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Meridian 1 Options 21 through 81C

# Basic Telecom Management

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Document Number: P0912434  
Document Release: Standard 6.00  
Date: October 2000

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# Revision History

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**October 2000**

Standard, Issue 6.00. This document is issued for X11 Release 25.3x.

**June 1999**

Standard, Issue 5.00. This document is issued for X11 Release 24.2x.

**December 1997**

Standard, Issue 4.00. This document is issued for X11 Release 23.0x.

**October 1996**

Standard, Issue 3.00. This document is issued for X11 Release 22.0x.

**January 1996**

Standard, Issue 2.00. This document is issued for X11 Release 21.1x.

**September 1995**

Standard, Issue 1.00. This document is issued for X11 Release 20.1x.

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# About this guide

## Who should use this guide

This guide is intended for the novice Meridian 1 administrator or programmer. Use this guide when you are installing telephones or performing programming changes on existing telephones.

## How to use this guide

This guide contains detailed instructions for programming new telephones, moving and removing telephones and making programming changes related to features that can be assigned to telephones.

### Please read before you start

The information in the *Before you begin* section provides a novice reader with the background information required to fully understand the material presented in the Task modules.

- ◆ *You should know this* covers basic background information on systems and the system-related terms used throughout the guide
- ◆ the *Call Detail Records* and *Traffic* modules help the novice reader understand references made to these topics in the Task modules

The module on *Basic programming instructions* should be covered in detail to ensure you have the programming skills required to complete the procedures in the Task modules. It is also recommended that the novice reader attend a programming course offered by Nortel Networks or by the system supplier.

## About this guide

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### How the sections of this guide work

#### Task sections

The bulk of this guide is made up of modules which explain how to perform tasks. Each Task module has three parts: an introduction, a flowchart, and a step-action procedure table. You should use these parts of a module in the order in which they appear.

#### Introduction (narrative)

The introduction provides you with information about a feature or function. It includes information under the following headings:

- ◆ Purpose — briefly outlines what the feature or function does
- ◆ Basic (feature) configuration — minimum information you need in order to program the basic feature or function, including:
  - setting up the feature
  - using the feature
  - interactions with other features
- ◆ Improving (feature) performance — information that will enhance your implementation of the basic feature or function
- ◆ Control tips — information related to the feature or function covered in the module that can help you improve control of your systems and users
- ◆ Administration tips — information related to the administration of the use of the feature or function covered in the module
- ◆ Training tips — information on how you can properly train users and how you can get the most out of training
- ◆ What to have ready — a checklist of basic and optional information to have ready and work that needs to be done before you can begin to program the feature or function

### Flowchart

The flowchart is a summary of the steps and decisions that are involved with programming an area of functionality. It summarizes the programming procedure and helps ensure you have everything ready before you start programming.

### Step-action procedure

This part of the Task module guides you through the programming part of the task.

We assume you are comfortable with the basic skills and competencies described in the *Basic programming instructions* module, and that you have read the narrative and flowchart parts of the module.

This guide assumes you have access to overlay programs 10, 11, 20, 21, and 22. Anything beyond that is outside the scope of the guide. When programming is required in other overlay programs, we advise you to contact your system supplier. We also remind you to check any maintenance agreements you have that specify what programming you can do and what programming must be done by your system supplier.

## How icons and symbols are used

### Task modules



#### Caution

This symbol alerts you to the risk of a service interruption.

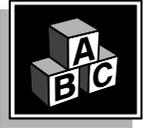


This symbol is used to alert you to information that is of major importance. The text that appears beside the symbol can vary from one situation to another, and it is important that you read it.

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## About this guide

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This icon illustrates basic building blocks. It appears in the Basic configuration part of each Task module. It symbolizes that the information in that part of the module is basic to the implementation of the feature or function being discussed.



This icon illustrates basic building blocks with additional blocks added. It appears in the Improving feature performance part of each Task module. It symbolizes that the information in that part of the module concerns the enhancements or optional capabilities that you can apply to the feature or function being discussed.



This icon illustrates a person who is directing traffic. It appears in the Control tips part of each Task module. It symbolizes that the information in that part of the module helps you improve control of the system operation, costs, and security because of the feature or function being discussed.



This icon illustrates a graph showing improvement trends in system efficiency. It appears in the Administration tips part of each Task module. It symbolizes that the information in that part of the module is related to the administration of the system with respect to the feature or function being discussed.



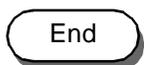
This icon illustrates a person doing telephone training. It appears in the Training tips part of each Task module. It symbolizes that the information in that part of the module is related to the use of training with respect to the feature or function being discussed.

### Flowcharts

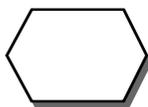
This guide uses CCITT standard flowchart symbols.



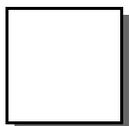
Every flowchart begins with this symbol.



This symbol appears at the end of a pathway within a flowchart.



This symbol contains text explaining what you have to decide.



This symbol contains text explaining an action that you should take or information that you should know.

## About this guide

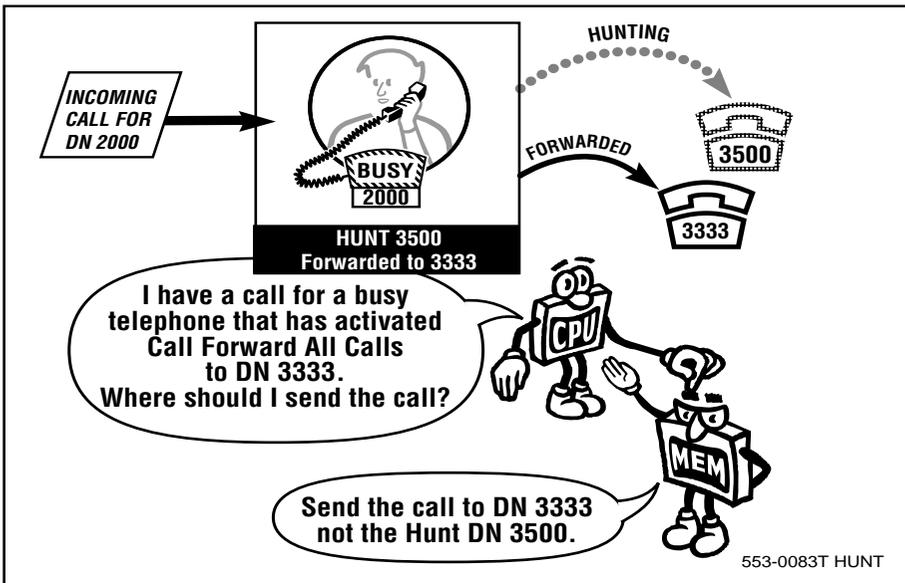
### Graphics

Graphic illustrations in this guide use lines with arrows to show calls travelling from one point to another.

Lines indicating call redirection because of the Hunting feature are composed of a series of dots. A solid line is used for call redirections by other features.

The lines can be shown in grey or black.

- ◆ a line shown in grey, indicates that there is programming in place for a call-redirection-related feature but the call being illustrated does not follow that redirection pathway, due to a feature interaction
- ◆ a line shown in black, indicates the path that a call takes, after the feature interactions being illustrated take effect



In the illustration, the dotted grey line indicates that there is programming for the Hunting feature. Hunting redirects calls to DN 3500 when DN 2000 is busy. The Call Forward All Calls feature overrides the Hunting feature. The solid black line indicates the path the call in the example takes. The call is redirected to DN 3333.

## How prompts and responses are represented

In this guide, the following conventions apply:

### Prompts

Meridian 1 system prompts and any messages that the system outputs appear in the step-action tables in bold type face. The prompt appears at the far left, as shown underlined here:

CLS      FNA      Call Forward No Answer allowed

### Responses

The responses or commands that you can enter at a particular prompt appear in the procedures to the right of the prompt itself, as shown underlined here:

**TYPE**      FNA      Call Forward No Answer allowed

### Variables

Some prompts allow a wide range of responses.

For alphanumeric responses, A . . A appears in the procedure and an explanation of the possible valid responses is provided in the description.

For numeric responses, a range of values is shown, as in the example here:

**FTR**      EHT      X . . X      Input the DN to which external calls  
are to hunt, where X..X represents a  
DN that can be:  
1–4 digits prior to Release 13  
1–7 digits Release 13 and later  
1–13 digits Release 14 and later

---

## About this guide

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### Explanations

Explanations of what a prompt means or what the different responses do are provided to the right of the response as shown underlined here:

**FTR**     EHT X . . X Input the DN to which external calls are to hunt, where X..X represents a DN that can be:  
1–4 digits prior to Release 13  
1–7 digits Release 13 and later  
1–13 digits Release 14 and later

## Software Releases

Prior to Release 20, International software is identified with a letter following the release and issue number. If there is no letter following the issue number, then the software was manufactured for the North American market. For example:

- X11 Release 14.46E software is International
- X11 Release 16.65 software is North American

Features and functions described in this guide often have a software release and issue number listed as a pre-requisite.

There are several factors that govern what releases and issues are offered in each market region.

*This guide states the minimum level required, on a global basis, strictly from a technical point of view.*

For example, the Multi-Party Operations (MPO) feature was first introduced in Release 14.46E. In some market regions, however, the MPO feature was first available with Release 20.

Contact your system supplier to confirm the availability of software for the features and functions that you want.

### Availability of product

Ask your system supplier to verify which Nortel Networks telephones, software features, or hardware are available in your market area.

### Language standards and translations

This guide is written to North American English standards.

You can find explanations of terms and equivalent terms in the *Terms and abbreviations* module and *Appendix 5* in this guide. Nortel Networks welcomes suggestions for additions to these modules.

Fax to: Manager,

Dept. 9V51,

Nortel Networks,

506-674-7314

Check with your system supplier or with Nortel Networks for versions of this guide in languages other than North American English.

### Additional Meridian 1 documentation

Information about the use of telephones is presented in more detail in User Guides and Quick Reference cards. These guides and cards are available for every type of telephone you can use with the Meridian 1.

## About this guide

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Certain features and options are beyond the scope of this guide. You can use the following documents to find information on all features and services related to the Meridian 1:

### North America

- ◆ *X11 Software Features Guide*
- ◆ *X11 Input / Output Guide*
- ◆ *X11 System Management Overview, Applications, and Security*

### International

- ◆ *X11 Software Feature Guide*
- ◆ *X11 Software Input / Output Guide*
- ◆ *Software System Management*

# You should know this

## Basic telephone concepts

### Types of telephone systems

When telephones are required in a building for a group of users, there are several options from which to choose.

The three main types of systems are:

- ◆ Centrex
- ◆ Key System
- ◆ Private Branch Exchange (PBX)

Nortel Networks manufactures systems of all three types. The focus of this book is the Meridian 1 system which falls into the PBX category. The Nortel Networks system that serves Centrex telephones is called the DMS system. The Key system is called Norstar.

### PBXs, trunks, and Central Offices

PBXs provide telephone service to large numbers of users, usually between 30 and 10,000.

When you are connected to a PBX and you lift the handset of your telephone, the dial tone you hear is coming from the PBX.

The PBX receives the digits you dial, interprets them and connects you to the destination you want. Sometimes the destination is an internal telephone, connected to the same PBX. Sometimes it is an external telephone connected to the PBX by a trunk.

Trunks are pairs of wires or optical fibre that connect the PBX to an outside system. One of these systems is called a Central Office. The Central Office (or CO) provides telephone service to businesses and residences in your local area.

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## You should know this

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Central Offices are sometimes called exchange offices. When your call goes out to one of these offices you have accessed the *exchange network*, sometimes called the *public exchange network*.

If you have more than one trunk connected to the same end-system, handling the same kinds of calls, arrange them in trunk groups (also called trunk routes). For example, trunks connected to the Central Office that handle public exchange network calls are called Central Office Trunks (COTs). As of X11 Release 24, you can have up to 510 trunks in one route. Prior to X11 Release 24, the limit was 254 trunks in a trunk group. If you have more than the maximum number of trunks of a particular kind you must program a second trunk group for the additional trunks.

Many systems have people called attendants who answer incoming calls from the public exchange network. The callers dial one main number to reach the attendants. The attendants transfer calls to the internal people who the callers want to reach. Each internal telephone has at least one *Directory Number (DN)*. The attendant and other internal people dial DNs to make calls to each other.



PBXs can be connected to trunks called *Direct-Inward-Dial (DID or DDI, Direct -Dial-In)* trunks. When a call comes in on one of these, it comes directly to the telephone on the PBX that has the DN associated with the last digits in the DID number the caller dialed. The CO sends the last digits in the DID telephone number to the PBX. The PBX receives the digits and deciphers them as digits in a DN. The call gets routed to the proper telephone. No attendant is required to transfer incoming calls from DID trunks to the proper telephone.

If you have pairs of wires connecting your PBX to another PBX they are called TIE trunks. TIE trunks to a particular switch are grouped together in one trunk route. When you call out on a TIE trunk, you have accessed the *private network*.

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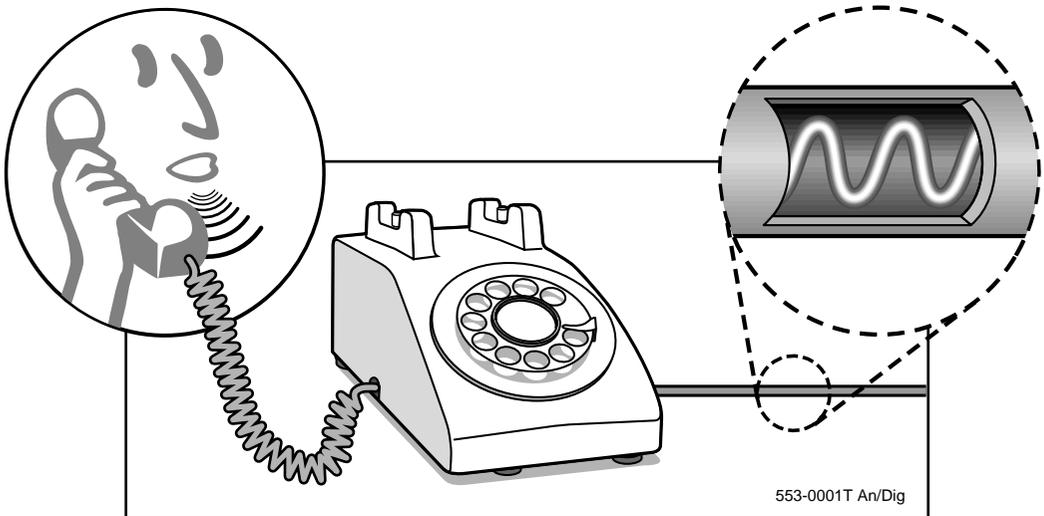
## You should know this

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### Analog and digital

There are trunks that handle analog signals and those that handle digital signals. There are analog and digital PBXs as well as analog and digital telephones.

Analog signals are transmissions that travel along in a wave format. They might travel through a wire (when a signal is travelling along a trunk) or the air (when you are speaking to someone beside you).

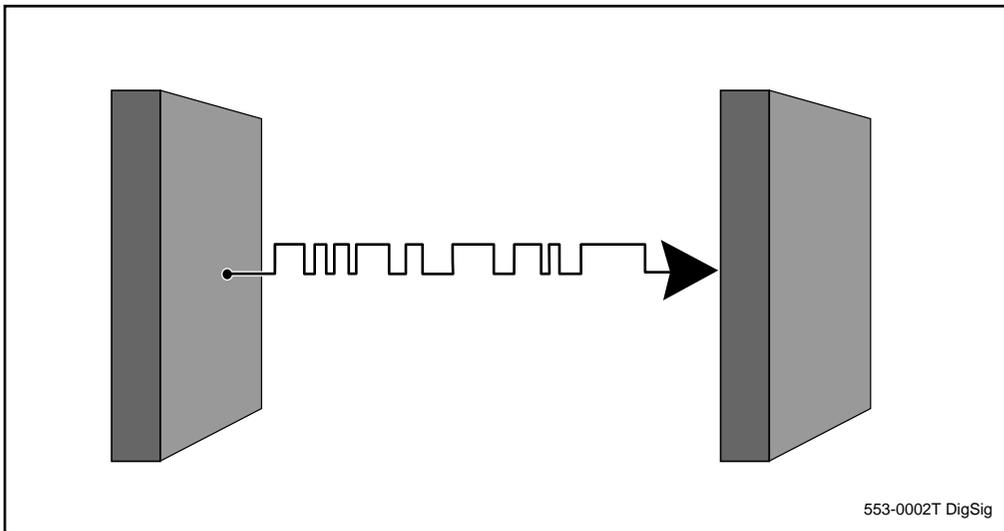


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## You should know this

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Digital signals are on and off pulses put together in a particular sequence. The pulses and the sequence are deciphered by equipment at the other end that can either read the message and understand it digitally or change it into an analog format to be heard and understood by a person.



When a telephone or system is called digital it means it is built to send and receive signals in a digital format.

The Meridian 1 is a digital PBX system.

The Meridian 1 can be connected to both analog and digital trunks.

Any Nortel Networks telephones in the M2XXX or M3XXX series are digital. There is more information on telephones later in this module.

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**You should know this**

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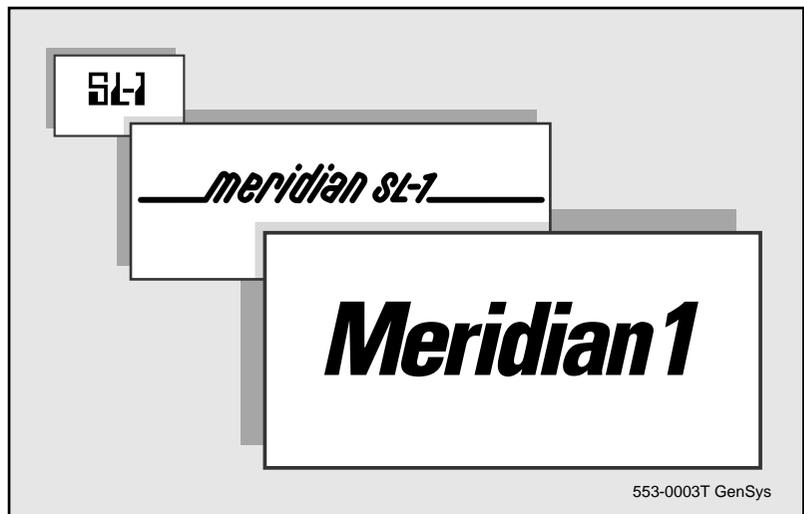
## Generations of systems

### System models



There are three distinct families or generations of PBX systems manufactured by Nortel Networks.

The most recent generation is called the Meridian 1. The earliest generation was called the SL-1, followed by the generation called the Meridian SL-1.



Each generation has at least three models. Each model is designed to handle different quantities of telephones. Generally, you can divide each generation into the categories of small, medium and large systems. In the most recent Meridian 1 generation there is also a system that handles a very small number of telephones.

## You should know this

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The following charts summarize the different system model names and the size ranges they are designed to handle.

**Table 1**  
**SL-1 systems**

System name	Size range
A, M, S, MS	small
L, LE	medium
VL, VLE, XL	large

**Table 2**  
**Meridian SL-1 systems**

System name	Size range
ST	small
N, NT	medium
XN, XT	large

**Table 3**  
**Meridian 1 systems**

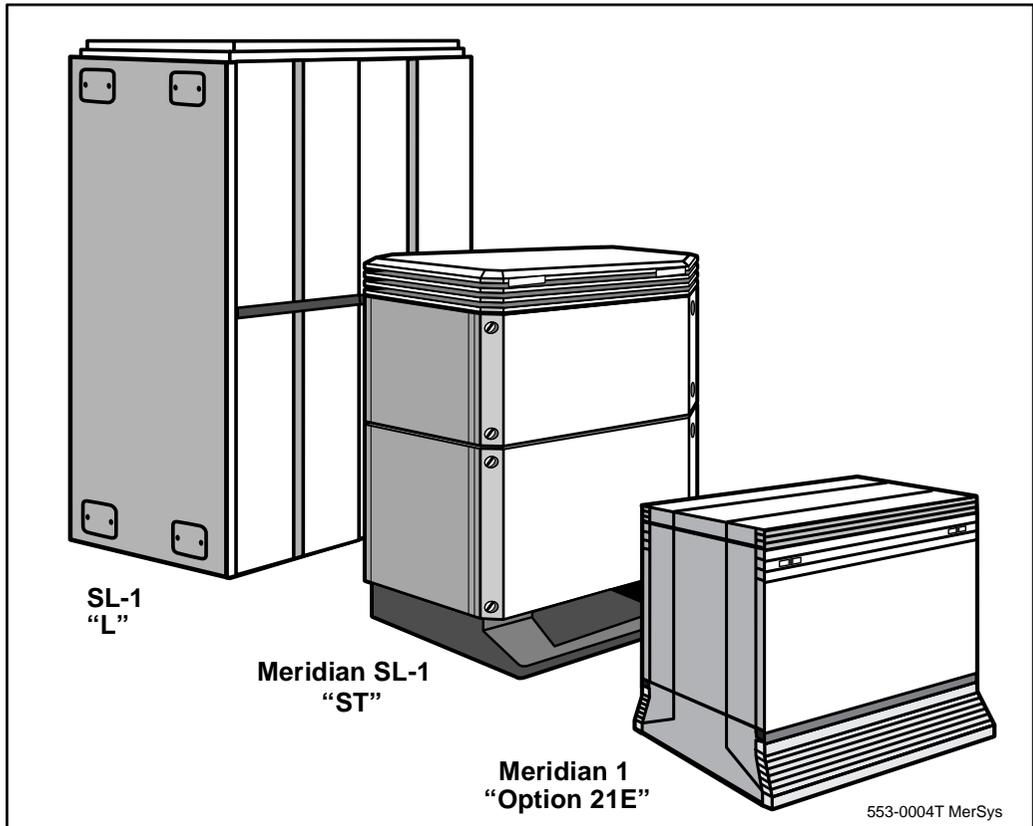
System name	Size range
Option 11, Option 11E, 11C, 11C Compact	very small
Option 21, Option 21E	small
Option 51, Option 51C, Option 61, Option 61C	medium
Option 71, Option 81, Option 81C	large

Note: Option 21 and Option 21E systems are supported up to and including X11 Release 21. Option 51, Option 61, Option 71 and Option 81 systems are supported up to and including X11 Release 22. Only systems using C-processors are supported as of X11 Release 23.

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**You should know this**

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**SL-1, Meridian SL-1, and Meridian 1 systems****Evolution and upgrades**

All systems can be upgraded to take advantage of enhanced hardware and software that was introduced after the initial introduction of the system. This is because the three generations of systems have evolved gracefully, with upgrades in mind.

For example, an SL-1 model S system can be upgraded, with new components and software, to operate like a new Meridian 1 Option 21E. The upgraded S system looks physically different from the new Option 21E, but they operate exactly alike.

It is also true that new systems are designed to work compatibly with old components. This is called *backward compatibility*.

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## You should know this

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For example, you might own components or telephones from an older system that you would like to continue to use with a new system. The old components will work in the new system. There might be drawbacks to doing that from a cost or efficiency point of view. You should discuss this fully with your system supplier.

### Understand your system

It is a good idea for you to find out what type(s) of system(s) you manage. You might try to arrange one or more visits to your system equipment room with whomever maintains your system.

Look carefully at the system components. Each system has its own unique configuration. Ask questions. If you do this, you will:

- ◆ become comfortable with the technology involved with the day-to-day operation of your system
- ◆ understand the hardware in your system that is behind the scenes when you need to add, move, and change telephones

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## You should know this

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### System hardware components

The hardware components of the system belong to three main groups of equipment. They are called:

- ◆ Common Equipment (CE)
- ◆ Network Equipment (NE)
- ◆ Peripheral Equipment (PE)

#### Common Equipment

The components in this area of the machine can be called the computer because they control the operation of the rest of the system.

The Common Equipment is made up of:

- ◆ Central Processing Unit (CPU)
- ◆ Memory
- ◆ Disks
- ◆ Input/Output Disk Unit with CD-ROM (IODU/C)
- ◆ Input/output ports

**The CPU** performs the functions required by the telephones and trunks connected to the system.

**The memory** has all the instructions stored so the CPU can operate.

**The disks** have a permanent record of the instructions. If the memory is erased because of a power failure, for example, the instructions stored on the disk are automatically loaded into the memory when the power failure ends.

With X11 Release 23 and the **Input/Output Disk Unit with CD-ROM (IODU/C)**, software is delivered to Meridian 1 systems by CD-ROM. IODU/C applies to Options 51C, 61C, 81, and 81C.

Prior to Release 23, the software was uploaded by a 4 MB disk drive. The SL-1 program was read in from a stack of 4 MB floppies (a stack of 8 in Release 18 and a stack of 16 by Release 23). With IODU/C

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## You should know this

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software delivery is done using a CD and a single install floppy. This replaces the large stack of floppies required to install software prior to Release 23.

Introduced in Release 25, the Call Processor PII (CP PII) provides the capacity and speed to meet the current and future communications demands of large and growing organizations.

CP PII is based on Intel's Pentium® processor to ensure uninterrupted voice and messaging services for the most demanding applications. The Meridian 1 open architecture is designed for seamless upgrades for increased capacity and to future generations of Intel Pentium processors.

CP PII is available only in an Option 81C configuration. Systems that are upgraded to a CP PII are also converted to an Option 81C system at the same time.

**The *input/output ports*** are called Serial Data Interface (SDI) ports. They allow your system maintainer to connect a terminal to the system for programming purposes. If you are going to move, add and change telephones, you will be using this terminal as well. Other devices, such as printers for traffic studies and call detail records, are also connected to these ports. There are modules on these topics later in this section.

Typically, when people upgrade the Common Equipment of their older systems, they do so to get faster CPUs or more memory. For instance, with X11 Release 23, the Call Processor 3 (CP3) is introduced. The CP3 improves real time performance over the existing pack, the CP2. With the CP3, the CPU realtime for the Options 51C, 61C, 81, and 81C is increased by 1.5 to 2 times.

### Network Equipment

The telephones and trunks interconnected by the PBX are connected using the Network Equipment components of the system.

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## You should know this

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### Time slots

The system uses *timeslots* to connect each party on an active call. If two internal telephone users are speaking, the system uses two timeslots to connect them, one for each telephone. If a telephone user is calling out on a trunk, the system uses two timeslots, one for the telephone and another for the trunk.

### Loops and Superloops

These timeslots are present on Network Equipment components called *Loops*. Each Loop has 32 timeslots, if it is an Enhanced or Standard Loop. Meridian SL-1 systems and Meridian 1 systems use Enhanced Loops. SL-1 systems used the Standard Loops.

Meridian 1 systems can also use newer versions of Loops called *Superloops*. Superloops have 128 timeslots.

Loops and Superloops are cards that sit in the Network Equipment area of the machine.

A Virtual Superloop has been introduced in X11 Release 25 to support i2004 Internet Telephones. Up to 1024 telephones can be configured on a single Virtual Superloop for a system, compared to the traditional 512 telephones.

Collectively, 32 loops are called a group. The Option 81C is called a multi-group system because you can equip up to five groups. Introduced in X11 Release 25, Fiber Network fabric (FNP) allows the expansion of Meridian 1 Option 81 and 81C systems from five Network groups to eight Network groups, a 60% increase in port and trunk capacity.

The Intergroup cards and Intergroup module in pre-Release 25 Meridian 1 systems have been replaced by a Dual Ring fiber optic network.

A Fiber Network provides 7680 timeslots for 3840 simultaneous conversations. This significantly enhances the number of telephones that you can configure on a system.



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## You should know this

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### Provisioning

The greater the number of Loops or Superloops equipped on your system, the greater the number of timeslots you have.

As you add more telephones and trunks to your system it is important to keep the timeslots in mind.

If you do not provision sufficient timeslots, or manage the system properly, the users on your system might begin to complain of poor service. This usually appears first in the form of dial tone delay problems.

When users lift their handsets to make calls, it is called taking their telephones *off-hook*. The system attempts to provide dial tone to the telephone that is off-hook. Timeslots are needed in order to provide dial tone. An under-provisioned system will not have enough timeslots for the demand, especially during busy times of the day. If there are not enough timeslots available for dial tone, a user must wait until another user on the same Loop (or Superloop) hangs up. Since Superloops have far more timeslots than Loops, dial tone delays usually do not occur when you use Superloops on your system.

This demand for timeslots is called *traffic*. You can predict the expected demand with the help of your system supplier.

The occurrence of service problems is sometimes called *blockage*. There are many things you and your system supplier can do initially, and on an ongoing basis, to eliminate blockage. Refer to the module called *Traffic* for many suggestions.

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## You should know this

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### Conference and Tone and Digit Switch

When you look at your system you will notice there are also *Conference* cards and *Tone and Digit Switch (TDS)* cards sitting near the Loop and Superloop cards. They are also part of the Network Equipment.

- ◆ The Conference card supplies extra timeslots to a conversation when additional people are added in a conference.
- ◆ The TDS card supplies tones like dial tone and busy tone, when told to do so by the computer in the system.

On some systems, the Conference and TDS functions are combined on dual-function cards.

## Peripheral Equipment

### Line cards and trunk cards

The telephones and trunks on your system are connected to the system with cards that sit on shelves. There are *line cards* for telephones and *trunk cards* for trunks.

On the newer Meridian 1 systems these shelves for cards are housed in modules.

There are unique cards designed for each type of telephone and trunk.

More than one telephone or trunk is connected to a card. The version of the card determines how many can be connected.

When you add more telephones and trunks to your system, you will need to add more cards when the existing ones are fully utilized.

### Density

A term, *density*, is used to describe, in general, the vintage and capacity of a card. For example, when line cards were introduced in 1975, they had four units on them to connect up to four telephones. These are called *single-density* cards. Later, line cards were introduced with twice as many units for twice as many telephones and these are called *double-density* cards. The development of new cards continued, with the introduction of *quad-density* cards that connect up



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## You should know this

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to 16 telephones, and then *octal-density* cards. These have 32 units, 16 of which are for digital telephones and the other 16 are for associated data terminals that you can connect to the telephones.



### PE cards vs. IPE cards

There are two versions of cards:

- ◆ Intelligent Peripheral Equipment (IPE)
- ◆ Peripheral Equipment (PE)

Meridian 1 systems can accommodate IPE cards and PE cards.

Only upgraded SL-1 and Meridian SL-1 systems can handle IPE cards. If not upgraded, they can only have PE cards.

Intelligent line cards and trunk cards can have more telephones and trunks connected to them than the older, non-intelligent kinds of cards. This saves room in your system and keeps your system small.

*Intelligent cards are served by Superloops. Non-intelligent cards are served by Loops. Superloops have more timeslots than Loops.*

### Digitone receiver (DTR)

If you use Digitone-type telephones, your system has digitone receiver (DTR) cards.

Digitone-type telephones are sometimes called 2500 or DTMF telephones. They are analog telephones that output tones when keys on the keypad are pressed.

The CPU of your system requires assistance in interpreting these analog tones. The DTR card was designed to interpret these tones and change each tone into a digital signal, suitable for the CPU.

You need DTR cards if your system has any Digitone-type telephones, or Digitone-type trunks which carry these tones into your system from other systems.

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## You should know this

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The DTRs installed in your system are shared by all the Digitone-type telephones and trunks on the system. Your system supplier can help to provision sufficient DTRs, based on the tone traffic load expected.

If there are not sufficient DTRs, Digitone-type telephone users experience dial tone delays while they wait for DTRs to become available.

**Note:** On some systems, the DTRs are not readily visible cards since they can be small cards called daughter boards that are attached to other cards.

## System software

### Generics, releases and issues

The term *generic* is used to describe software which is designed with a particular application in mind.

There have been a number of different generics during the evolution of the systems. One generic was designed specifically for hotels world-wide. One was designed for business applications outside North America. This generic is often called the International generic of software.

In the early stages of software development for the earliest SL-1 systems, whenever new software was introduced with new features and capabilities, it was called a new generic. As a result there have been, through the years, Generics X01 through to X11.

With the introduction of Generic X11 software, each new version of software was called a new *release* instead of a new generic. There is at least one new release of software introduced every year.

Each new release introduces new capabilities that were not present on the previous release. That is why upgrading your system to take advantage of new developments in hardware and telephones often requires an upgrade of your software to a newer release.

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## You should know this

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During the development of a software release, trials of the software are conducted at selected sites around the world. If problems are encountered at these sites and software of the same release is re-written to fix the problems, the new software is called a new *issue*. Once the software release is stable, and ready to be sold as a product, as an example, it might be labelled Issue 16.

After introduction, if further software problems are identified, they are registered by the Nortel Networks technical support groups around the world, and prioritized. Scheduling is done to include as many fixes as possible in the next issue of software for that release. Some fixes are scheduled to be included in the next release instead of the next issue.



You should always report any software problems you encounter on your site to your system maintainer. There is a process in place for them to follow to resolve the problem with their own technical support people first, and then with Nortel Networks, if the problem is still unresolved.

### Software packages

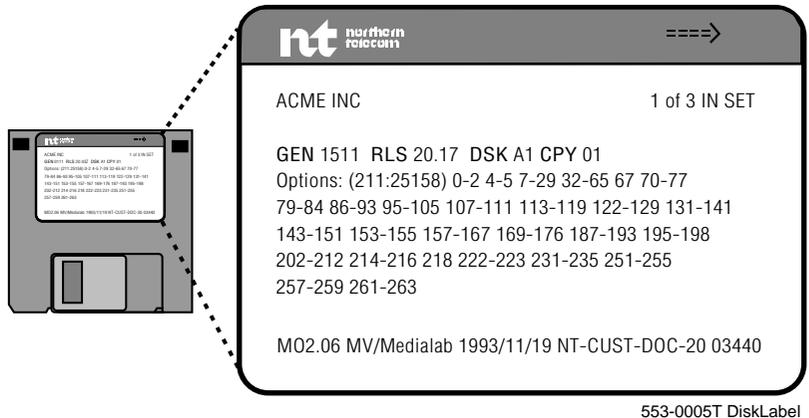
When a system is first installed, disks are used to load the system instructions into the memory. Some features and capabilities are grouped on the disks into what are called *software packages*.

For example, if you want names to be transmitted with calls so that the called person can see the caller's name on the telephone display before answering, you need the feature called Call Party Name Display (CPND). This capability was introduced as software package 95.

## You should know this

You can see what software packages you have on your disks in two ways.

- ◆ You can have the system print out the complete list using overlay program 22. Check with your system maintainer on how to print this.
- ◆ You can look at the labels on the disks themselves. The software packages equipped are listed there by number. Refer to the *Software Input/Output Guide* that was delivered with your system for a complete listing of the software packages that are available to date.



553-0005T DiskLabel

Systems shipped today are shipped with a standard complement of software packages. You do not necessarily have to activate all of them. You might also have ordered certain optional software packages for which there was a cost.

Activation of some packages requires much time and effort in programming, so your system supplier might have an associated charge for activation.

Discuss your equipped packages with them and discuss which packages are actually activated on your system.

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## You should know this

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### Overlay programs

When your system was installed, your system maintainer programmed information related to the telephones and trunks that are connected to your system into the system memory.



That person used programs called *overlay programs* to do this. *These programs are often called “Loads” because the command you use to make a particular program active in the memory is the mnemonic LD followed by a program number. When you type this, you are telling the system to load that particular program into the system memory temporarily, while you need it for programming.*

There is a particular load for each specific aspect of the programming that must be done in order for your system to work. There is a particular sequence for programming the various loads. This is laid out in the *Basic programming instructions* module in a part called *Overlay program hierarchy*.

The focus of this book is programming telephones. Telephones are programmed in LD 10 and LD 11, depending on the kind of telephone. Refer to the module called *Basic programming instructions* for more information on the loads and proper programming procedures.

In documents written by Nortel Networks, the term *Service Changes* is used to mean programming of administration overlay programs. Service Changes are different from the type of programming you might do related to the maintenance of the system.

*SCHXXX* messages (*Service Change messages or error codes*) appear on your terminal if you do not follow one of the rules of programming or if one of your responses is not what the system expects or tolerates for a given step.

The XXXX represents a code that you can look up in the *Software Input/Output Guide* for more information on what the error is.

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## You should know this

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### Data Dump

When you make programming changes, these changes are stored in the system memory when you finish working in the overlay program.

To make a permanent copy of the updated information, it is a good idea to do a data dump. By doing this, the information in the memory is copied onto the system disks. That way, if you lose power and you have no battery backup, or if you experience a memory-related problem, the system can use the information on the disks to reload its memory.

### SYSLOAD

If the system loads or reloads information from the disks into the system memory, that process is called System Reload, or SYSLOAD for short.

- ◆ It loads information from the disks when it is first installed.
- ◆ It might reload, automatically, if there was a power failure and the power has returned.
- ◆ The system maintainer might force the system to SYSLOAD during a system upgrade when the new disks are inserted into the machine.

During a SYSLOAD there is no telephone service until all the data has been reloaded into memory.

The time it takes varies, depending on the size of the system and the amount of data to be reloaded. The vintage of the machine can also affect the time it takes.

### Initialization

Occasionally your system might initialize to clear out transient information in its memory. For example, this might occur if there is a faulty line card sending an extreme number of erroneous messages to the CPU.

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## You should know this

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The users of the system usually do not notice an initialization unless they were in the process of attempting to activate a feature or initiate a call at the time it occurred. The initialization prevents the activation of features or new calls. When the initialization is complete, a few seconds later, the users can activate features and initiate calls with no problems.

Some programming changes do not take effect unless an initialization is done to your system manually. You are probably not responsible for these kinds of programming changes.

If your system initializes, there are messages that print out on the maintenance printer connected to your system. These messages explain why the system initialized.

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## You should know this

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### Telephones

There has been a wide variety of telephones used with the systems through the years.

The telephones that people used, in the 1970s were the analog dial and Digitone telephones for single line (single Directory Number) applications.

A Digitone telephone transmits tones when the buttons on the key pad are pressed. Today, there are many different models of telephones that transmit tones. They are called Digitone-type in this book.

People who needed more than one DN used SL-1 telephones, designed specifically for SL-1 systems, the most modern systems in existence at that time. SL-1 telephones do not transmit tones when the buttons on the key pad are pressed. Digital signals are sent to the CPU in the system. Other models of the SL-1 telephone have been developed by Nortel Networks (M1000 series telephones). These telephones are called SL-1-type in this book. The SL-1 telephone is an analog telephone; it does not digitize the user's voice during a conversation.

There are digital telephones that digitize the user's voice. They also multiplex data from a PC that is connected to the system through the telephone wires. There have been five generations of digital telephones to date, Release 7, Release 9, Release 14, Release 18 and Release 24. Each release introduced unique digital telephones.

It is worth noting that the new systems installed today can still provide service to any model of telephone that Nortel Networks has ever produced (backwards compatibility).

## You should know this

There are four categories of telephones used today:

- ◆ Analog dial or Digitone-type. The terms *regular telephone*, or *analog (500/2500) telephone* are also used for this type.
- ◆ Analog SL-1-type. The term *analog proprietary telephone* is also used for this type.
- ◆ Digital. The term *digital proprietary telephone* is also used for this type.
- ◆ Wireless. There are in-building portable telephones and cellular telephones that work inside or outside, on the cellular network.

Table 4 summarizes the models of Nortel Networks telephones that have been used with SL-1, Meridian SL-1 and Meridian 1 systems to date.

**Table 4**  
**Telephone models and category**

Analog dial or Digitone-type	Analog SL-1-type	Digital	Wireless	Internet
Dial (500) *	SL-1 *	M2009 *	M2616CT	i2004 Internet Telephone
Digitone (2500) *		M2112 *	Wireless (UPCS)**	
Unity I *‡	M1009 Ɔ	M2018 *	Microcellular**	
Unity II *‡	M1109 Ɔ	M3000 *	Meridian Companion**	
Unity Plus *‡	M1309 Ɔ	M2317 *	Meridian Companion DECT**	
Unity 2-line *‡		M2006		
Unity Handsfree *‡		M2008		
M8000 ‡		M2216ACD		
M8009 ‡		M2616		
M8314 ‡		M5317TDX §		
M8417 ‡		M3110		
		M3310		
— continued —				

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## You should know this

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**Table 4**  
**Telephone models and category (Continued)**

Analog dial or Digitone-type	Analog SL-1-type	Digital	Wireless	Internet
		M3820		
		M3901		
		M3902		
		M3903		
		M3904		
		M3905		
* means the telephone is not available for new orders from Nortel Networks ‡ means the telephone is called <i>Digitone-type</i> in the rest of this book P means the telephone is called <i>SL-1-type</i> in the rest of this book § means the telephone conforms to the Basic Rate Interface standards ** these are system names - contact your system supplier about telephone model numbers				

### Regular telephones compared to proprietary telephones

**Table 5**  
**Comparison of telephone types**

Regular telephones	Proprietary telephones
work on any system	work when connected to an SL-1, Meridian SL-1 or Meridian 1 system
programmed in LD 10	programmed in LD 11
some Digitone-type telephones have buttons that are programmed using the telephone memory	have <i>keys</i> that are programmed using the system memory
when you press a button to access a feature on a Digitone-type telephone, digits are outputted to the CPU, as if the user dialed them	when you press a key to access a feature on a proprietary telephone, it sends a digital message to the CPU. The CPU scans the memory for what is programmed for that key on that telephone

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## You should know this

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### Differences in names

Naming conventions and types of telephones available, vary from country to country.

### The telephones in this book

In the Task modules that follow, in the section called *Adding and changing features*, you will find modules about the telephones that are commonly used with Meridian 1 systems, in many different countries.

There is a large illustration of the specific telephone covered in that module, at the beginning of each Task module. There is a small illustration of that telephone at the top of each page that follows.

Some system suppliers offer telephones that do not appear in this book. If you have a telephone that does not have its own module in this book and it fits the description of Digitone-type, as described previously, use the information in Task 2, *New Digitone telephone* when you are programming.

If you are installing an SL-1 or SL-1-type telephone, the programming information in the Task modules for digital telephones will be of assistance to you. An SL-1 or SL-1 type telephone has many of the same attributes as a digital telephone. Since there are also some critical differences, ask for assistance from your system supplier the first time you program one of these kinds of telephones.

### Identifying telephones

If you are not sure what kind of telephone you are to install:

- ◆ compare the telephone you want to program with the illustrations you see in the modules
- ◆ look at the label on the bottom of the telephone

If it is a Nortel Networks label, it will look like the illustration that follows.

**You should know this**

**The model number of any Meridian telephone is identified here**

**NTZK16BA35 M2616 W/DISPLAY**  
**NT2K16XC35 01A7SR** **04/08/94**  
 [Barcode]  
 Listed  Telephone Equipment   
**48KG** **LR 57943**  
**RE-MANUFACTURED BY NTI/NROC**  
**(800)251-1758** **PASS 15**  
553-0006T ModelNum

Look at the area on the label that is highlighted in the illustration. The code there tells you what kind of telephone it is.

If you are still not sure what kind of telephone you have, ask your system supplier for help. Your supplier can suggest what Task module to use when you want to install it.

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## You should know this

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### Attendant Consoles

Programming Attendant Consoles is beyond the scope of this book. However, the following information will give you a brief overview of Attendant Consoles. For further information on Attendant Consoles, refer to the *Attendant Console User Guide*.

Attendant Consoles help place and extend calls into and out of the Meridian 1 system. The operator of an Attendant Console is known as the attendant. The console provides the attendant with many unique features that increase the speed and use of call processing.

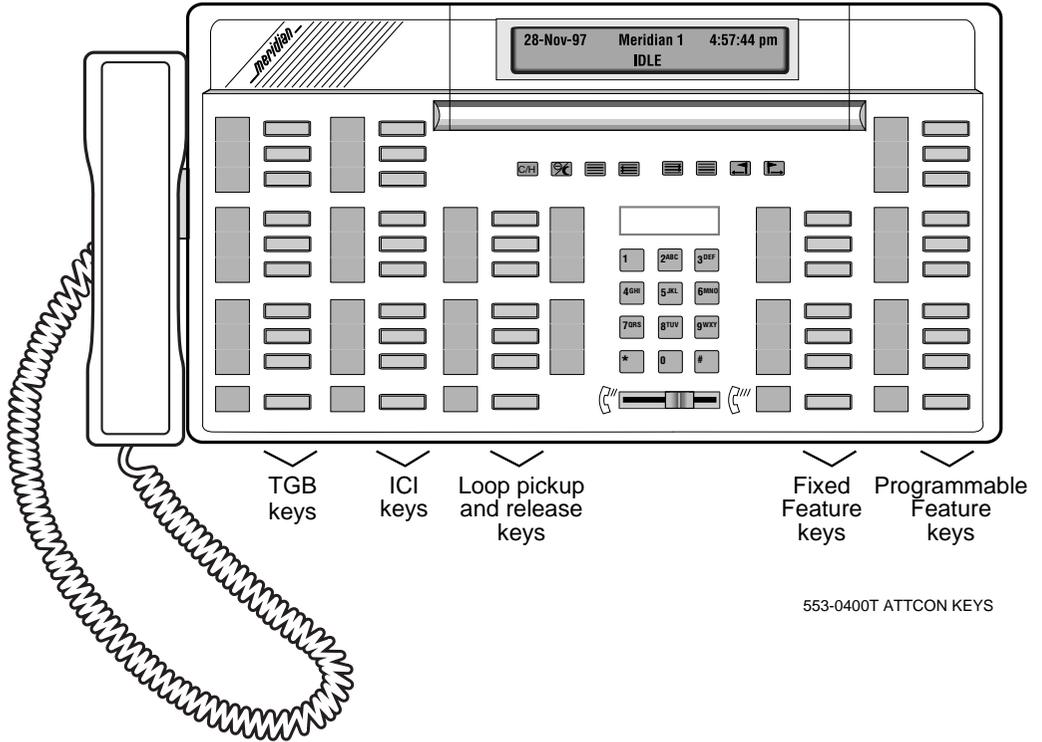
Attendant Consoles have a digit display at the top of the console and a dial pad below the display. Five vertical keystrips on the console provide access to different features. Add-on modules can be added to some of the Attendant Consoles.

Each Attendant Console occupies at least two Terminal Numbers (TNs). External power must also be supplied. Four TNs can be used if the system has battery back-up. The extra TNs ensure that your console is fully functional during a power failure.

Figure 1 is an illustration of an M2250 Attendant Console.

# You should know this

**Figure 1**  
**M2250 Attendant Console**



## You should know this

The following Attendant Consoles are available on the Meridian 1 system:

**Table 6**  
**Attendant Consoles available with the Meridian 1 system**

Console type	Description	X11 Release
* QCW4	<ul style="list-style-type: none"> <li>◆ Basic console with a 16-character alphanumeric display</li> <li>◆ Key/lamp add-on modules (optional)</li> <li>◆ Lamp Field Array</li> <li>◆ 40 fixed keys</li> <li>◆ 10 assignable keys</li> </ul>	All
*M1250	<ul style="list-style-type: none"> <li>◆ Console with a four-line, 40-character wide, alphanumeric Liquid Crystal Display</li> <li>◆ Multilingual display</li> <li>◆ Menu-driven display set-up</li> <li>◆ Busy Lamp Field (optional)</li> <li>◆ Up to 16 Trunk Group Busy keys</li> <li>◆ Up to 20 Incoming Call Indicator keys</li> <li>◆ 6 Loop pick-up keys</li> <li>◆ 8 function keys</li> <li>◆ 8 display-related keys</li> <li>◆ 10 assignable keys</li> </ul>	12
— continued —		

## You should know this

**Table 6**  
**Attendant Consoles available with the Meridian 1 system (Continued)**

Console type	Description	X11 Release
M2250	<ul style="list-style-type: none"> <li>◆ Digital console with a four-line, 40 character wide, alphanumeric Liquid Crystal Display (LCD)</li> <li>◆ Multilingual display</li> <li>◆ Menu-driven display set-up</li> <li>◆ Busy Lamp Field (optional)</li> <li>◆ Up to 20 Trunk Group Busy keys</li> <li>◆ Up to 20 Incoming Call Indicator keys</li> <li>◆ 6 Loop pick-up keys</li> <li>◆ 8 function keys</li> <li>◆ 8 display-related keys</li> <li>◆ 20 assignable keys</li> </ul>	15
Meridian 1 Attendant PC	◆ Refer to the description on page 40.	15
* Manufacturer discontinued.		

### Trunk Group Busy (TGB) keys

Trunk Group Busy keys indicate when all trunks in a route are busy. When the Light Emitting Diode (LED) or Liquid Crystal Display (LCD) flashes, the attendant can see that all trunks in the route are in use or out-of-service, due to maintenance conditions.

The attendant can deny users access to a trunk route by pressing the associated Trunk Group Busy key. The LED or LCD indicator lights steadily when the attendant presses the key. Refer to Task 45, Trunk Group Access Restriction, for more information.

### Loop keys

Loop keys allow the attendant to answer and originate calls from the console. Calls that are waiting to be answered by the attendant(s) are queued when they cannot be answered immediately. The longest waiting call is presented to the first available attendant on an idle loop key. Recalls always go to the head of the queue.

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## You should know this

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### Incoming Call Indicators (ICIs)

The Incoming Call Indicators identify the type of calls in the attendant queue and the status of each particular call type. Therefore, the attendant knows what type of call is waiting to be answered or whether a restricted user is calling or has been intercepted to the console. For example, calls from an incoming 800 service line could be answered before other calls. The attendant can answer calls using ICI keys, rather than Loop keys. You can program each ICI key for a different call type. One key can represent more than one call type.

### Meridian 1 Attendant PC

In North America, the Meridian 1 Attendant PC places the capabilities of the M2250 Attendant Console into an interface unit that fits under your PC monitor. Outside of North America, other similar products are available for use by Meridian 1 attendants. Ask your system supplier what products they offer.

The Meridian 1 Attendant PC interface unit and Attendant PC software combine to provide the following capabilities:

- ◆ efficient call processing
- ◆ incoming call information
- ◆ quick dialing
- ◆ access to an on-line Directory with Dial-By-Name capability

It is compatible with Windows 95 and can increase attendant productivity. It provides customized Information Screens. In addition, the attendant can work with other Windows 95/NT applications while answering calls.

The Graphical User Interface (GUI) simplifies call processing with cut and paste, drag and drop functionality. The attendant can multitask between call processing, word processing, spreadsheets, and database information screens, for example. They can access Information Screens for each Directory entry. This can lead to improved customer service.

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## You should know this

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These are the characteristics of the Meridian 1 Attendant PC:

- ◆ Windows 95 or NT Graphical User Interface
- ◆ Customizable screens emulate the M2250 Attendant Console
- ◆ Comprehensive on-line help and a tutorial is included
- ◆ Call processing keys with indicators
- ◆ 6 Loop Keys
- ◆ Up to 20 Incoming Call Indicators (ICI) Keys
- ◆ Up to 20 Trunk Group Busy (TGB) Keys
- ◆ Up to 20 programmable Feature Keys
- ◆ Customized Virtual Feature Keys consolidate multiple keystrokes into one
- ◆ Toolbox to access frequently used features and functions quickly
- ◆ Directory look-up and dial-by-name
- ◆ Up to 14 freeform Information Screens per Directory listing
- ◆ Access privileges assigned per attendant
- ◆ Drag and drop numbers for speed dialing
- ◆ Database utility program to import/export Directory
- ◆ Multisite environment support
- ◆ Mouse and keyboard control
- ◆ Optional LAN Interface Module provides shared database in multi-attendant environments
- ◆ Dual headset/handset ports for fast connection to interface unit
- ◆ Optional Meridian Digital Telephone connection to interface unit

The following information appears on the main Meridian 1 Attendant PC screen:

- ◆ the Call Party Name Display shows the name and extension number of internal callers

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## You should know this

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- ◆ identification of an external call, so attendants can answer appropriately
- ◆ the number of calls waiting to be answered

The screen is customizable, so that attendants can show full or partial screens, and create a customized Toolbox that stores their most frequently used features, Incoming Call Indicator keys and Trunk Group Busy keys. This saves space on the display. You can custom-label these keys and features for easy recognition.

The call processing status indicators on the screen indicate the status of each call. When a caller requests a number, the attendant can access the on-line Directory, which can contain both internal and external numbers. The Directory is customized to include special column headings, viewing order and size and it can be searched by multiple categories.

Attendants can access up to 14 screens of information for each Directory entry. For example, you can list alternative names and extensions, emergency numbers, travel itineraries, products and services offered, business hours, holiday schedules, and on-call staff.

Attendants can program the information to meet their needs, changing or updating the freeform text fields when needed.

When call processing requires several keystrokes, attendants can program virtual feature keys to help increase productivity by consolidating multiple keystrokes into one. Virtual feature keys are identified as blue feature keys for fast recognition. They work like macros in word processing programs. For example, to access a pager, several keystrokes are normally required. When they are consolidated into a virtual feature “script”, the attendant can press a single key to access a pager.

The Attendant PC supports Centralized Attendant Service (CAS) for call answering for multiple locations from a single site and Network Attendant Service (NAS), if you are using Meridian 1 ISDN services. The optional Attendant PC LAN Interface software module allows multiple attendants to share Directory and Information Screens.

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## You should know this

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### PC Requirements

- ◆ Pentium processor, 100 MHz or higher (133 MHz is recommended)
- ◆ Minimum of 16 MB RAM available memory (32 MB RAM is recommended)
- ◆ Hard disk with at least 10 MB of free disk space
- ◆ 17" SVGA color monitor (1024 by 768 resolution, 256 colors)
- ◆ 16-bit sound board (recommended)
- ◆ Printer (optional)
- ◆ Network Interface adapter (for LAN applications)
- ◆ Windows 95 or NT operating system
- ◆ RS-232C serial port

### Meridian 1 System Requirements

A minimum of X11 Release 15 software is required.

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## You should know this

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### Features

There are a number of ways that users have for activating, deactivating and using features from their telephones. There are user guides for each kind of telephone that explain the feature codes and procedures in detail. Ask your system supplier for these guides or discuss features with the people in their company who conduct user training sessions.

#### SPRE code

Users of regular dial or Digitone-type telephones can use the *Special Prefix (SPRE) Code* for most features. This is a code defined for the entire customer group, that tells the system computer that you are about to use a feature.

The digit or digits that you dial after the SPRE code tell the system computer what feature you want. These digits are not changeable. They are pre-programmed in the system database when the system is delivered to you.

For example, all systems are shipped with a pre-defined Night Service feature access code. It is the digit 4. To use the Night Service feature to answer calls ringing a night bell, a user would lift the telephone handset and dial the SPRE code followed by the digit 4. For this example, assume the customer group to which a user belongs has the digits 11 defined for the SPRE code. Therefore, in this example, the user would dial 114 to answer a ringing night bell.

If there is no key for the feature assigned to the telephone, a user with a digital or SL-1-type telephone can access some of the features by dialing the SPRE code method. This type of information is noted in the appropriate feature-related Task modules.

#### Switch-hook

Some features, like Call Transfer and Conference, do not require a SPRE code. The user presses the button under the handset of the telephone, when talking on an active call. This button is called the *switch-hook* and pressing it is called performing a *switch-hook flash*.

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## You should know this

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If the user presses it for the correct amount of time, the system gives the user a *confirmation tone*. This is three short bursts of tone followed by dial tone. Once the user hears the dial tone, they can dial the digits in the number to which the call is to be transferred.

### Special Control key

Your system could be set up so that switch-hook flashes are ignored. If your system is like this, you can install telephones that have Special Control keys. These keys perform the equivalent of switch-hook flashes for users who require the use of certain switch-hook-related features.

## 2500 set features

Every system comes with four pre-programmed feature access codes that users of Digitone-type telephones (2500 sets) can use.

**Table 7**  
**Pre-programmed Digitone feature codes**

Feature name	Feature code
Call Forward	#1
Speed Call Control	#2
Speed Call Use	#3
Permanent Hold	#4

These codes are easier to use than the SPRE code plus feature access code equivalent. Digitone-type telephone users can access features using either of the two methods.

Some features require a combination of the switch-hook flash and a feature access code. For example, to put a call on hold at a Digitone telephone, switch-hook flash and then press #4 and hang up. The call is on hold.

## Link

Some users are not comfortable with the switch-hook flash operation. Telephones with *Link* buttons help these users. The Link button performs a perfect switch-hook flash every time it is pressed. When

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## You should know this

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you give users this kind of telephone, they are more comfortable with features like Call Transfer that require a switch-hook flash, and are more likely to use the features as a result.

### Users and features

Regular telephone users sometimes complain that the SPRE code method for using features is too difficult for them. You can do a number of things to assist them:

- ◆ limit the number of feature codes the users are required to remember
- ◆ train them frequently and allow them to practice
- ◆ supply them with training aids that they keep near the telephones for quick reference
- ◆ upgrade the telephones to Digitone-type, with buttons to store the codes
- ◆ upgrade the telephones to SL-1-type or digital to allow the use of the programmed *keys* for features
- ◆ implement the Flexible Feature Codes (FFCs) that are easier to remember than some of the codes that follow the SPRE code

### Flexible Feature Codes

Flexible Feature Codes (FFCs) can be defined for your customer group if you have software package 139 on your system. It allows you to have feature access codes of your choice programmed for the features the users on your system need.

There can be more than one code for each feature, but this is not recommended.

The symbols \* (asterisk) and # (octothorpe) can be part of the code. For example, you might choose an access code of \*2 for the Call Park feature, instead of the standard code which is SPRE code plus 71.

FFCs are codes that can be used from any type of telephone. This comes in handy if the telephone you are programming does not have enough keys for all the features you want to program on it. The user can access some of the less commonly used features by dialing FFCs.

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## You should know this

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### Station Control Password

There are features that are designed to require a password before activation or deactivation takes effect. This is because of security concerns related to the feature.

For example, there is a feature that allows you to change the Access Restrictions level of your telephone. It is called Electronic Lock. This is something you would not want an unauthorized person to do to your telephone. Therefore, activation and deactivation requires the use of a Station Control Password that the programmer entered into the database for your telephone. For more information, refer to Task 44, *Electronic Lock* and Task 43, *Access Restriction*.

The length of the passwords must be consistent for all telephones in one customer group. The range is one to eight digits.

If you do not want to enforce the use of Station Control Passwords, it can be turned off in the customer group programming. Talk to your system supplier about doing this.

You can change your Station Control Password by dialing a Flexible Feature Code set up for this.

If a Station Control Password is required for a particular feature included in this book, it is identified in the appropriate Task module.

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## You should know this

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### Proprietary telephone keys

Key access is usually the easiest way for users to access features.

Each model of proprietary telephone has a specific number of keys that you can program for feature access and DNs. You can add additional keys to some models by attaching modules. Each model has a limit to the maximum number of keys it can have.

You program these keys in LD 11.

The Task modules related to features will help you program the most common ones.

*X11 features and services*, delivered with your system, has information on all available features.

### Dial accessible features from proprietary telephones

There are some features that users of proprietary SL-1-type and digital telephones can use by dialing the SPRE code plus a feature access code, instead of using keys.

Do not confuse this with Flexible Feature Code access. Flexible Feature Codes can be used from any type of telephone.

On systems that do not have Flexible Feature Codes implemented, dial access to a feature might be useful if:

- ◆ there are no more feature keys available on a telephone and you do not want to upgrade it to a model with more keys
- ◆ a user has been provided with a proprietary telephone and cannot adjust to the key method of feature access

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## You should know this

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The following list summarizes those features that can be accessed from a proprietary telephone using a feature access code.

**Table 8**  
**Proprietary telephone dial accessible features**

Feature
Call Pickup
Trunk Answer from Any Station (TAFAS) night bells
Authorization Code
Charge Account Code
System Speed Call
Automatic Set Relocation
Directed Call Pickup (Group or DN)
Room Status
Call Park (telephone must have a Call Transfer or Conference key)
Malicious Call Trace (telephone must have a Call Transfer or Conference key)

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## You should know this

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### Feature access summary

There are many different ways to access features within one customer group on one system. You must determine which feature access methods will be easiest for the users on your system. Sometimes the users' preferred method of feature access helps to determine the types of telephones that you will choose for them.

For example, if you have the Flexible Feature Code (FFC) software package programmed on your system, there are at least four ways to access the Call Forward All Calls feature.

**Table 9**  
**Feature access alternatives**

Type of telephone	Feature access method
Dial	FFC or SPRE code plus 74
Digitone-type	FFC or #1 or SPRE code plus 74
SL-1-type	FFC or key
Digital	FFC or key

**Note 1:** Call Forward All Calls is not one of the features that can be accessed with a SPRE code from an SL-1-type or digital telephone.

**Note 2:** You can assign more than one FFC to a feature, but for the purposes of the chart, it is assumed that only one code was assigned. This complies with the recommendations made earlier.

If you have many different kinds of telephones, you might decide to tell all users to use the FFC method. This provides uniformity for training purposes and simplicity when you prepare training aids.

If all the telephones are digital, the feature key method is probably the easiest.

If you have both Digitone and digital telephones, decide whether two methods of access are tolerable when you are training the different users or whether you prefer uniformity.

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## You should know this

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If the users on your system are not comfortable with access codes:

- ◆ consider installing SL-1-type or digital telephones, so they can use the key access method
- ◆ consider installing Digitone-type telephones with memory buttons that store codes



If you do not make feature access easy, users will not take advantage of the benefits of the feature. It is to your advantage to find ways to ensure that users will feel comfortable using the features available to them. Features are designed to accomplish many things, but they will only do so if the users use them.

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## You should know this

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### Terminal Number (TN)

Every terminal connected to your system has a unique location in the hardware of the system. You can use this location address to identify each terminal. This is the way the computer in your system identifies each terminal.

Terminals can be:

- ◆ telephones
- ◆ trunks
- ◆ data devices
- ◆ attendant consoles

The location or address of a terminal is called the Terminal Number or TN. It is comprised of four parts:

- ◆ a network loop or Superloop number
- ◆ PE shelf number
- ◆ PE card number
- ◆ PE card unit number

For example, the Terminal Number or TN of a telephone connected to unit 1 on card 5 on shelf 0 of Loop 8 would be:

**TN 8 0 5 1**

**Table 10**  
**Possible range of numbers in each field of TN**

<b>TN component</b>	<b>Range</b>
Loop	0–159
Shelf	0–3
Card	0–15
Unit	0–31

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## You should know this

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### Phantom TN

This type of TN has no associated hardware. There is no telephone or line card for a phantom TN. It is connected to a loop that is programmed as a phantom loop or a phantom Superloop. Once the phantom loop or Superloop has been programmed, you program the Phantom TN in LD 10.

The phantom TN has a Directory Number (DN) associated with it. Internal users call this DN to reach the user who is using the phantom TN for telephone service. This number can be used by outside callers as a DID number, if you have DID trunks and the DN falls within the range of DID telephone numbers.

This DN must be a unique number that is not assigned to anything else on your system.

The phantom TN works by forwarding calls to one of the following:

- ◆ to a default Call Forward DN that you program when you program the TN
- ◆ to a Call Forward DN that a user programs by using the Remote Call Forward feature from a working telephone or attendant console on the system

Calls go to the default Call Forward DN when the Remote Call Forward feature is not active.

Examples of how you can use this capability are:

- ◆ when office space in buildings must be time-shared by many visiting or temporary employees

You can assign a phantom TN to each employee who is not in the office full time. Tell the users what DN is assigned to each phantom TN. If you are using DID numbers, each user has a personal DID number for business cards.

When the employee arrives at one of the time-shared offices, the Remote Call Forward feature can be used to redirect incoming calls from the individual's phantom TN to the DN of the telephone at the desk. When the employee leaves, Call Forwarding is

## You should know this

cancelled using the Remote Call Forwarding feature again. Incoming calls will redirect to the default Call Forward DN until the user returns and uses Remote Call Forwarding to redirect calls to a time-shared office.

- ◆ when employees move frequently, assign them each a phantom TN with a DN that is published

During the move, the user must deactivate Call Forwarding by using the Remote Call Forward feature from the telephone in the old office. After the move, the user activates Call Forwarding to a new DN using the Remote Call Forward feature again. During the move, calls redirect to the default Call Forward DN.

The default Call Forward DN must be a DN that is assigned to only one terminal. It can be a voice mail DN or the DN on a telephone. It can also be an external number.

The DN the user programs using the Remote Call Forward feature can be an internal or external number. If the calls are forwarded to an external number, the Call Detail Records are the same as for telephones that are forwarded to external numbers. Refer to the *Call Detail Records* module. The information you need is in the part called *Redirected incoming calls*.

**Table 11**  
**Software requirements**

Release required	Software package(s) required
20	254 – Phantom Terminal Numbers (PHTN)
	139 – Flexible Feature Codes (FFC) (for the Remote Call Forward capability)

# Traffic

## Purpose

Your system supplier assessed your needs and installed your system with the necessary components to provide your end users with an excellent level of service.

You can use traffic study data to monitor a number of things after the system is installed. Use the data to:

- ◆ monitor the performance of the system shortly after it is installed to see what level of service the system is providing during your actual workday situations
- ◆ monitor ongoing system performance after installation, when telephones and trunks have been moved, added or removed
- ◆ assess training needs of the users and attendant(s)
- ◆ provision for forecasted growth or downsizing of the system and other major predictable changes

## Setting up

Every system can print Traffic studies, once the following tasks are done:

- ◆ the studies must be scheduled
- ◆ the particular study options that you want to run must be selected
- ◆ the system must be programmed with instructions as to where to print out the traffic study data

The overlay program for scheduling and selecting the study options is overlay program (LD) 2. Talk to your system supplier about how to schedule your Traffic studies. There is more information on setting up Traffic studies later in this module.

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## Traffic

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Your system supplier can configure a Serial Data Interface (SDI) port on your system to output the traffic study data to a printer or PC set up for this purpose. This is done in the Configuration Record, LD 17, the content of which is beyond the scope of this book.

### Using the data

Traffic studies monitor the performance of your system under typical working conditions. To fully appreciate the data offered by a traffic study you must be aware of the way the system works. If you require information on your system, your system supplier can explain what you need to know or you can read the section called *You should know this*.

The information on Traffic studies provided here offers an overview so that you can understand:

- ◆ what types of data are presented by the most common traffic study options
- ◆ how the data can be used to improve system performance
- ◆ how the data can impact your day-to-day operations when managing the system

When you discuss a traffic study analysis with your system supplier, the information presented here can be used as a starting point in your discussion of the data.

### Grade of service objectives

You must decide what service level (also called grade of service) objectives you have for your own system before you analyze any traffic study data.

System suppliers provision systems to meet the grade of service objectives shown in the following chart.

You can use more stringent objectives than these if you wish. If you do so, you might need additional equipment to meet your objectives.

You can use less stringent objectives, if you wish, but you sacrifice service if you do so. For example, poor service can result in a blocked incoming call, delayed dial tone for your users, or a feature which did not operate when needed. Assess the impact of poorer service on your business before you choose reduced service levels.

**Table 12**  
**Nortel Networks grade of service Guidelines**

Type of service	Maximum blockage objective (%)
incoming calls	1
outgoing calls	1
intracustomer calls	4
tandem (trunk to trunk) calls	1
less than 3 sec. wait for dial tone	1.5

The guidelines are objectives against which you can measure your system performance.

A traffic study is usually conducted over a period of a week and the data is usually collected every hour of each business day during that week. You and your system supplier can use the data from the busiest hours of the study period to evaluate your system performance against the grade of service objectives.

Systems provisioned with tools or charts which are based on the guidelines shown above perform well within these service level objectives during normal working hours. The provisioning methods used by system suppliers usually provide sufficient capacity to allow your system to operate with an excellent grade of service, even during sporadic peaks in traffic during the busy hour.

Discuss with your system supplier what projected traffic load was used when they configured your system components. If your system was configured based on your projected busy hour traffic load, the traffic study data should be analyzed based on your busy hour statistics.

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## Traffic

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If you find your actual busy hour traffic is consistently different from what was projected, this can lead you to re-provision components in your system in order for you to operate within the grade of service guidelines.

### When to run a study

- ◆ Determine what weeks of the year are slow times for your organization and what weeks are the busiest (Busy Season).

During the busiest times, your system is handling its greatest call volumes.

If you do not understand the traffic patterns on your system well enough to determine your Busy Season, ask people who might know. Some people you might ask are the attendant(s), executives, sales people, and secretarial staff.

- ◆ Decide what call volume your system is expected to handle and still meet the grade of service objectives. Choose one of the following types of *Busy Hours*:
  - the busiest hour during the busiest week (also called the Peak Busy Season Busy Hour)
  - the average of your five busiest hours, one busiest hour from each day during a busy week (also called the Busy Season Average Busy Hour)
  - the busiest hour during an average busy week (also called an Average Season Busy Hour)

If you provision your system to handle the traffic load during your absolute busiest times, this guarantees excellent service for incoming and outgoing calls. Internal users and external callers will not encounter blocking even during peak traffic periods.

If you provision based on a study which is run during an *average* busy time, there might be peak busy times when the recommended grade of service objectives will not be met. Evaluate the potential costs to your organization which would result from blocked calls and features before you decide to do this.

- ◆ Prepare your system supplier with sufficient time and information to set up a traffic study, and analyze the data if they are conducting the traffic study for you.

If you have deadlines you are trying to meet, they need to know what they are. If you are preparing a budget for possible new equipment purchases based on the study results, or if you are expecting immediate increases in call volumes due to increased business, give them that information. It affects the recommendations they will make about your equipment.

- ◆ Decide how often you want to run a study.

It is a good policy to run a minimum of one study annually.

If your organization is changing rapidly and this is impacting your calling patterns, your system should be monitored more frequently. Your system can be configured in advance to handle predictable changes to your volume of calls and use of features.

If your system supplier is running the studies for you, there may be a charge associated with more than one annual study.

If you intend to do your own traffic study analysis, after receiving some training, assess the time it will take to do the study against the benefits you will achieve.

- ◆ Discuss setting up traffic threshold levels with your system supplier. Instead of running complete studies, the system can be programmed to print out messages any time these traffic-related thresholds are violated. Along with the threshold violation message, it prints out enough traffic-related data to help you analyze the source of the problem. You and your supplier can coordinate a procedure for using this method to monitor the traffic on your system.

There is more information on these threshold settings and traffic studies in general in *Traffic measurement formats and output*.

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## Traffic

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### Terms you should know

#### Peg count

Many of the traffic study options are designed to keep a tally of how often certain events occur. *Peg count* is another word for tally.

#### Usage

Many of the traffic study options are designed to keep a record of the duration of certain events. *Usage* is the term used for a measurement of the length of time which a certain type of event lasted. The traffic program itself measures usage in two second increments.

Some study options are designed to print out the usage data in units of seconds and others print out in units of CCS (see the definition of CCS to follow).



*It is very important that you pay close attention to the usage units used in each study option if you are analyzing the data yourself.*

#### CCS (“Centa” Call Seconds)

Centa is a Latin word for one hundred. CCS is a unit of time measurement equalling 100 seconds.

As call volumes increase, and usage times increase, the usage data numbers get very large. Therefore, the CCS unit is used to shorten the number of digits in the data being presented.

For example, if usage on a certain trunk group during a study hour is 66,000 seconds, the usage data in the traffic study for trunk group usage prints out as 660 CCS.

#### FTM (Failure to match)

The first SL-1 family of *Standard Network* systems used a system of pairing when it assigned two timeslots to a conversation. The timeslots in a pair had to have consecutive numbers and the odd number in the pair had to be the higher number of the two. The timeslots were said to *match*.

When the system attempted to connect two telephones for a conversation, and was not able to find two available *matching* timeslots, it would register a *Failure to Match* in the Traffic data to indicate a call had been blocked. More information on timeslots is in the *You should know this* section.

Systems in the later Meridian SL-1 and Meridian 1 families are equipped with *Enhanced Network loops* and *Superloops*. They do not require matching timeslots to establish a call. However, if the system cannot find *any* timeslots available in order to set up a connection because they are all in use, it still registers this problem in the traffic study data as a Failure to Match.

Many of the traffic study options explained in the following pages are designed to monitor system performance by indicating the number of Failures to Match during a study period.

Consistently high numbers of FTMs can indicate one or more of the following things:

- ◆ the need for more components, to get more timeslots for certain functions
- ◆ the need to reposition components in the system to prevent timeslot problems
- ◆ the existing component(s) are defective

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## Traffic

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### Traffic study options

The study options included here are discussed from the following points of view:

- ◆ what a study can quickly tell you about system performance
- ◆ what you can do with the data to improve the system performance
- ◆ how you can interpret the data in different ways
- ◆ what questions you can ask when analyzing a study
- ◆ how you can relate some study results with problems that have been reported
- ◆ how you can use the results to improve training programs that you are running
- ◆ how you can use the traffic study data to do day-to-day moves, adds and changes more efficiently
- ◆ how you can use the traffic study data from your system to provision other systems in your network properly before they are installed

### System, Customer, Network traffic studies

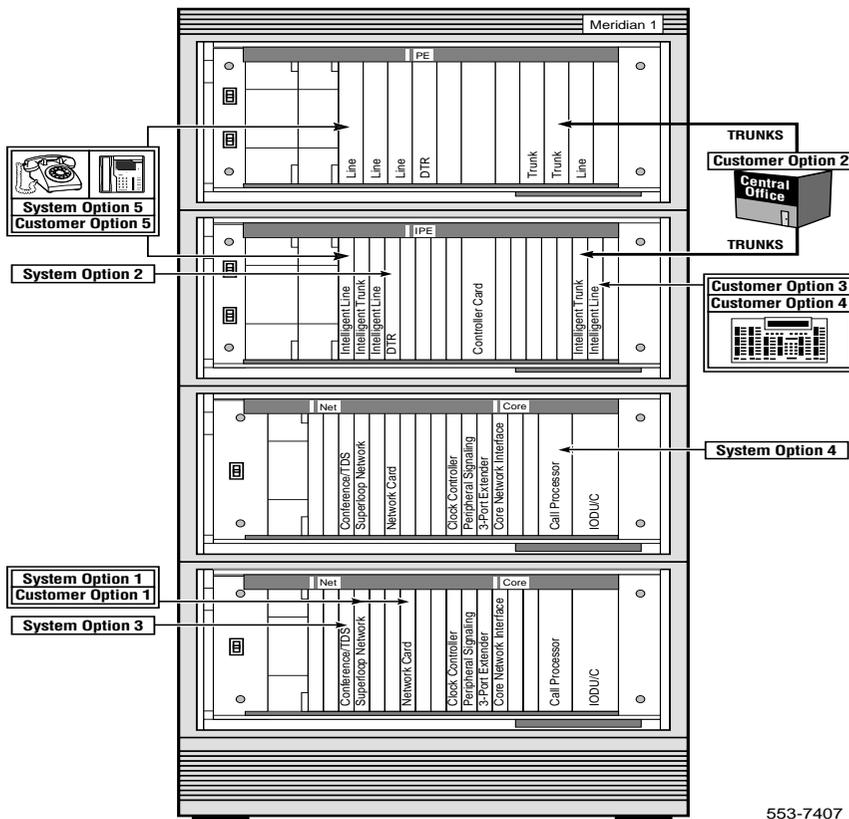
*System* and *Customer* traffic study options come with every system. There are some options that print out data only if you have certain software packages present on your system disk. The optional studies are specifically identified when they are presented here.

*Network Traffic* (NTRF) is an optional software package that you would probably order if you have some of the Electronic Switched Network software packages such as Basic Automatic Route Selection (BARS), Network Alternate Route Selection (NARS), or Coordinated Dialing Plan (CDP). Network traffic studies monitor the performance of network features such as least cost routing and queuing. Further information on these options is provided in the *Software System Management Guide*.

Understanding what these traffic study options deliver can have a bearing on how you perform the moves, adds, and changes of telephones on your system.

All of the traffic study options are described in *Traffic measurement Formats and output*.

## Relationships between System and Customer traffic studies and system components



### Upgraded Option 61C system

## Traffic

### System traffic study options

The following table provides a complete list of the traffic study options available for studying the *System*. A similar table for the *Customer* traffic study options is presented later in this module.

**Table 13**  
**System traffic study options**

Option number	Option name	Major focus of study
TFS001	Networks	Loops, (including TDS, CONF and MFS loops) and Superloops
TFS002	Service loops	CONF, DTR, TDS, MFS and tone detectors
TFS003	Dial tone delay	Dial tone delays
TFS004	Processor load	CPU, buffers and call registers
TFS005	Selected terminals	Individual telephones, trunks, and data terminals
TFS007	Junctors	Multi-group system junctors
TFS008	Command status link & Application module link	CSL link used for Application modules like Meridian Mail and Meridian Link
TFS009	D-channel	ISDN D-channel used in Primary Rate Interface or ISDN Signaling Link
TFS011	Multi-Purpose ISDN Signaling Processor traffic	Basic Rate Interface voice, data, or packet data traffic
TFS012	Multi-Purpose ISDN Signaling Processor D-channel	Basic Rate Interface D-channel management messages
TFS013	Multi-Purpose ISDN Signaling Processor messages	Basic Rate Interface messages by size
TFS015	Meridian Packet Handler	Incoming and outgoing calls handled by the packet handler and the data packets

The information in this book focuses on the five System options which are the most useful for system administrators of all systems. They are:

- ◆ TFS001
- ◆ TFS002
- ◆ TFS003
- ◆ TFS004
- ◆ TFS005

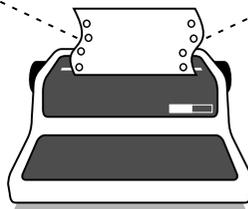
## Traffic

### TFS001 – Networks

#### Sample data

System ID	Loop number	Loop type	Intraloop FTM	Intraloop CCS	Intraloop peg count	Total loop FTM	Total loop CCS	Total loop peg count
TFS001	200	TFS001						
	004	TERM	00000	0000142	00161	00001	0002056	01652 S
	008	TERM	00000	0000184	00180	00001	0002500	01725 S
	012	TDMS	00000	0000000	00000	00013	0000031	01496
	013	CONF	00000	0000000	00000	00000	0000010	00006
	014	TERM	00000	0000085	00060	00006	0000544	00287
	015	TERM	00003	0000064	00039	00014	0000372	00284

The headings shown in this example do not appear in the printout.



533-0300T TTY

This study prints out the usage data in units of CCS.

## Purposes of TFS001 study

TFS001 is one of the most useful study options you can run. It monitors the performance of the loops and Superloops on your system. The types of loops it monitors include:

- ◆ Terminal (Network Controller loops and Superloops)
- ◆ Tone and Digit Switch loops
- ◆ Multi-Frequency Sender loops
- ◆ Conference loops

The data for Superloops is identified with an “S” in the Total loop peg count column to differentiate it from the data for loops.

For each type of loop or Superloop there is one line of data output. Each line of data includes:

- ◆ a peg count of the number of times that timeslots were used
- ◆ a measurement of the total usage time of those timeslots
- ◆ a peg count of the Failures to Match (FTMs), times when there were no suitable or available timeslots

One line of data is highlighted in the previous example printout.

## Explanation of terms used

### Timeslots

When a user attempts to call another user, the system Central Processing Unit (CPU) connects the telephones for the conversation by assigning one timeslot for each of the two telephones.

The loops which serve the telephones each have 30 timeslots to use for voice and data connections for all of the terminals that share that loop. The terminals can be telephones, trunks, attendant consoles, data devices and digitone receivers.

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## Traffic

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Superloops have 120 timeslots to provide for voice and data connections for the terminals connected to them. It is important to note that with four times more timeslots than a loop, a Superloop can carry *five* times the amount of traffic. You will see more about that in the recommended traffic levels shown in Table 14 which follows.

When establishing a connection, the CPU must find one timeslot on the originator's loop or Superloop and one timeslot on the destination terminal's loop or Superloop. If either loop has no available or suitable timeslot, this traffic study, TFS001, shows FTM peg counts for the loops for *both* telephones attempting the connection. If one loop is too busy and is causing problems for many other loops when they try to connect with it, the FTMs will be the highest number for the loop causing the problems.

This study identifies peg counts, usage and FTMs for two basic kinds of connections, *Intraloop and Loop*.

### Intraloop connections

Intraloop statistics only include the activity of terminals attempting to connect to other terminals on the same loop or Superloop.

### Loop connections

Loop statistics include the activity of any terminal on that loop or Superloop. The statistics print out when terminals connect to a terminal on the same loop or on another loop. The data includes twice the value of the associated intraloop numbers for the same loop or Superloop as well as any interloop traffic which occurred involving terminals on that loop.



*If you are using loops on your system, the frequently connected terminals should be configured on different loops whenever possible and in this way intraloop connections are prevented. This helps to keep blockage (if any) within the grade of service guidelines.*

If both telephones for two users who call each other frequently are connected to one loop, the probability that there will *not* be a timeslot occasionally when needed is greater than if the two telephones are connected to two different loops. There is even less chance of blockage if one or both of the terminals are connected to Superloops.

When users make calls they do not know what loop(s) or Superloops their telephones are on, nor should they concern themselves with that. It is the responsibility of the person who sets up and maintains the system to understand the calling patterns of the users of the system. Telephones and trunks and attendant consoles which interconnect frequently must be considered. The cards for these terminals should be located on different loops, or on Superloops, if the grade of service is to stay within the guidelines.

Although Superloops are able to handle very high levels of traffic, it is a good idea to monitor the load and the amount of intraloop traffic on these as well in order to achieve maximum efficiency from your system.

## **Avoid these potential intraloop blockage scenarios:**

### **Scenario 1**

Incoming trunks should not be connected to trunk cards which share a loop with a line card connected to an attendant console.

Every time a call comes into the console from one of the trunks, the system must find two timeslots on one loop for the call to be answered (one for the trunk side of the call and the other for the attendant to use).

**Symptom of blockage:** If blockage occurs, the caller experiences many rings before the call gets answered. The attendant does not show any call waiting.

**Solution:** Reduce potential intraloop traffic congestion by moving a trunk card or the attendant console line card to a different loop with low traffic.

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## Traffic

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### Scenario 2

A manager's telephone should not be connected to a line card which shares a loop with the line card connected to that manager's secretary's telephone.

**Symptom of blockage:** These users, or others on the same loop, experience delayed dial tone or call blockage when they attempt to make calls.

**Solution:** Move one of the two telephones which frequently connect to each other to a different loop with low traffic.

### Scenario 3

Digitone receiver cards should not be connected to a loop with a high number of Digitone-type telephones. Every time a Digitone-type telephone goes off-hook, it requires a connection with a digitone receiver. If the two are on the same loop, this ties up timeslots and deprives other users on that loop for the duration of the dialing period.

**Symptom of blockage:** All users on the loop with the Digitone-type telephones and the digitone receiver card could experience dial tone delays, most often in the busy hour(s).

**Solution:** Move the digitone receiver card to a different loop with low traffic and few Digitone-type telephones.

## How can you ensure there will be timeslots available for the terminals when they need them?

- ◆ Configure your system so that there is very low *intra*loop calling. When users call each other and use the trunks, they should be making *inter*loop connections the majority of the time.
- ◆ Distribute the total system traffic across all loops or Superloops as much as possible ( $\pm 10\%$ ). If any loop or Superloop carries a disproportionate amount of the total traffic of the system, maximum system performance will not be achieved.
- ◆ Keep your traffic levels below the recommended levels of maximum traffic for loops and Superloops.
- ◆ Set a Loop traffic threshold at less than the recommended capacity so that if any loop or Superloop reaches the threshold level, you will see warning messages on the traffic study printer. In this way, you can prevent any loop or Superloop from getting overloaded and you maintain excellent service to your users at all times.

**Table 14**  
**Recommended traffic levels**

Type of loop	Maximum traffic (ccs per hour)	Recommended traffic (ccs per hour)
Standard	1080	600
Enhanced	1080	660
Superloop	4320	3500

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## Traffic

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**Note 1:** Standard Network SL-1 System Types: L, LE, VL, VLE, XL, M, MS, S)

**Note 2:** Enhanced Network Meridian SL-1 System Types: N, XN, ST, RT, NT, XT

**Note 3:** Enhanced Network /Superloop Network Meridian SL-1 System Types: ST, RT, NT, XT,

**Note 4:** Enhanced Network /Superloop Network Meridian 1 Option 11, Option 11E, Option 11C, Option 21, Option 21E, Option 51, Option 51C, Option 61, Option 61C, Option 71, Option 81, Option 81C.

See the section called *You should know this* for more information on these system types.

Use the recommended traffic levels in the preceding chart to analyze the traffic study data from your system. If your loops and Superloops consistently carry more traffic than the recommended levels, this may result in Failures to Match (FTMs).



*If you see traffic reports which show peg counts for Failures to Match, calculate whether your system is meeting the grade of service objectives first, before you plan any changes to your system. Use the data from Customer traffic study TFC001 to do that. See the section on TFC001 which follows.*

*Find out if Failures to Match are showing up consistently before you react by making system changes.*

## Situations you might encounter

### **Situation:**

All loops and Superloops are carrying the maximum recommended traffic and there are too many FTMs; you are not meeting your grade of service objectives.

### **Solution:**

You need more timeslots. Order at least one additional loop or Superloop card and have your system maintainer redistribute the system traffic once the additional card is installed.

### **Situation:**

You are adding several new telephones, or trunks, or data terminals, or a console, (in other words you are about to add more traffic to your system). You must connect them to available TNs.

### **Solution:**

Use recent traffic study data to help you select the best TNs to use. Terminals should *not* be added to loops which are already experiencing FTMs.

It helps your system maintainer(s) with day-to-day moves, adds, and changes if you discuss study results with them. They need to know the statistics on the loops which are very busy and those which have low traffic.

When they have an opportunity, cards from very busy loops can be moved to loops which have low traffic to keep the traffic spread evenly over the entire system.

Arrange with your system maintainer to set up Traffic threshold settings. There are thresholds for incoming or outgoing call blockage, percentage of all trunks busy, attendant speed of answer, and loop or Superloop traffic, to name a few. For example, if loop traffic exceeds a threshold level, warning messages print out along with traffic study data. With thresholds set up, complete studies are not required as often since the system monitors itself and prints out warnings whenever violations occur.

## Traffic

### Estimating traffic

If you do not have recent traffic study data and you have not been monitoring for threshold violations, you can do an estimate of the traffic on each loop by assigning average usage values to the various types of terminals on your system.

- ◆ Estimate or have different users estimate, how busy (in seconds) each type of telephone is in its busiest hour. You can also use Internal Call Detail Recording, if you have the software package, to record the call activity of various typical telephones.
- ◆ Remember to include trunk traffic and the traffic on your digitone receivers (DTRs) when you are estimating. Use Call Detail Recording information for the trunk estimates. Ask your system supplier for help estimating the DTR traffic.
- ◆ Calculate how many terminals of each type are on each loop. Do a TN Block print out to verify all the terminals connected to each loop or Superloop.
- ◆ Multiply the usage per terminal, times the number of terminals per loop, to calculate the average estimated traffic per loop or Superloop in its busiest hour.

The following example illustrates this exercise. The averages used in the example are not to be taken as suggestions. Use your own traffic values in your calculations.

**Table 15**  
Example of traffic estimate

Type of terminal	Type of connection	Busy hour estimate
Digital telephone	voice	800 seconds (8 ccs)
	data	1800 seconds (18 ccs)
Analog telephone	voice	600 seconds (6 ccs)
— continued —		

**Table 15**  
**Example of traffic estimate (Continued)**

Type of terminal	Type of connection	Busy hour estimate
Data terminal	data	1800 seconds (18 ccs)
Central Office trunk	voice	3000 seconds (30 ccs)
TIE trunk	voice	3400 seconds (34 ccs)
Digitone receiver (DTR)	Digitone	3400 seconds (34 ccs)

**Table 16**  
**Example of one loop traffic estimate**

Card type & Quantity	Terminals working	Traffic volume
digital line cards (2)	12 telephones	96 ccs
	3 data terminals	54 ccs
analog line cards (4)	30 telephones	180 ccs
data line card (0)	–	–
COT trunk cards (2)	6 trunks	180 ccs
TIE trunk card (1)	2 trunks	68 ccs
DTR card (0)	–	–
Total traffic:		578 ccs

Compare this amount of estimated traffic with the recommended levels shown earlier in this section.

- ◆ Decide whether more terminals can be added to this loop or Superloop.
- ◆ Decide what types of terminals can be added, based on their estimated traffic load in the busy hour.

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## Traffic

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### Service loops

The Tone and Digit Switch, Conference, and Multi-frequency Sender loops are called Service loops collectively. If there are times when timeslots were not available for one of the services provided by these cards, there will be FTMs pegged under the service type that was blocked.

Users of the system who experienced the blockage may also mention this to you. For example, they may have had problems with the Conference feature during a busy hour if the CONF loop showed FTMs in the traffic study print out. Look for more detail concerning the problem by analyzing studies TFS002 and TFS003, to be discussed later in this section.

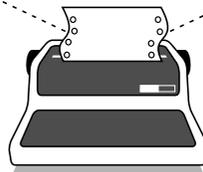
It is important to note that if the telephone on a very busy loop with no available timeslots requests a service such as dial tone, two FTM peg counts will print out, one for the telephone's loop and one for the TDS loop.

Since the interpretation of this data related to Service loops is rather advanced, it is best to discuss the data with your system supplier.

**TFS002 – Service loops****Sample data**

<b>System ID</b>	<b>TFS002</b>		
<b>Service number</b>	<b>Service FTM</b>	<b>Service usage</b>	<b>Service request peg count</b>
200	TFS002		
000	00002	0000023	01650
001	00000	0000003	00099
002	00002	0000008	00321
003	00002	0000057	00951
004	00000	0000010	00168
005	00000	0000005	00068
006	00003	0000044	00376
007	00000	0000000	00000
008	00013	0000076	01471
009	00000	0000013	00069
010	00000	0000002	00012
011	00000	0000000	00000
012	00000	0000002	00022
013	00000	0000001	00003
014	00000	0000000	00000

**The headings shown in this  
example**



This study prints out the usage data in units of CCS.

## Purposes of TFS002 study

### Tone-related hardware

The cards looked at by this study are:

- ◆ Conference
- ◆ Digitone receiver (DTR)
- ◆ Tone and digit switch (TDS)
- ◆ Multi-frequency sender (MFS)
- ◆ Tone detector

Study option TFS002 monitors the performance of the Service loops in detail and also related cards which are involved in providing services.

The major uses of this study are:

- ◆ finding out the number of requests for dial tone there were in order to calculate the percentage of users who waited for dial tone

In order to calculate the percentage wait for dial tone, you need data from study TFS003. This calculation is included in the discussion of the TFS003 study which follows.

- ◆ finding out the usage of the DTRs in order to assess whether they are properly provisioned for your requirements
- ◆ finding out if there are FTMs on these cards which could mean improper provisioning, defective cards or poor traffic balance on your system. This data can also help explain repair calls related to these services during the same time period

## Services by number

Each service provided by these cards, has been assigned a number:

- ◆ 000 Dial tone
- ◆ 001 Busy tone
- ◆ 002 Overflow tone
- ◆ 003 Ringback tone
- ◆ 004 Tone ringing Meridian 1 telephones
- ◆ 005 Miscellaneous tone
- ◆ 006 Outpulsers
- ◆ 007 Spare
- ◆ 008 Digitone receiver
- ◆ 009 Conference
- ◆ 010 MF tone for Automatic Number Identification (ANI)
- ◆ 011 Meridian 1 Tone Detector
- ◆ 012 Multi-frequency Sender
- ◆ 013 End-to-End Signaling TDS usage (Release 19 and later)
- ◆ 014 End-to-End Signaling conference usage (Release 19 and later)

## DTR usage

Your system supplier can help you calculate the number of DTRs your system requires during the time period you have chosen. To do this they use the usage and peg count data shown in the study for service number 008.

A Digitone telephone requires a DTR anytime it is used to make a call. If none is available, the user is not given dial tone until there is one. Insufficient DTRs impact users of Digitone telephones and incoming trunks only.

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## Traffic

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Using provisioning tables, which your supplier has, they can calculate how many DTRs are required to provide a good grade of service for dial tone for the Digitone users of your system.

### **FTMs**

If there are Failures to Match for any of the services in this study use the data from TFS001 if you have it to help analyze the numbers.

FTMs are often explained by overloaded loops. Redistributing traffic load can remove the FTMs from your system.

There may be a requirement for more Service loops. This would also show up in the data for TFS001.

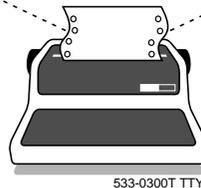
A defective card is the least likely solution. Replace the type of card with the FTMs if all the other alternatives have been tried and FTMs continue to appear in TFS002.

## TFS003 – Dial tone delay

### Sample data

System ID	TFS003	
Delay longer than 3 seconds	Delay longer than 10 seconds	Total delays of 1 second or longer
200	TFS003	
00003	00001	0040

The headings shown in this example do not appear in the printout.



533-0300T TTY

This study prints out the usage data in units of seconds.

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## Traffic

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### Purposes of TFS003 study

The data provided by study option TFS003 can be used to calculate whether your system is meeting the grade of service objective for dial tone delay.

The standard objective is: *no more than 1.5% of users should experience a 3 second wait for dial tone during the busy hour.*

#### Calculate the percentage dial tone delay

Use the number of dial tone requests shown in the TFS002 study data for the same period. That number is the peg count shown for service 000. The line of data is highlighted in the example printout.

Calculate your percentage as follows:

TFS003 peg count for delays longer than 3 seconds divided by the TFS002 peg count for service 000 dial tone requests.

Multiply this number by 100% to get your percentage. Compare this to the objective of 1.5%.

If you are not meeting your objective you may need

- ◆ more TDS loops
- ◆ more DTRs for Digitone telephones and incoming trunks
- ◆ more units on your existing DTR cards activated in software
- ◆ more loops or Superloops
- ◆ repairs
- ◆ a faster CPU to keep up with all the dial tone requests

Your system supplier can help you investigate the cause of these delays.

On an ongoing basis, you can monitor the delayed dial tone percentage without doing the manual calculation. Set a *dial tone delay threshold* and if this is ever violated, the system prints out a warning message to the traffic printer along with the traffic study data which you can use to analyze the situation.

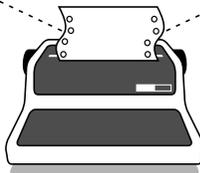
# Traffic

## TFS004 – Processor load

### Sample data

System ID	TFS004	
Idle cycle count	CPU attempts	Load peak peg count
HPIB overflow peg count	LPIB overflow peg count	
500/2500 Output buffer overflow peg count	SL-1 Output buffer overflow peg count	
Call register overflow peg count		
Rated call capacity	Maximum call capacity used	Percentage of call capacity used
Number of eliminated observations	Day, hour of maximum call capacity used	
LLC1 blocked calls	LLC2 blocked calls	LLC3 blocked calls
200	TFS004	
1474233	21786	00141
00000	00000	
00000	00000	
00000		
00000	00000	00000
00000	0000	
00000	00000	00000

The headings shown in this example do not appear in the printout.



533-0300T TTY

TFS004

## Purposes of TFS004 study

The focus of study option TFS004 is the Central Processing Unit (CPU) and memory of your system.

- ◆ You can use it to see how well your CPU is keeping up with call processing demands, especially during the busy hour.

Call capacity is the term used to describe the amount of processing power your CPU has. As of Release 18, one of the fields of data in TFS004 shows the percentage of call capacity used during the study period. The nearer this number is to 100% the more likely it is that users are experiencing delays in getting dial tone, feature related problems, and you are seeing such things as missing Call Detail Records. Since the CPU controls the system, if it is running at maximum capacity, symptoms appear in all areas of call processing. Systems running at a maximum call capacity of approximately 70% are able to handle peaks in call traffic efficiently, during the busy hour.

In Release 24, the *Rated call capacity* and the *Maximum call capacity* used is based on data collected for the last seven days, 24 hours a day (168 hours), rather than the previous 24 hours only. If the system initializes or SYSLOADS, there will not be data in these fields for the first 24 hours. The *Day and hour of maximum call capacity used* is the date and hour with the highest Call capacity used over the past 168 hours. For example, DDHH = 1613 means the maximum call capacity used occurred on the 16th of the month at the 13th hour.

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## Traffic

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**Note:** If your system is running on software of an earlier release than Release 18, ask your system supplier to manually calculate the percentage of real time used from the data in the busy hour study and another study which runs when there is no activity on the system.

- ◆ You can look at the data for buffer and call register overflows to evaluate the provisioning of memory for these functions.

After installation of your system, your system supplier can use the data from the first study with the system running under a normal load to adjust the provisioning slightly if required. Ideally, there should never be buffer or call register overflows since they indicate a lost call, feature, or Call Detail Record.

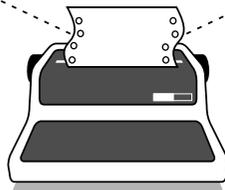
- ◆ If you are using the Line Load Control feature, you can monitor the blocked call attempts when you have turned the feature on during a study period. For more information on Line Load Control see *X11 software features and services*.

## TFS005 – Selected terminals

### Sample data

System ID	TFS005	
Loop number	Line usage	Line peg count
200	TFS005	
00	00000144	00066
01	00000213	00179
02	00000232	00144
03	00000244	00130
05	00000289	00124
08	00000218	00158
10	00000229	00154

The headings shown in this example do not appear in the printout.



533-0300T TTY

This study prints out the usage data in units of CCS.

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## Traffic

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### Purposes of TFS005 study

The data in study option TFS005 allows you to monitor selected terminals for the number of calls they make and the traffic load they offer to the system.

The terminals can be individual trunks or telephones. *They cannot be attendant consoles.* Refer to the sections on Customer Options TFC003 and TFC004 for the study options designed to monitor consoles.

The data you collect in this study can be very useful when you move, add, and remove terminals from your system.

- ◆ When you do any of these things, the traffic load of the system and each loop or Superloop is changed.
- ◆ You need to know, before you add terminals, how much traffic each one will add to the system if you are going to distribute the traffic as evenly as possible over the entire system.
- ◆ If several TNs are available for a new trunk or telephone, you can choose the best one to use, from a traffic point of view, if you understand the traffic on your existing loops or Superloops and how much the new terminal will add.

You can use this study to find out how much traffic, on average, each different kind of trunk or telephone user adds to the system. For example, a sales person might use the telephone far more than other kinds of users. You need to know the calling patterns of the various kinds of users you have on your system. Use this study to get that data.

The same thing applies to the different types of trunks you might be using. TIE trunks to other systems on your private network might be used frequently, whereas Foreign Exchange trunks might not be so busy.

Some individual trunks are used more often than others. For example, the trunk with the highest member number in a trunk route is used more often than the trunk with the lowest member number, if your system is programmed to scan trunks in a linear fashion.

If you can get this level of detail about the traffic on each type of trunk and telephone, you can use it along with data from a recent TFS001 (Networks) study to plan a major change to your system. Also, you can use it to estimate the traffic on each loop or Superloop if you have no recent TFS001 data when you make day-to-day changes to your system. You will be able to provide your users with the level of service they need, managing the traffic on the system, while you perform moves, adds and changes.

If you have other systems on your network with users who are similar to the ones on the system you are managing, you can use the data collected for this study to help the other manager with provisioning and management decisions.

If a new system is being installed, knowing the number of terminals and the traffic expected from them in detail allows you and your system supplier to configure loops and Superloops extremely well for the needs of the terminals to be connected.

## Set up

- ◆ Select typical users in each functional group on your system.
- ◆ Ask your system supplier to monitor the traffic for them long enough to get busy hour data which represents typical calling patterns for each one.
- ◆ Do the same for average busy trunks or busy/not busy trunks in each trunk group on your system.
- ◆ Your system supplier knows that if you simultaneously monitor two terminals on the same loop or Superloop, this study combines the data for both terminals. You would do this to calculate an average traffic value. If you do not want the data combined, you must ensure that you are monitoring only one terminal from each loop or Superloop individually to get pure data.

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## Traffic

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### Other System traffic study options

TFS007, TFS008, TFS009, TFS 011, TFS012, TFS013 and TFS015 are the remaining System traffic study options. The content of these studies relates to optional system components and some of them also require optional software packages. They are beyond the scope of this book.

For further information on them, ask your system supplier or refer to the *Traffic measurement formats and output*.

## Customer traffic study options

**Table 17**  
**Customer traffic study options**

Option number	Option name	Major focus of study
TFC001	Networks	Calls by type (incoming, outgoing, tandem and intracustomer)
TFC002	Trunks	Trunk group activity
TFC003	Console queue	Calls in attendant queue
TFC004	Individual consoles	Individual attendant activity
TFC005	Feature key	Use of feature keys
TFC006	Radio paging	Radio paging system
TFC007	Call Park	Call Park feature usage
TFC008	Messaging and Auxiliary Processor links	Messaging and Auxiliary Processor links (IMS and IVMS links)
TFC009	Network Attendant Service	Calls attempting routing with Network Attendant Service

The information in this book focuses on the five Customer options which are the most useful for system administrators of all systems. They are:

- ◆ TFC001
- ◆ TFC002
- ◆ TFC003
- ◆ TFC004
- ◆ TFC005

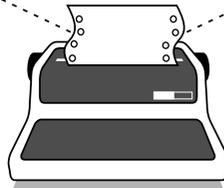
## Traffic

### TFC001 – Networks

#### Sample data

System ID	TFC001	
Customer number		
Incoming FTM	Incoming CCS	Incoming peg count
Outgoing FTM	Outgoing CCS	Outgoing peg count
Intracustomer FTM	Intracustomer CCS	Intracustomer peg count
Tandem FTM	Tandem CCS	Tandem peg count
Permanent signal	Abandon	Partial dial
200	TFC001	
000		
00001	0001985	01143
00002	0002909	01732
00003	0000339	00047
00000	0000046	00062
00001	00004	00002

The headings shown in this example do not appear in the printout.



533-0300T TTY

This study prints out the usage data in units of CCS.

## Purposes of TFC001 study

- ◆ The data in study option TFC001 allows you to monitor call activity in the customer group from the point of view of the type of call. There is a line of data for the following types of calls:
  - incoming
  - outgoing
  - intra-customer
  - tandem

For each call type, the system tracks FTMs, usage in CCS, and the peg count of the number of calls during the study period. Studies are usually run on an hourly basis.

Before running the study, you decided what grade of service objectives you wanted to use for the four call types which this study monitors. It is very common to use the recommended objectives shown in Table 12 near the beginning of this module.

You can use the data in TFC001 to calculate the percentage of FTMs relative to the peg count of the number of calls of a particular type. You can determine whether your system is meeting your grade of service objectives.

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## Traffic

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For example, if you look at the sample print out shown earlier for this study, you can see the line of data for incoming calls that is highlighted. There was 1 FTM and there were 1143 incoming calls during the sample hour. As a percentage this is:

$$1 \div 1143 \times 100\% = 0.08\%$$

Once you compare this percentage to your objectives, you can decide whether some system changes are required to bring your system performance in line with your objectives.

- ◆ This study also shows peg counts for such things as Permanent signals, Abandoned calls, and Partially dialed calls. The data shows the number of times telephones were left off-hook, or users did not complete dialing once they had started.

If users leave their telephones off-hook, incoming calls will not get through. This also puts an extra load on your CPU.

If the telephones are Digitone, it adds extra load onto your system DTRs as well.

Immediately after cutover these numbers might be high due to a change in dialing plans. Users need time to adjust to new ways of dialing calls and accessing features.

If these numbers remain high, user re-training might be needed, or you can walk around to see if users are leaving their telephones off-hook.

## What can you learn from the data?

- ◆ The data can help to support or refute user reports of problems.

Users who experience blockage may assume there is a larger system problem than there in fact is. The FTM they experienced may have been due to unusually high levels of traffic which might not reoccur. You might also find that your system shows small numbers of FTMs consistently during busy hours, but if you are running within your grade of service objectives, it is important to be able to tell the user that.

If the user requires better service, you can have that user's telephone moved to a loop with lower traffic and, hopefully, fewer FTMs than the one they are connected to at present.

- ◆ It can help you pinpoint traffic bottlenecks in your system.

For example, if incoming calls are experiencing FTMs, your system maintainer can identify cards connected to incoming trunks or attendant consoles and focus rearrangement work on those cards and loops or Superloops. Traffic bottlenecks are not likely to occur on Superloops.

## Thresholds

There are two thresholds which your system maintainer can set up to configure the system to print out a threshold violation message, when the percentage of FTMs rises above your grade of service objective.

The threshold settings are for *incoming and outgoing* calls. Decide what percentage your settings will be. If you set it slightly lower than your desired grade of service, you will be alerted before there is serious need for concern. This helps you manage the system proactively and provide excellent service to your users at all times.

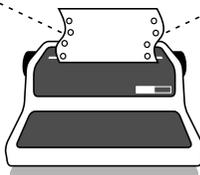
# Traffic

## TFC002 – Trunks

### Sample data

System ID	TFC002
Customer number	
Route number	Trunk type
Trunks equipped	Trunks working
Incoming usage	Incoming peg count
Outgoing usage	Outgoing peg count
Outgoing overflow	All trunks busy
Toll peg count	
Incoming ISA peg count	Outgoing ISA peg count
200	TFC002
007	
004	COT
00008	00007
0000088	00046
0000114	00052
00001	00002
00006	
00000	00000

The headings shown in this example do not appear in the printout.



533-0300T TTY

This study prints out the usage data in units of CCS

TFC002

## Purposes of TFC002 study

The data in study option TFC002 is mainly used for provisioning the correct number of trunks in each trunk group. Based on the usage you actually have on each group of trunks during your busy hour(s), you and your supplier can use trunk provisioning tables or computerized tools to calculate how many trunks should be in each trunk group to provide the level of service you are expecting.

## Grade of service

You must decide what grade of service, or in other words what maximum level of blockage, you can tolerate. Each trunk group can be configured individually for a separate grade of service.

For example, you might want to provision public network Central Office trunks at a 2% blockage maximum since your customers use them to call in to you. You might provision your private network TIE trunks with 5% blockage as a maximum since these trunks might have a higher monthly cost than Central Office trunks.

Also, since the TIE trunks handle calls only from your own private network users, you can train them to use the Ring Again feature to queue for the trunks when these are busy, or they can try the call at a later time after the blockage has cleared.

*The higher the acceptable blockage, the fewer trunks you need for the given amount of traffic.*

You must assess what impact an *all trunks busy* condition might have on the type of caller who uses the trunks, and the resulting impact on your business before choosing the grade of service.

## Provisioning tables

You and your system supplier must discuss the kind of provisioning tables to use. Three of the most common ones are called:

- ◆ Poisson
- ◆ Erlang B
- ◆ Erlang C

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## Traffic

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Poisson and Erlang B statistical tables provision almost the same number of trunks when there are low levels of traffic on a trunk group. However, as the traffic levels increase, the Poisson tables provision more trunks than the Erlang B tables.

If you want to provision a buffer for periods of peak traffic or if the trunk group you are provisioning is a last choice trunk group on a system which uses automatic route selection, use the Poisson table.

If you are provisioning one of the first choice trunk groups, the Erlang B tables provision exactly enough trunks for the grade of service you requested with no buffer for peaks. You can expect that overflowed calls during short-term peaks in traffic will go to the last choice trunk group if the first choices are busy.

Use Erlang C tables only if you expect your users to queue during busy times when all trunks in that group are busy. *Do not provision using these tables if your users will not queue or if your business cannot tolerate queuing.* These tables provision low numbers of trunks since these tables assume that queuing will occur.

## Other information

Other fields of data in this study show you the following additional information:

- ◆ the number of trunks equipped and the number of trunks working

This data is one way to monitor each trunk group to ensure there are no disabled trunks. If there are any, be sure to enable them and run a new study before you assess the traffic data.

Your system maintainer is probably running maintenance diagnostics on your trunks periodically in order to maintain your trunks in good working order.

There are also maintenance messages which print out on maintenance printers when there are trunk problems.

Your attendant can also check each trunk in each trunk group on a regular basis from the console. Instructions on how to do that are in the Console User Guide.

- ◆ how many times during the study period there were no available trunks in that trunk group and a call intended for that group of trunks was blocked or sent to a second trunk choice, if one exists. These are referred to as overflowed calls.

Overflows are not necessarily bad, especially if the overflowed calls do go out on a second choice trunk group and the cost for these overflowed calls is lower than the cost of installing additional trunks in the trunk group which overflowed them.

- ◆ how many times during the study period the last available trunk in that trunk group was used by a call

A high number is not necessarily bad unless it is accompanied by a high number of overflows as well. Then the same argument stated in the previous item applies.

There is a row (or optionally two rows) of keys on the attendant console for Trunk Group Busy indicators. Your attendant can monitor trunk groups by noticing how often these key lamps flash. A flashing lamp means all the trunks in that group are busy.

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## Traffic

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You might want to tell the attendant to inform you whenever certain trunk groups seem to be busy frequently, and to tell you the times of day when that is happening.

- ◆ the number of calls which were dialed with a 0 or 1 following the trunk group access code

This pegs only for Central Office and foreign exchange trunk groups. If users are supposed to be restricted, you might use this as a quick way of checking if the necessary restrictions are in place. Check your Call Detail Records for more detailed information on what calls are being made and what telephones are being used to make them.

- ◆ the last two fields of data apply to ISDN trunks. A discussion of this is beyond the scope of this book. If you are using ISDN, discuss your study results with your system supplier.

### Threshold

There is an All Trunks Busy threshold which you can program to automatically monitor the trunk groups on your system. The threshold violation message indicates that the last trunk in an identified group was seized more than the allowed percentage of the time. Whenever, a trunk group exceeds the percentage you program, the threshold violation message prints out on the Traffic printer along with TFC002 traffic study data, to help you analyze the situation.

A suggested threshold is 5% initially.

### Trunk Traffic Reporting Enhancement (RLS 21)

There are two options that are part of the enhancements.

- ◆ Traffic Period Option (TPO)
- ◆ Trunk Seizure Option (TSO)

#### Traffic Period Option (TPO)

Normally, when a call is in progress at the time a TFC002 study is scheduled to print out, the duration and peg count for that call will not be included in that printout. The data for that call only prints out at the next scheduled print out time, after the call ends.

When the TPO option is activated in the Configuration Record (LD 17), TFC002 trunk usage data in each printout will include all duration data even though some calls are still in progress. When calls are disconnected, the next scheduled printout after the disconnect shows the duration data of the calls for that reporting period and a peg count for the calls.

### **Trunk Seizure Option (TSO)**

Normally, trunk usage data begins to accumulate for the TFC002 study option only after a call is considered to be established.

A call is considered to be established when:

- ◆ the End-of-Dialing timer expires after the last digit is dialed
- ◆ octothorpe (#) is dialed
- ◆ answer supervision is received from the other end

The TSO option allows the data to be accumulated beginning with trunk seizure, and not only after the call is established. You can have this option activated in the Configuration Record (LD 17).

Some calls that users make are not answered. Data will still accumulate if this option has been activated on your system. However, if the time between trunk seizure and call disconnect is too small (less than 4 seconds), the usage and peg count will not be accumulated.

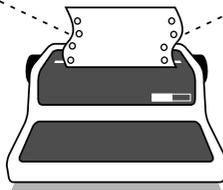
## Traffic

### TFC003 – Attendant queue

#### Sample data

<b>System ID</b>	<b>TFC003</b>
<b>Customer number</b>	
<b>Average speed of answer</b>	<b>Average attendant response</b>
<b>Calls delayed peg count</b>	<b>Average time in queue</b>
<b>Abandoned calls peg count</b>	<b>Average wait time of abandoned calls count</b>
200	TFC003
003	
00107	00048
00289	00079
00015	00192

**The headings shown in this example do not appear in the printout.**



533-0300T TTY

This study prints out the usage data in units of seconds.

## Purposes of TFC003 study

Each customer group has one attendant queue, if there are attendant consoles programmed. All consoles for one customer group receive calls from the same queue. The traffic study option, TFC003, *Attendant queues*, monitors the entire queue, not each individual console. Traffic study option TFC004, *Attendant consoles*, monitors each console. Usually a traffic study analyst looks at these two console-related studies together to get a complete look at the console statistics.



*Never make recommendations about the attendants before you:*

- ◆ *sit with them for extended periods of time. You need to understand their daily routine, busy hour routine and the reasons for their behavior before you can make sense out of the data in these two studies.*
- ◆ *familiarize yourself with proper console operation by referring to a User Guide*
- ◆ *discuss efficient call answering techniques with your system supplier*

It is important to note that systems using Direct-in-Dial (DID) trunks do not have as many calls coming into the console as systems of similar size without DID trunks. The calls which do go to the console are usually more time-consuming. The caller probably needs information since they did not use a DID number to make the call. You should bear this in mind when you analyze your data.

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## Traffic

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### **Average speed of answer**

This study monitors calls intended for the attendant and measures how long they spend waiting to be answered.

Some calls are immediately presented to an available attendant while others wait in queue before being answered. All calls for the attendant are averaged together for each hour. The calls could be external or Dial 0, or recalls of unanswered calls which were previously extended to telephones by the attendant.

Look for an average of ten seconds if your attendants are not overloaded.

### **Average Attendant Response**

This is the average time elapsed between the time a call is presented to an available console and the time the attendant answers it.

The attendant has two ways of answering the call. Either by pressing the Incoming Call Indicator key or the Loop key. It doesn't matter which way the attendant answers. The averages are not affected.

Two seconds is considered the maximum acceptable time, if the attendant is not expected to perform other duties along with answering calls on the console.

### **Peg count of calls delayed**

The system counts all calls which spend time in the attendant queue before being answered by the attendant, except the calls which abandon.

Abandoned calls are those where the caller hangs up while in the attendant queue or after being presented to the attendant. Abandoned calls are counted in a separate field of data.

Calculate a percentage of calls delayed. Divide the peg count of delayed calls by the total number of calls processed (add internal and external call peg counts). Multiply by 100 to arrive at the percentage. If the percentage is higher than 25–35% you might have an overloaded attendant.

### Average time in queue

This is the time that calls spend in the attendant queue averaged over all calls that spend time in the queue. Some typical delay times are listed here.

**Table 18**  
**Call delay times related to the number of consoles**

Number of consoles	Typical delay time (seconds)
1	12
2	10
3	8
4	6
5	4

### Peg count of abandoned calls

This is a count of internally-originated and externally-originated calls which abandon before being answered by the attendant.

Calculate a percentage of calls abandoned. Divide the peg count of abandoned calls by the total number of calls processed (add internal and external call peg counts). Multiply by 100 to arrive at the percentage. If the percentage is higher than 1–2% you might have an overloaded attendant or you might have overloaded loops. You might also have very impatient callers! (The more you get to know the expectations of your callers, the better service you can provide).

### Average wait time of abandoned calls

The average time that a call waited before abandoning.

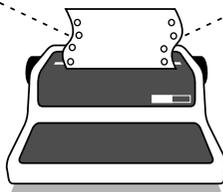
# Traffic

## TFC004 – Attendant consoles

### Sample data

<b>System ID</b>	<b>TFC004</b>
<b>Customer number</b>	
<b>Attendant number</b>	
<b>Peg count of internal calls processed by attendant</b>	<b>Total time spent processing internal call requests</b>
<b>Peg count of external calls processed by attendant</b>	<b>Total time spent processing external call requests</b>
<b>Total time console is attended</b>	<b>Total time spent processing calls</b>
<b>Peg count of the number of times all Loop Keys were busy</b>	
<b>Peg count of Attendant Alternative Answering call attempts</b>	<b>Peg count of answered Attendant Alternative Answering calls</b>
200	TFC004
000	
001	
00076	0000011
00167	0000017
000036	0000029
00000	
00005	0000003

The headings shown in this example do not appear in the printout.



533-0300T TTY

This study prints out the usage data in units of CCS.

TFC004

## Purposes of TFC004 study

Study option TFC004 monitors each individual console. It monitors all calls being handled by each attendant, so an external call which is extended to a telephone by an attendant gathers external call statistics. If the call recalls to the attendant queue because it is not answered, it gathers new external call statistics at this point.

### **Peg count of internal calls processed by the attendant**

When an attendant removes a call from the console, the peg count increments. Internal calls are those originated by users on the system, attendants, and even calls made on the paging system.

### **Total time spent processing internal call requests**

A call that is pegged as internal, is timed in units of CCS. If such a call is put on hold, the timer stops and is started again once the call is removed from hold.

You can calculate an average *work time* per internal call. This gives you an idea of how efficient each attendant is. Do not jump to conclusions. Attendants who spend longer with callers than other attendants may be providing very good service to your callers.

Divide the Total time spent processing internal calls by the peg count of the number of internal calls. Multiply this number by 100 to change the units to seconds per call.

### **Peg count of external calls processed by the attendant**

This is a count of all external incoming calls answered by the attendant. This includes calls coming in from DID trunks which were routed to busy telephones and were sent to the console by the Call Forward Busy feature. Recalls from camped-on calls and ring-no-answer calls are also pegged as external calls.

### **Total time spent processing external call requests**

A call that is pegged as external, is timed in units of CCS. If such a call is put on hold, the timer stops and is started again once the call is removed from hold.

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## Traffic

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You can calculate an average work time per external call.

Divide the Total time spent processing external calls by the peg count of the number of external calls. Multiply this number by 100 to change the units to seconds per call.

If you calculated the average work time for internal calls, compare this external call average work time to that number. If you find the internal and external work times differ significantly, sit with the attendants to find out why. The longer an attendant speaks to an internal caller, the longer an external caller must wait.

### **Total time console is attended**

This field of data shows the total amount of time during the study period, usually one hour, that the console was not in Night Service mode nor Position Busy mode.

When the console is put into Night Service or Position Busy, calls in progress, or calls made by the attendant, continue to accumulate time. It is possible, therefore, to have a Total Time Spent Processing Calls measurement which is greater than the measurement of Time the Console is Attended.

You can use this data to monitor the break-times which the attendants are taking. A 15 minute break equates to 9 CCS. A full hour is 36 CCS.

### **Total time spent processing calls**

The system combines the time spent answering internal and external calls. This way the number is rounded to the nearest CCS only once, whereas if you manually add the internal and external times, this includes two roundings. The number the system calculates is the more accurate.

For example, if the actual time spent answering internal calls was 13.3 CCS, the study prints 13 CCS.

If the actual time spent answering external calls was 14.4 CCS, the study prints 14 CCS.

If you add the numbers yourself, you get 27 CCS.

The system calculates 27.7 CCS and rounds it to 28 which is actually closer to the real number than 27 CCS is.

You can calculate an average work time per call (internal + external calls).

Divide the Total time spent processing calls by the peg count of the number of internal + external calls. Multiply this number by 100 to change the units to seconds per call.

A good average work time is 10–12 seconds per call. A good average number of calls per hour is 150–170. As the number of calls approaches 200, the attendant might be sacrificing good service for faster speed. Attendants tend to feel stress beyond 170 calls per hour. Do not overload them. Consider these options:

- ◆ hire more attendants
- ◆ install DID trunks to take some of the load from the attendants
- ◆ install Meridian Mail Automated Attendant Service as a front end to process calls for callers who know the DN they want, or to give information to callers and take the load from the attendants

If calls are waiting in queue for longer than average times, consider installing a recorded announcement device or setting up Meridian Mail voice mail to take some of the load.

### **Peg count of the number of times all Loop keys were busy**

There are six Loop keys on each console for answering and making calls. Anytime the last Loop key on the console is used, this peg count increments.

Attendants use more than one Loop key at a time if they put one call on hold and answer another call using a second Loop key. If they do this repeatedly, they can tie up all six Loop keys and therefore cannot answer any more calls.

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## Traffic

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If the data indicates that attendants are tying up Loop keys, sit with them to understand why this is happening, before you make an assessment.

### **Peg count of Attendant Alternative Answering calls**

As of Release 15, if a call is presented to a console and the attendant does not answer, the call can be sent to a designated Directory Number (DN) which can appear on one or more telephones. This feature is called Attendant Alternative Answering. Each console can have a different DN designated for this.

This data is a count of the number of times calls were not answered and were routed to the designated DN.

You need to find out why this is occurring if you see peg counts here. As the numbers rise, the load on the user of the designated DN increases.

You might need to remind the attendants to use the Position Busy feature when they leave the consoles so calls do not get presented to unattended consoles. You can set it up so that more than one person can answer the re-routed calls if the load is high.

### **Threshold**

You can have the system print a warning message whenever the Average Speed of Answer for your attendants exceeds the value you set.

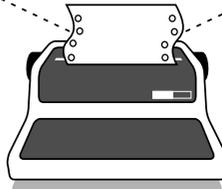
Along with the threshold violation message, data from traffic study options TFC003 and TFC004 prints as well. This helps you analyze the overall attendant situation.

## TFC005 – Features

### Sample data

<b>System ID</b>	<b>TFC005</b>
<b>Customer number</b>	
<b>Feature number</b>	<b>Peg count</b>
200	TFC005
000	
000	00012
001	00002
002	00003
003	00015

The headings shown in this example  
do not appear in the printout.



533-0300T TTY

## Traffic

### Purposes of TFC005 study

The data in traffic study option TFC005 shows you how often features are used during a study period in the customer group specified.



*The features must be activated from a key which means only digital telephones, SL-1-type telephones and attendant consoles are monitored.*

### Features by number

There is a peg count associated with each feature. Each feature is listed by number.

**Table 19**  
**Feature numbers and names**

Feature number	Feature name
000	Auto Dial
001	Call Forward All Calls
002	Call Pickup
003	Call Transfer
004	Call Waiting
005	3-Party Conference
006	6-Party Conference
007	Manual Signaling
008	Override
009	Privacy Release
010	Private Line Service
011	Ring Again
012	Speed Call
013	Voice Call
014	Volume control
015	Busy Verify
016	Barge-in
— continued —	



**Table 19**  
**Feature numbers and names (Continued)**

Feature number	Feature name
017	Call Selection
018	Attendant Recall
019	Dial Intercom
020	Message Waiting Indicator
021	Message Indication
022	Message Cancellation
023	Message Center INCALLS
024	Attendant Overflow
025	Group Call
026	Auto Answerback
027	reserved for future use
028	reserved for future use
029	Call Park
030	Stored Number Redial
031	Last Number Redial
032	Malicious Call Trace
033	Enhanced Hot Line
034	Group Pickup
035	DN Pickup
036	Attendant End-to-End Signaling
037	Internal Call Forward
038	EES Digit Count
039-045	reserved for future use

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## Traffic

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The count increments when features are used, but not when they are reprogrammed from the telephone. For example, when the Call Forward All Calls DN is changed by the user at the telephone, the count for the Call Forward All Calls feature does not increment. It increments when the user activates the Call Forward All Calls feature and redirects calls for the telephone to another DN.

Every time an additional party is added on to a conference, the counter for the Conference feature increments.

### What can you learn from the data?

What usually emerges from this study is data to support your suspicions that users need more training in the use of features.

This data will support you when you want to justify the need for ongoing formal or informal training sessions.

You know what features your system was designed around. You know what features the users are expected to use and why. You also know your organization. Use this information to evaluate the data in the study for your needs.

- ◆ excessively high usage of features can be as alarming as low usage. For example, high usage of the Call Forward All Calls feature (# 001) might mean people are not making themselves available for calls.

Walking around can help you find out how people use the telephone during the average work day.

- ◆ low usage of features like Call Pickup (# 002) might mean calls are not being answered. This may lead to more training, or redesigning the system with different kinds of telephones to accommodate more shared DNs so that calls are answered. It would be unfortunate if you added additional attendants to handle large numbers of recalls when there are other ways to improve the situation.

- ◆ high usage of Ring Again (# 011) during the busy hours usually means you do not have sufficient trunks for the traffic load your users put on them. It can also mean there are disabled trunks, especially if there is high usage of the feature during slow or average hours.
- ◆ low usage of the Speed Call feature (# 012) might mean people need training on the use and programming of the Speed Call lists. If users continue with low usage of the feature you might consider removing the empty lists in order to save memory. Ask your system supplier to help you print out the lists on your system periodically to see which lists are empty or improperly programmed.
- ◆ no usage of the Barge-in feature (# 016) indicates the attendants are not taking advantage of the ability to test trunks from the console. This is a maintenance routine which can be useful in early detection of disabled trunks.

## Other Customer traffic study options

TFC006, TFC007, TFC008, TFC009 are the remaining Customer traffic study options. The content of these studies relates to optional system components and some of them also require optional software packages. They are beyond the scope of this book. See the *Traffic measurement formats and output* for more information.

## Setting up the study

### Procedures

- ◆ Check your maintenance agreement with your system supplier before you attempt to set up a traffic study.
- ◆ If your system supplier agrees that you may run studies, they can train you to schedule the studies properly and choose the appropriate study options.
- ◆ You will use overlay program 2 to set up traffic studies.

Refer to the *Traffic measurement formats and output* for more information on overlay program 2.

- ◆ *Print the existing traffic study schedules and the options which are already selected before you make changes. If you do not do this, you might accidentally change a schedule that someone else has set up. This can affect a study already in progress or one planned for the near future.*

*Tell other people who set up studies to print any existing traffic study schedules before they set a new schedule.*

- ◆ *Notify other people who are involved with your system when you are running a study. The technician needs to know, for example, so that when study data prints out it will not be discarded accidentally.*
- ◆ Print the schedules and options after you have finished inputting to verify that you entered the settings correctly.
- ◆ Check the printer during the first scheduled output time to be sure data prints out with no problems.
- ◆ Check your printer often during the study to ensure that you are getting all the data you should be getting and that the printer is in good working order.



## Printout formats

The beginning of a study is labelled with the header message **TFS000** followed by the date and time of the printout.

The end of the study is labelled with a footer message **TFS999**.



Be careful to tear off the printer paper so you can see both the header message and the footer message. If you don't, you will not see the *important warning messages and threshold violations which print at the beginning of the study* or you will miss parts of the last study option printout.

Some of these warnings might be telling you to ignore the data for various reasons. For example, if the system initializes, the traffic registers are cleared out. If this occurs at some point during the study period, there is no point in using the data since it is not complete.

## Invoking data

If you check the printer and you find that a problem of some kind prevented the data from printing out, you can still retrieve the data.

However, you can only retrieve the data from the most recent scheduled study period. Retrieving this data is called *invoking* the data.

The data from the most recent study period is held in memory while the data from the next study period is being collected. When the system is scheduled to print the new data, the old data is removed from memory and replaced with the new data. If you do not invoke and print the old data quickly enough, it is replaced with new data and no longer available to you.



*You must retrieve old data before the next printout is scheduled or it will be erased.*

Be sure your system supplier trains you on this procedure. You can read about the commands for this in the *Traffic measurement formats and output*.

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## Traffic

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### Control tips



- ◆ If you tell users you are running a traffic study, they might alter their habits when using the telephone. This is especially true of attendants who may think you are doing an analysis of them for job performance purposes. If you want to capture the normal activity levels, do not tell users about the study.
- ◆ Tell the system maintainer that you are running a study so they can avoid doing work and maintenance routines which have an impact on the data. For example, doing a manual initialization clears out the traffic data in memory; avoid doing this while a study is running.
- ◆ If cards are moved to different loops or new cards are installed ask the system maintainer to let you know the date and time of this work, so you can include that information in your analysis.
- ◆ Ask the system maintainer to keep track of warning messages which might print out concerning, for example, the loops, Superloops, timeslots, and trunks. If there are problems which the system identifies, these warnings should be included in the traffic analysis too.

## Administration tips



- ◆ If the TTY device which your system maintainer uses to program and maintain your system is also configured to receive traffic study data, at times, your system maintainer might find this annoying.

When the traffic study data is printing, it interrupts the programmer until all the data from the study has printed out. Once it has printed, the programmer can resume where he or she left off, but it may take some time for the data to print.

*Try to configure a separate printer for Traffic studies if you can.*

- ◆ One thing to note is the speed at which the study prints out. If the traffic study data prints and then stops and then prints again, and this continues, it is one indication that your system CPU is working hard at that time.

Traffic study printing is a low priority task for the CPU and if there are many other tasks to do, the study printouts slow down. If you are running TFS004, pay attention to the CPU real-time analysis, to see if your CPU is overloaded.

## Training tips



- ◆ The data from study option TFC005 can have a major impact on your training programs. Once you see the patterns of feature use and non-use, you can use the data to focus your training effectively.
- ◆ The data in study options TFC003 and TFC004 can have a major effect on the training you do with the attendants. Use the data in conjunction with your observations about their performance and the goals of your organization for efficient call answering.

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# Traffic

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# Call Detail Records

## Purpose

With the Call Detail Recording option (CDR) implemented on a Meridian 1 system, you can track users' calls for billing purposes or restriction purposes.

## Setting up

The system generates raw data in Call Detail Records. You can have these printed on a TTY or a tape, or have them sent to a polling device or computer for processing.

The minimum information provided on the call records is:

- ◆ customer group number
- ◆ calling-trunk identification (trunk group number and member number of trunk) or internal-party DN
- ◆ terminating-trunk identification or internal DN
- ◆ date and time of call
- ◆ call duration
- ◆ digits dialed

As an option, the Terminal Number (TN) of the originating terminal can be included.

The call duration is measured in two-second increments.

CDR activation involves several steps in programming:

- activate it in the Customer Data Block (LD 15)
- activate CDR for each trunk group for which you want to print call records

## Call Detail Records

Each trunk group can be programmed independently to show CDR records for:

- ◆ all outgoing calls, or
- ◆ all outgoing toll calls and/or
- ◆ all incoming calls

If Answer Supervision is allowed in the programming of TIE trunks, CDR measures call duration for calls placed over the TIE trunks from the moment a call is answered.

For outgoing calls on other kinds of trunks, all calls seizing a trunk in the trunk group are recorded from the time a trunk is seized. If you want records for answered calls only, this can be changed. Refer to the section on Answer Supervision, later in this module.

### Types of basic call records

The call records discussed here are the most common ones and are those mentioned in other modules in this book. If you want information on all the types of call records that are available, refer to *Call Detail Recording Description and formats*.

#### Normal, N-records

These print out as each two-party basic call is completed. The record is identified with the letter N as the first field in the record.

**Table 20**  
**N-record**

N	001	00	DN4999	A00000907.1.02.1	06/28	10:15	00:00:20	98289124 0
---	-----	----	--------	------------------	-------	-------	----------	------------

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## Call Detail Records

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All telephone key-pad input can be included in the record. It can include such things as those listed below.

- ◆ If the Asterisk (\*) is stored as a pause-for-dial-tone symbol in a Speed Call number, it appears in the call record.
- ◆ Digits dialed after the call is established also print out, if they are outpulsed because you have the End-to-End signaling software package on your system. For example, if a user on your system calls an outside service that requires the user to press digits for certain options, you can choose to have these digits appear on CDR records.

Beginning with Release 14.46E (International software) and then in Release 19 (North America), the printing of these digits is suppressed by default in the Customer Data Block. The option can be activated, if you want to see the digits in the CDR records.



- ◆ If the user presses octothorpe (#), the digits, up to and including the #, print out. The remaining digits dialed after # do not show up on the CDR record. Users can dial calls which the CDR does not track, if they know about dialing the # key.

For example, a user who knows about this might dial a trunk access code and then # and then the digits in a toll call. The CDR record shows the trunk access code and the # only. When you receive the bill for the call, there will be no CDR record to match with the bill.

There is a software patch available to prevent users from dialing # for outgoing calls.

### **N-records and redirected incoming calls**

When an external incoming call is answered by an internal telephone, an N-record shows the originating trunk route and member number as the originating terminal (ORIGID). The Directory Number (DN) of the terminating telephone is shown as the terminating terminal (TERID). No indication of the attendant's involvement is printed in the record, if the attendant extended the incoming call to the answering telephone.

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## Call Detail Records

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If the originally intended telephone redirects the call to another telephone or to a trunk, there is some flexibility in what you can choose to print in the call record.

The redirection can be due to the following features:

- ◆ Call Forward All Calls
- ◆ Call Forward No Answer
- ◆ Call Forward Busy
- ◆ Hunting

If you have Release 21 software, there is an option called LAST, in the Route Data Block (LD 16), that can be activated. Some examples follow in the next few paragraphs that show the effect of this option on CDR records.

In the case where a call is forwarded to an external trunk, there will be two N-records.

- ◆ The first N-record indicates the incoming trunk as the ORIGID and the TERID is the telephone that was forwarded.
- ◆ The second N-record shows the ORIGID as the forwarded telephone and the TERID as the outgoing trunk.

In the case where a call is forwarded to another telephone before it is forwarded to an external trunk, the first N-record stays the same as the above. You can choose between two options that affect the second N-record.

- ◆ If LAST is YES — the second N-record shows the telephone to which the call was forwarded as the ORIGID and the TERID as the outgoing trunk.
- ◆ If LAST is NO — the second N-record prints the forwarding telephone as the ORIGID and the outgoing trunk as the TERID.

In the case where a call is forwarded from the originally dialed telephone to another telephone and then to another telephone and then to a trunk, the first N-record stays the same as the above.

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## Call Detail Records

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You can choose between two options that affect the second N-record.

- ◆ If LAST is YES — the second N-record shows the final (last) telephone to which the call was forwarded as the ORIGID and the TERID as the outgoing trunk.
- ◆ If LAST is NO — the second N-record prints the second to last forwarding telephone as the ORIGID and the outgoing trunk as the TERID.

If your system has an earlier software release than Release 21, your call records will appear in the same format that has been described for the LAST is NO options in the previous examples.

### Start, S-records and End, E-records

- ◆ When a user activates Call Transfer on an established call, a Start record is generated instead of a Normal record. The record is identified with the letter S as the first field in the record.

The Start record prints out when the transfer is completed and shows the two parties involved immediately before the transfer feature was activated. One of the parties can be a trunk.

When the call is disconnected, an End record is generated showing the final two parties in the call. The record is identified with the letter E as the first field in the record. The End record shows the trunk as the originating terminal and the Directory Number (DN) of the telephone user as the terminating terminal.

Start records are not generated for intermediate stations when a call is transferred more than once. If you want a print out of the intermediate parties, there is an enhancement available in Release 20 to do this. See the information on CDR Transfer Enhancement later in this module.

- ◆ When a user activates the Call Forward All Calls feature and this results in a call for that telephone that originated from a trunk going back out of the system on a trunk, a consecutive pair of Start records is generated as well as an End record.

## Call Detail Records

The first S-record indicates the incoming trunk as the originating terminal and the forwarded DN as the terminating terminal.

The second S-record indicates the forwarded DN as the originating terminal and the outgoing trunk as the terminating terminal. Both records indicate the same timestamps and duration data. An E-record is generated at the end of the call.

When a user activates the Call Forward All Calls feature at a telephone and this results in a call from an incoming TIE trunk going out on an outgoing TIE trunk, two Normal records are generated, one for the incoming TIE trunk to the telephone and the other for the telephone to the outgoing TIE trunk.

**Table 21**  
**S-record**

S	003	00	T000004	DN5064	06/28	10:15		
---	-----	----	---------	--------	-------	-------	--	--

**Table 22**  
**E-record**

E	005	00	T000004	DN5055	06/28	10:16		
---	-----	----	---------	--------	-------	-------	--	--

## Interactions with other features

### Multi-Tenant software interacts with CDR

With Multi-Tenant software package 86, the telephones are assigned to a Tenant group within the customer group. The tenant numbers of the telephones are included in the call records when users make calls.

### ESN software packages interact with CDR

The field of data showing the digits dialed or outpulsed on the CDR record may be preceded by an "A" or an "E." These letters indicate that route-selection software chose the route for the user. The route selection software can be either Basic Automatic Route Selection (BARS), Network Alternate Route Selection (NARS), Coordinated Dialing Plan (CDP), or Route Selection Automatic Number Identification (RS/ANI).

## Call Detail Records

In addition to that, the “E” indicates that Expensive Route Warning Tone was given to the caller and the call was routed on a trunk route programmed as expensive.

Refer to the *Control tips* section of this module if you have a route selection software in place, but you see call records without an “A” or an “E” preceding the digits in the call.

BARS CDR format is different from NARS CDR format. Where BARS and NARS software packages are both present on a system, the CDR prints out in the BARS format.

## Improving performance

### Timing

**Table 23**  
Software requirements

Release required	Software package(s) required
9.30A	97 – Japan Central Office Trunk (JPN)

Normally, call duration for CDR records is measured in two second increments, but with this package the CDR timing can be configured for half-second increments for greater accuracy.

### CDR Expansion

**Table 24**  
Software requirements

Release required	Software package(s) required
9.30A	151 – CDR Expansion (CDRE)

If you have the DN Expansion software package equipped, the DNs at your switch can be longer than four digits and less than, or equal to, seven digits.

## Call Detail Records

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If you want complete call records, the CDR Expansion package is required in order to capture the full DN in the call records. If DN Expansion is used without CDR Expansion, only the last four digits of the DNs print in the CDR.

### Internal, L-records

**Table 25**  
**Software requirements**

Release required	Software package(s) required
9.30A	108 – Internal CDR (ICDR)

As of Release 10, an internal call between two telephones on your system can activate a CDR record. To enable this, at least one telephone involved in the call must have an Internal-CDR-allowed (ICDA) Class of Service. The record is identified with the letter L as the first field in the record.

You can use this kind of data to help you learn more about the total traffic load for a certain telephone that is representative of several similar telephones in a group or department. This helps you get the information you need in order to maintain acceptable traffic levels on your system when you add and move telephones.

### Outpulsed digits

When ESN packages like Basic Automatic Route Selection (BARS) or Network Alternate Route Selection (NARS) software are programmed on a system, the outpulsed-digits option can be very useful. The typical ESN dialing plan has users dialing digits which do not necessarily correspond to what is actually outpulsed on each trunk route.

As of Release 12, the outpulsed digits, rather than the dialed digits, can appear in the CDR records. This helps you to match up your bills with the CDR records.

This option is activated on a per-route basis. The system must be initialized for this to take effect.

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## Call Detail Records

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The outpulsed-digits option is not available with the ESN package called Coordinated Dialing Plan.

Example: A typical Private network call using the ESN Dialing Plan on a system equipped with BARS and NARS:

6 + Location code (343) + Directory Number (2214)

Outpulsed digits:

16139672214

**Table 26**  
**Outpulsed digits option activated on BARS-type CDR**

N	001	00	DN4999	T006001	06/28	10:15	00:10:20	A916139672214
---	-----	----	--------	---------	-------	-------	----------	---------------

### Toll Calls Only Option (OTL)

Previous to Release 8, the CDR could only recognize toll calls if the users actually dialed the digit “1” or “0” as the first or second digit following a trunk access code. If users did not dial a “0” or “1” to place a toll call, in order to have records of the toll calls, *all calls* had to be printed on the CDR records. This was a problem on systems where the dialing plan did not include 1+ dialing or where toll calls were not dialed with the digits 1 or 0. A lot of paper was wasted, or processing time and expense was involved, with extracting the records of the toll calls from the printouts of all calls.

As of Release 5.31 and Release 8 software (not Release 7), selection of the Toll Calls Only option on a trunk route is sufficient to print toll calls only, even if the digits “1” or “0” are not dialed by the user. *If these digits are inserted by digit manipulation tables and are outpulsed on the trunk, then these calls appear as toll calls on the CDR output.*

### Flexible Definition of Toll

In Release 13, Flexible Definition of Toll provided an option on a trunk-route basis, to define single digits following the trunk access code which indicate a toll call for CDR purposes. However, the digits defined are not used for restriction purposes.

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## Call Detail Records

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### ISDN and CDR

**Table 27**  
**Software requirements**

Release required	Software package(s) required
12	118 – Calling Line ID in CDR (CCDR)

Calling Line Identification (CLID) is a feature of an Integrated Services Digital Network (ISDN). When a user makes a call on an ISDN network, the caller's DN (the CLID) is transmitted throughout the network, with the call, to the destination switch. The CDR printout, including the CLID, prints out after the call is ended.

This is especially useful when users make calls from remote switches which use the trunks at a node switch. The CDR printout at the node identifies the caller by the CLID sent by the originator's system, to bill them for the call.

### Answer Supervision

On North American based ground-start and loop-start and loop-start XFCOT-type trunks, CDR Answer Supervision detects an answer condition when the polarity on the trunk is reversed by the Central Office (CO).

The Answer Supervision option can be enabled in the Route Data Block (LD 16) for each trunk group. When enabled, and for an answered call with supervision, the record shows an "A" in the terminating ID field for the trunk.

With this enabled, the timing for a CDR record does not start when a trunk is seized, but only after the call is answered.

## Call Detail Records

Before the Answer Supervision option was introduced, the terminating ID field was always preceded by the letter “T”. After Answer supervision was introduced, if the Answer Supervision option is enabled for a trunk route, but no supervision is returned on a call, the terminating ID field is still preceded by a T.

- ◆ Release 14 - loop-start Answer Supervision was introduced.
- ◆ Release 18 - with double-density or quad-density trunk cards, ground-start Answer Supervision can be detected.
- ◆ Release 19 - loop-start Answer Supervision capability for trunks connected to Intelligent Peripheral Equipment trunk cards was introduced. Refer to the *You should know this* section for more information on Intelligent Peripheral Equipment (IPE).



The CO must provide Answer Supervision for this feature to work and the trunk group must be programmed for Answer Supervision.

### Format CDR

**Table 28**  
**Software requirements**

Release required	Software package(s) required
18.20H	234 – New Format CDR (FCDR)

On systems without this software package, or if this feature is not enabled, the fields of data in CDR printouts are output in variable locations, depending on which software packages are equipped. This makes CDR processing difficult, especially if the call records in a network are in different formats at each site.

This software package allows you to have the individual fields of data in CDR records print in fixed locations in every call record, no matter which optional features affect each call.

With the FCDR package equipped, additional CDR information can be printed which was previously unavailable on CDR.

## Call Detail Records

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### Time to Answer

Three fields of information print out:

- ◆ time during which the call was in a ringing state on the originally dialed DN and/or the DN to which the call was redirected
- ◆ the type of redirection, if redirection occurred. If the call is redirected with a feature like Call Forward All Calls and does not ring at the originally dialed DN, an N appears following the time-to-answer field. If ringing occurred before the call was redirected with a feature like Call Forward No Answer, an R appears following the time-to-answer field.
- ◆ the total waiting-time-before-answer for incoming calls in the attendant queue or Group Hunt queue. This applies to calls answered by the attendant, night number, or attendant-overflow position.

### Abandoned Call record

An Abandoned call, B-record prints out if a call disconnects while in the ringing state or in queue.

### CDR on Busy Tone

**Table 29**  
**Software requirements**

Release required	Software package(s) required
23	234 – New Format CDR (FCDR)

With the CDR on Busy Tone feature, a B record prints out when an incoming or internal call is abandoned after encountering a busy tone.

You can enable this feature for incoming trunk routes and also for telephones that you want to monitor for incoming internal calls encountering a busy tone.

The letter B appears in the Redirection Identifier subfield of the record.

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## Call Detail Records

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### Attendant CDR Enhancement

Prior to Release 20, trunk calls answered by the attendant and transferred to an internal telephone produced an N-record identifying the trunk and internal telephone only. The attendant was never identified in the call record and this presented problems for system administrators. The internal telephone was identified, whether it answered the call or not.

With Release 20, a trunk call extended by the attendant to an internal telephone produces an S-record when the attendant releases from the call. The attendant is shown as the originating party, the trunk as the terminating party. The time the attendant spends on the call is measured, and the time measurement ends when the release key on the console is pressed. When either the internal or external telephone disconnects, an E-record is generated. The duration shown in this record is calculated from the time the attendant presses the release key until the call is disconnected.

### CDR Transfer Enhancement

**Table 30**  
**Software requirements**

Release required	Software package(s) required
20	259 – Enhanced Call Detail Recording (CDRX) 234 – Format CDR (FCDR)

On systems without this software, there is only an S-record for the initial phase of the call and an E-record showing the final two parties in the call. Intermediate parties are not shown in the CDR records.

With this software equipped, if a call is transferred, an X-record is printed which identifies the new DN involved with the call. If there are multiple transfers for one call, many X-records print out in sequence as the call is transferred.

## Call Detail Records

### Station Activity Call Detail Recording

**Table 31**  
**Software requirements**

Release required	Software package(s) required
20	251 – Station Activity Records (SCDR)

This capability is an extension of the Internal CDR functionality.

Internal CDR only prints a record when the call occurs between two telephones. The SCDR package prints a record when an incoming trunk call terminates on a telephone, or if the telephone being monitored calls out on a trunk.

If Call Detail Monitoring is allowed in the Class of Service of the telephone, D-records print out, regardless of the CDR programming associated with the trunk route to which the trunk belongs.

### CDR 100 Hour Call

**Table 32**  
**Software requirements**

Release required	Software package(s) required
22	234 – New Format CDR (FCDR)

With the CDR 100 Hour Call feature, a field appears on the third line of Fixed Format CDR records to indicate when a call has a duration of 100 hours or longer. This three digit field indicates call duration in hundreds and thousands of hours as follows:

A call lasting more than 100 hours but less than 200 hours is represented by a field showing 001. A call lasting more than 1800 hours but less than 1900 hours is represented by a field showing 018.

## Call Detail Records

### Control tips



- ◆ Look for Call Records that indicate features like Call Forward All Calls and Call Transfer are being abused to set up trunk to trunk connections. This type of activity on your system can be responsible for high telecommunications bills. If you want that activity prevented, implement the Call Forward External Deny feature on the telephones of the offending users. Stop trunk to trunk transfers by removing supervision programming from your trunk groups. Discuss this with your system maintainer first.



- ◆ On systems with ESN software programmed, the absence of the letter A or E preceding the dialed or outpulsed digits field in the CDR means the user dialed a direct trunk access code to place the call, instead of a BARS or NARS access code.

*This indicates users are bypassing BARS or NARS and not taking advantage of the cost savings and features these software packages can provide. If you find this is happening on your system, implement TGAR codes to prevent direct trunk access.*



- ◆ If you use Direct Inward System Access (DISA) ports, it is imperative that you monitor CDR frequently. Unauthorized callers who use your DISA ports can be caught if you pay attention to the call records that print out. Talk to your system supplier about ways to implement a security routine that includes regular inspection of raw CDR records to prevent security breaches on your system.
- ◆ If you are using Authorization Codes on your system, be careful about who you permit to see the CDR records. The Authorization codes print out as part of the records.

### Administration tips



- ◆ Decide how often you wish to check for unusual and unauthorized calls using the CDR printouts. Check for such things as:
  - long-duration calls
  - calls in and out after normal working hours

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## Call Detail Records

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- calls from publicly accessible telephones
  - calls from meeting rooms or empty office telephones
  - personal calls
  - incoming trunk calls forwarded out on a trunk
  - incoming trunk calls from other network locations calling out on trunks at your location
  - calls made with direct trunk-access codes, if BARS or NARS is supposed to route calls
  - S- and E-records on systems that cannot print X-records for transferred calls. Identify these and, where appropriate, bill the originator of the call, instead of the final DN to which the call was transferred.
- ◆ If you are interested in finding out about your attendant work time statistics, you can use the Attendant CDR Enhancement instead of (or in addition to) running traffic studies.
  - ◆ Internal CDR data can be useful in providing you with information about the traffic load to and from certain terminals. Also, it can be useful for you to know the traffic patterns of certain users so that you can avoid connecting terminals that call each other frequently to the same loop.

You should choose days and times that are busiest to get representative data. There is a lot of data that prints out so you might not want to leave Internal CDR on for very long.

- ◆ It is often true that unless users and managers receive the bills and an itemized accounting of calls they made, they have very little interest in reducing the expenses associated with their calls. For example, if users see how much their calls cost when they go out on expensive routes compared to less expensive choices, they appreciate the cost factors involved. Once users know what expense is associated with their calls they are usually more willing to cooperate with your plans to reduce expenses.
- ◆ It is wise to provide a secondary device for CDR printing, in case your primary CDR device experiences a problem.

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## Call Detail Records

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### Training tips



- ◆ Include information in training sessions for your system users regarding the monitoring you will be doing using CDR. If users know that calls are being monitored, your telecommunications expenses stay close to the minimum.

## **Call Detail Records**

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# Basic programming instructions

## Introduction

You will program new telephones, and change, move or remove existing ones.

The programming procedures in each Task module in this book show the steps required for the particular task at hand.

The information in each module is presented with the assumption that you have already learned the basics of proper programming procedures. To achieve this basic level of knowledge you can:

- ◆ take a course or get instruction from your system supplier
- ◆ read the *X11 input/output guide*
- ◆ read this module to understand the rules of programming

It is recommended that you get assistance from an experienced person the first few times that you attempt to do programming.

## Maintenance agreement



It is also necessary that you clearly understand any *maintenance agreements* that you have with your system supplier or system maintainer regarding what programming you are permitted to do under the terms of the agreement.

Agreements of this nature clearly define the overlay programs that you may access and might even define the procedures in each program that you may perform. The agreement might specify what will happen if you make errors that require your system maintainer to do work to correct them.

If there is no such agreement between you and your system maintainer, it might be wise to write one and have all parties concerned approve the document.

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## Basic programming instructions

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### Types of programming terminals

There are many different types of devices you can use to program changes on a system. You might have access to one or more of these devices. Discuss the method that will work best for you with your system supplier. The choices are:

- ◆ On-site Teletype Terminal (TTY)
- ◆ Remote TTY access with a modem
- ◆ Maintenance telephone
- ◆ Console (using Attendant Administration)
- ◆ Telephones (using Automatic Set Relocation and/or Set Based Administration)
- ◆ Meridian Administration Tool (MAT)

#### On-site TTY

The system maintainer uses this terminal to do the initial programming required to install your system. After that, Administration and Maintenance programming can be done using this TTY.

When you program telephones, you might use this terminal. The instructions in this book are written for someone who is using the TTY for programming purposes.

The terminal can be a TTY or VDT if it is an input/output device. If it is an output only device, it must be RS-232-C compatible.

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## Basic programming instructions

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The requirements for an input/output terminal are as follows:

- ◆ interface: RS-232-C
- ◆ code: ASCII
- ◆ speed: 110, 300, 1200, 2400, 4800, or 9600 baud
- ◆ loop current: 20 mA

If this is the only TTY you have, be aware that maintenance messages will print on this terminal along with

- traffic study data, if you schedule a study
- Call Detail Records (CDR), if you enable this feature

It can be very disruptive to have other messages printing out while you are programming.

If you have traffic studies and CDR running, you might need other TTYs installed. You can arrange to configure each one with a particular function of its own. That way the data from two different functions do not get merged, which makes it much easier to interpret.

Do regular inspections of these TTYs to make sure they are operating and each has a sufficient supply of paper.

Show any maintenance messages to your system maintainer. Set these printouts aside for the proper people to look at on a regular basis. Only if these messages are analyzed, can your system can be maintained to its highest level of efficiency.

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## Basic programming instructions

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### Remote TTY

Data modems are required for TTYs located more than 50 feet (15 meters) from the system.

- ◆ It is common for system maintainers to connect a remote TTY to each system they maintain.

This helps them to monitor for maintenance messages that the systems might print out. If problems are indicated they can send people to the sites in a timely fashion.

They can also use this device to make programming changes to a system without sending someone out to the site. This saves time and money.

- ◆ You might want a remote TTY at, or near, your desk. You can use it for the following functions:
  - to make programming the system more convenient. You do not need to go to the TTY in the room where the system is.
  - to monitor the system, if other people make programming changes. You can see the changes they are making.
  - to get traffic study data at this TTY, if it is configured for that.
  - to use it as a CDR printer. This helps you monitor the system for unusual call activity during working hours. Also, when you come to your desk in the morning, you can see if there were calls made during off-hours the night before.

### Maintenance telephone

When a telephone is programmed for this capability, the person who maintains your system can use it for doing some maintenance routines instead of going to the TTY in the room where the system is located. If there are telephones like this spread throughout a large building, it can save the maintainers substantial amounts of time and allow them to perform maintenance routines more quickly.

Discuss setting up some maintenance telephones with your system maintainer.

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## Basic programming instructions

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### Console with Attendant Administration (AA)

When Attendant Administration, software package 54, is equipped on a system, an attendant console becomes a programming device when it is put into a programming mode.

There is a plastic template that fits over the keys of the console and a user guide to explain the modified functions of the keys. The programmer uses the keys to enter commands. The system communicates with the programmer by sending information to the console display.

You can have messages print out on TTYs, to indicate to other people that the Attendant Administration feature is being used to make programming changes.

The programming you can do from the console is not as extensive as programming from a TTY. However, the features and services that you can program from the console are often the ones that are most commonly changed on a system. It can be convenient to do the programming like this as well as time saving. It is an appropriate function for a senior attendant to perform.

### Telephone with Automatic Set Relocation (SR)

If you have Automatic Set Relocation (SR), software package 53, equipped, you do not need to use a TTY to program the system when a telephone moves to a new jack.

Users can move their telephones to jacks that are enabled and connected to the proper kind of line card for that telephone.

This might be difficult for the average user to understand and control, so you might want to organize the moves and do the set relocation yourself. By dialing a few simple codes before you remove the telephone from the existing jack and some codes once you move it to the new position, the system transfers the information about that telephone in the system database from the old position on the old line card, to the new position on the new line card.

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## Basic programming instructions

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If the move to the new jack is successful, after you have entered the relocation codes from the telephone you hear dial tone.

If you are moving a modular digital telephone (M2006, M2008, M2216, or M2616) that has a data terminal associated with it, the Automatic Set Relocation feature moves it automatically when it moves the telephone. With these types of telephones, you hear a buzz if the move has been successful.

Because of built-in security, moving a telephone in this way requires a password.

You can have messages print out on TTYs to indicate to other people that the Automatic Set Relocation feature is being used to move telephones.

### **Meridian Administration Tool (MAT)**

With MAT, you can configure, control, and manage single or multiple Meridian 1 systems using point-and-click commands on your PC. This method of programming, through a graphic interface, can be much simpler than using the TTY, as the language used at the MAT terminal is easier to understand than machine programming language.

Refer to the *MAT User Guides* for further information on MAT. If you decide to install MAT, your system supplier will train you on this interface. Also, ask your system supplier if MAT is available in your area, as it is not available in every market region.

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## Basic programming instructions

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### Set Based Administration

Option 11, Option 11E and Option 11C systems were always equipped with software that allows some system programming to be done from telephones.

As of Release 21, the larger systems, Option 21E – Option 81C can have the Set Based Administration Enhancement capability.

The programming is menu-driven, using the displays of digital telephones.

There are three levels of programming access:

- ◆ Administrator
- ◆ Installer
- ◆ User

Using this feature, Administrator telephones can do the following things:

- ◆ modify data associated with some telephone-related features, if the feature has already been assigned to a telephone. Features cannot be added or deleted however.
- ◆ add or change names programmed for Call Party Name Display
- ◆ change the system time and date
- ◆ change toll restrictions for any telephone
- ◆ find DN–TN correspondence

Installer access is very similar to the Administrator access except for the DN–TN correspondence capability. It is assumed that the installer has access to the TTY for that.

User access allows a user with a telephone display to add or change a Call Party Name Display name when logged in through a telephone.

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## Basic programming instructions

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### Overlay programs

The system has a particular program for each type of programming you need to do. For example, telephones and trunks are programmed in different overlay programs.

It is important that you understand the overall structure of the overlay programs and what each one does. However, you might not have access to some of the programs. Check your maintenance agreement.

#### LDs

Another word for overlay program is “Load,” which is generally written in the short form LD. It comes from the command you use to tell the system to *load* an overlay program from the system disk into the system memory so you can use it.

Once you are finished programming, the overlay program is removed from the overlay area of the system memory and can be replaced with another overlay program.

On systems using software Release 18 or later, spare system memory can be used to load several overlay programs. This is called *overlay cache memory*. It can be configured to load up to 32 programs. This reduces your programming time since the programs already loaded in cache memory are readily available, while those that must be loaded from the disk will take longer to access.

#### Overlay programs in this book

The focus of this book is the overlay programs (LDs) you use for:

- ◆ programming analog dial and Digitone-type telephones
- ◆ programming SL-1-type and digital telephones
- ◆ printing data about telephones
- ◆ doing a data dump
- ◆ programming the system time and date

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## Basic programming instructions

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When the programming for a particular feature requires any overlay programs not listed above, the Task modules give you information on what is required, for your information only. You should contact your system supplier to get the actual programming done.

If you have the *X11 input/out guide* and *X11 features and services* that were shipped with your system, you can refer to them. They are excellent sources of information.



Before you do any programming, ensure you have access to the overlay program or procedure you want to perform by checking your maintenance agreement first.

### Overlay program hierarchy

You must input programmable data through the overlay programs in the order that you see them listed here, whether you are programming a new system or making changes.

If you do not follow the proper sequence, you will get error messages telling you that the sequence of your data input is incorrect or the necessary prerequisite data does not exist.

The overlay programs listed here are the most common ones. They are the ones mentioned in the Task modules in this book. There are many other overlay programs that go beyond the scope of the book.

Information on these programs is in the *X11 input/output guide* and *X11 features and services*.

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## Basic programming instructions

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### Programming sequence

1. Configuration Record (LD 17), one per system
2. Customer Data Blocks (LD 15) for all customer groups
3. Route Data Blocks (LD 16) for all trunk routes
4. Trunk Data Blocks (LD 14) for all trunks in all trunk routes
5. Digitone receiver (DTR) Data Blocks (LD 13) for all DTRs equipped
6. Speed Call Data Block (LD 18) for all Speed Call lists
7. The three LDs listed below can be programmed in any order following the overlay programs listed above.
  - a Attendant console Data Block (LD 12)
  - b SL-1-type and digital telephone Data Block (LD 11)
  - c Dial and Digitone-type telephone Data Block (LD 10)

The hierarchy will affect you most often when there is something that must be programmed in LD 15 before you can program the telephone.

For example, you will see this in the Task module on the Call Forward No Answer feature. There are customer-wide options to be programmed, or checked, before you assign the feature to a telephone.

Also, you will have to follow these rules when you want to assign a feature like Speed Call to a telephone. You must arrange to have the Speed Call list programmed in LD 18 before you can program a telephone to have access to the Speed Call list.

The proper sequence of programming the LDs is presented in each Task module.

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## Basic programming instructions

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### Passwords

Every system has a Level 1 password and a Level 2 password.

#### Level 1

This password is used to log into the system and make administration and maintenance programming changes. If your maintenance agreement permits you to make these changes, your system supplier can tell you what the Level 1 password is.

#### Level 2

This password is only known by your system supplier and Nortel Networks. It is used to change the Level 1 password and other passwords.

### Limited Access to Overlays Passwords (LAPW)

**Table 33**  
Software requirements

Release required	Software package(s) required
16	164 – Limited Access to Overlays (LAPW)

If this software package is equipped on your system, there can be up to 100 additional passwords defined. The passwords can contain 4– 16 alphanumeric characters in a mixture of upper and lower case characters.

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## Basic programming instructions

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Each LAPW password can be configured for the following attributes:

- ◆ specific LDs
- ◆ one customer group or all customer groups
- ◆ name (Release 19 and later)
- ◆ one tenant group (optional) or all tenant groups
- ◆ HOST mode, to speed up the TTY port to its maximum speed, when this password is used to log in, regardless of the speed of other similarly configured ports
- ◆ ability to change the password
- ◆ printing only, in the overlay programs the password can access
- ◆ printing of Speed Call lists only

There are other attributes that are configurable for each LAPW, but they are beyond the scope of this book.

### Invalid logins

The LAPW software package allows you to set a threshold for the number of unsuccessful login attempts before the input/output port locks up. It stays locked up for a programmable amount of time. This is a security measure to prevent unauthorized people from attempting to program changes to your system.

When an invalid login lock-up occurs, messages print immediately to all maintenance TTYs. The first user of a Level 1 or Level 2 password to log in sees a message as well.

### Audit trail

Users with Level 1 or 2 authorization can monitor the work of LAPW users.

When Audit trail is enabled, records of the date, login password, login time, and the overlay programs used are kept in memory. You can print this information at any time.

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## Basic programming instructions

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On systems with Release 19 or later software, the audit trail shows the input/output port number, login time, user name, password, LDs used, and logout time.

Your system supplier might assign you one of these LAPW passwords to comply with your maintenance agreement regarding your programming duties

You might want to assign this type of password to other people who work with you doing programming.

### Logging in

#### Pre-Release 19

With these releases of software, only one active programmer is allowed to use the overlay program area of memory at any one time.

#### Before you log in

**On these systems, it is recommended that you press the carriage return on the TTY before you begin a programming session.**

When you do this, you will see messages that indicate if there is another programmer currently in an active session.

- ◆ If there is not, it is safe to login.
- ◆ If there is someone programming, consult your policies to decide whether you can proceed or not.



**If you proceed, you take control of the overlay program area and the other person's session is halted.**

There might be occasions when it is necessary for you, or someone else, to do this.

Decide, in advance, who has priority in this type of situation, and what types of programming requirements warrant one user overriding another user.

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## Basic programming instructions

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**It is safe to log in** if the TTY message looks like either of these:

**OVL111 nn IDLE**

**OVL111 nn BKGD**

**nn** represents the number (0–15) assigned to the input/output port for that TTY

If the response is a period (.), you can log in.

**Someone else is logged in** if the TTY message looks like either of these:

**OVL111 nn TTY x**

**OVL111 nn SL1**

**CAUTION**

Proceed with caution based on the policies you have in place concerning programmer's priority.

**You are already logged in** if the TTY message looks like this:

**OVL000>**

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## Basic programming instructions

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### Release 19 - Multi-User Login

The Multi-User Login capability allows the following to access overlays simultaneously:

- ◆ up to three users on TTY ports
- ◆ an attendant console and maintenance terminal
- ◆ a background or midnight routine

The software prevents conflicting overlays from executing concurrently. Multiple copies of overlay programs 10, 11, 20, 21, and 22 can execute at the same time.

**Table 34**  
**Software requirements**

Release required	Software package(s) required
19	242 – Multi-User Login (MULTI_USER)

There are several commands that you can enter when you are using Multi-User Login.

**Table 35**  
**Multi-User Login commands**

Command	Purpose
WHO	display what sessions are running and the names of the programmers
SEND	send messages to another logged-in TTY
FORC	force a specified TTY to log off
HALT	halt the system from doing background and midnight routines during current login session
MON	monitor another logged-in port locally or remotely

Ask your system supplier for training on the use of these commands.

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## Basic programming instructions

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### Set Based Administration Enhancements

The Enhancements offered in RLS 21, allow telephones on Options 21E – 81C to be used as programming terminals.

The maximum simultaneous logins are configurable and they belong in two categories. There is a maximum for Administrator and Installer logins and another maximum for User logins. These login limits are in addition to the limits for the Multi-User Login capability.

This type of programming is password protected. There is a programmable Flexible Feature Code for Administrator access and another one for Installer access.

Several passwords may be configured for each type of access, each with a different degree of access to the main menu options that are presented on the telephone display.

### Security Banner at System Login

As of X11 Release 22, you can configure your system to print a security banner that advises unauthorized users not to attempt login. This banner prints out after successful and unsuccessful login attempts.

**Figure 2**  
**Security Banner**

**Warning: The programs and data stored on this system are licensed to or are the property of NT/BNR and are lawfully available only to authorized users for approved purposes. Unauthorized access to any program or data on this system is not permitted. This system may be monitored at any time for operational reasons. Therefore, if you are not an authorized user, DO NOT ATTEMPT TO LOG IN.**

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## Basic programming instructions

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### Login

Before you begin your programming session, ensure you have all the information you need to complete the programming you want to do.

If you are not prepared, and you get to a point in the program where you have to stop and look something up, or ask someone a question, the system will abort your programming session if your TTY is inactive for longer than 20 minutes.

### Worksheets



To help you get your responses ready before you begin a programming session, there are *worksheets* for you to use in *Appendix 4* at the end of this book.

There is a worksheet for dial and Digitone-type telephones (LD 10) and a different one for SL-1-type and digital telephones (LD 11).

Make copies, so you have plenty of blank ones on hand.

The prompts you see in those worksheets are those that are related to the Task modules in this book. These tasks are the ones you will perform most often when you install, move or change telephones. They have been selected for that reason. Other prompts that you might see when you are programming are explained in the *X11 input/output guide*.

## Basic programming instructions

### Login instructions

Use the instructions in the following table to log in.

**Table 36**  
**Login procedure**

<b>Log in by typing LOGI and then press the carriage return key.</b>	
LOGI <cr>	<cr> represents carriage return, press the return key or enter key
<b>If you can log in, the following message appears.</b>	
<b>PASS?</b>	For information on other messages you might see, refer to <i>Logging in</i> , in this module.
<b>Type your password and then carriage return.</b>	
Your password does not display.	
<b>The following symbol prints out.</b>	
>	
<b>Input the following command, after the &gt;, to tell the system what overlay program you want to load into the memory.</b>	
LD XX <cr>	where XX represents the overlay program number carriage return after the overlay program number
<b>The system finds the overlay program you requested.</b>	
As a first choice, the system looks for the overlay program in cache memory. If it is not there, it finds it on the disk and the program is then loaded into the overlay program area of the memory.	
<b>When the overlay program is loaded and ready for use, the first prompt in that overlay program appears.</b>	
<b>End of login procedure</b>	

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## Basic programming instructions

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### Prompts and responses

The TTY language for programming is based on a series of prompts being presented to you in the form of mnemonics.

For each prompt, the system expects you to type a response, followed by a carriage return.

You must type your responses in UPPER CASE type.



In the Task modules in this book, the system prompts are printed in **bold type**. The proper responses are printed in plain type.

For example:

**Table 37**  
**Sample of prompts and responses**

Prompt	Response
<b>REQ</b>	CHG
<b>TYPE</b>	M2008
<b>TN</b>	4 0 2 1
continued.....	

### SCH codes

There are certain acceptable responses to each prompt. If you type a valid response, the system presents you with the next prompt. If you type an invalid response followed by a carriage return, the system prints out a Service Change error message in the format:

**SCHXXXX** where XXXX represents a four-digit number that you can look up in the *X11 input/output guide* for interpretation.

The system presents you with the same prompt again, waiting for you to type a valid response.

If you do not type in UPPER CASE, you will see an SCH code.

---

## Basic programming instructions

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### Using \* and \*\* and \*\*\*\*

**Type one asterisk (\*) in your response** if you enter invalid characters in your response, but you have not pressed carriage return. The system re-prompts you with the same prompt and does not output an SCH code. You can type a valid response, after you are re-prompted.

**Type two asterisks (\*\*) in your response** if you want the system to ignore the data that you have input since the beginning of the overlay program. The system presents you with the first prompt in the overlay program and you can start again.

**Typing four asterisks (\*\*\*\*) means** you have finished your programming and you do not want to work in another overlay program. You can log off at this point.

You can also type \*\*\*\* when you want to request a different overlay program.

**Type END instead of \*\*\*\*** if the REQ prompt is showing. It is recommended that you do this because it means you want to end the overlay program you are using and request a new one.

### Abbreviated responses (getting help)

Systems using Release 19 and later software, show a colon (:) following the prompt for certain prompts. This means you can enter either one of the following:

- ◆ a question mark (?) followed by a carriage return to get a list of valid responses to that prompt
- ◆ an abbreviated response. The system then responds with the nearest match. If there is more than one possible match, the systems prints SCH0099 and the input followed by a question mark and a list of possible responses for you to choose from. You can then enter the valid response.

---

## Basic programming instructions

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### Default responses

Many prompts have a pre-programmed response that you accept if you enter a carriage return as your only response when you are entering data for the first time. This pre-programmed response is called a default response.

For information on the valid responses to every prompt and what the default responses are for every administration overlay program, refer to the *X11 input/output guide*. This *Basic Telecom Management Guide* includes information about the prompts and responses for the features and services included in the Task modules.

### Using spaces

The response to the TN prompt in Table 38 illustrates another point. There are times when your response must include spaces in certain positions. If you see numbers or letters with spaces between them in the example of a response, type a space in the same place(s) when you are programming.

In the example shown, there is a space after the digit 4, one after the digit 0, one after the digit 2, and you must press carriage return after the digit 1, since that is the end of the response.

Another situation when you use the spacebar is when you are entering multiple responses to one prompt. For example, there are codes you can enter in the Class of Service programming of a telephone that represent different features and services you want to activate or deactivate.

## Basic programming instructions

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To do this, you could type the following responses to the CLS prompt:

**Table 38**  
Using spaces for multiple responses to a prompt

Prompt	Response
<b>REQ</b>	CHG
<b>TYPE</b>	M2008
<b>TN</b>	4 0 2 1
more prompts and responses	
<b>CLS</b>	FNA HTA TLD
continued.....	

These three responses are separated by a space and the last one, TLD, is followed by a carriage return.

Refer to Task 37, *Call Forward No Answer*, Task 38, *Hunting*, and Task 43, *Access Restriction* for more information on these three features.

### Typing zeroes

If you were to make a printout of the TN shown in the example above, it would print out in this format:

004 0 02 01

When you are programming that TN you do not need to type the leading zeroes. You can input it as:

4 0 2 1

You would only type leading zeroes if they are part of a string of digits that must be outpulsed for an outgoing call (when you are programming telephone numbers on a Speed Call list, for example).

---

## Basic programming instructions

---

### Changing a telephone



**Before you make a programming change** you should get a printout of what is already programmed. That way, if you run into problems making your change, you will have a copy of the old data, in case you must re-enter it for some reason. Before you program a change:

**PRINT    PRINT    PRINT**



**The OUT response** means you are deleting *all* of the data associated with a particular telephone or TN. Use caution.

It is a very common, and dangerous, misconception that typing OUT in response to the REQ prompt allows you to take parts of the programming of a telephone out. **THIS IS NOT THE CASE.**



**Warn the user** not to use the telephone for outgoing calls during the time you are programming, if you are going to make changes to the programming of a telephone during work hours.

- ◆ If there is an active call on that telephone at the time you are doing the programming change, it is disconnected when you make the change.
- ◆ If you do this, you will see a warning message (ERR3056) print out, along with the TN of the telephone, telling you that the telephone conversation was disconnected because of your service change.
- ◆ Before you begin to program, you can disable the telephone you want to program so that incoming calls cannot be presented to it.

**You can type over the old data** for a given prompt by simply typing in the new response when the prompt is presented to you, if you are changing an existing telephone.

**Carriage return** if you are not changing the responses to certain prompts. This leaves the data that is already programmed for them unchanged. It does not mean that the old response is replaced with the default response.

---

## Basic programming instructions

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### Easy Change

This capability was introduced in Release 12 to make changing telephones faster.

Instead of scrolling through the prompts in the LD until you see the prompt you want to change, you can select an item or items you want to change.

When you say YES to the ECHG (Easy Change) prompt, the next prompt that appears is ITEM. You type the mnemonic for the prompt that you want to change, followed by a space and the new response that you want to enter. The ITEM prompt reappears until you respond with a carriage return to indicate that you have no further changes to make.

You can program the ITEMS in any sequence you choose.

The Task modules include the programming steps for Easy Change capability, and also the steps when you do not have this capability, (on systems that have pre-Release12 software).

### Removing data

The responses to some prompts can be blank. If you want to remove an entry to one of these prompts completely, you can type X before the response you want to remove.

For example, if you want to remove a user's Station Control Password for such features as User Selectable Call Redirection, you program it the following way.

---

## Basic programming instructions

---

Assume the password is 2345:

**Table 39**  
**Removing a Station Control Password using X**

Prompt	Response
<b>REQ</b>	CHG
<b>TYPE</b>	M2008
<b>TN</b>	4 0 2 1
more prompts and responses	
<b>SCPW</b>	X2345
continued.....	

Not all responses can be removed with an X.

Some features are deactivated by typing 0 as the response.

Refer to the prompt by prompt instructions in the *X11 input/output guide*.

To remove a feature from a key and leave it blank you type XX NUL in response to the prompt KEY. XX represents the key number.

**Table 40**  
**Removing a feature from a key to leave it blank**

Prompt	Response
<b>REQ</b>	CHG
<b>TYPE</b>	M2008
<b>TN</b>	4 0 2 1
more prompts and responses	
<b>KEY</b>	XX NUL
continued.....	

## Basic programming instructions

Usually users do not want blank keys, they want all the keys to be programmed with features, so to change the feature on a key to a new feature, you type XX followed by the new feature mnemonic in response the KEY prompt. (XX represents the key number.)

**Table 41**  
**Changing a feature key to a new feature (AutoDial)**

Prompt	Response
REQ	CHG
TYPE	M2008
TN	4 0 2 1
more prompts and responses	
KEY	XX ADL
continued.....	

## Finishing the overlay program

It is a common error for novice programmers to make a programming change in an overlay program and then to go to another overlay program or to Log off, without finishing the overlay program first.



**If you do not finish an overlay program before you Log off, the change you made is not entered into the memory.**

In this book, each Task module includes instructions for you to finish the overlay program by entering carriage return until you see messages stating how much memory is available on the system. These messages indicate that your change has been entered.

## Basic programming instructions

The messages look like this:

**Table 42**  
**Memory message when a Service Change is entered**

Prompt	Response
<b>REQ</b>	CHG
<b>TYPE</b>	M2008
<b>TN</b>	4 0 2 1
more prompts and responses.....	
At the end of the overlay program, you will see one of the following two types of messages:	
Small systems	
<b>U.data aaaaaa      P.data bbbbbb</b>	
where:	
aaaaaa - represents the amount of unprotected memory available for use (in words)	
bbbbbb - represents the amount of protected memory available for use (in words)	
or	
Large systems	
<b>MEM AVAIL: (U/P):cccccc USED:dddddd TOT:eeeeee</b>	
where:	
cccccc – represents the total memory available for use (in words) – depending on the total amount of memory, cccccc might be split into two fields, one for unprotected data and the other for protected data	
dddddd – represents the total memory used (in words)	
eeeeee – represents the total memory (in words)	

If you know what kind of system you have, you will know what memory message you will see.

---

## Basic programming instructions

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Once you have finished with the change(s) in one overlay program, you can continue to make more changes:

- ◆ in the same program. Respond to the initial prompt in the program that reappears on your TTY.
- ◆ in another program. Type END or \* \* \* \* in response to the initial prompt that reappears.

### Data Dump

When you have finished all the programming you want to do, you should do a Data Dump.

Refer to the *You should know this* section for more information on what a Data Dump is.

If your training did not include information on how to do a Data Dump, or your maintenance agreement does not permit you to perform one, ask your system supplier for help.

Even though most systems are programmed to automatically do a Data Dump at a certain time every day, it is best not to rely on this to permanently store information on your disks. Many people have learned the hard way that it is better to do the manual Data Dump than to rely on the automatic one.

The reason is, that if your system experiences a memory-related problem before the automatic Data Dump occurs, the memory, with all of your service changes, is cleared and you have to re-do your service changes.

---

## Basic programming instructions

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### Logging off

When you have no further programming to do, and your Data Dump has been successful, you can Log off.

Type END or \*\*\*\* to finish the overlay program you are in.

The > prompt appears.

Type:

LOGO



Always log off if you are going to leave the TTY unattended. If you do not log off and you leave the TTY active, someone else can program or attempt to program, without having to log in with a password.

---

## Basic programming instructions

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### Finding out the TN assigned to a telephone



Before you can make programming changes to an existing telephone, you must know the TN assigned to it.

It is more likely that you will know the Directory Number (DN) assigned to a certain telephone than the TN.

If you know the DN that appears on a telephone, you can request a printout of the DN Block.

The DN Block shows you the Terminal Number (TN) for the telephone.

If the DN appears on more than one telephone, the TNs print out for all the telephones where the DN appears.

You might choose to do routine DN-Block printouts of all the DNs on your system. This is useful when you update your Numbering Plan records to find out what numbers are used or unused on your system.

If you want to print the entire system DN Block, carriage return in response to the DN prompt when you request a printout.

### What overlay programs to use?

The overlay programs that you can use to print out a DN Block have changed through the releases of software. The sample that follows shows you the choices of LDs available, based on the software release on your system.

### Printing several DN Blocks at once

You can request DN-Block printouts for multiple DNs (up to six, at one time), by entering the first DN followed by a space, the next DN followed by a space and so on until you have entered the sixth DN. Follow the last DN with a carriage return.

---

## Basic programming instructions

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### Display DN – TN correspondence

You can find out the DN – TN correspondence using a telephone if the telephone has a display and you use the Set Based Administration Enhancements capability that was introduced in Release 21.

With the proper Flexible Feature Code and password you can find out what TNs correspond to a particular DN. You do not get a printout with this method, however you get the information displayed quickly and easily at a user's desk.

## Basic programming instructions

### How to print a DN Block

Table 43

Programming procedure for printing a DN Block.

Prompts and responses	Explanations
> LD 22	(Any Release)
> LD 20	(Release 17 or later)
> LD 10 or LD 11 or LD 32	(Release 19 or later)
<b>REQ</b> PRT	Request a Printout
<b>TYPE</b> DNB	DN Block
<b>DN</b> X..X	Input the DN of one telephone.
X..X X..X X..X	Input a DN followed by a space, another DN followed by a space and so on up to six DNs.
	Finish with a carriage return
<CR>	Carriage return for all DNs.
You get a printout of the TN(s) of the telephone(s).	

---

## Basic programming instructions

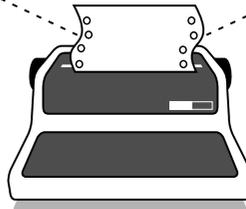
---

### Sample of a DN-Block printout

```
>LD 22
PT2000
MARP NOT ACTIVATED

REQ      PRT
TYPE     DNB
CUST     0
DN       2000
DATE
PAGE
DES

DN       2000
TYPE     SL1
TN       003 0 00 13 KEY 01 H MARP      DES FLR1 16 JUN 1995
        (2616)
```



533-0300T TTY

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## Basic programming instructions

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### Printing the data programmed for a telephone

Request a TN Block (TNB) printout when you need information about all the features and services that are programmed for one or more telephones.

The data on the TNB printout will help you know what you need to change and what you can leave unchanged when you are doing Service Change programming.

The TNB information can help you to answer users' questions about their features or to troubleshoot with your system supplier.

Ask your system supplier or programming course instructor to help you understand all the prompts and responses that you see in a TNB printout. If you do not fully understand what the printout shows you, your programming changes can have unexpected results.

## Basic programming instructions

### How to print a TN Block

Table 44

Programming procedure for printing a TN Block.

Prompts and responses	Explanations
> LD 20	(Any Release)
> LD 10 or LD 11 or LD 22 or LD 32	(Release 19 or later)
<b>REQ</b> PRT	Request a printout.
<b>TYPE</b> TNB	TN Block
<b>TN</b> L S C U	<p>Input the <b>Loop Shelf Card</b> and <b>Unit</b> number of the telephone.</p> <p>Enter a space between the Loop number and the Shelf number. Enter a space between the Shelf number and the Card number. Enter a space between the Card number and the Unit number.</p> <p>Finish the line of input with a carriage return.</p>
L S C	Input the <b>Loop Shelf Card</b> number to print data for all of the TNs on one card.
L S	Input the <b>Loop Shelf</b> number to print data for all of the TNs on one shelf.
L	Input the <b>Loop</b> number to print data for all of the TNs on one loop.
<cr>	Carriage return to print data for all of the TNs on your system.
You get a printout of the database for the TN(s) you specified.	

## Basic programming instructions

### Printing Hunt chains

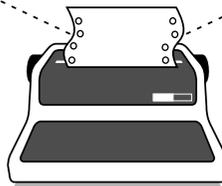
When you want to find out what telephones hunt to a particular DN, you can use LD 20. Refer to Task 38, *Hunting*, for more information. The programming for this is as follows:

**Table 45**  
Programming procedure for printing a Hunt chain.

Prompts and responses	Explanations
> LD 20	
<b>REQ</b> PRT	Request a printout.
<b>TYPE</b> HNT	Hunt chain
<b>CUST</b>	Enter customer group number.
<b>HTNO</b> 3001	Input the DN you are interested in.

The following type of information prints out.

<b>DN</b>	<b>3001</b>	<b>HUNTED FROM</b>
<b>TN</b>	<b>028 0 00 01</b>	
<b>TN</b>	<b>028 0 09 00</b>	



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In the example shown above, the two telephones listed by TN number are programmed to Hunt to DN 3001, when they are busy.

## Basic programming instructions

If the Call Forward by Call Type feature is allowed, external calls can hunt differently than internal calls. For more information on this feature, refer to Task 36, *Call Forward by Call Type (Hunting Option)*.

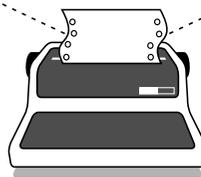
You can print out the TNs that are programmed to send external calls to a particular DN when they are busy.

**Table 46**  
**Programming procedure for printing an external call Hunt chain**

Prompts and responses	Explanations
> LD 20	
<b>REQ</b> PRT	Request a printout.
<b>TYPE</b> EHT	External call Hunt chain
<b>CUST</b>	Enter the customer group number.
<b>EHNO</b> 3001	Input the DN you are interested in.

The following type of information prints out.

<b>DN</b>	<b>3001</b>	<b>HUNTED FROM</b>
<b>TN</b>	<b>028 0 00 01</b>	
<b>TN</b>	<b>028 0 09 00</b>	



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## Basic programming instructions

### Printing other data blocks

There are three overlay programs designed for printing the various data blocks programmed on your system. The most frequently used print routines are listed in the following table. The complete list of data blocks that you can print is in the *X11 input/output guide*.

**Table 47**  
**Frequently used print routines**

Overlay program	Data block
20	DN Block External Hunting Hunting Speed Call lists TN Block Unused card slots Unused Directory Numbers Unused units Unused voice units Unused data units
21	Customer group Route Trunks within a route
22	Configuration record DN to TN matrix Software version Software issue number Software packages equipped

Check your maintenance agreement, to find out what other data blocks you can print. Spend time with an experienced programmer for help in understanding the printouts in these other overlay programs.

---

## Basic programming instructions

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If you have software package 20, Office Data Administration System (ODAS), you can print using overlay programs 81, 82 and 83. You can print information about the following things in each of these LDs.

**Table 48**  
**ODAS Print Routines**

LD	Print
81	a count or list of the telephones: <ul style="list-style-type: none"><li>– that have a particular feature</li><li>– that are members of certain pickup groups</li><li>– of a certain NCOS</li><li>– of a certain SAR group</li><li>– that use a particular Speed Call list</li></ul>
82	Hunt chains Multiple Appearance DN groups
83	lists of TNs in order of Designators TN Blocks in order of Designators

Check with your system supplier on the use of these ODAS print routines.

You can refer to the *X11 input/output guide* for more information.

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## Basic programming instructions

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### Overlay linking

You can print information using LD 10 and LD 11, if you have Release 19 or later software on your system. This is because the overlay programs designed for printing are linked with LD 10 and LD 11 as of Release 19. (Overlay programs 10, 11, 20, 22 and 32 are linked.)

While you are making programming changes to a telephone you can request printouts of TN Blocks, DN Blocks, unused units, unused voice units, unused data units, and unused DNs without having to end LD 10 or LD 11 and request a print overlay program.

### Setting the system time and date

When you adjust the system time, you affect:

- ◆ telephone displays
- ◆ Call Detail Records

You might need to adjust the system time clock if:

- ◆ there has been a power failure on your system and you do not have battery backup
- ◆ it is day-light-saving time
- ◆ your system clock has gained or lost a few seconds over a period of months

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## Basic programming instructions

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### How to set time and date

- ◆ You can use a key on the attendant console. Check to see if this is something your system supplier provides.
- ◆ You can use a telephone if you have Set Based Administration Enhancements equipped on your system. You can do this from an Administrator telephone, if you use:
  - the correct Flexible Feature Code and password
  - the correct Installer Access Flexible Feature Code and password from any telephone
- ◆ You can use LD 2 to make the adjustment.

A programmer needs a password to access LD 2 or to use an Administrator telephone. No password is required when you use the attendant console key.

Some system suppliers do not assign a key for this capability on the attendant console for security reasons.

## Basic programming instructions

If your maintenance agreement allows you to access LD 2 to change the system time and date, here is the procedure.

**Table 49**  
**Setting time and date**

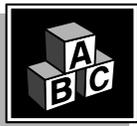
<b>Log in using correct procedures.</b>
Refer to <i>Logging in</i> .
<b>Request overlay program 2.</b>
> LD 2 • (a period) appears when the program is loaded
<b>To print the existing time and date, type the following command after the period:</b>
TTAD                      Test Time and Date
<b>The time and date prints out.</b>
For example: . <b>TTAD WED 24 11 1994 08 41 49</b> In this example, the time and date was: Wednesday, the 24th of November, 1994 at 8 hours, 41 minutes and 49 seconds, a.m.  The time is shown based on a 24 hour clock. • (a period) reappears
<b>To set a new time and date, type the following command after the period:</b>
STAD                      Set Time and Date
The existing time and date prints out. Input the date, (not the day of the week), month, year, hour, minute and second using two digit codes and spaces between the numbers. Press carriage return when the data you input is the accurate time. • (a period) reappears
<b>To test the time and date, type the following command after the period:</b>
TTAD
<b>The time and date prints out.</b>
<b>Verify it is correct.</b>

# Introduction to telephones

## Purpose

The Task modules in this section of the book focus on the programming required to add a new telephone to a system. The programming steps covered are the *minimum* required to make that particular type of telephone operate.

## Basic configuration



Read this general information for help in deciding which Task module to use when you are installing a particular type of telephone.

This part also includes some basic background information you should know before you program a new telephone.

## Hardware

The Task modules in this section do not include information on how to install the cabling or the telephone and system hardware when a new telephone is installed. These topics are covered in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide* which are two of the books shipped with every system.

Ask your system maintainer to do the physical installation work.

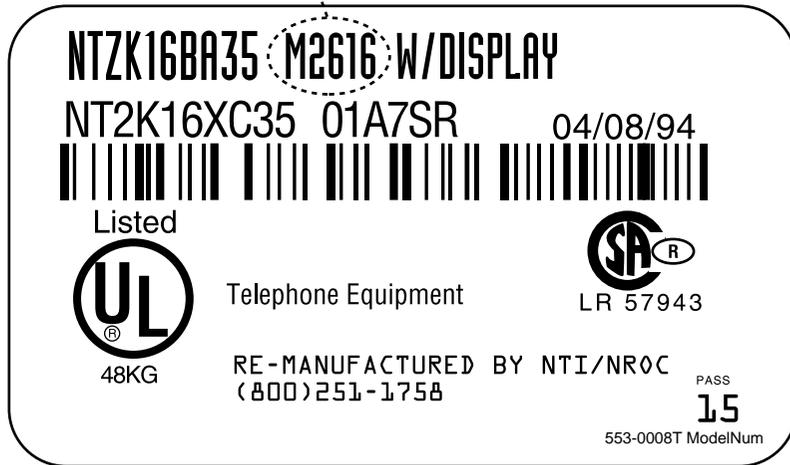
## Types of telephones

For information on the names and functions of the different types of telephones which are available, read the *You should know this* module in the *Before you begin* section.

If you are not sure which type of telephone you are installing, look at the label on the underside. Each telephone is labelled with a sticker on its base.

## Introduction to telephones

The model number of any Meridian telephone is identified here



If the sticker is no longer in place, scan the Task modules in the *Making a telephone work* section until you find an illustration that matches the type of telephone you have. There is a small picture at the top of each page which shows the appearance of the telephone which that Task module explains. The first page of each module has a larger, more detailed picture. If the telephone you are installing is not included in a Task module, ask your system supplier what Task module you should use.

### Terminal Number (TN)

Every telephone must be identified by a physical location (address) in the system in order for the telephone to function. You must use programming to identify the Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone. You will have to find out what Terminal Number (TN) is assigned to the new telephone you are installing before you can program it. If your system maintainer installs the cabling for a new jack and connects it to the system, ask what Terminal Number they plan to assign to the new telephone. Terminal Numbers are explained in the *Terms and abbreviations* module.

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## Introduction to telephones

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### Directory Number (DN)

Every telephone must have a Directory Number (DN) assigned to it if it is to receive calls. According to the Numbering Plan on your system and the needs of the user, decide on the DN or DN's to be assigned to the telephone. For more information on the Numbering Plan see the *Terms and abbreviations* module.

DN's can be configured as one of the following types: Single Call or Multiple Call. There is more information on this in each module in the *Making a telephone work* section.

### Programming

#### Minimum programming

The information presented in this section explains the *minimum* programming required to make each type of telephone function. You should look at the tasks in the section titled *Adding and changing features* for further information on additional services and features that can be allowed or denied on the telephone, once it is installed with minimum programming.

#### Overlay programs

There are three main families of telephone types:

- dial and Digitone-type
- digital and SL-1-type
- Basic Rate Interface

Refer to the *You should know this* module for more information on telephones. This book does not include information about programming Basic Rate Interface telephones.

The programming required for each type of telephone is unique. There are three programs, one for each family of telephones. A program is called an overlay program or LD, pronounced “load,” as in “load the overlay program.”

## Introduction to telephones

The overlay programs, or LDs, for the three families of telephones are:

- ◆ LD 10 for dial, Digitone-type and Wireless telephones
- ◆ LD 11 for digital and SL-1-type telephones
- ◆ LD 27 for Basic Rate Interface telephones

Within each family there can be different models of telephones. Table 50 that follows shows the individual model names of telephones, the overlay program (or LD) which you use to program it, and the Task module to read for more information.

**Table 50**  
**Telephone type, LD, Task module**

Telephone type	LD	Task module
dial	10	1
Digitone	10	2
M8000	10	3 **
M8009		4 **
M8314		5 **
M8417		6 **
SL-1	11	*
M1009	11	*
M1109		*
M1309		*
M2009	11	*
M2112		*
M2018		*
M2317	11	10
— continued —		

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## Introduction to telephones

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**Table 50 (Continued)**  
**Telephone type, LD, Task module**

Telephone type	LD	Task module
M3000	11	*
M2006	11	7 **
M2008		8 **
M2216ACD		9
M2616		11 **
M2616CT		11 **
M3110	11	12
M3310		13
M3820		14
M3901	11	15
M3902		16 **
M3903		17 **
M3904		18 **
M3905		19
M5317TDX	27	*
C3050	10	*
C3060		*
		Note 1
C4000	10	*
C4010		*
C4040		*
		Note 2
<p><b>Note:</b> * indicates that this telephone is not included in this book.</p> <p><b>Note:</b> ** indicates that this telephone is not available in all countries. Check with your system supplier.</p>		

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## Introduction to telephones

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**Note 1:** Meridian Companion telephones, available in Europe and North America (based on CT2 technology). The M3060 replaces the M3050. Your system supplier must register these on the Meridian Companion system and program WRLS YES in LD 10 on the Meridian 1.

**Note 2:** Meridian Companion DECT telephones, available in Europe and North America. The C4010 replaces the C4000. Your system supplier must register these on the Meridian Companion DECT system and program WRLS YES in LD 10 on the Meridian 1.

### Default values

The overlay programs you use for these tasks present a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is also considered a response, as it programs the default value.

Investigate the default responses to the prompts since the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator. For example, the user's manager often wants controls placed on the user's calling capabilities. The default responses do not place these controls on the user. Also the telephone system administrator may want to implement corporate-wide policies for telephones which are not met through the default choices.

*Appendixes 1 and 2* at the end of this guide list the prompts, responses (including the defaults) and the Task modules by number for the prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system, provides detailed information on all prompts and responses in all of the administration overlay programs.

Familiarize yourself with the default values if you do not intend to program additional features and services when you install a new basic telephone.

---

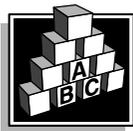
## Introduction to telephones

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### Worksheets

*Appendix 4* at the end of this book includes sample overlay program worksheets. If you are an inexperienced programmer, you will probably find it useful to complete one of these worksheets before you sit down at the terminal to program.

## Improving feature performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

### Maintenance agreement

The information in this book concentrates on LDs 10, 11, 20, 21, 22, and 43. Sometimes a particular task requires work to be done in overlay programs other than these. What you need to know about this other programming is covered in the Task modules, but your system supplier or maintainer is probably responsible for doing the actual programming. You should read the maintenance agreement you have with your system maintainer before doing any programming, including the programming of overlay programs 10, 11, 21, 22, and 43.

### Training

You will probably need training before you program for the first time. Arrange to attend some form of training to gain a good understanding of proper programming procedures and the information you need to know about the overlay programs.

Ask your system maintainer about training programs they offer or courses offered by Nortel Networks.

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## Introduction to telephones

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### Control tips



- ◆ Information that helps you to improve the control you have over your system operation, costs, and security is included in this part of each Task module.

### Administration tips



- ◆ Common system administration practices, efficient policies and procedures, record keeping advice, and suggestions to improve your system efficiency through better management appear in this part of each module.

### Training tips



- ◆ Proper end-user training can greatly improve the operation and effectiveness of any system. The tips in this part of each Task module cover suggested ways to improve system operation through better training.

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## Introduction to telephones

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### What to have ready

A checklist like the one shown below summarizes the steps you should take before doing the programming in each Task module.

**Table 51**  
**Checklist**

Basic	Optional	Preparation
✓		Find out what DN to assign to the new telephone.
✓		Find out what TN to assign to the new telephone.
	✓	Find out how the new telephone is to be billed for long distance calls.
	✓	Find out how the new telephone fits into your inventory management policies.

---

## Introduction to telephones

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## New dial telephone

### Purpose

The information in this Task module will help you if a user at your site needs a new dial telephone.

If the user needs a new telephone, install a dial telephone if:

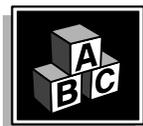
- ◆ the user needs only one Directory Number (DN)
- ◆ the user does not require the use of a telephone which transmits tones
- ◆ the user does not require easy access to features using buttons (or keys) but is instead able to use one or two digit codes for features





## New dial telephone

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Hardware

The installation of cabling, and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic dial telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator. For example, the user's manager often wants controls placed on the user's calling capabilities. The default responses do not place these controls on the

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## New dial telephone

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user. Also, the telephone system administrator may want to implement corporate-wide policies for telephones which are not met through the default choices.

*Appendix I* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for the prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming in the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.



## New dial telephone

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, DNs can be one to four digits.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone. There is information on an important Multiple Appearance DN feature in Task 40, *Multiple Appearance DN Redirection Prime*.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

### Single Call DN

The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.



Unless programmed otherwise, a Single Call configuration is the default configuration of a DN when it is programmed on a dial telephone.

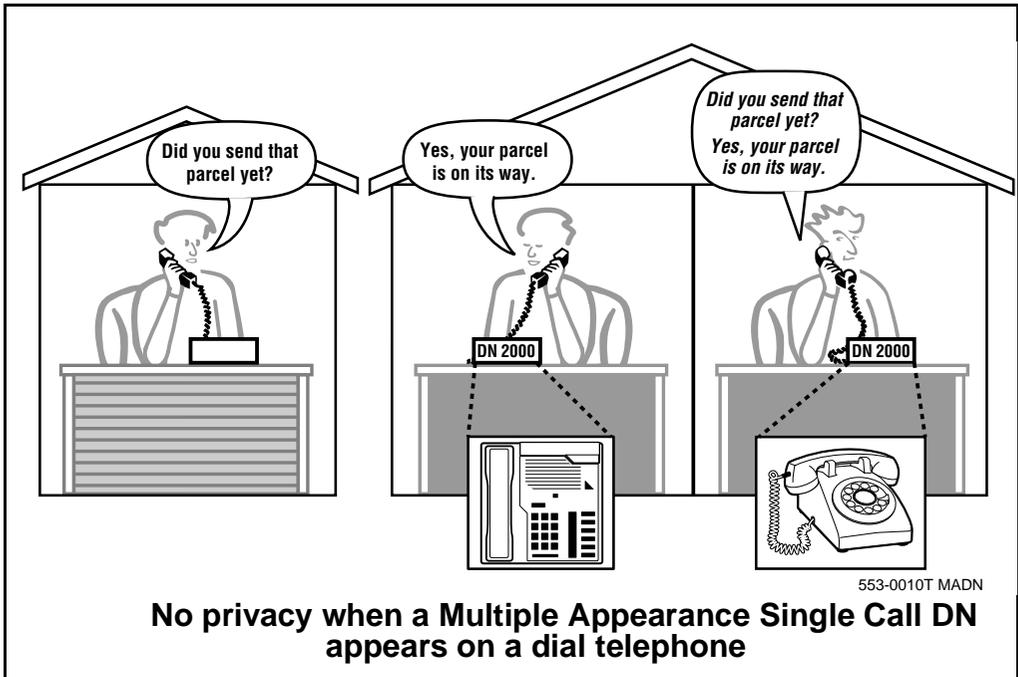
If the same Single Call DN is shared between a dial telephone and an SL-1-type or digital telephone, there is no way to prevent a user from breaking in on an active call in progress on the shared DN.

## New dial telephone



If privacy is important, choose one of the following two options:

- ◆ do not assign the same Single Call DN to a dial telephone and an SL-1-type or digital telephone
- ◆ replace the dial telephone with an SL-1-type or digital telephone. There is privacy on shared Single Call DN's on these types of telephones



### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.



## New dial telephone

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A Multiple Call DN is not treated as busy until there are calls on all the programmed appearances of the DN. There can be a maximum of 16 appearances of one DN on systems using software prior to Release 13; after that release there can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching the maximum numbers. Consult with your system supplier before you implement Multiple Appearance DNs.

### Multiple Call Class of Service

When you want to make a DN on a dial telephone a Multiple Call DN, you activate this in the Class of Service.



*With Release 15.58F software, this Class of Service is used along with the Centralized Multiple Line Emulation feature. Discuss the application of this feature with your supplier. It is beyond the scope of this book.*

*With Release 20 software, this Class of Service is used in conjunction with the use of Meridian COMPANION™ wireless telephones on your system.*

### Consistent configuration

*Whether you choose Single Call or Multiple Call, all appearances of one DN must be the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*



The step-action table at the end of this module explains how to assign a DN on a new dial telephone.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use.

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## New dial telephone

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If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

You should keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module in this book.



### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DNs, you request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.

### Terminal Number (TN)

You must use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

If you are using a system running with Release 15 or later software, it can be equipped with either loops or Superloops. If you are using a system with software prior to Release 15, the system can be equipped with only loops. Loops and Superloops belong in the Network Equipment part of the system.



## New dial telephone

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If you are not sure what type(s) of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment.

Refer to the *You should know this* module for more information on the hardware of your system.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the loop, or Superloop, to which you are adding this telephone.

Loops and Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each loop or Superloop is kept within the recommended guidelines. If all your existing loops and/or Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

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## New dial telephone

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Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards. There are three types of line cards for dial telephones: single-, double-, or quadruple-density.

Single-density line cards connect to a maximum of four telephones. Double-density line cards connect to a maximum of eight telephones. Quadruple (quad) density line cards connect to a maximum of sixteen telephones.

Systems using Superloops can use *intelligent* line cards. They are called intelligent because they possess microprocessors.

As of Release 20, double-density intelligent line cards are available for off-premises extensions. They connect to a maximum of eight telephones.

On-site dial telephones can be connected to quadruple-density intelligent line cards which connect to a maximum of 16 telephones.

### Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.



## New dial telephone

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You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned. For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If no policy is in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

## New dial telephone



### Class of Service (CLS)

When you are programming telephones using LD 10, you must enter a Class of Service for each one which prepares the system for the type of outpulsing to be transmitted from the telephone.

The choices are either dial pulse (DIP), Digitone (DTN), or none (manual line service MNL).

**Table 52**  
**Software release and default setting**

Release	Default
19 or 20	DTN
18 or earlier	DIP

For a dial telephone, program the TN for DIP service. Once you find out what release of software your system has, you might find that DIP is the default.

When you install a dial telephone, the impact of programming incorrectly is as follows.

When a telephone with a DTN class of service initiates a call, the system finds and reserves a digitone receiver (DTR) unit on a DTR card for that telephone. It is reserved for that telephone while the call is dialed. A digitone receiver is not required when a dial telephone is used. When a dial telephone is programmed incorrectly with a DTN class of service, the system reserves a DTR needlessly every time the dial telephone user initiates and dials a call. As a result, users of Digitone telephones who do need the DTR unit are not able to use it while it is held for the dial telephone. Digitone telephone users can experience delayed dial tone when this happens. Your system supplier does not provision your system with sufficient DTRs for dial telephones which are programmed incorrectly. Provisioning extra DTRs would not be a solution either, since that would be an added expense for you.

You can read about digitone receivers in the Peripheral Equipment section of the *You should know this* module in this guide.



## New dial telephone

### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

You may wish to consider installing a more up-to-date telephone for the user instead of a dial telephone. You may wish to look at the list which follows as a quick way to determine if a dial telephone is appropriate for the user.

#### Do not install a dial telephone if:

- ◆ the user requires more than one Directory Number (DN). Decide whether to install a two-line Digitone-type telephone or a multi-line SL-1 or digital telephone.
- ◆ the user must share a DN with another user and privacy is important. Only SL-1-type or digital telephones can be programmed to prevent other users from listening to live conversations if they share DNs.
- ◆ the telephone must outpulse tones to external systems using voice mail or automated attendant services
- ◆ the user does not wish to dial feature codes or will be difficult to train to dial codes in order to activate features
- ◆ the user requires a telephone and a data terminal like a Personal Computer at the same desk. Investigate the benefits and costs associated with digital telephones instead.

#### Real time

If you are using many dial telephones and you are planning to continue to use them, you should consider connecting them to intelligent line cards which have been available since Release 15. These line cards share some of the processing load with the main computer in your system. As a result, the main computer is able to handle more calls and applications.

## New dial telephone



### Control tips



- ◆ Dial telephone users who share DNs with other users must be careful not to break in on active calls. Consider installing a system of lights which shows when the DN is in use. If lack of privacy continues to be a problem, they may need to change to SL-1-type or digital telephones.

### Administration tips



If users experience problems such as delayed dial tone, report the user's telephone type to your system maintainer along with the report of the problem. If the telephones are dial type, the maintainer does not need to investigate anything to do with DTRs. You can reduce your trouble-shooting time, if you identify as much pertinent information as possible. For example, the user's DN, and the time when the problem occurred are two pieces of important information.

### Training tips



- ◆ Avoid problems by doing refresher training on an ongoing basis. Dial telephone users must remember a number of different feature access codes. They may need reminders after the initial training in order to effectively use all the features they need. This helps them get the most out of the system and in turn the system provides them with the expected benefits.
- ◆ Short customized lists of feature instructions and access codes for each user are worthwhile. Make them small enough to be placed underneath the telephone where they are readily accessible.
- ◆ If Flexible Feature codes are in use on your system, keep the codes as simple as possible. Users will be confused and aggravated if you implement codes that are difficult to use.



## New dial telephone

It is not a good idea to implement several codes for each feature unless you have users who are each accustomed to a different code and it would be difficult for them to learn new codes.

For more information on Flexible Feature codes refer to the *You should know this* module in this book.

### What to have ready

The following checklist summarizes the steps you should take before implementing a basic new dial telephone.

**Table 53**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN.
✓		Determine the TN which is assigned to this telephone. If you do not assign TNs, ask your system supplier.
✓		Find out the density of the line card for the telephone. In other words, find out how many units are present on the card.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other

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## New dial telephone

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telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

*Appendix I* (for LD 10) at the back of the book lists the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

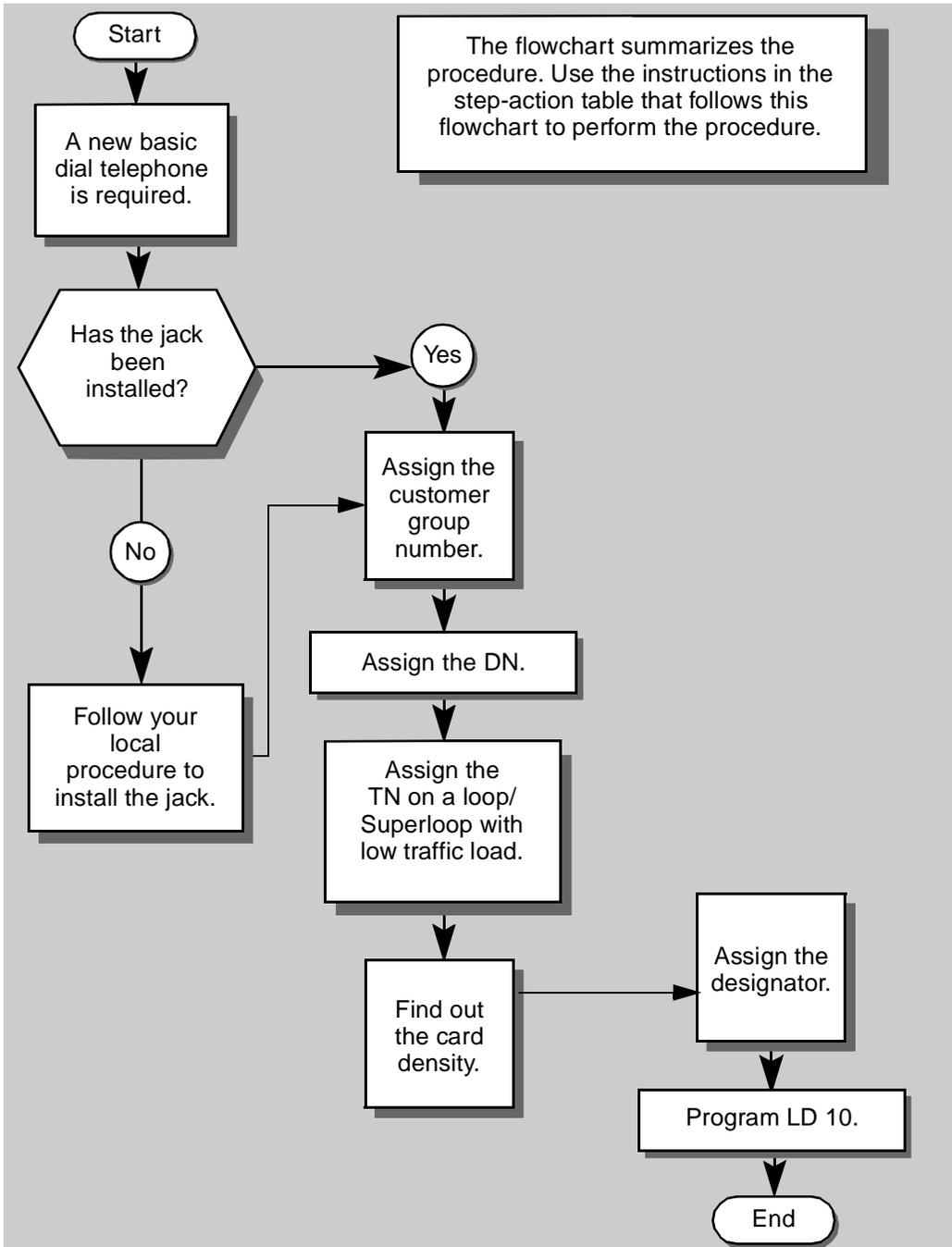
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of a dial telephone.



## New dial telephone



## New dial telephone



The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic dial telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

### STEP ACTION

#### 1 Arrange to have a new jack installed, if required

Talk to your system supplier to get this done.

#### 2 Assign a customer group number to the new telephone.

**If**

**Do**

the telephone is being added to an existing customer group

step 3

the telephone is the first one in a new customer group

step 8

— continued —



## New dial telephone

STEP	ACTION	
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	.....	
	You do not know your customer group number and you have access to the print overlay programs.	step 4
	You do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>4</b>	<b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	
	you know the DN and not the TN of the other telephone	step 5
	you know the TN of the other telephone	step 6
— continued —		

## New dial telephone



### STEP ACTION

#### 5 Print the DN Block of the other telephone.

Log in. For information on proper login procedures, refer to *Basic programming instructions* in this book.

> LD 22 or

> LD 20 or (Release 17 or later)

> LD 10 or LD 11 or LD 32 (Release 19 or later)

**REQ** PRT Request a printout

**TYPE** DNB DN Block

**CUST** <cr> All Customer groups

**DN** X . X Input the DN of the other telephone

Carriage return until you see either of the following messages:

**U.data**            **P.data**    small systems

or

**MEM AVAIL: (U/P) USED:TOT:**    large systems

You get a printout of the TN of the other telephone.

**Note:** If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.

#### 6 Print the TN Block of the other telephone.

Log in. For information on proper login procedures, refer to *Basic programming instructions* in this book.

> LD 20 or

> LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)

**REQ** PRT Request a Printout

**TYPE** TNB TN Block

**TN** L S C U Input the **Loop Shelf Card** and **Unit** number of the other telephone

You get a printout of the customer group number of the other telephone.

— continued —

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## New dial telephone

STEP	ACTION	
7	<b>Assign the same customer group number to the new telephone.</b>	
	Go to step 10.	
8	<b>Arrange with your system supplier to have the new customer group data block programmed.</b>	
9	<b>Assign the new customer group number to the new telephone.</b>	
10	<b>Find out what DN to assign.</b>	
	<b>If</b>	<b>Do</b>
	the DN is shared with another telephone	step 11
	the DN is unique	step 12
11	<b>Find out how the DN is to be shared.</b>	
	<b>If</b>	<b>Do</b>
	the telephone can be an extension of an existing telephone	Ask your system supplier to install the jack accordingly and connect the telephone — no programming is required.
	the telephone is to have its own TN	step 15
<b>— continued —</b>		

## New dial telephone



STEP	ACTION	
<b>12</b>	<b>Find out what DNs are available.</b>	
	<b>If</b>	<b>Do</b>
	you know what DN you want to assign	step 15
	your system software is Release 19 or later	step 13
	your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 14.
<b>13</b>	<b>Print unused DNs in your customer group.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b>	PRT Print
	<b>TYPE</b>	LUDN List unused DNs
	<b>CUST</b>	0 - 99 Input customer group number
	You get a printout of the unused DNs in your customer group.	
<b>14</b>	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>	
<b>15</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	you have access to the print overlay programs	step 16
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 17.
<b>— continued —</b>		

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## New dial telephone

STEP	ACTION						
<b>16</b>	<p><b>Print out the available TNs on your system.</b></p> <p>For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>        LUU                List all unused units</p> <p>              LUVU            List unused voice units (Release 19 or later)</p> <p><b>TYPE</b>       500                Dial or Digitone telephone</p> <p>You get a printout of the available dial and Digitone telephone TNs.</p>						
<b>17</b>	<p><b>Consider traffic when choosing a TN to use for the new telephone.</b> For more information, refer to the section called <i>Traffic</i> in this book.</p> <table border="1"> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>there is recent traffic study data</td> <td>Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.</td> </tr> <tr> <td>there is no recent traffic study data</td> <td>Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.</td> </tr> </tbody> </table>	If	Do	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
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there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.						
<b>18</b>	<b>Choose the TN for the new telephone.</b>						
<b>19</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>						
— continued —							

## New dial telephone



STEP	ACTION	
<b>20</b>	<b>Find out the density of the line card which has the TN you are using.</b>	
	<b>If</b>	<b>Do</b>
	it is a new line card	Ask your system supplier about card density.
	it is an existing line card	Use the default density setting.
<b>21</b>	<b>Assign a Designator.</b>	
	Choose up to six alphanumeric characters to identify the telephone for your records, according to your local procedures.	
<b>22</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<b>&gt; LD 10</b>	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 500	Dial or Digitone telephone
	<b>TN</b> L S C U	Input the TN ( <b>L</b> oop <b>S</b> helf <b>C</b> ard <b>U</b> nit number)
	<b>CDEN</b>	Input the card density if on a new line card
	SD	single-density
	DD	double-density
	4D	quad-density
	<b>&lt;cr&gt;</b>	Carriage return if line card already programmed
<b>— continued —</b>		

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## New dial telephone

### STEP ACTION

#### 22 continued ...

<b>DES</b>	A . . A	Designator maximum six characters long
<b>CUST</b>	0 - 99	customer group number
<b>DN</b>	X . . X	Directory Number 7 digits maximum with DN Expansion (DNXP) software equipped 4 digits maximum without DNXP
Carriage return until you see the prompt CLS		
<b>CLS</b>		Input the Outpulsing type
	DIP	DIP (dial pulse), default prior to Release 19 Input DIP, or <cr> if it is default on your system

Carriage return until you see either of the following messages:

**U.data**      **P.data**    small systems

or

**MEM AVAIL: (U/P) USED:TOT:**    large systems

#### 23 Check that the telephone works.

Try to make a call. Try to receive a call.

If	Do
.....	.....
telephone works	step 24
telephone does not work	step 1

— continued —

## New dial telephone



STEP	ACTION								
24	<p><b>Arrange for a data dump to be performed.</b></p> <table border="0"> <tr> <td style="vertical-align: top;"><b>If</b></td> <td style="vertical-align: top;"><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>you do not have access to LD 43</td> <td>Contact your system supplier.</td> </tr> <tr> <td>you have access to LD 43</td> <td>step 25</td> </tr> </table>	<b>If</b>	<b>Do</b>	.....		you do not have access to LD 43	Contact your system supplier.	you have access to LD 43	step 25
<b>If</b>	<b>Do</b>								
.....									
you do not have access to LD 43	Contact your system supplier.								
you have access to LD 43	step 25								
25	<p><b>Perform a data dump to permanently store the programming you have just completed.</b></p> <div style="border: 2px solid black; padding: 10px; margin: 10px 0;">  <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div> <p>Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.</p> <pre>&gt; LD 43 . EDD &lt;cr&gt;</pre>								
26	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b></p> <p>or</p> <p><b>DATA DUMP COMPLETE</b></p> <table border="0"> <tr> <td style="vertical-align: top;"><b>If</b></td> <td style="vertical-align: top;"><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 27</td> </tr> </table> <p style="text-align: center;">— continued —</p>	<b>If</b>	<b>Do</b>	.....		data dump fails	Contact your system supplier.	data dump succeeds	step 27
<b>If</b>	<b>Do</b>								
.....									
data dump fails	Contact your system supplier.								
data dump succeeds	step 27								

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**New dial telephone**

STEP	ACTION
<b>27</b>	<b>Terminate this overlay program.</b>  • * * * *
<b>28</b>	<b>Terminate this programming session.</b>  Log off.  > LOGO
<b>29</b>	<b>You have now completed the minimum programming required to implement a basic new dial telephone.</b>
	

## New Digitone telephone

### Purpose

The information in this Task module will help you if a user at your site needs a new Digitone telephone.

If the user needs a new telephone, install a Digitone telephone if:

- ◆ the user needs only one Directory Number (DN)
- ◆ the user requires the use of a telephone that transmits tones
- ◆ the user does not require easy access to features using buttons (or keys) but is instead able to use one or two digit codes for features





## New Digitone telephone

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, see the section called *Adding and changing features*.

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.



Check with your system maintainer to ensure that the necessary digitone receiver cards are installed and programmed.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic Digitone telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

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## New Digitone telephone

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Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator. For example, the user's manager often wants controls placed on the user's calling capabilities. The default responses do not place these controls on the user. Also, the telephone system administrator might want to implement corporate-wide policies for telephones which are not met through the default choices.

*Appendix 1* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for the prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system, provides detailed information on all prompts and responses in all of the administration overlay programs.

### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming in the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number,



## New Digitone telephone

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or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, DNs can be one to four digits.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone.

Refer to Task 40, *Multiple Appearance DN Redirection Prime* for important information on a Multiple Appearance DN feature.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

### Single Call DN

The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.

Unless programmed otherwise, a Single Call configuration is the default configuration of a DN when it is programmed on a Digitone telephone.



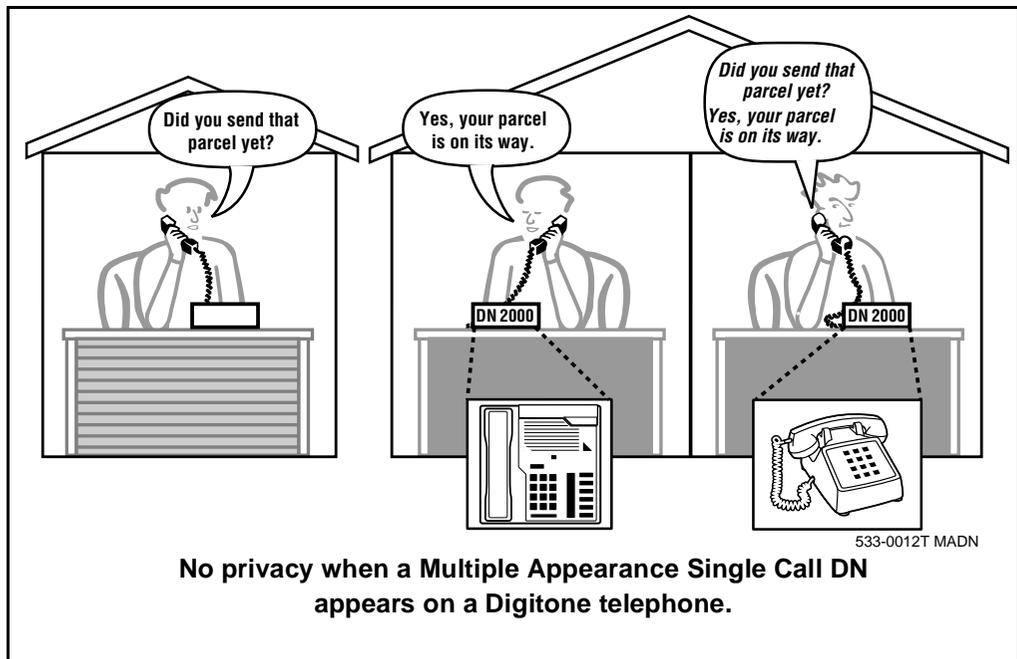
## New Digitone telephone



If the same Single Call DN is shared between a Digitone telephone and an SL-1-type or digital telephone, there is no way to prevent a user from breaking in on an active call in progress on the shared DN.

If privacy is important, choose one of the following two options:

- ◆ do not assign the same Single Call DN to a Digitone telephone and an SL-1-type or digital telephone
- ◆ replace the Digitone telephone with an SL-1-type or digital telephone. There is privacy on shared Single Call DNs on these types of telephones





## New Digitone telephone

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### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

A Multiple Call DN is not treated as busy until there are calls on all the programmed appearances of the DN. There can be a maximum of 16 appearances of one DN on systems using software prior to Release 13; after that release there can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching the maximum numbers. Consult with your system supplier before you implement Multiple Appearance DNs.

### Multiple Call Class of Service

When you want to make a DN on a Digitone telephone a Multiple Call DN, you activate this in the Class of Service.



*With Release 15.58F software, this Class of Service is used along with the Centralized Multiple Line Emulation feature. Discuss the application of this feature with your supplier. It is beyond the scope of this book.*

*With Release 20 software, this Class of Service is used in conjunction with the use of Meridian COMPANION™ wireless telephones on your system.*



### Consistent configuration

*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

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## New Digitone telephone

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The step-action table at the end of this module explains how to assign a DN on a new Digitone telephone.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

You should keep a summary of the Numbering Plan on site. For more information on the Numbering Plan see the *Terms and abbreviations* module in this book.



### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DN's, you request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.



## New Digitone telephone

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### Terminal Number (TN)

You must use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

If you are using a system running with Release 15 or later software, it can be equipped with either loops or Superloops. If you are using a system with software prior to Release 15, the system can be equipped with only loops. Loops and Superloops belong in the Network Equipment part of the system.

If you are not sure what type(s) of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment.

Refer to the *You should know this* module for more information on the hardware of your system.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

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## New Digitone telephone

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There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the loop, or Superloop, to which you are adding this telephone.

Loops and Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each loop or Superloop is kept within the recommended guidelines. If all of your existing loops and/or Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

See the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards. There are three types of line cards for Digitone telephones: single-, double-, or quadruple-density.

Single-density line cards connect to a maximum of four telephones. Double-density line cards connect to a maximum of eight telephones. Quadruple (quad) density line cards connect to a maximum of sixteen telephones.

Systems using Superloops can use *intelligent* line cards. They are called intelligent because they possess microprocessors.

As of Release 20, double-density intelligent line cards are available for off-premises extensions. They connect to a maximum of eight telephones.



## New Digitone telephone

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On-site Digitone telephones can be connected to quadruple-density intelligent line cards which connect to a maximum of 16 telephones.

### Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

## New Digitone telephone



For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If no policy is in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

### Class of Service (CLS)

When you are programming telephones using LD 10, you must enter a Class of Service for each one which prepares the system for the type of outpulsing to be transmitted from the telephone.

The choices are either dial pulse (DIP), Digitone (DTN), or none (manual line service MNL).

**Table 54**  
**Software release and default setting**

Release	Default
19 or 20	DTN
18 or earlier	DIP



## New Digitone telephone

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For a Digitone-type telephone, program the TN for DTN service. Once you find out what release of software your system has, you might find that DTN is the default.

When you install a Digitone telephone, the impact of programming incorrectly is as follows.

When a Digitone telephone with a DTN Class of Service initiates a call, the system finds and reserves a digitone receiver (DTR) unit on a DTR card for that telephone. It is reserved for that telephone while the call is dialed. Because of this, the outpulsed tones are translated by the DTR into digital messages suitable for the CPU. The CPU can then translate what the user is dialing.

When a Digitone telephone is programmed incorrectly with a DIP Class of Service, the system does not reserve a DTR when the telephone user tries to initiate a call. (A digitone receiver is not required when a dial telephone is used.) As a result, the telephone user receives dial tone but cannot make calls.

You can read about digitone receivers in the Peripheral Equipment section of the *You should know this* module in this guide.

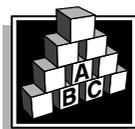
---

## New Digitone telephone

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### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

You may wish to consider installing a more up-to-date telephone for this user instead of a Digitone telephone.

#### Provisioning digitone receivers (DTRs)

Your system supplier must configure your system with a sufficient quantity of DTRs to provide a good grade of service to the Digitone telephone users. If that is not done, dial tone could be delayed for users of Digitone telephones, and the level of service could be poor. As you add more and more Digitone telephones after the initial installation of the system, your system supplier might need to re-provision your system periodically for additional DTRs.

You know it is time to look at the provisioning issue if you start to get complaints about delayed dial tone exclusively from users of Digitone telephones and incoming Digitone trunks.

Traffic studies can help you to calculate the proper quantity of DTRs you require based on the actual digitone traffic load offered to the system. For more information on what a traffic study can show you, see the *Traffic* module in this book. (Refer to the information on studies TFS002 and TFS003).

### Control tips



- ◆ Digitone telephone users who share DNs with other users must be careful not to break in on active calls. Consider installing a system of lights which shows when the DN is in use. If lack of privacy continues to be a problem, consider a change to SL-1-type or digital telephones.



## New Digitone telephone

### Administration tips



- ◆ If users report problems such as delayed dial tone, report the user's telephone type to your system maintainer along with the report of the problem.

If the telephones are Digitone, the maintainer will need to investigate whether there are:

- faulty DTRs
  - unprogrammed DTRs
  - DTRs on busy loops
  - loops with high numbers of Digitone telephones and DTRs
  - insufficient DTRs
- ◆ You can reduce your trouble-shooting time, if you identify as much pertinent information as possible. For example, the user's DN, and the time when the problem occurred are two pieces of important information.

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## New Digitone telephone

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### Training tips



- ◆ Avoid problems by doing refresher training on an ongoing basis.

Digitone telephone users must remember a number of different feature access codes.

They might need reminders after the initial training in order to effectively use all the features they need. This helps them get the most out of the system and in turn the system provides them with the expected benefits.

- ◆ Short customized lists of feature instructions and access codes for your users are worthwhile. Make the lists small enough to be placed underneath the telephone where they are readily accessible.
- ◆ If Flexible Feature codes are in use on your system, keep the codes as simple as possible. Users will be confused and aggravated if you implement codes which are difficult to use.

It is not a good idea to implement several codes for each feature unless you have users who are each accustomed to a different code and they are difficult to retrain.

For more information on Flexible Feature codes see the *You should know this* module in this book.



## New Digitone telephone

### What to have ready

The following checklist summarizes the steps you should take before implementing a basic new Digitone telephone.

**Table 55**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN.
✓		Determine the TN which is assigned to this telephone. If you do not assign TNs, ask your system supplier.
✓		Find out the density of the line card for the telephone. In other words, find out how many units are present on the card.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

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## New Digitone telephone

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*Appendix 1* (for LD 10) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

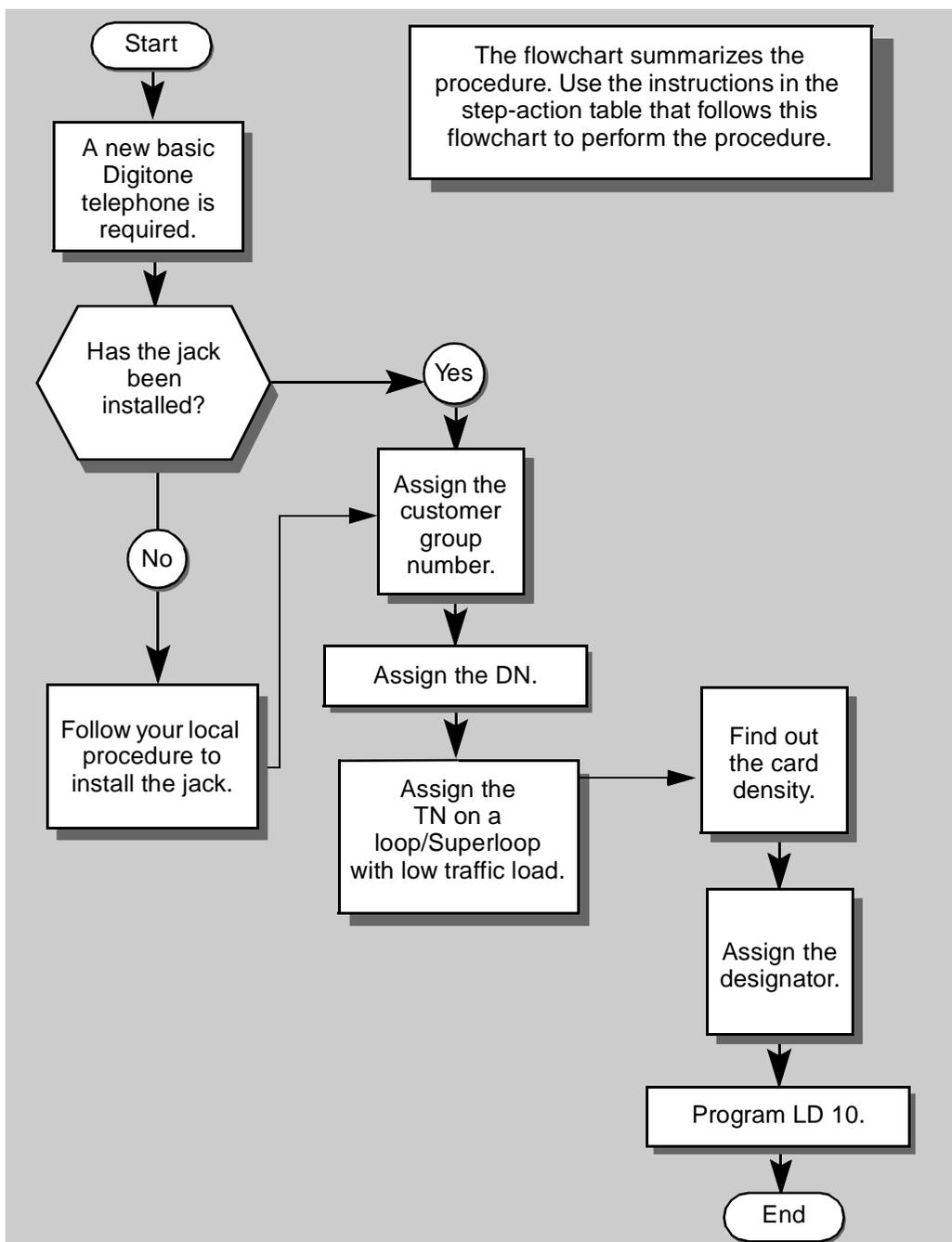
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of a Digitone telephone.



## New Digitone telephone



## New Digitone telephone



The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic Digitone telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

### STEP ACTION

#### 1 Arrange to have a new jack installed, if required

Talk to your system supplier to get this done.

#### 2 Assign a customer group number to the new telephone.

**If**

**Do**

the telephone is being added to an existing customer group

step 3

the telephone is the first one in a new customer group

step 8

#### 3 Find out your customer group number.

**If**

**Do**

you do not know your customer group number and you have access to the print overlay programs.

step 4

you do not know your customer group number and you do not have access to the print programs.

Ask your system maintainer what your customer group number is, then do step 10.

you know your customer group number

step 10

— continued —



## New Digitone telephone

### STEP ACTION

#### 4 Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.

If	Do
you know the DN and not the TN of the other telephone	step 5
you know the TN of the other telephone	step 6

#### 5 Print the DN Block of the other telephone.

Log in. For information on proper login procedures, refer to *Basic programming instructions* in this book.

```
> LD 22 or
> LD 20 or (Release 17 or later)
> LD 10 or LD 11 or LD 32 (Release 19 or later)
```

```
REQ      PRT      Request a printout
TYPE    DNB      DN Block
CUST    <cr>     All Customer groups
DN      X. .X    Input the DN of the other telephone
```

Carriage return until you see either of the following messages:

```
U.data    P.data  small systems
or
MEM AVAIL: (U/P) USED:TOT:  large systems
```

You get a printout of the TN of the other telephone.

**Note:** If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.

— continued —

## New Digitone telephone



### STEP ACTION

#### 6 Print the TN Block of the other telephone.

Log in. For information on proper login procedures, see *Basic programming instructions* in this book.

> LD 20 or

> LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)

**REQ** PRT Request a Printout

**TYPE** TNB TN Block

**TN** L S C U Input the Loop Shelf Card and Unit number of the other telephone

You get a printout of the customer group number of the other telephone.

#### 7 Assign the same customer group number to the new telephone.

Go to step 10.

#### 8 Arrange with your system supplier to have the new customer group data block programmed.

#### 9 Assign the new customer group number to the new telephone.

#### 10 Find out what DN to assign.

If	Do
the DN is shared with another telephone	step 11
the DN is unique	step 12

— continued —



## New Digitone telephone

STEP	ACTION	
<b>11</b>	<b>Find out how the DN is to be shared.</b>	
	<b>If</b>	<b>Do</b>
	the telephone can be an extension of an existing telephone	Ask your system supplier to install the jack accordingly and connect the telephone – no programming is required.
	the telephone is to have its own TN	step 15
<b>12</b>	<b>Find out what DNs are available.</b>	
	<b>If</b>	<b>Do</b>
	you know what DN you want to assign	step 15
	your system software is Release 19 or later	step 13
	your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 14.
<b>13</b>	<b>Print unused DNs in your customer group.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, see <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b>	PRT Print
	<b>TYPE</b>	LUDN List unused DNs
	<b>CUST</b>	0-99 Input customer group number
	You get a printout of the unused DNs in your customer group.	
	— continued —	

## New Digitone telephone



STEP	ACTION	
14	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>	
15	<b>Find out what Terminal Numbers are available for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you have access to the print overlay programs	step 16
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 17.
16	<b>Print out the available TNs on your system.</b>	
	Log in. For information on proper login procedures, see <i>Basic programming instructions</i> in this book.	
	> LD 20 or	
	> LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)	
	<b>REQ</b>	LUU List all unused units
		LUVU List unused voice units (Release 19 or later)
	<b>TYPE</b>	500 Dial or Digitone telephone
	You get a printout of the available dial and Digitone telephone TNs.	
17	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
18	<b>Choose the TN for the new telephone.</b>	
	— continued —	



## New Digitone telephone

STEP	ACTION	
19	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
20	<b>Find out the density of the line card which has the TN you are using.</b>	
	<b>If</b>	<b>Do</b>
	.....	
	it is a new line card	Ask your system supplier about the card density.
	it is an existing line card	Use the default density setting.
21	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
22	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, see <i>Basic programming instructions</i> in this book.	
	> LD 10	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 500	Dial or Digitone telephone
	<b>TN</b> L S C U	Input the TN (Loop Shelf Card Unit number)
	<b>CDEN</b>	
	SD	Input the card density if on a new line card
	DD	single-density
	4D	double-density
	<cr>	quad-density
		Carriage return if line card already programmed
	— continued —	



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## New Digitone telephone

### STEP ACTION

#### 24 Arrange for a data dump to be performed.

If

Do

you do not have access  
to LD 43

Contact your system supplier.

you have access to LD 43

step 25

#### 25 Perform a data dump to permanently store the programming you have just completed.



#### CAUTION

Check your maintenance agreement  
before working in LD 43.

Refer to the *Basic programming instructions* module of this book or refer to the *X11 input/output guide* for more information on LD 43.

> LD 43

. EDD<cr>

#### 26 Verify that the data dump was successful.

TTY response:

**NO GO BAD DATA**

or

**DATA DUMP COMPLETE**

If

Do

data dump fails

Contact your system supplier.

data dump succeeds

step 27

— continued —

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## New Digitone telephone

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STEP	ACTION
27	<b>Terminate this overlay program.</b>  • ****
28	<b>Terminate this programming session.</b>  Log off.  > LOGO
29	<b>You have now completed the minimum programming required to implement a basic new Digitone telephone.</b>



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of 1776

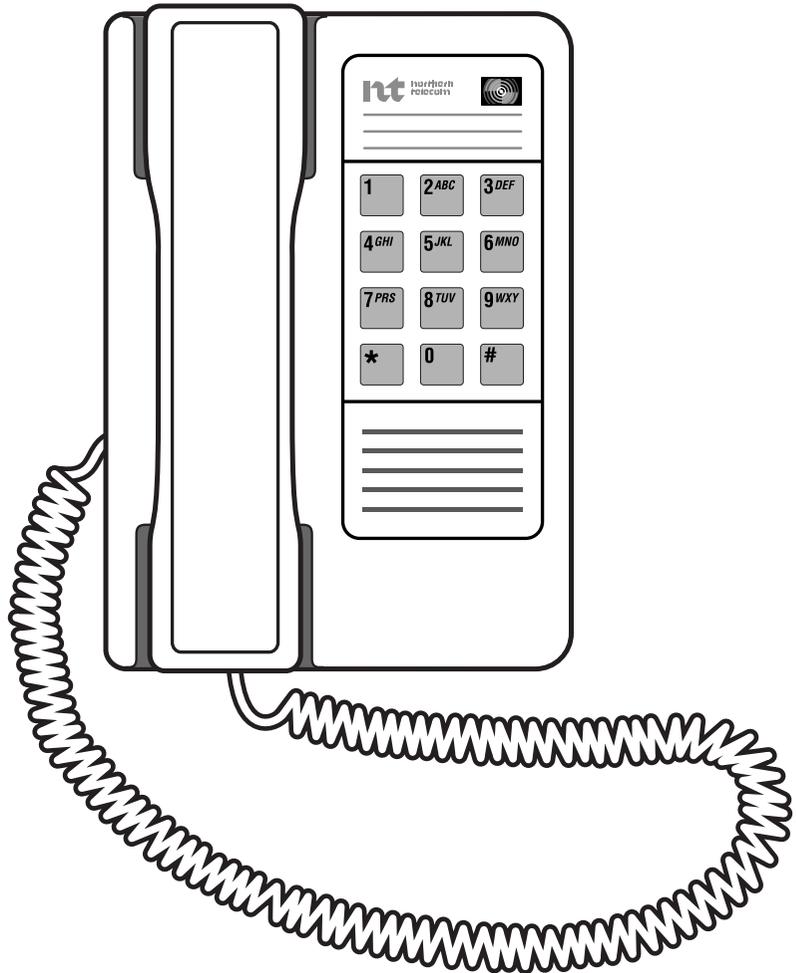
## **New Digitone telephone**

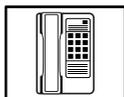
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## New M8000 telephone

### Purpose

The information in this Task module will help you if a user at your site needs a new M8000 telephone.





## New M8000 telephone

If the user needs a new telephone, install an M8000 telephone if:

- ◆ the user needs only one Directory Number (DN)
- ◆ the user requires the use of a telephone that transmits tones
- ◆ the user does not require easy access to features using buttons (or keys) but is instead satisfied to use one or two digit codes for features

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Built-in functions

This telephone has an adjustable ringer, and a message waiting/incoming call indicator light which are part of the telephone. If you want to activate the message waiting light, refer to Task 25, *Message Center*.

### Hardware

The installation of cabling, and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.

Check with your system maintainer to ensure that the necessary digitone receiver cards are installed and programmed.



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## New M8000 telephone

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### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a particular sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M8000 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator. For example, the user's manager often wants controls placed on the user's calling capabilities. The default responses do not place these controls on the user. Also, the telephone system administrator might want to implement corporate-wide policies for telephones which are not met through the default choices.

*Appendix I* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for the prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on the prompts and responses in all of the administration overlay programs.

### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.



## New M8000 telephone

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Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory number

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software, package 150, is equipped on the system. Without DN Expansion, the range is one to four digits.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DN**s appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time.

**Multiple Appearance DN**s appear on more than one telephone, or more than one key on a telephone such as a digital telephone.

Refer to Task 40, *Multiple Appearance DN Redirection Prime* for important information on a Multiple Appearance DN feature.

## New M8000 telephone



There are two configurations to choose from when dealing with Multiple Appearance DN's, Single Call and Multiple Call.

### Single Call DN

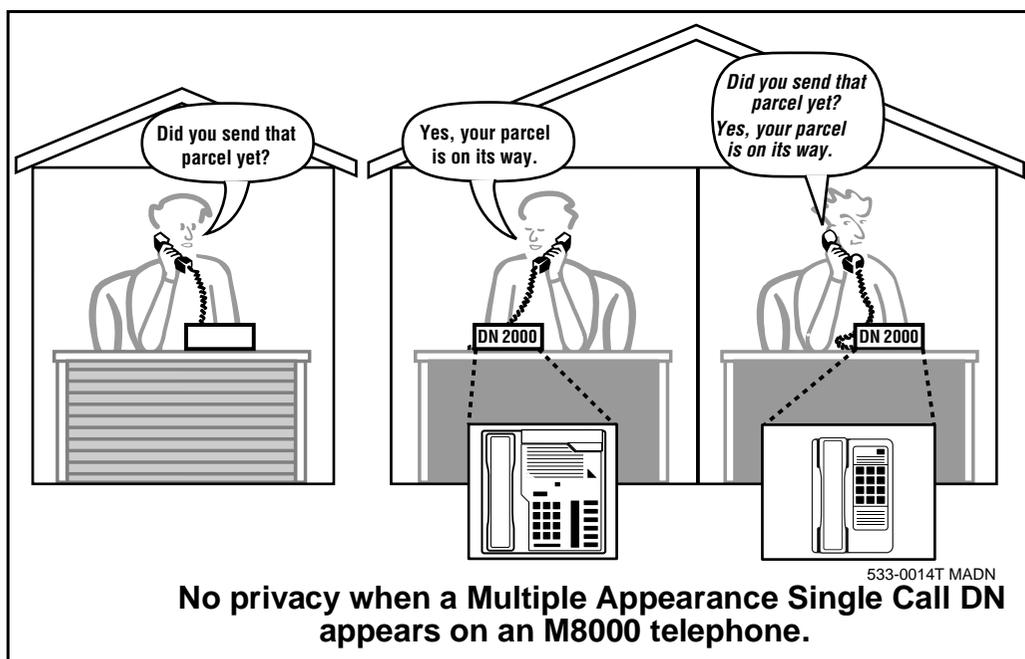
The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.



Unless programmed otherwise, a Single Call configuration is the default configuration of a DN when it is programmed on a dial telephone.

If the same Single Call DN is shared between an M8000 telephone and an SL-1-type or digital telephone, there is no way to prevent a user from breaking in on an active call in progress on the shared DN.





## New M8000 telephone



If privacy is important, choose one of the following two options:

- ◆ do not program the same Single Call DN on an M8000 telephone and an SL-1-type or digital telephone
- ◆ replace the M8000 telephone with an SL-1-type or digital telephone. There is privacy on shared Single Call DN's on these types of telephones

### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

A Multiple Call DN is not treated as busy until there are calls on all the programmed appearances of the DN. There can be a maximum of 16 appearances of one DN on systems using software prior to Release 13; after that release there can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching the maximum numbers. Consult with your system supplier before you implement Multiple Appearance DN's.

### Multiple Call Class of Service

When you want to make a DN on an M8000 telephone a Multiple Call DN, you activate this in the Class of Service.



*With X11 Release 15.58F software, this Class of Service is used along with the Centralized Multiple Line Emulation feature. Discuss the application of this feature with your supplier. It is beyond the scope of this book.*

*With X11 Release 20 software, this Class of Service is used in conjunction with the use of Meridian COMPANION™ wireless telephones on your system.*

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## New M8000 telephone

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### Consistent configuration

*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M8000 telephone.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and may also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

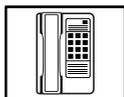
- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module in this book.



### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DN's, you can request a DN-Block printout. This printout



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also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

If you are using a system running with Release 15 or later software, it can be equipped with either loops or Superloops. If you are using a system with software prior to Release 15, the system can be equipped with only loops. Loops and Superloops belong in the Network Equipment part of the system.

If you are not sure of what type(s) of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment.

Refer to the *You should know this* module for more information on the hardware of your system.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

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There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the loop, or Superloop, to which you are adding this telephone.

Loops and Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each loop or Superloop is kept within the recommended guidelines. If all of your existing loops and/or Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards. There are three types of line cards for M8000 telephones: single-, double-, or quadruple-density.

Single-density line cards connect to a maximum of four telephones. Double-density line cards connect to a maximum of eight telephones. Quadruple (quad) density line cards connect to a maximum of sixteen telephones.

Systems using Superloops can use *intelligent* line cards. They are called intelligent because they possess microprocessors.

As of Release 20, double-density intelligent line cards are available for off-premises extensions. They connect to a maximum of eight telephones.

On-site M8000 telephones can be connected to quadruple-density intelligent line cards which connect to a maximum of 16 telephones.



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## New M8000 telephone

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### Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

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For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

### Class of Service (CLS)

When you are programming telephones using LD 10, you must enter a Class of Service for each one which prepares the system for the type of outpulsing to be transmitted from the telephone.

The choices are either dial pulse (DIP), Digitone (DTN), or none (manual line service MNL).

**Table 56**  
**Software release and default setting**

Release	Default
19 or 20	DTN
18 or earlier	DIP



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For an M8000 telephone, program the TN for DTN service. Once you find out what release of software your system has, you might find that DTN is the default.

When you install an M8000 telephone, the impact of programming incorrectly is as follows.

When any Digitone-type telephone such as the M8000 with a DTN class of service initiates a call, the system finds and reserves a digitone receiver (DTR) unit on a DTR card for that telephone. It is reserved for that telephone while the call is dialed. Because of this, the outpulsed tones are translated by the DTR into digital messages suitable for the CPU. The CPU can then translate what the user is dialing.

When an M8000 telephone is programmed incorrectly with a DIP Class of Service, the system does not reserve a DTR when the telephone user tries to initiate a call. (A digitone receiver is not required when a dial telephone is used.) As a result, the telephone user receives dial tone but cannot make calls.

You can read about digitone receivers in the Peripheral Equipment section of the *You should know this* module in this guide.

## Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

This telephone has very basic capabilities. It is designed for economy. The advantages and capabilities of the other M8000-series telephones might be appropriate for certain users.

### Provisioning digitone receivers (DTRs)

Your system supplier must configure your system with a sufficient quantity of DTRs to provide a good grade of service to the Digitone-type telephone users, including the M8000 telephones. If that is not

## New M8000 telephone



done, dial tone could be delayed for users of any Digitone-type telephones, and therefore the level of service is poor. As you add more and more Digitone-type telephones after the initial installation of the system, your system supplier might need to reprovision your system for additional DTRs.

You know it is time to look at the provisioning issue if you start to get complaints about delayed dial tone exclusively from users of Digitone-type telephones and incoming Digitone trunks.

Traffic studies can help you to calculate the proper quantity of DTRs you require based on the actual digitone traffic load offered to the system. For more information on what a traffic study can show you, refer to the *Traffic* module in this book. (Refer to the information on studies TFS002 and TFS003).

### Control tips



- ◆ M8000 telephone users who share DNs with other users must be careful not to break in on active calls. Consider installing a system of lights which shows when the DN is in use. If lack of privacy continues to be a problem, consider a change to SL-1-type or digital telephones.

### Administration tips



- ◆ If users report problems such as delayed dial tone, report the user's telephone type to your system maintainer along with the report of the problem.

If the telephones are M8000, the maintainer will need to investigate whether there are:

- faulty DTRs
- unprogrammed DTRs
- DTRs on busy loops



## New M8000 telephone

- loops with high numbers of Digitone-type telephones and DTRs
- insufficient DTRs

You can reduce your trouble-shooting time, if you identify as much pertinent information as possible. For example, the user's DN, and the time when the problem occurred are two pieces of important information.

### Training tips



- ◆ Avoid problems by doing refresher training on an ongoing basis. M8000 telephone users must remember a number of different feature access codes. They might need reminders after the initial training in order to effectively use all of the features they need. This helps them get the most out of the system, and in turn the system provides them with the expected benefits.
- ◆ Short customized lists of feature instructions and access codes for each user are worthwhile. Make them small enough to be placed underneath the telephone where they are readily accessible.
- ◆ If Flexible Feature codes are in use on your system, keep the codes as simple as possible. Users will be confused and aggravated if you implement codes which are difficult to use.

It is not a good idea to implement several codes for each feature unless you have users who are each accustomed to a different code and they are difficult to retrain.

For more information on Flexible Feature codes refer to the *You should know this* module in this book.

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### What to have ready

Make the following preparations before you do the basic programming of a new M8000 telephone.

**Table 57**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN.
✓		Determine the TN which is assigned to this telephone. If you do not assign TNs, ask your system supplier.
✓		Find out the density of the line card for the telephone. In other words, find out how many units are present on the card.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.



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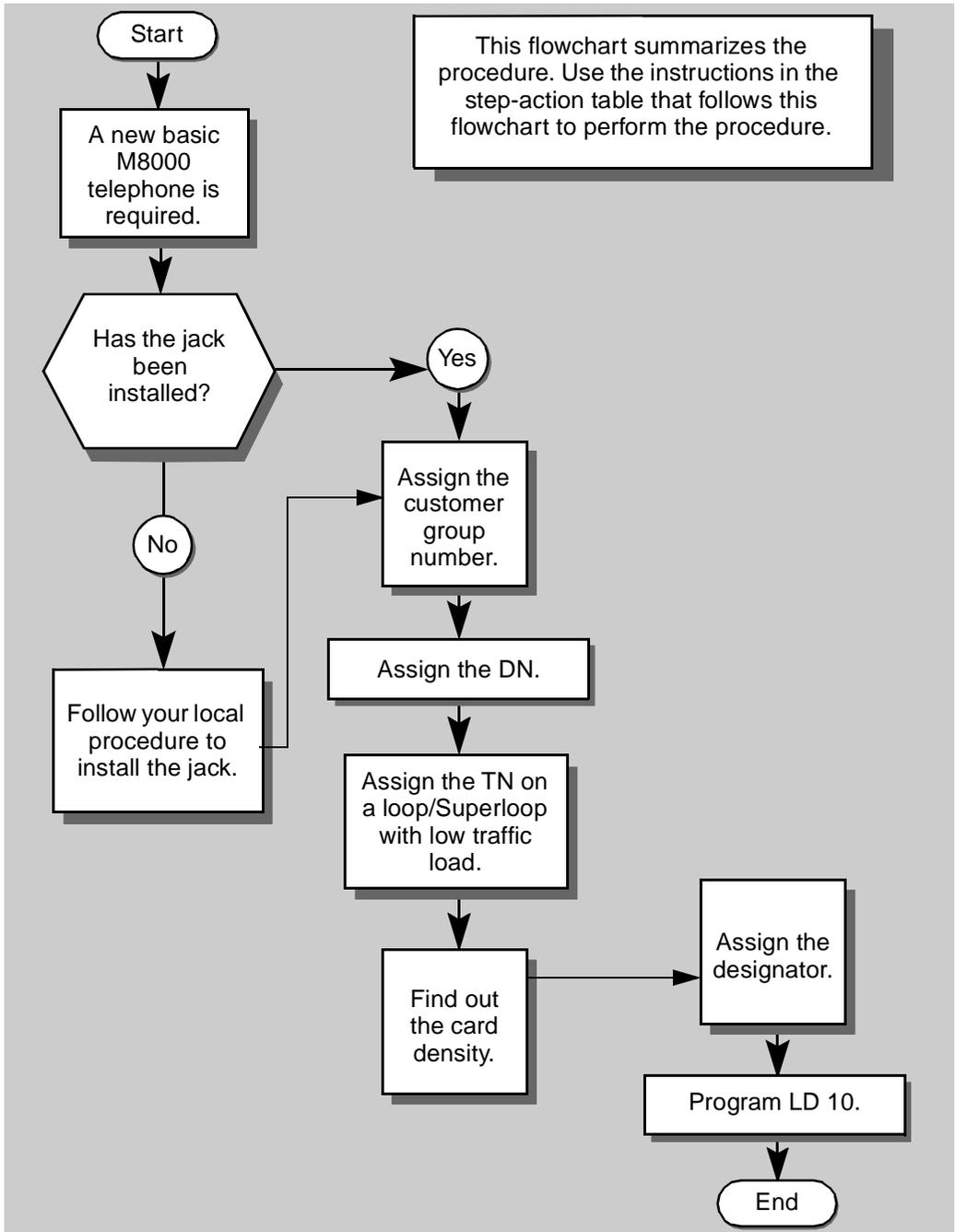
*Appendix 1* (for LD 10) at the back of the book lists the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M8000 telephone.

## New M8000 telephone





## New M8000 telephone

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

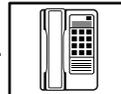
This step-action table covers the prompts related to the implementation of a basic M8000 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP ACTION									
<b>1</b>	<b>Arrange to have a new jack installed, if required</b> Talk to your system supplier to get this done.								
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>								
	<table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>the telephone is being added to an existing customer group</td> <td>step 3</td> </tr> <tr> <td>the telephone is the first one in a new customer group</td> <td>step 8</td> </tr> </tbody> </table>	If	Do	the telephone is being added to an existing customer group	step 3	the telephone is the first one in a new customer group	step 8		
If	Do								
the telephone is being added to an existing customer group	step 3								
the telephone is the first one in a new customer group	step 8								
<b>3</b>	<b>Find out your customer group number.</b>								
	<table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you do not know your customer group number and you have access to the print overlay programs</td> <td>step 4</td> </tr> <tr> <td>you do not know your customer group number and you do not have access to the print programs</td> <td>Ask your system maintainer what your customer group number is, then do step 10.</td> </tr> <tr> <td>you know your customer group number</td> <td>step 10</td> </tr> </tbody> </table>	If	Do	you do not know your customer group number and you have access to the print overlay programs	step 4	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.	you know your customer group number	step 10
If	Do								
you do not know your customer group number and you have access to the print overlay programs	step 4								
you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.								
you know your customer group number	step 10								
— continued —									

## New M8000 telephone



STEP	ACTION						
4	<p><b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
5	<p><b>Print the DN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 22 or</p> <p>&gt; LD 20 or (Release 17 or later)</p> <p>&gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</p> <p><b>REQ</b> PRT Request a printout</p> <p><b>TYPE</b> DNB DN Block</p> <p><b>CUST</b> &lt;cr&gt; All Customer groups</p> <p><b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <p><b>U.data</b>      <b>P.data</b>      small systems</p> <p>or</p> <p><b>MEM AVAIL: (U/P) USED:TOT:</b>      large systems</p> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p> <p style="text-align: center;">— continued —</p>						



## New M8000 telephone

STEP	ACTION									
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or            &gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <table> <tr> <td><b>REQ</b></td> <td>PRT</td> <td>Request a Printout</td> </tr> <tr> <td><b>TYPE</b></td> <td>TNB</td> <td>TN Block</td> </tr> <tr> <td><b>TN</b></td> <td>L S C U</td> <td>Input the Loop Shelf Card and Unit number of the other telephone</td> </tr> </table> <p>You get a printout of the customer group number of the other telephone.</p>	<b>REQ</b>	PRT	Request a Printout	<b>TYPE</b>	TNB	TN Block	<b>TN</b>	L S C U	Input the Loop Shelf Card and Unit number of the other telephone
<b>REQ</b>	PRT	Request a Printout								
<b>TYPE</b>	TNB	TN Block								
<b>TN</b>	L S C U	Input the Loop Shelf Card and Unit number of the other telephone								
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>									
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>									
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>									
<b>10</b>	<p><b>Find out what DN to assign.</b></p> <table> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>the DN is shared with another telephone</td> <td>step 11</td> </tr> <tr> <td>the DN is unique</td> <td>step 12</td> </tr> </tbody> </table>	If	Do	the DN is shared with another telephone	step 11	the DN is unique	step 12			
If	Do									
the DN is shared with another telephone	step 11									
the DN is unique	step 12									
— continued —										

## New M8000 telephone



STEP	ACTION	
<b>11</b>	<b>Find out how the DN is to be shared.</b>	
	<b>If</b>	<b>Do</b>
	the telephone can be an extension of an existing telephone	Ask your system supplier to install the jack accordingly and connect the telephone — no programming is required.
	the telephone is to have its own TN	step 15
<b>12</b>	<b>Find out what DNs are available.</b>	
	<b>If</b>	<b>Do</b>
	you know what DN you want to assign	step 15
	your system software is Release 19 or later	step 13
	your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 14.
<b>13</b>	<b>Print unused DNs in your customer group.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b> PRT	Print
	<b>TYPE</b> LUDN	List unused DNs
	<b>CUST</b> 0 – 99	Input customer group number
	You get a printout of the unused DNs in your customer group.	
	— continued —	



## New M8000 telephone

STEP	ACTION	
14	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>	
15	<b>Find out what Terminal Numbers are available for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	you have access to the print overlay programs	step 16
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 17.
16	<b>Print out the available TNs on your system.</b>	
	Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20 or	
	> LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)	
	<b>REQ</b>	List all unused units
	LJU	List unused voice units (Release 19 or later)
	<b>TYPE</b>	Dial or Digitone-type telephone
	500	
	You get a printout of the available dial and Digitone-type telephone TNs.	
17	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
— continued —		

## New M8000 telephone



STEP	ACTION						
18	Choose the TN for the new telephone.						
19	Verify with your system maintainer that the new jack is cross-connected to the TN you chose.						
20	Find out the density of the line card which has the TN you are using.						
	<table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>it is a new line card</td> <td>Ask your system supplier about the card density.</td> </tr> <tr> <td>it is an existing line card</td> <td>Use the default density setting.</td> </tr> </tbody> </table>	If	Do	it is a new line card	Ask your system supplier about the card density.	it is an existing line card	Use the default density setting.
If	Do						
it is a new line card	Ask your system supplier about the card density.						
it is an existing line card	Use the default density setting.						
21	Assign a Designator.						
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.						
22	Program the new telephone.						
	<p>Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <pre>&gt; LD 10 REQ NEW          New telephone TYPE 500         Dial or Digitone-type telephone TN L S C U       Input the TN (Loop Shelf Card Unit number) CDEN             Input the card density if on a new line card                 single-density                 DD             double-density                 4D            quad-density                 &lt;cr&gt;          Carriage return if line card already programmed</pre>						
— continued —							

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## New M8000 telephone

### STEP ACTION

#### 22 continued ...

<b>DES</b>	A . . A	Designator maximum six characters long
<b>CUST</b>	0 – 99	customer group number
<b>DN</b>	X . . X	Directory Number
		7 digits maximum with DN Expansion (DNXP) software equipped
		4 digits maximum without DNXP
Carriage return until you see the prompt CLS		
<b>CLS</b>	DTN	Input the Outpulsing type DTN (Digitone), default Release 19 and later Input DTN, or <cr> if it is default on your system

Carriage return until you see either of the following messages:

<b>U.data</b>	<b>P.data</b>	small systems
or		
<b>MEM AVAIL: (U/P)</b>	<b>USED:TOT:</b>	large systems

#### 23 Check that the telephone works.

Try to make a call. Try to receive a call.

<b>If</b>	<b>Do</b>
telephone works	step 24
telephone does not work	step 1

— continued —

## New M8000 telephone



STEP	ACTION								
24	<p><b>Arrange for a data dump to be performed.</b></p> <table border="0"> <tr> <td style="vertical-align: top;"><b>If</b></td> <td style="vertical-align: top;"><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>you do not have access to LD 43</td> <td>Contact your system supplier.</td> </tr> <tr> <td>you have access to LD 43</td> <td>step 25</td> </tr> </table>	<b>If</b>	<b>Do</b>	.....		you do not have access to LD 43	Contact your system supplier.	you have access to LD 43	step 25
<b>If</b>	<b>Do</b>								
.....									
you do not have access to LD 43	Contact your system supplier.								
you have access to LD 43	step 25								
25	<p><b>Perform a data dump to permanently store the programming you have just completed.</b></p> <div style="border: 2px solid black; padding: 10px; margin: 10px 0;">  <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div> <p>Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.</p> <p>&gt; LD 43</p> <p>. EDD &lt;cr&gt;</p>								
26	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b></p> <p>or</p> <p><b>DATA DUMP COMPLETE</b></p> <table border="0"> <tr> <td style="vertical-align: top;"><b>If</b></td> <td style="vertical-align: top;"><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 27</td> </tr> </table> <p style="text-align: center;">— continued —</p>	<b>If</b>	<b>Do</b>	.....		data dump fails	Contact your system supplier.	data dump succeeds	step 27
<b>If</b>	<b>Do</b>								
.....									
data dump fails	Contact your system supplier.								
data dump succeeds	step 27								

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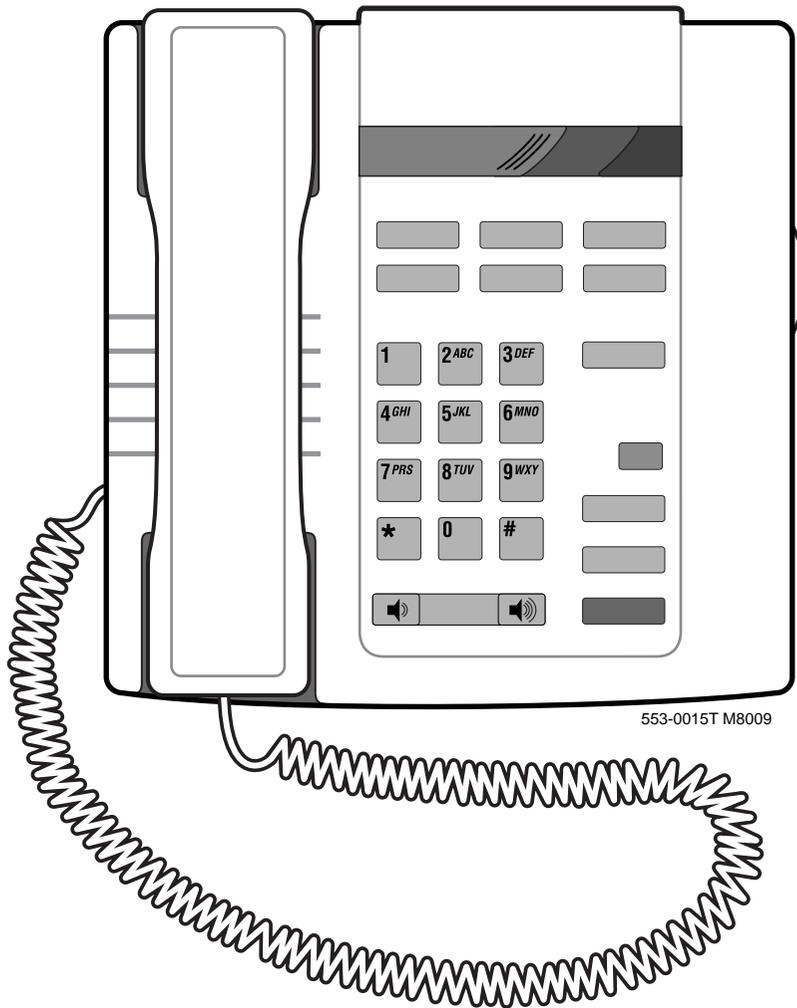
**New M8000 telephone**

STEP	ACTION
<b>27</b>	<b>Terminate this overlay program.</b>  • * * * *
<b>28</b>	<b>Terminate this programming session.</b>  Log off.  > LOGO
<b>29</b>	<b>You have now completed the minimum programming required to implement a basic new M8000 telephone.</b>
	

## New M8009 telephone

### Purpose

The information in this Task module will help you if a user at your site needs a new M8009 telephone.



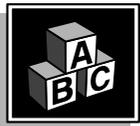


## New M8009 telephone

If the user needs a new telephone, install an M8009 telephone if:

- ◆ the user needs only one Directory Number (DN)
- ◆ the user requires the use of a telephone that transmits tones
- ◆ the user wants to adjust the volume of the sound coming through the receiver
- ◆ the user needs to put calls on hold and does not want to dial a feature code to do it
- ◆ the Directory Number (DN) assigned to this telephone will have extensions assigned to other phones and the user needs to know when the DN is in use by one of the extensions
- ◆ the user wants buttons for easy access to features or commonly dialed telephone numbers

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Built-in functions

This telephone has an adjustable ringer, and a message waiting/incoming call indicator light which are part of the telephone. If you want to activate the message waiting light, refer to Task 25, *Message Center*.

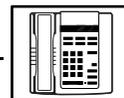
### Hardware

The installation of cabling, and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

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## New M8009 telephone

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When you are installing a new telephone, ask your system maintainer to do the physical installation work.



Check with your system maintainer to ensure that the necessary digitone receiver cards are installed and programmed.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M8009 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator. For example, the user's manager often wants controls placed on the user's calling capabilities. The default responses do not place these controls on the user. Also, the telephone system administrator may want to implement corporate-wide policies for telephones which are not met through the default choices.

*Appendix I* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.



## New M8009 telephone

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### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, DNs can be one to four digits.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN.

The term *appearance* means a DN has been assigned to a telephone or a key on a telephone.

## New M8009 telephone



**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone.

Refer to Task 40, *Multiple Appearance DN Redirection Prime* for important information on a Multiple Appearance DN feature.

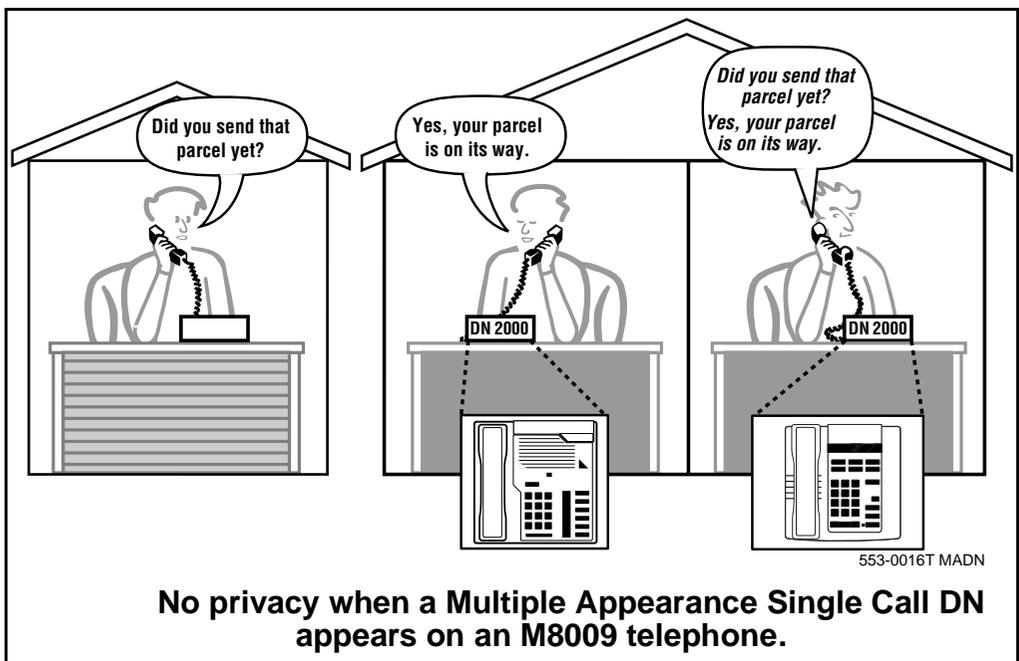
There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

### Single Call DN

The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.

Unless programmed otherwise, a Single Call configuration is the default configuration of a DN when it is programmed on an M8009 telephone.





## New M8009 telephone

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If the same Single Call DN is shared between an M8009 telephone and an SL-1-type or digital telephone, there is no way to prevent a user from breaking in on an active call in progress on the shared DN.

If privacy is important, choose one of the following two options:

- ◆ do not assign the same Single Call DN to an M8009 telephone and an SL-1-type or digital telephone
- ◆ replace the M8009 telephone with an SL-1-type or digital telephone. There is privacy on shared Single Call DN's on these types of telephones

### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

A Multiple Call DN is not treated as busy until there are calls on all the programmed appearances of the DN. There can be a maximum of 16 appearances of one DN on systems using software prior to Release 13; after that release there can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching the maximum numbers. Consult with your system supplier before you implement Multiple Appearance DN's.

### Multiple Call Class of Service

When you want to make a DN on an M8009 telephone a Multiple Call DN, you activate this in the Class of Service.

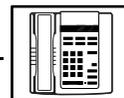


*With Release 15.58F software, this Class of Service is used along with the Centralized Multiple Line Emulation feature. Discuss the application of this feature with your supplier. It is beyond the scope of this book.*

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## New M8009 telephone

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*With Release 20 software, this Class of Service is used in conjunction with the use of Meridian COMPANION™ wireless telephones on your system.*



### Consistent configuration

*Whether you choose Single Call or Multiple Call, all appearances of one DN must be the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M8009 telephone.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module in this book.



## New M8009 telephone

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### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DNs, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

If you are using a system running with Release 15 or later software, it can be equipped with either loops or Superloops. If you are using a system with software prior to Release 15, the system can be equipped with only loops. Loops and Superloops belong in the Network Equipment part of the system.

If you are not sure of what type(s) of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment.

Refer to the *You should know this* module for more information on the hardware of the system.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

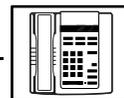
Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

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## New M8009 telephone

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### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the loop, or Superloop, to which you are adding this telephone.

Loops and Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each loop or Superloop is kept within the recommended guidelines. If all of your existing loops and/or Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards. There are three types of line cards for M8009 telephones: single-, double-, or quadruple-density.

Single-density line cards connect to a maximum of four telephones. Double-density line cards connect to a maximum of eight telephones. Quadruple (quad) density line cards connect to a maximum of sixteen telephones.

Systems using Superloops can use *intelligent* line cards. They are called intelligent because they possess microprocessors.



## New M8009 telephone

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As of Release 20, double-density intelligent line cards are available for off-premises extensions. They connect to a maximum of eight telephones.

On-site M8009 telephones can be connected to quadruple-density intelligent line cards which connect to a maximum of 16 telephones.

### Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

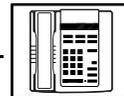
- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

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## New M8009 telephone

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For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.



## New M8009 telephone

### Class of Service (CLS)

When you are programming telephones using LD 10, you must enter a Class of Service for each one which prepares the system for the type of outpulsing to be transmitted from the telephone.

The choices are either dial pulse (DIP), Digitone (DTN), or none (manual line service MNL).

**Table 58**  
**Software release and default setting**

Release	Default
19 or 20	DTN
18 or earlier	DIP

For the M8009 telephone, program the TN for DTN service. Once you find out what release of software your system has, you might find that DTN is the default.

When you install an M8009 telephone, the impact of programming incorrectly is as follows.

When any Digitone-type telephone such as the M8009 with a DTN Class of Service initiates a call, the system finds and reserves a digitone receiver (DTR) unit on a DTR card for that telephone. It is reserved for that telephone while the call is dialed. Because of this, the outpulsed tones are translated by the DTR into digital messages suitable for the CPU. The CPU can then translate what the user is dialing.

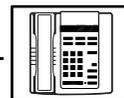
When an M8009 telephone is programmed incorrectly with a DIP Class of Service, the system does not reserve a DTR when the telephone user tries to initiate a call. (A digitone receiver is not required when a dial telephone is used.) As a result, the telephone user receives dial tone but cannot make calls.

You can read about digitone receivers in the Peripheral Equipment section of the *You should know this* module in this guide.

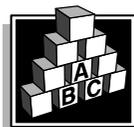
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## New M8009 telephone

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### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

#### Parallel-line jacks

A parallel-line jack is provided in the telephone, for connection to an extension telephone, or a fax or a modem. Your system supplier can help you install these devices if you require them.

#### Provisioning digitone receivers (DTRs)

Your system supplier must configure your system with a sufficient quantity of DTRs to provide a good grade of service to the Digitone-type telephone users, including the M8009 telephones. If that is not done, dial tone could be delayed for users of any Digitone-type telephones, and therefore the level of service could be poor. As you add more and more Digitone-type telephones after the initial installation of the system, your system supplier might need to reprovision your system periodically for additional DTRs.

You know it is time to look at the provisioning issue if you start to get complaints about delayed dial tone exclusively from users of Digitone-type telephones and incoming Digitone trunks.

Traffic studies can help you to calculate the proper quantity of DTRs you require based on the actual digitone traffic load offered to the system. For more information on what a traffic study can show you, refer to the *Traffic* module in this book. (Refer to the information on studies TFS002 and TFS003).



## New M8009 telephone

### Control tips



- ◆ M8009 telephone users who share DNs with other users must be careful not to break in on active calls. The indicator light on the telephone lights up when the DN is in use at an extension of that telephone. Users must learn not to initiate a call when the indicator light is on. When a telephone with a separate TN and the same DN as this telephone is in use, the indicator light on this telephone is not on. If lack of privacy continues to be a problem, consider a change to SL-1-type or digital telephones.

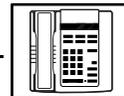
### Administration tips



- ◆ If users report problems like delayed dial tone, report the user's telephone type to your system maintainer along with the report of the problem. If the telephones are M8009, the maintainer will need to investigate whether there are:
  - faulty DTRs
  - unprogrammed DTRs
  - DTRs on busy loops
  - loops with high numbers of Digitone-type telephones and DTRs
  - insufficient DTRs

You can reduce your trouble-shooting time, if you identify as much pertinent information as possible. For example, the user's DN, and the time when the problem occurred are two pieces of important information.

## New M8009 telephone



### Training tips



- ◆ Train users on how to use the LINK key. This helps them when they are transferring and conferencing calls.
- ◆ There are six programmable keys on this telephone. If you want uniformity, decide which feature access codes or telephone numbers are to be programmed on all M8009 telephones.
- ◆ Decide who is going to program the keys; you, the user, or the system supplier.

Select responsible users to do this function to ensure the programming is done correctly. This will reduce repair reports and costs that result from incorrect programming.

- ◆ Even though the most common feature access codes can be programmed on the six keys, users might, from time to time, need access to other features. To do this, they must dial feature access codes. Refresher training helps to keep users' knowledge levels current. This helps them get the most out of the system and in turn the system provides them with the expected benefits.
- ◆ Short, customized lists of feature instructions and access codes for your users are worthwhile. Make the lists small enough to be placed underneath the telephone where they are readily accessible.
- ◆ If Flexible Feature codes are in use on your system and if users are supposed to dial these codes, keep the codes as simple as possible. Users will be confused and aggravated if you implement codes that are difficult to use.

If the codes are going to be accessed solely from keys, use longer codes. Save the shorter, easier to remember codes for features that users must dial.

It is not a good idea to implement several codes for each feature unless you have users who are each accustomed to a different code and they are difficult to retrain.

For more information on Flexible Feature codes refer to the *You should know this* module in this book.



## New M8009 telephone

### What to have ready

Make the following preparations before you do the basic programming of a new M8009 telephone.

**Table 59**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN.
✓		Determine the TN which is assigned to this telephone. If you do not assign TNs, ask your system supplier.
✓		Find out the density of the line card for the telephone. In other words, find out how many units are present on the card.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* module for further information on many of these additional features and services.

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## New M8009 telephone

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*Appendix 1* (for LD 10) at the back of the book list all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

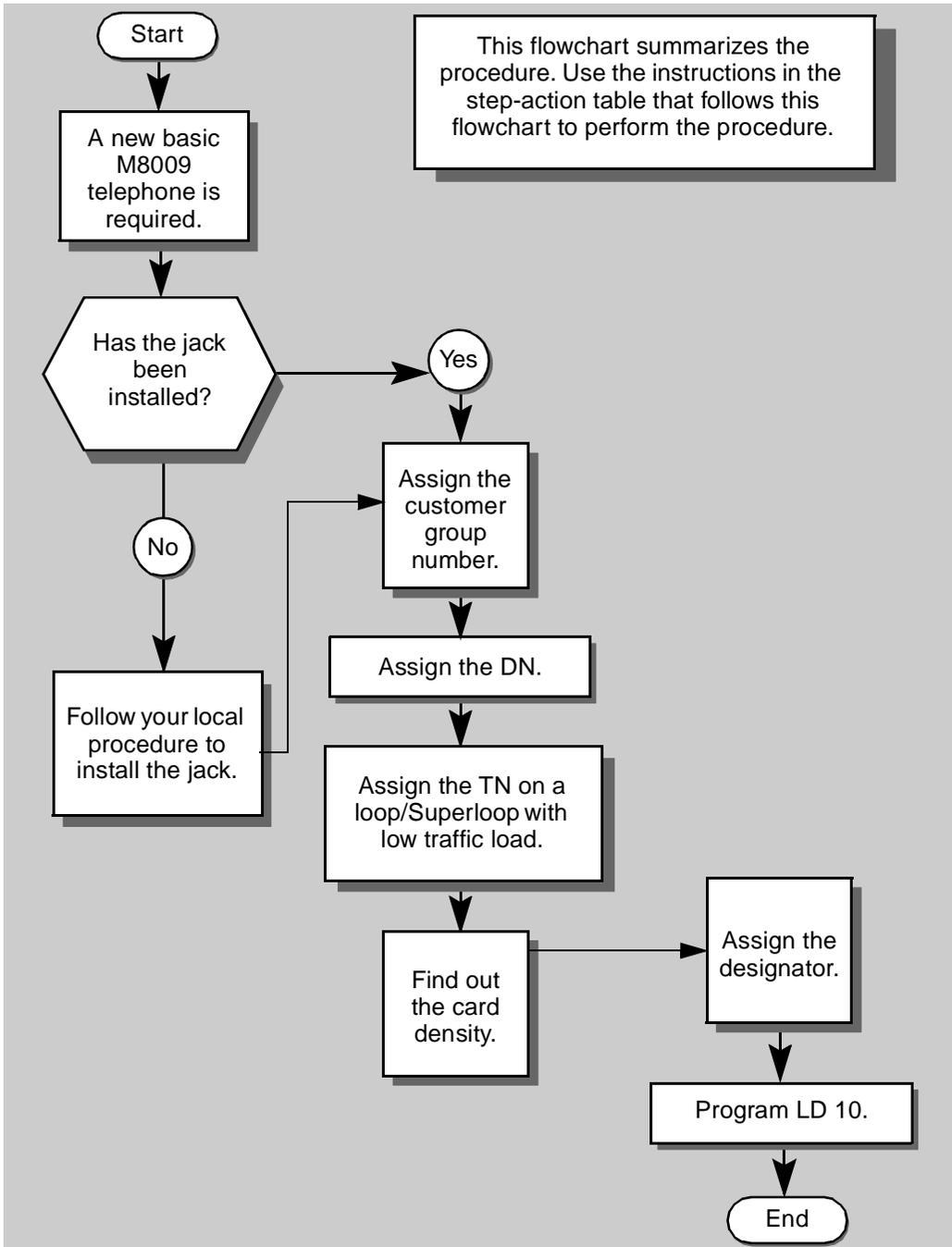
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

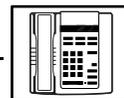
A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M8009 telephone.



## New M8009 telephone



## New M8009 telephone



The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M8009 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

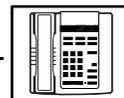
STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>— continued —</b>		



## New M8009 telephone

STEP	ACTION						
4	<p><b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
5	<p><b>Print the DN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <pre>&gt; LD 22 or &gt; LD 20 or (Release 17 or later) &gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</pre> <p><b>REQ</b> PRT Request a printout  <b>TYPE</b> DNB DN Block  <b>CUST</b> &lt;cr&gt; All Customer groups  <b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <pre>U.data P.data small systems or MEM AVAIL: (U/P) USED:TOT: large systems</pre> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p>						
— continued —							

## New M8009 telephone



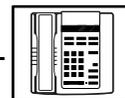
STEP	ACTION						
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>      PRT              Request a Printout</p> <p><b>TYPE</b>     TNB                TN Block</p> <p><b>TN</b>        L S C U            Input the Loop Shelf Card and Unit number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>						
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>						
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>						
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>						
<b>10</b>	<p><b>Find out what DN to assign.</b></p> <table border="0"> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>the DN is shared with another telephone</td> <td>step 11</td> </tr> <tr> <td>the DN is unique</td> <td>step 12</td> </tr> </tbody> </table> <p style="text-align: center;">— continued —</p>	If	Do	the DN is shared with another telephone	step 11	the DN is unique	step 12
If	Do						
the DN is shared with another telephone	step 11						
the DN is unique	step 12						



## New M8009 telephone

STEP	ACTION	
<b>11</b>	<b>Find out how the DN is to be shared.</b>	
	<b>If</b>	<b>Do</b>
	the telephone can be an extension of an existing telephone	Ask your system supplier to install the jack accordingly and connect the telephone — no programming is required.
	the telephone is to have its own TN	step 15
<b>12</b>	<b>Find out what DNs are available.</b>	
	<b>If</b>	<b>Do</b>
	you know what DN you want to assign	step 15
	your system software is Release 19 or later	step 13
	your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 14.
<b>13</b>	<b>Print unused DNs in your Customer Group.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b>	PRT            Print
	<b>TYPE</b>	LUDN        List unused DNs
	<b>CUST</b>	0 – 99      Input customer group number
	You get a printout of the unused DNs in your customer group.	
— continued —		

## New M8009 telephone



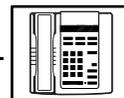
STEP	ACTION	
14	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>	
15	<b>Find out what Terminal Numbers are available for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	you have access to the print overlay programs	step 16
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 17.
16	<b>Print out the available TNs on your system.</b>	
	Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20 or	
	> LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)	
	<b>REQ</b>	List all unused units
	LUVU	List unused voice units (Release 19 or later)
	<b>TYPE</b>	Dial or Digitone-type telephone
	500	
	You get a printout of the available dial and Digitone-type telephone TNs.	
17	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
	— continued —	



## New M8009 telephone

STEP	ACTION																								
18	<b>Choose the TN for the new telephone.</b>																								
19	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>																								
20	<b>Find out the density of the line card which has the TN you are using.</b>																								
	<table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>it is a new line card</td> <td>Ask your system supplier about the card density.</td> </tr> <tr> <td>it is an existing line card</td> <td>Use the default density setting.</td> </tr> </tbody> </table>	If	Do	it is a new line card	Ask your system supplier about the card density.	it is an existing line card	Use the default density setting.																		
If	Do																								
it is a new line card	Ask your system supplier about the card density.																								
it is an existing line card	Use the default density setting.																								
21	<b>Assign a Designator.</b>																								
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.																								
22	<b>Program the new telephone.</b>																								
	<p>Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <pre>&gt; LD 10</pre> <table border="0"> <tr> <td><b>REQ</b></td> <td>NEW</td> <td>New telephone</td> </tr> <tr> <td><b>TYPE</b></td> <td>500</td> <td>Dial or Digitone-type telephone</td> </tr> <tr> <td><b>TN</b></td> <td>L S C U</td> <td>Input the TN (Loop Shelf Card Unit number)</td> </tr> <tr> <td><b>CDEN</b></td> <td></td> <td>Input the card density if on a new line card</td> </tr> <tr> <td></td> <td>SD</td> <td>single-density</td> </tr> <tr> <td></td> <td>DD</td> <td>double-density</td> </tr> <tr> <td></td> <td>4D</td> <td>quad-density</td> </tr> <tr> <td></td> <td>&lt;cr&gt;</td> <td>Carriage return if line card already programmed</td> </tr> </table>	<b>REQ</b>	NEW	New telephone	<b>TYPE</b>	500	Dial or Digitone-type telephone	<b>TN</b>	L S C U	Input the TN (Loop Shelf Card Unit number)	<b>CDEN</b>		Input the card density if on a new line card		SD	single-density		DD	double-density		4D	quad-density		<cr>	Carriage return if line card already programmed
<b>REQ</b>	NEW	New telephone																							
<b>TYPE</b>	500	Dial or Digitone-type telephone																							
<b>TN</b>	L S C U	Input the TN (Loop Shelf Card Unit number)																							
<b>CDEN</b>		Input the card density if on a new line card																							
	SD	single-density																							
	DD	double-density																							
	4D	quad-density																							
	<cr>	Carriage return if line card already programmed																							
— continued —																									

## New M8009 telephone



### STEP ACTION

#### 22 continued ...

<b>DES</b>	A . . A	Designator maximum six characters long
<b>CUST</b>	0 – 99	customer group number 0 is default
<b>DN</b>	X . . X	Directory Number 7 digits maximum with DN Expansion (DNXP) software equipped 4 digits maximum without DNXP
Carriage return until you see the prompt CLS		
<b>CLS</b>	DTN	Input the Outpulsing type DTN (Digitone), default Release 19 and later Input DTN, or <cr> if it is default on your system

Carriage return until you see either of the following messages:

<b>U.data</b>	<b>P.data</b>	small systems
or		
<b>MEM AVAIL: (U/P)</b>	<b>USED:TOT:</b>	large systems

#### 23 Check that the telephone works.

Try to make a call. Try to receive a call.

<b>If</b>	<b>Do</b>
telephone works	step 24
telephone does not work	step 1

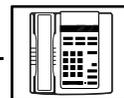
— continued —



## New M8009 telephone

STEP	ACTION								
24	<p><b>Arrange for a data dump to be performed.</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td colspan="2">.....</td> </tr> <tr> <td>you do not have access to LD 43</td> <td>Contact your system supplier.</td> </tr> <tr> <td>you have access to LD 43</td> <td>step 25</td> </tr> </tbody> </table>	If	Do	.....		you do not have access to LD 43	Contact your system supplier.	you have access to LD 43	step 25
If	Do								
.....									
you do not have access to LD 43	Contact your system supplier.								
you have access to LD 43	step 25								
25	<p><b>Perform a data dump to permanently store the programming you have just completed.</b></p> <div style="border: 2px solid black; padding: 10px; margin: 10px 0;">  <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div> <p>Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.</p> <pre>&gt; LD 43 . EDD &lt;cr&gt;</pre>								
— continued —									

## New M8009 telephone



STEP	ACTION						
26	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b> or <b>DATA DUMP COMPLETE</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;"><b>If</b></th> <th style="text-align: left;"><b>Do</b></th> </tr> </thead> <tbody> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 27</td> </tr> </tbody> </table>	<b>If</b>	<b>Do</b>	data dump fails	Contact your system supplier.	data dump succeeds	step 27
<b>If</b>	<b>Do</b>						
data dump fails	Contact your system supplier.						
data dump succeeds	step 27						
27	<p><b>Terminate this overlay program.</b></p> <p>. ****</p>						
28	<p><b>Terminate this programming session.</b></p> <p>Log off.</p> <p>&gt; LOGO</p>						
29	<p><b>You have now completed the minimum programming required to implement a basic new M8009 telephone.</b></p>						
							

**298** Making a telephone work

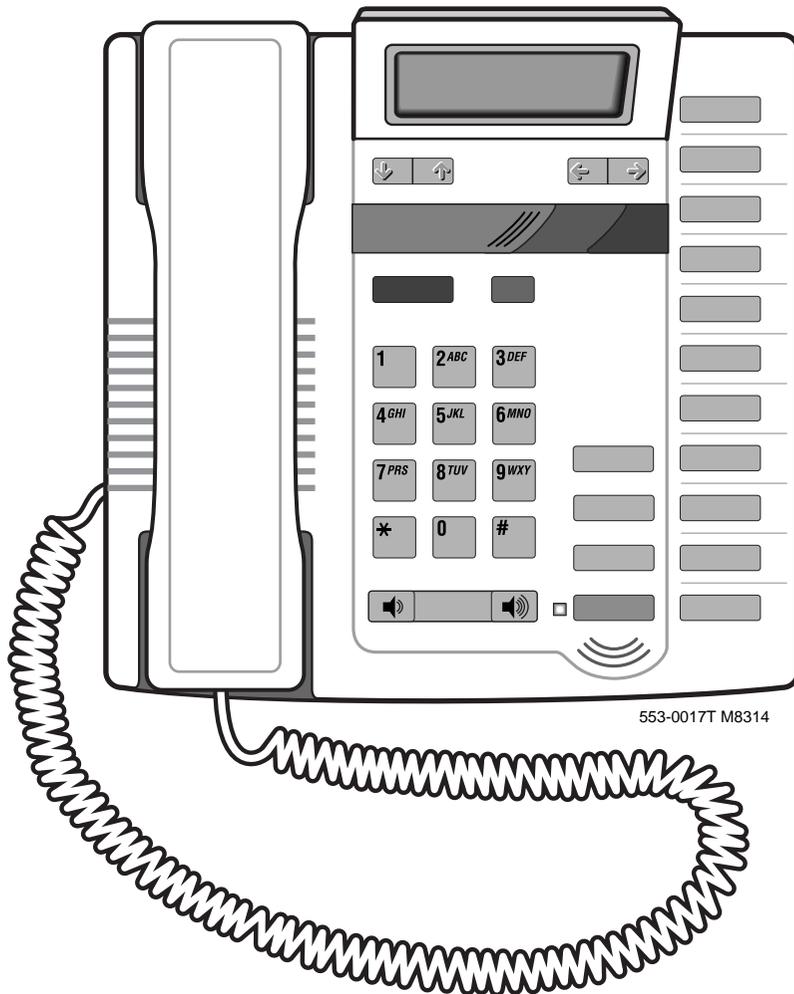
of 1776

**New M8009 telephone**

## New M8314 telephone

### Purpose

The information in this Task module will help you if a user at your site needs a new M8314 telephone.



553-0017T M8314



## New M8314 telephone

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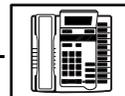
If the user needs a new telephone, install an M8314 telephone if:

- ◆ the user needs only one Directory Number (DN)
- ◆ the user requires the use of a telephone that transmits tones
- ◆ the user wants buttons for easy access to features or commonly dialed telephone numbers
- ◆ the user wants to be able to hear a conversation and speak to a caller without using the handset of the telephone (speakerphone capability)
- ◆ the user wants a display to make feature use very easy, to display a directory of names and telephone numbers and to show a call timer
- ◆ the user wants to adjust the volume of the sound coming through the receiver
- ◆ the user needs to put calls on hold and does not want to dial a feature code to do it
- ◆ the user needs to know when extensions of the DN are in use
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the users need the choice of English and French or English and Spanish words on the display when using features
- ◆ you want the users' telephones to have your company logo

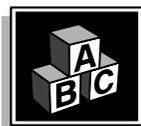
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## New M8314 telephone

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### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Built-in functions

The M8314 telephone has a message waiting/incoming call indicator light that is part of the telephone. If you want to activate the message waiting light, refer to Task 25, *Message Center*.

*The display on this telephone does not show you the Directory Number (DN) of the caller whether they are internal to your system or external. That functionality is provided by the digital telephones and the SL-1-type telephones.*

This telephone has a built-in handsfree unit. There is a Handsfree/Mute button to activate and deactivate it.

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.



Check with your system maintainer to ensure that the necessary digitone receiver cards are installed and programmed.



## New M8314 telephone

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### Power

This telephone requires external power in order for the display, the autodial buttons and the handsfree unit to function. Arrange with your system supplier to get the necessary power equipment ordered and installed.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M8314 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator. For example, the user's manager often wants controls placed on the user's calling capabilities. The default responses do not place these controls on the user. Also, the telephone system administrator may want to implement corporate-wide policies for telephones which are not met through the default choices.

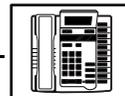
*Appendix I* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for the prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

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## New M8314 telephone

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### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, DNs can be one to four digits.

### Single Appearance or Multiple Appearance DN

You must understand the following terms in order to program a DN.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.



## New M8314 telephone

---

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone.

Refer to Task 40, *Multiple Appearance DN Redirection Prime* for important information on a Multiple Appearance DN feature.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

### Single Call DN

The DN can handle one call at a time.

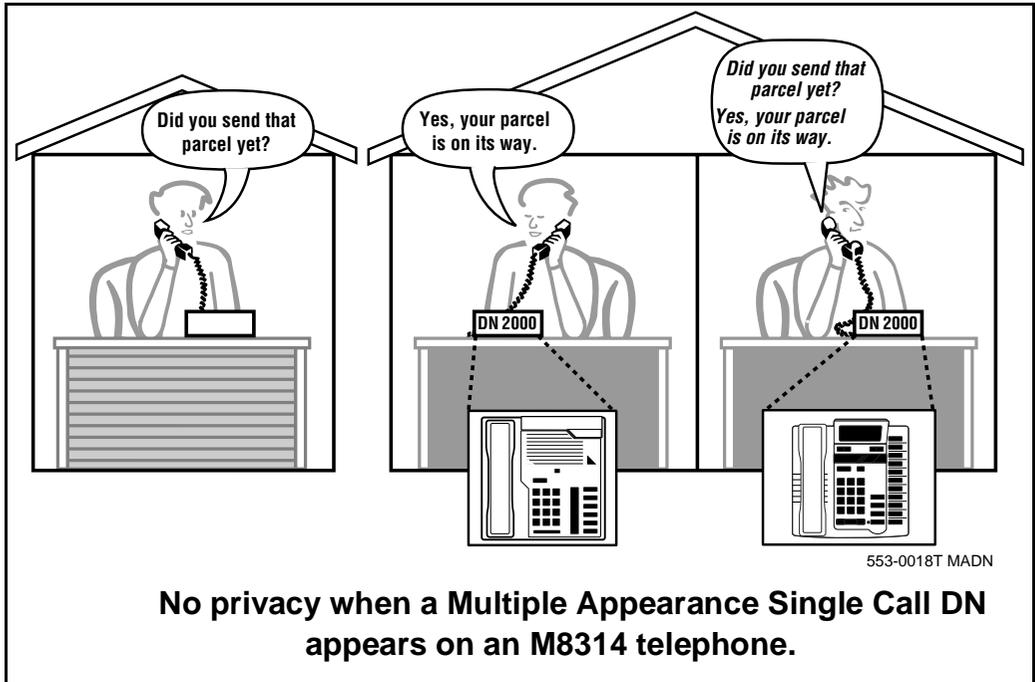
This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.

Unless programmed otherwise, a Single Call configuration is the default configuration of a DN when it is programmed on an M8314 telephone.



If the same Single Call DN is shared between an M8314 telephone and an SL-1-type or digital telephone, there is no way to prevent a user from breaking in on an active call in progress on the shared DN.

## New M8314 telephone



If privacy is important, choose one of the following two options:

- ◆ do not assign the same Single Call DN to an M8314 telephone and an SL-1-type or digital telephone
- ◆ replace the M8314 telephone with an SL-1-type or digital telephone. There is privacy on shared Single Call DN's on these types of telephones



## New M8314 telephone

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### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

A Multiple Call DN is not treated as busy until there are calls on all the programmed appearances of the DN. There can be a maximum of 16 appearances of one DN on systems using software prior to Release 13; after that release there can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching the maximum numbers. Consult with your system supplier before you implement Multiple Appearance DNs.

### Multiple Call Class of Service

When you want to make a DN on an M8314 telephone a Multiple Call DN, you activate this in the Class of Service.



*With Release 15.58F software, this Class of Service is used along with the Centralized Multiple Line Emulation feature. Discuss the application of this feature with your supplier. It is beyond the scope of this book.*

*With Release 20 software, this Class of Service is used in conjunction with the use of Meridian COMPANION™ wireless telephones on your system.*

### Consistent configuration



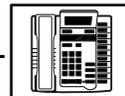
*Whether you choose Single Call or Multiple Call, all appearances of one DN must be the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M8314 telephone.

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## New M8314 telephone

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### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module.

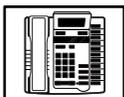
### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DN's, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.



### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.



## New M8314 telephone

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If you are using a system running with Release 15 or later software, it can be equipped with either loops or Superloops. If you are using a system with software prior to Release 15, the system can be equipped with only loops. Loops and Superloops belong in the Network Equipment part of the system.

If you are not sure of what type(s) of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment.

Refer to the *You should know this* module for more information on the hardware of the system.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the loop, or Superloop, to which you are adding this telephone.

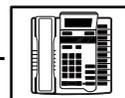
Loops and Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each loop or Superloop is kept within the recommended guidelines. If all of your existing loops and/or Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

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## New M8314 telephone

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Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards. There are three types of line cards for M8314 telephones: single-, double-, or quadruple-density.

Single-density line cards connect to a maximum of four telephones. Double-density line cards connect to a maximum of eight telephones. Quadruple (quad) density line cards connect to a maximum of sixteen telephones.

Systems using Superloops can use *intelligent* line cards. They are called intelligent because they possess microprocessors.

As of Release 20, double-density intelligent line cards are available for off-premises extensions. They connect to a maximum of eight telephones.

On-site M8314 telephones can be connected to quadruple-density intelligent line cards which connect to a maximum of 16 telephones.

### Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.



## New M8314 telephone

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You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

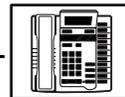
For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

## New M8314 telephone



### Class of Service (CLS)

When you are programming telephones using LD 10, you must enter a Class of Service for each one which prepares the system for the type of outpulsing to be transmitted from the telephone.

The choices are either dial pulse (DIP), Digitone (DTN), or none (manual line service MNL).

**Table 60**  
**Software release and default setting**

Release	Default
19 or 20	DTN
18 or earlier	DIP

For the M8314 telephone, program the TN for DTN service. Find out what release of software your system has. Determine if DTN is the default setting in the Class of Service.

When you install an M8314 telephone, the impact of programming incorrectly is as follows:

- ◆ When any Digitone-type telephone such as the M8314 with a DTN Class of Service initiates a call, the system finds and reserves a digitone receiver (DTR) unit on a DTR card for that telephone. It is reserved for that telephone while the call is dialed. Because of this, the outpulsed tones are translated by the DTR into digital messages suitable for the CPU. The CPU can then translate what the user is dialing.
- ◆ When an M8314 telephone is programmed incorrectly with a DIP Class of Service, the system does not reserve a DTR when the telephone user tries to initiate a call. (A digitone receiver is not required when a dial telephone is used.) As a result, the telephone user receives dial tone but cannot make calls.

You can read about digitone receivers in the Peripheral Equipment section of the *You should know this* module in this book.



## New M8314 telephone

### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

#### Parallel-line jack

A parallel-line jack is provided in the telephone, for connection to an extension telephone, or a fax or a modem. Your system supplier can help you install these devices if you require them.

#### Ringing options

There are four different ring tone choices. The telephones can be made to ring in different ways so that when a telephone rings and the users have left their desks, they can tell which telephone is ringing.

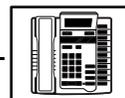
This telephone feature can be very useful with the Call Pickup feature. When telephones are ringing in the Pickup group, the users can tell which telephone is ringing and whether they are to answer. If a user does answer, the caller can be greeted appropriately.

#### Provisioning digitone receivers (DTRs)

Your system supplier must configure your system with a sufficient quantity of DTRs to provide a good grade of service to the Digitone-type telephone users, including the M8314 telephones. If that is not done, dial tone could be delayed for users of any Digitone-type telephones, and therefore the level of service could be poor. As you add more and more Digitone-type telephones after the initial installation of the system, your system supplier might need to reprovision your system periodically for additional DTRs.

You know it is time to look at the provisioning issue if you start to get complaints about delayed dial tone exclusively from users of Digitone-type telephones and incoming Digitone trunks.

## New M8314 telephone



Traffic studies can help you to calculate the proper quantity of DTRs you require based on the actual digitone traffic load offered to the system. For more information on what a traffic study can show you, refer to the *Traffic* module in this book. (Refer to the information on studies TFS002 and TFS003).

### Control tips



- ◆ M8314 telephone users who share DN with other users must be careful not to break in on active calls. The indicator light on the telephone lights up when the DN is in use at an extension telephone. Users must learn not to initiate a call when the indicator light is on. When a telephone with a separate TN and the same DN as this telephone is in use, the indicator light on this telephone is not on. If lack of privacy continues to be a problem, consider a change to SL-1-type or digital telephones.

### Administration tips



- ◆ If users experience problems such as delayed dial tone, report the user's telephone type to your system maintainer along with the report of the problem. If the telephones are M8314, the maintainer will need to investigate whether there are:
  - faulty DTRs
  - unprogrammed DTRs
  - DTRs on busy loops
  - loops with high numbers of Digitone-type telephones and DTRs
  - insufficient DTRs

You can reduce your trouble-shooting time, if you identify as much pertinent information as possible. For example, the user's DN, and the time when the problem occurred are two pieces of important information.



## New M8314 telephone

### Training tips



- ◆ Train users on how to use the LINK key. This helps them when they are transferring and conferencing calls.
- ◆ There are eight programmable keys on this telephone. If you want uniformity, decide which feature access codes or telephone numbers are to be programmed on all M8314 telephones.
- ◆ Decide who is going to program the keys; you, the user, or the system supplier.

Select responsible users to do this function to ensure the programming is done correctly. This will reduce repair reports and costs that result from incorrect programming.

- ◆ Even though the most common feature access codes can be programmed on the eight keys, users might, from time to time, need access to other features. To do this, they must dial feature access codes. Refresher training helps to keep users' knowledge levels current. This helps them get the most out of the system and in turn the system provides them with the expected benefits.
- ◆ Short, customized lists of feature instructions and access codes for your users are worthwhile. Make the lists small enough to be placed underneath the telephone where they are readily accessible.
- ◆ If Flexible Feature codes are in use on your system and if users are supposed to dial these codes, keep the codes as simple as possible. Users will be confused and aggravated if you implement codes that are difficult to use.

If the codes are going to be accessed solely from keys, use longer codes. Save the shorter, easier to remember codes for features that users must dial.

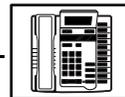
It is not a good idea to implement several codes for each feature unless you have users who are each accustomed to a different code and they would have difficulty learning new codes.

For more information on Flexible Feature codes refer to the *You should know this* module in this book.

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## New M8314 telephone

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- ◆ This telephone has a Handsfree/Mute button to activate and deactivate the handsfree unit built into the telephone. Put guidelines in place to govern the use of these units. When users misuse and overuse this feature it can be very irritating to users around them. It can have a negative impact on productivity if handsfree conversations are disruptive.
- ◆ Spending time training each M8314 user can reap rewards. Users need training on the use of:
  - the directory
  - scrolling
  - adjusting the receiver volume
  - choosing a ring option
  - choosing a language option
  - redialing one of the last five telephone numbers called



## New M8314 telephone

### What to have ready

Make the following preparations before you do the basic programming of a new M8314 telephone.

**Table 61**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN.
✓		Determine the TN which is assigned to this telephone. If you do not assign TNs, ask your system supplier.
✓		Find out the density of the line card for the telephone. In other words, find out how many units are present on the card.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
✓		Arrange for the necessary power equipment to be ordered and installed.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

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## New M8314 telephone

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*Appendix 1* (for LD 10) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

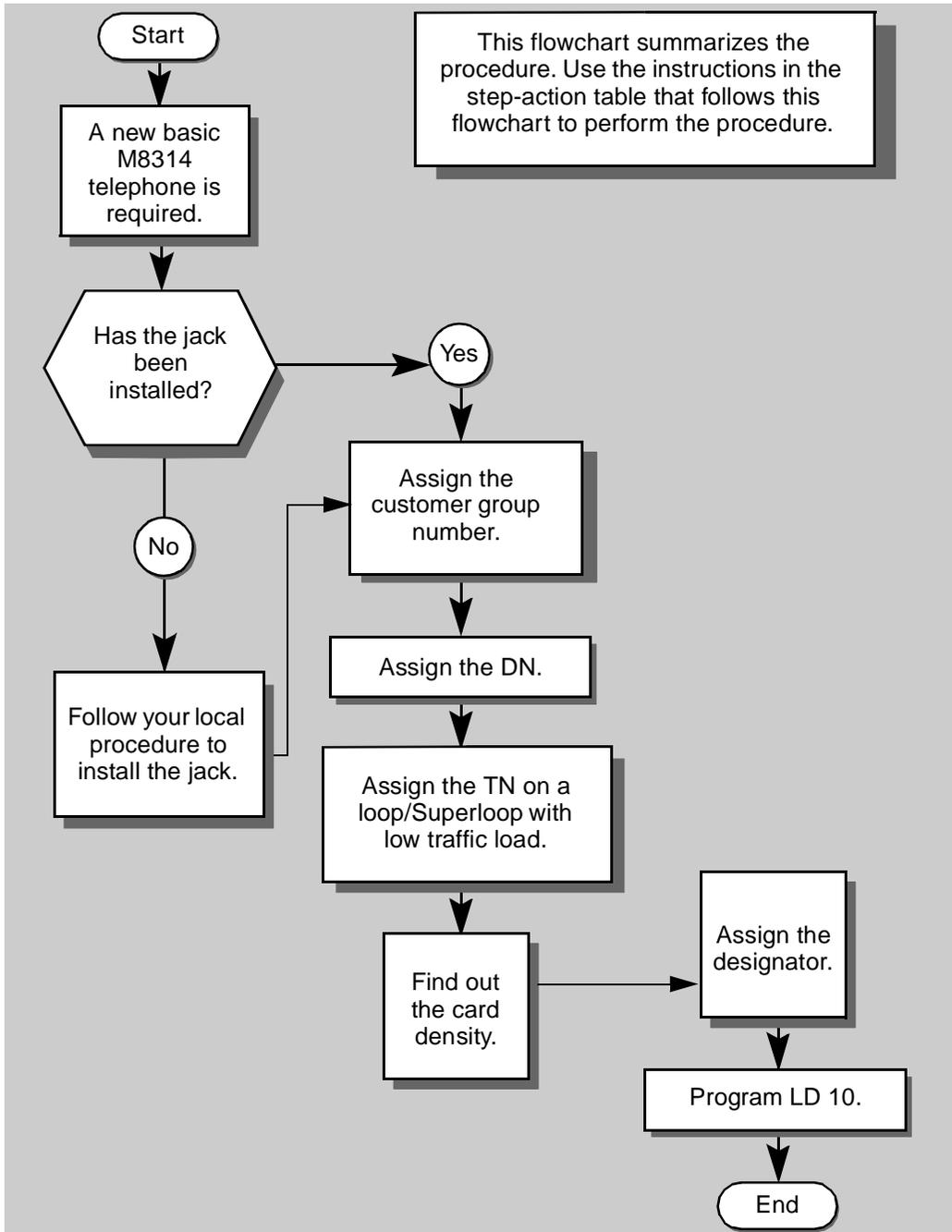
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M8314 telephone.



## New M8314 telephone



## New M8314 telephone



The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M8314 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>— continued —</b>		



## New M8314 telephone

STEP	ACTION						
4	<p><b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
5	<p><b>Print the DN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <pre>&gt; LD 22 or &gt; LD 20 or (Release 17 or later) &gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</pre> <p><b>REQ</b> PRT Request a printout  <b>TYPE</b> DNB DN Block  <b>CUST</b> &lt;cr&gt; All Customer groups  <b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <pre>U.data P.data small systems or MEM AVAIL: (U/P) USED:TOT: large systems</pre> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p> <p style="text-align: center;">— continued —</p>						

## New M8314 telephone



STEP	ACTION									
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or &gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <table> <tr> <td><b>REQ</b></td> <td>PRT</td> <td>Request a Printout</td> </tr> <tr> <td><b>TYPE</b></td> <td>TNB</td> <td>TN Block</td> </tr> <tr> <td><b>TN</b></td> <td>L S C U</td> <td>Input the Loop Shelf Card and Unit number of the other telephone</td> </tr> </table> <p>You get a printout of the customer group number of the other telephone.</p>	<b>REQ</b>	PRT	Request a Printout	<b>TYPE</b>	TNB	TN Block	<b>TN</b>	L S C U	Input the Loop Shelf Card and Unit number of the other telephone
<b>REQ</b>	PRT	Request a Printout								
<b>TYPE</b>	TNB	TN Block								
<b>TN</b>	L S C U	Input the Loop Shelf Card and Unit number of the other telephone								
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>									
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>									
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>									
<b>10</b>	<p><b>Find out what DN to assign.</b></p> <table> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>the DN is shared with another telephone</td> <td>step 11</td> </tr> <tr> <td>the DN is unique</td> <td>step 12</td> </tr> </tbody> </table> <p style="text-align: center;">— continued —</p>	If	Do	the DN is shared with another telephone	step 11	the DN is unique	step 12			
If	Do									
the DN is shared with another telephone	step 11									
the DN is unique	step 12									

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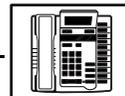
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## New M8314 telephone

STEP	ACTION
<b>11</b>	<b>Find out how the DN is to be shared.</b>
<b>If</b>	<b>Do</b>
the telephone can be an extension of an existing telephone	Ask your system supplier to install the jack accordingly and connect the telephone — no programming is required.
the telephone is to have its own TN	step 15
<b>12</b>	<b>Find out what DNs are available.</b>
<b>If</b>	<b>Do</b>
you know what DN you want to assign	step 15
your system software is Release 19 or later	step 13
your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 14.
— continued —	

## New M8314 telephone



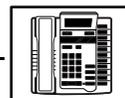
STEP	ACTION	
<b>13</b>	<b>Print unused DNs in your customer group.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b>	PRT                      Print
	<b>TYPE</b>	LUDN                     List unused DNs
	<b>CUST</b>	0 – 99                    Input customer group number
	You get a printout of the unused DNs in your customer group.	
<b>14</b>	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>	
<b>15</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	
	you have access to the print overlay programs	step 16
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 17.
<b>16</b>	<b>Print out the available TNs on your system.</b>	
	Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20 or	
	> LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)	
	<b>REQ</b>	LJU                        List all unused units
		LUVU                     List unused voice units (Release 19 or later)
	<b>TYPE</b>	500                        Dial or Digitone-type telephone
	You get a printout of the available dial and Digitone-type telephone TNs.	
	— continued —	



## New M8314 telephone

STEP	ACTION	
<b>17</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>18</b>	<b>Choose the TN for the new telephone.</b>	
<b>19</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>20</b>	<b>Find out the density of the line card which has the TN you are using.</b>	
	<b>If</b>	<b>Do</b>
	it is a new line card	Ask your system supplier about the card density.
	it is an existing line card	Use the default density setting.
<b>21</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>22</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
— continued —		

## New M8314 telephone



## STEP ACTION

## 22 continued ...

>	LD 10	
<b>REQ</b>	NEW	New telephone
<b>TYPE</b>	500	Dial or Digitone-type telephone
<b>TN</b>	L S C U	Input the TN (Loop Shelf Card Unit number)
<b>CDEN</b>		If on a new line card, input the card density
	SD	single-density
	DD	double-density
	4D	quad-density
	<cr>	Carriage return if line card already programmed
<b>DES</b>	A . . A	Designator maximum six characters long
<b>CUST</b>	0 - 99	customer group number
<b>DN</b>	X . . X	Directory Number
		7 digits maximum with DN Expansion (DNXP) software equipped
		4 digits maximum without DNXP
		Carriage return until you see the prompt CLS
<b>CLS</b>	DTN	Input the Outpulsing type
		DTN (Digitone), default Release 19 and later
		Input DTN, or <cr> if it is default on your system

— continued —

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## New M8314 telephone

### STEP ACTION

#### 22 *continued ...*

Carriage return until you see either of the following messages:

**U.data**            **P.data**            small systems

or

**MEM AVAIL: (U/P) USED:TOT:**            large systems

#### 23 Check that the telephone works.

Try to make a call. Try to receive a call.

**If**

**Do**

.....  
telephone works

step 24

telephone does not work

step 1

#### 24 Arrange for a data dump to be performed.

**If**

**Do**

.....  
you do not have access  
to LD 43

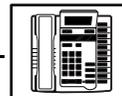
Contact your system supplier.

you have access to LD 43

step 25

— continued —

## New M8314 telephone



### STEP ACTION

**25 Perform a data dump to permanently store the programming you have just completed.**



**CAUTION**

Check your maintenance agreement before working in LD 43.

Refer to the *Basic programming instructions* module of this book or refer to the *Software Input /Output Guide Book 1 of 2* for more information on LD 43.

> LD 43

. EDD <cr>

**26 Verify that the data dump was successful.**

TTY response:

**NO GO BAD DATA**

or

**DATA DUMP COMPLETE**

**If**

**Do**

data dump fails

Contact your system supplier.

data dump succeeds

step 27

**27 Terminate this overlay program.**

. \*\*\*\*

— continued —

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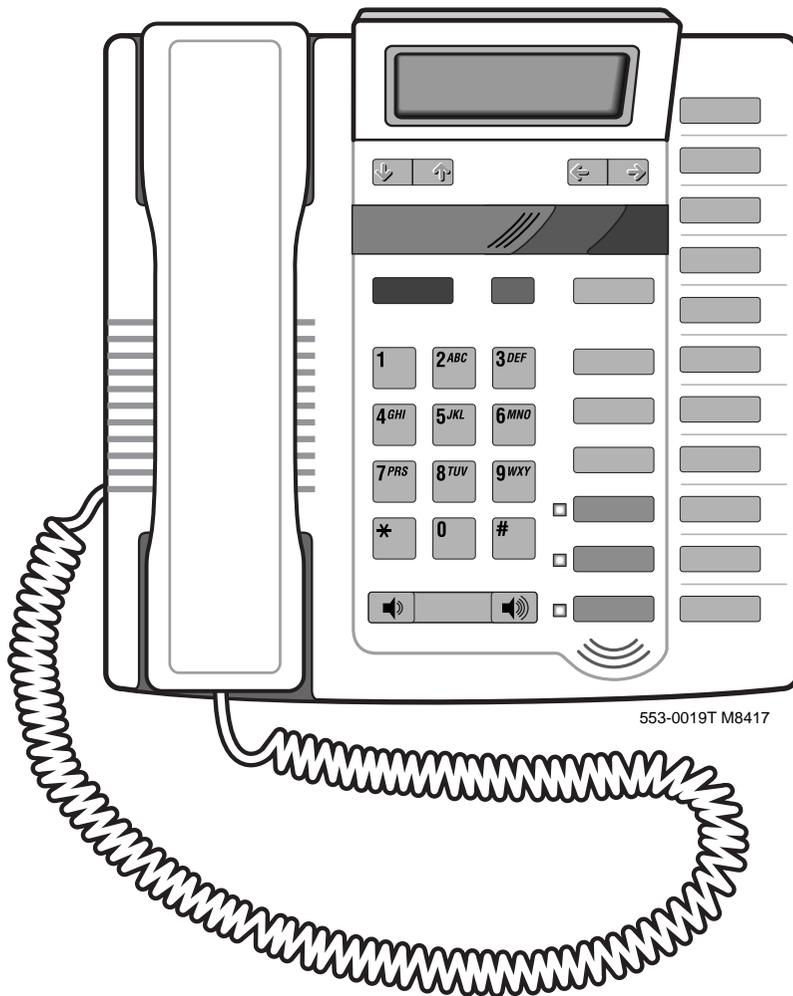
**New M8314 telephone**

STEP	ACTION
<b>28</b>	<b>Terminate this programming session.</b>  Log off.  > LOGO
<b>29</b>	<b>You have now completed the minimum programming required to implement a basic new M8314 telephone.</b>
	

## New M8417 telephone

### Purpose

The information in this Task module will help you if a user at your site needs a new M8417 telephone.



553-0019T M8417



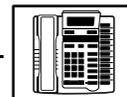
## New M8417 telephone

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If the user needs a new telephone, install an M8417 telephone if:

- ◆ the user needs one or two Directory Numbers (DNs)
- ◆ the user wants the ability to conference a conversation on Line 1 with a conversation on Line 2
- ◆ the user requires the use of a telephone that transmits tones
- ◆ the user wants buttons for easy access to features or commonly dialed telephone numbers
- ◆ the user wants to be able to hear a conversation and speak to a caller without using the handset of the telephone (speakerphone capability)
- ◆ the user wants a display to make feature use very easy, to display a directory of names and telephone numbers and to show a call timer
- ◆ the user wants to adjust the volume of the sound coming through the receiver
- ◆ the user needs to put calls on hold and does not want to dial a feature code to do it
- ◆ the user needs to know when extensions of the DN(s) are in use
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the users need the choice of English and French or English and Spanish words on the display when using features
- ◆ you want the users' telephones to have your company logo

## New M8417 telephone



### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Built-in functions

The M8417 telephone has a message waiting/incoming call indicator light that is part of the telephone. If you want to activate the message waiting light, refer to Task 25, *Message Center*.

The telephone also has a display. *The display on this telephone does not show you the Directory Number (DN) of the caller, whether they are internal to your system or external.* That functionality is provided by the digital telephones and the SL-1-type telephones.

### Hardware

The installation of cabling, and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.



Check with your system maintainer to ensure that the necessary digitone receiver cards are installed and programmed.



### Power

This telephone requires external power in order for the display, the auto-dial buttons and the handsfree unit to function. Arrange with your system supplier to get the necessary power equipment ordered and installed.



## New M8417 telephone

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### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a particular sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M8417 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator. For example, the user's manager often wants controls placed on the user's calling capabilities. The default responses do not place these controls on the user. Also, the telephone system administrator may want to implement corporate-wide policies for telephones which are not met through the default choices.

*Appendix 1* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number that are covered in this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the Administration overlay programs.

### Customer group

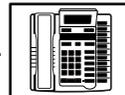
Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

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## New M8417 telephone

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Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the range is one to four digits.

This telephone can be configured to have one or two lines. Each of these lines can have a different DN assigned.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN.

The term *appearance* means a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone.



## New M8417 telephone

Refer to Task 40, *Multiple Appearance DN Redirection Prime* for important information on a Multiple Appearance DN feature.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

### Single Call DN

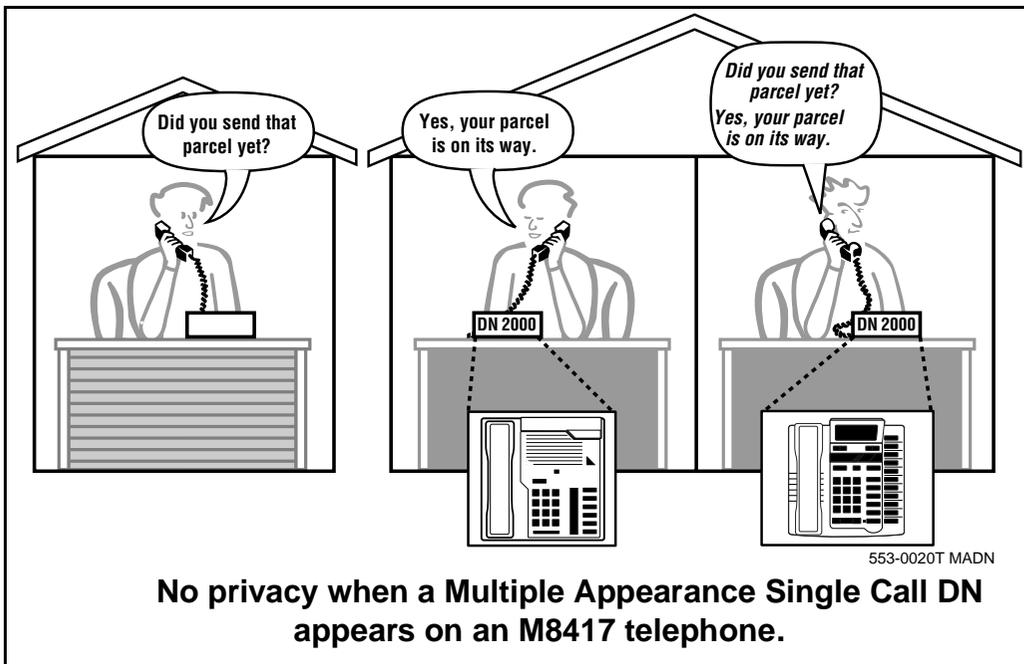
The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.

Unless programmed otherwise, a Single Call configuration is the default configuration of a DN when it is programmed on an M8417 telephone.



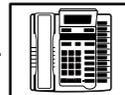
If the same Single Call DN is shared between an M8417 telephone and an SL-1-type or digital telephone, there is no way to prevent a user from breaking in on an active call in progress on the shared DN.



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## New M8417 telephone

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If privacy is important, choose one of the following two options:

- ◆ do not program the same Single Call DN on an M8417 telephone and an SL-1-type or digital telephone
- ◆ replace the M8417 telephone with an SL-1-type or digital telephone. There is privacy on shared Single Call DN's on these types of telephones.

### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

A Multiple Call DN is not treated as busy until there are calls on all the programmed appearances of the DN. There can be a maximum of 16 appearances of one DN on systems using software prior to Release 13; after that release there can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching the maximum numbers. Consult with your system supplier before you implement Multiple Appearance DN's.

### Multiple Call Class of Service

When you want to make a DN on an M8417 telephone a Multiple Call DN, you activate this in the Class of Service.



*With Release 15.58F software, this Class of Service is used along with the Centralized Multiple Line Emulation feature. Discuss the application of this feature with your supplier. It is beyond the scope of this book.*

*With Release 20 software, this Class of Service is used in conjunction with the use of Meridian COMPANION™ wireless telephones on your system.*



## New M8417 telephone

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### Consistent configuration

*Whether you choose Single Call or Multiple Call, all appearances of one DN must be the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M8417 telephone.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and may also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

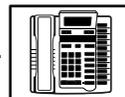
- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *You should know this* module in this book.

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## New M8417 telephone

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### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DNs, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

If the telephone you are programming is using two lines, there must be two TNs assigned to that telephone. The system is programmed as if there are two separate telephones when in fact the two lines appear on one M8417 telephone.

If you are using a system running with Release 15 or later software, it can be equipped with either loops or Superloops. If you are using a system with software prior to Release 15, the system can be equipped with only loops. Loops and Superloops belong in the Network Equipment part of the system.

If you are not sure of what type(s) of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment.

Refer to the *You should know this* module for more information on the hardware of your system.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.



## New M8417 telephone

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Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the loop, or Superloop, to which you are adding this telephone.

Loops and Superloops perform best when they share equally the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each loop or Superloop is kept within the recommended guidelines. If all of your existing loops and/or Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

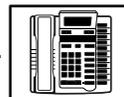
Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

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## New M8417 telephone

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### Card density

Telephones are connected to interface cards in the system called line cards. There are three types of line cards for M8417 telephones: single-, double-, or quadruple-density.

Single-density line cards connect to a maximum of four telephones. Double-density line cards connect to a maximum of eight telephones. Quadruple (quad) density line cards connect to a maximum of sixteen telephones.

Systems using Superloops can use *intelligent* line cards. They are called intelligent because they possess microprocessors.

As of Release 20 double-density intelligent line cards are available for off-premises extensions. They connect to a maximum of eight telephones.

On-site M8417 telephones can be connected to quadruple-density intelligent line cards which connect to a maximum of 16 telephones.

### Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.



## New M8417 telephone

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You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

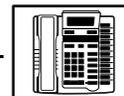
For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

## New M8417 telephone



### Class of Service (CLS)

When you are programming TNs using LD 10, you must enter a Class of Service for each one which prepares the system for the type of outpulsing to be transmitted from the telephone.

The choices are either dial pulse (DIP), Digitone (DTN), or none (manual line service MNL).

**Table 62**  
**Software release and default setting**

Release	Default
19 or 20	DTN
18 or earlier	DIP

For the M8417 telephone, program the TN for DTN service. Find out what release of software your system has. Determine if DTN is the default setting in the Class of Service.

When you install an M8417 telephone, the impact of programming incorrectly is as follows:

- ◆ When any Digitone-type telephone such as the M8417 with a DTN Class of Service initiates a call, the system finds and reserves a digitone receiver (DTR) unit on a DTR card for that telephone.

It is reserved for that telephone while the call is dialed.

Because of this, the outpulsed tones are translated by the DTR into digital messages suitable for the CPU. The CPU can then translate what the user is dialing.

- ◆ When an M8417 telephone is programmed incorrectly with a DIP Class of Service, the system does not reserve a DTR when the telephone user tries to initiate a call. (A digitone receiver is not required when a dial telephone is used.) As a result, the telephone user receives dial tone but cannot make calls.

You can read about digitone receivers in the Peripheral Equipment section of the *You should know this* module in this guide.



## New M8417 telephone

### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

#### Parallel-line jack

A parallel-line jack is provided in the telephone, for connection to an extension telephone, or a fax or a modem. Your system supplier can help you install these devices if you require them.

#### Ringing options

There are four different ring tone choices. The telephones can be made to ring in different ways so that when a telephone rings and the users have left their desks, they can tell which telephone is ringing.

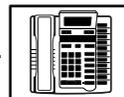
This telephone feature can be very useful with the Call Pickup feature. When telephones are ringing in the Pickup group, the users can tell which telephone is ringing and whether they are to answer. If a user does answer, the caller can be greeted appropriately.

#### Provisioning digitone receivers (DTRs)

Your system supplier must configure your system with a sufficient quantity of DTRs to provide a good grade of service to the Digitone-type telephone users, including the M8417 telephones. If that is not done, dial tone could be delayed for users of any Digitone-type telephones, and therefore the level of service is poor. As you add more and more Digitone-type telephones after the initial installation of the system, your system supplier might need to reprovision your system for additional DTRs.

You know it is time to look at the provisioning issue if you start to get complaints about delayed dial tone exclusively from users of Digitone-type telephones and incoming Digitone trunks.

## New M8417 telephone



Traffic studies can help you to calculate the proper quantity of DTRs you require based on the actual digitone traffic load offered to the system. For more information on what a traffic study can show you, refer to the *Traffic* module in this book. (Refer to the information on studies TFS002 and TFS003).

### Control tips



- ◆ M8417 telephone users who share DN's with other users must be careful not to break in on active calls. The indicator light on the telephone lights up when the DN is in use at an extension telephone. Users must learn not to initiate a call when the indicator light is on. When a telephone with a separate TN and the same DN as this telephone is in use, the indicator light on this telephone is not on. If lack of privacy continues to be a problem, consider a change to SL-1 or digital telephones.

### Administration tips



- ◆ If users experience problems such as delayed dial tone, report the user's telephone type to your system maintainer along with the report of the problem. If the telephones are M8417, the maintainer might need to investigate whether there are:
  - faulty DTRs
  - unprogrammed DTRs
  - DTRs on busy loops
  - loops with high numbers of Digitone-type telephones and DTRs
  - insufficient DTRs

You can reduce your trouble-shooting time, if you identify as much pertinent information as possible. For example, the user's DN, and the time when the problem occurred are two pieces of important information.



## New M8417 telephone

### Training tips



- ◆ Train users on how to use the LINK key. This helps them when they are transferring and conferencing calls.
- ◆ Users need to know how to join a conversation on Line 1 with a conversation on Line 2.
- ◆ There are eight programmable keys on this telephone. If you want uniformity, decide which feature access codes or telephone numbers are to be programmed on all M8417 telephones.
- ◆ Decide who is going to program the keys; you, the user, or the system supplier.

Select responsible users to do this function to ensure the programming is done correctly. This will reduce repair reports and costs that result from incorrect programming.

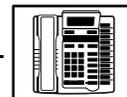
- ◆ Even though the most common feature access codes can be programmed on the eight keys, users might, from time to time, need access to other features. Refresher training helps to keep users' knowledge levels current. This helps them get the most out of the system and in turn the system provides them with the expected benefits.
- ◆ Short, customized lists of feature instructions and access codes for each user are worthwhile. Make them small enough to be placed underneath the telephone where they are readily accessible.
- ◆ If Flexible Feature codes are in use on your system and if users are supposed to dial these codes, keep them as simple as possible. Users will be confused and aggravated if you implement codes that are difficult to use.

If the codes are going to be accessed solely from keys, use longer codes. Save the shorter, easier to remember codes for features that users must dial.

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## New M8417 telephone

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It is not a good idea to implement several codes for each feature unless you have users who are each accustomed to a different code and they would have difficulty learning new codes.

For more information on Flexible Feature codes refer to the *You should know this* module in this book.

- ◆ This telephone has a Handsfree/Mute key to activate and deactivate the handsfree unit built into the telephone. Put guidelines in place governing the use of these units. When users misuse and overuse this feature it can be very irritating to users around them. It can have a negative impact on productivity if handsfree conversations are disruptive.
- ◆ Spending time training each M8417 user can reap rewards. Users need training on the use of:
  - the directory
  - scrolling
  - adjusting the receiver volume
  - choosing a ring option
  - choosing a language option
  - redialing one of the last five telephone numbers called



## New M8417 telephone

### What to have ready

Make the following preparations before you do the basic programming of a new M8417 telephone.

**Table 63**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s).
✓		Determine the TN(s) to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Find out the density of the line card for the telephone. In other words, find out how many units are present on the card.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code for each TN.
✓		Arrange for the necessary power equipment to be ordered and installed.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.

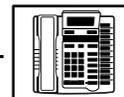
There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

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## New M8417 telephone

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*Appendix 1* (for LD 10) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

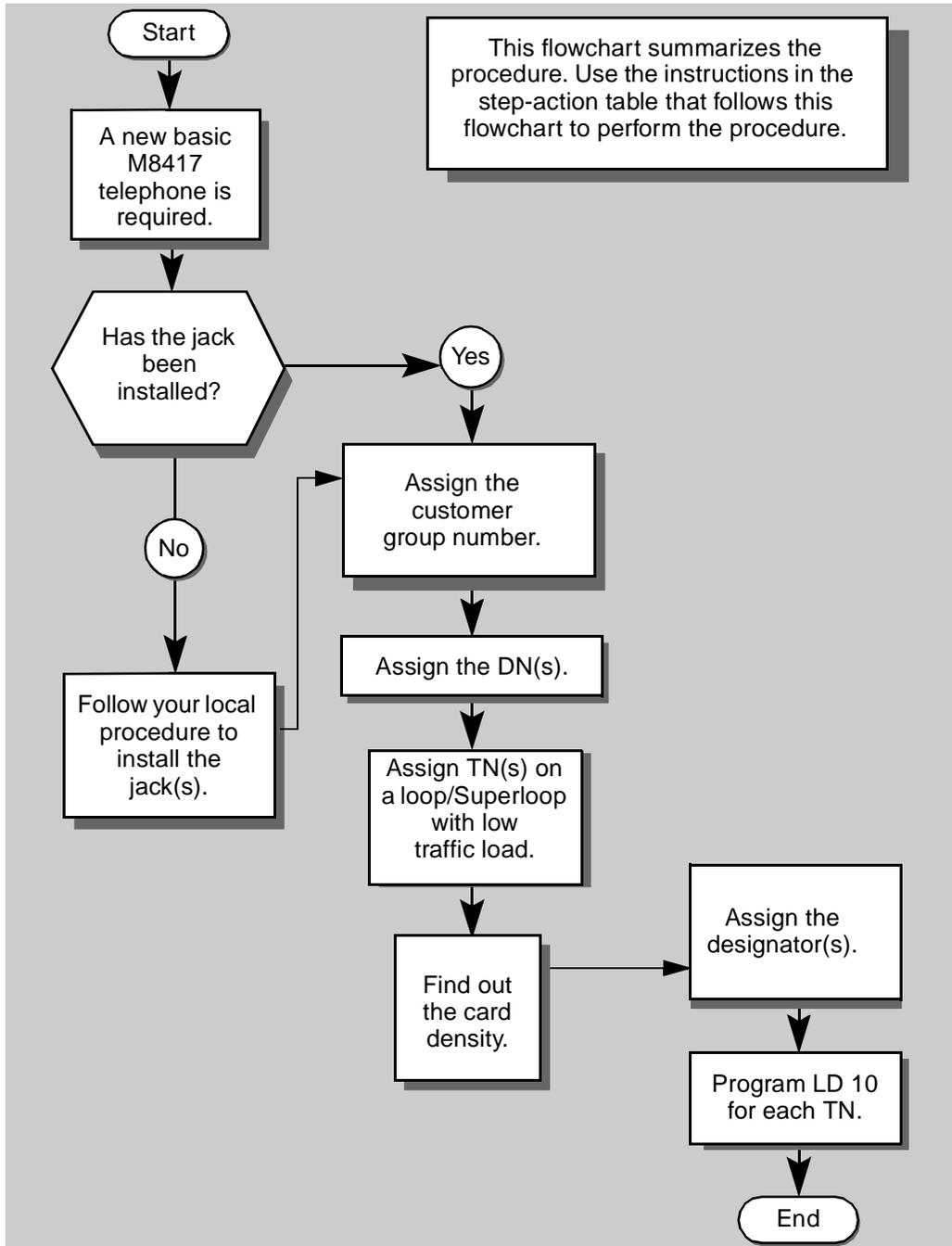
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M8417 telephone.



## New M8417 telephone



## New M8417 telephone



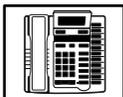
The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M8417 telephone only. Do the procedure twice, if you are activating two lines on the telephone.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

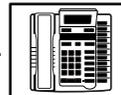
STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done. Each line requires a jack.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>— continued —</b>		



## New M8417 telephone

STEP	ACTION						
4	<p><b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
5	<p><b>Print the DN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <pre>&gt; LD 22 or &gt; LD 20 or (Release 17 or later) &gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</pre> <p><b>REQ</b> PRT Request a printout  <b>TYPE</b> DNB DN Block  <b>CUST</b> &lt;cr&gt; All Customer groups  <b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <pre>U.data P.data small systems or MEM AVAIL: (U/P) USED:TOT: large systems</pre> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p> <p style="text-align: center;">— continued —</p>						

## New M8417 telephone



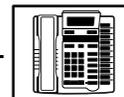
STEP	ACTION									
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <table> <tr> <td><b>REQ</b></td> <td>PRT</td> <td>Request a Printout</td> </tr> <tr> <td><b>TYPE</b></td> <td>TNB</td> <td>TN Block</td> </tr> <tr> <td><b>TN</b></td> <td>L S C U</td> <td>Input the Loop Shelf Card and Unit number of the other telephone</td> </tr> </table> <p>You get a printout of the customer group number of the other telephone.</p>	<b>REQ</b>	PRT	Request a Printout	<b>TYPE</b>	TNB	TN Block	<b>TN</b>	L S C U	Input the Loop Shelf Card and Unit number of the other telephone
<b>REQ</b>	PRT	Request a Printout								
<b>TYPE</b>	TNB	TN Block								
<b>TN</b>	L S C U	Input the Loop Shelf Card and Unit number of the other telephone								
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>									
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>									
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>									
<b>10</b>	<p><b>Find out what DN to assign, one DN for each line.</b></p> <table> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>the DN is shared with another telephone</td> <td>step 11</td> </tr> <tr> <td>the DN is unique</td> <td>step 12</td> </tr> </tbody> </table> <p style="text-align: center;">— continued —</p>	If	Do	the DN is shared with another telephone	step 11	the DN is unique	step 12			
If	Do									
the DN is shared with another telephone	step 11									
the DN is unique	step 12									



## New M8417 telephone

STEP	ACTION	
<b>11</b>	<b>Find out how the DN is to be shared.</b>	
	<b>If</b>	<b>Do</b>
	the telephone is an extension of an existing telephone	Ask your system supplier to install the jack accordingly and connect the telephone — no programming is required.
	the telephone is not identical to an existing telephone and has its own TN	step 15
<b>12</b>	<b>Find out what DNs are available.</b>	
	<b>If</b>	<b>Do</b>
	you know what DN you want to assign	step 15
	your system software is Release 19 or later	step 13
	your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 14.
<b>13</b>	<b>Print unused DNs in your customer group.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b>	PRT Print
	<b>TYPE</b>	LUDN List unused DNs
	<b>CUST</b>	0 – 99 Input customer group number
	You get a printout of the unused DNs in your customer group.	
	— continued —	

## New M8417 telephone



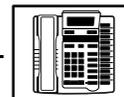
STEP	ACTION	
14	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>	
15	<b>Find out what Terminal Numbers are available for the new telephone</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you have access to the print overlay programs	step 16
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 17.
16	<b>Print out the available TNs on your system.</b>	
	Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20 or	
	> LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)	
	<b>REQ</b>	LJU List all unused units
		LJVV List unused voice units (Release 19 or later)
	<b>TYPE</b>	500 Dial or Digitone-type telephone
	You get a printout of the available dial and Digitone-type telephone TNs.	
17	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
	— continued —	



## New M8417 telephone

STEP	ACTION	
18	<b>Choose a TN for each new line.</b>	
19	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
20	<b>Find out the density of the line card which has the TN you are using.</b>	
	<b>If</b>	<b>Do</b>
	it is a new line card	Ask your system supplier about the card density.
	it is an existing line card	Use the default density setting.
21	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
22	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 10	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 500	Dial or Digitone-type telephone
	<b>TN</b> L S C U	Input the TN ( <b>L</b> oop <b>S</b> helf <b>C</b> ard <b>U</b> nit number)
	<b>CDEN</b>	If on a new line card, input the card density
	SD	single-density
	DD	double-density
	4D	quad-density
	<cr>	Carriage return if line card already programmed
<b>— continued —</b>		

## New M8417 telephone



### STEP ACTION

#### 22 continued ...

**DES** A . . A                      Designator maximum six characters long  
**CUST** 0 – 99                      customer group number

**DN** X . . X                      Directory Number  
 7 digits maximum with DN Expansion (DNXP)  
 software equipped  
 4 digits maximum without DNXP

Carriage return until you  
 see the prompt CLS

**CLS** DTN                      Input the Outpulsing type  
 DTN (Digitone), default Release 19 and later  
 Input DTN, or <cr> if it is default on your system

Carriage return until you see either of the following messages:

**U.data**                      **P.data**                      small systems  
 or

**MEM AVAIL: (U/P) USED:TOT:**                      large systems

Repeat step 22, if you have two lines.

#### 23 Check that the line works.

Try to make a call. Try to receive a call.

<b>If</b>	<b>Do</b>
.....	.....
line works	Step 24, if there are no more lines to program or step 1, if you are activating another line.
line does not work	step 1

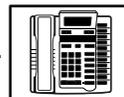
— continued —



## New M8417 telephone

STEP	ACTION								
24	<p><b>Arrange for a data dump to be performed.</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td colspan="2">.....</td> </tr> <tr> <td>you do not have access to LD 43</td> <td>Contact your system supplier.</td> </tr> <tr> <td>you have access to LD 43</td> <td>step 25</td> </tr> </tbody> </table>	If	Do	.....		you do not have access to LD 43	Contact your system supplier.	you have access to LD 43	step 25
If	Do								
.....									
you do not have access to LD 43	Contact your system supplier.								
you have access to LD 43	step 25								
25	<p><b>Perform a data dump to permanently store the programming you have just completed.</b></p> <div style="border: 2px solid black; padding: 10px; margin: 20px auto; width: fit-content;">  <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div> <p>Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.</p> <pre>&gt; LD 43  . EDD &lt;cr&gt;</pre>								
— continued —									

## New M8417 telephone



STEP	ACTION								
26	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b> or <b>DATA DUMP COMPLETE</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;"><b>If</b></th> <th style="text-align: left;"><b>Do</b></th> </tr> </thead> <tbody> <tr> <td>.....</td> <td></td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 27</td> </tr> </tbody> </table>	<b>If</b>	<b>Do</b>	.....		data dump fails	Contact your system supplier.	data dump succeeds	step 27
<b>If</b>	<b>Do</b>								
.....									
data dump fails	Contact your system supplier.								
data dump succeeds	step 27								
27	<p><b>Terminate this overlay program.</b></p> <p>. * * * *</p>								
28	<p><b>Terminate this programming session.</b></p> <p>Log off.</p> <p>&gt; LOGO</p>								
29	<p><b>You have now completed the minimum programming required to implement a basic new M8417 telephone.</b></p>								

**358** Making a telephone work

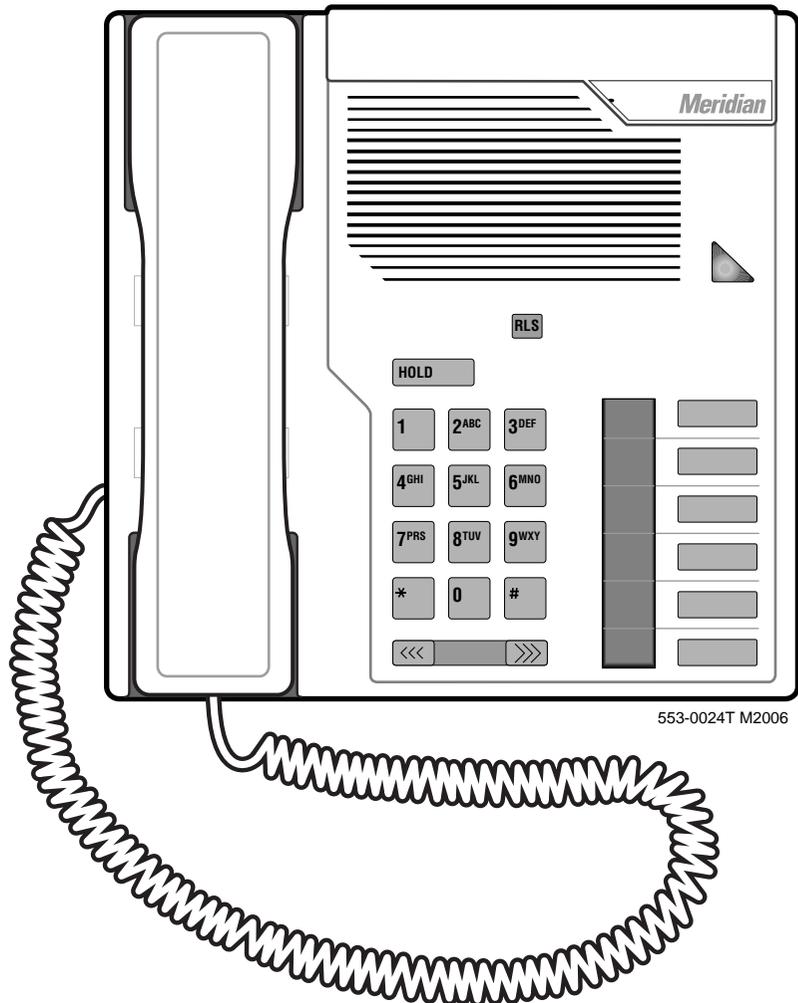
of 1776

**New M8417 telephone**

## New M2006 telephone

### Purpose

The information in this Task module will help you if a user at your site needs a new M2006 telephone.





## New M2006 telephone



The M2006 telephone is not available in Europe.

If the user needs a new telephone, install an M2006 telephone if:

- ◆ the user needs only one Directory Number (DN)
- ◆ the user has a Personal Computer or will need one at the desk and you want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires
- ◆ the user requires easy access to features or commonly dialed telephone numbers using buttons (or keys)
- ◆ the user wants to adjust the volume of the sound coming through the receiver
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting

## Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

## New M2006 telephone



### Software

**Table 64**  
**Software requirements**

Release required	Software package(s) required
14	88 (DSET) M2000 Digital Sets 89 (TSET) M3000 Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.



It is important to note that if you are using digital line cards on an older system, the card type is Integrated Services Digital Line Card (ISDLC), and the card vintage must be “C” or later for these telephones to work. Discuss the line cards on your system with your system maintainer.

### Power

This telephone requires external power if any of the following external equipment is installed:

- ◆ an external alerter interface kit
- ◆ a Meridian Programmable Data Adapter (MPDA)
- ◆ a Meridian Communications Adapter (MCA)

When external power is needed, there is a power supply board which must be installed inside of the telephone. Arrange with your system supplier to get the necessary power equipment ordered and installed.



## New M2006 telephone

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### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M2006 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator. For example, the user's manager often wants controls placed on the user's calling capabilities. The default responses do not place these controls on the user. Also, the telephone system administrator may want to implement corporate-wide policies for telephones which are not met through the default choices.

Because the M2006 is a digital telephone, it is programmed in overlay program (LD) 11.

### Data default values

If the telephone has a data option installed, key 5 is automatically set by the system as a PROGRAM key. This key is needed for the user to make adjustments to the data parameters from the telephone keypad.

When you do a TN-Block printout of the information programmed for the telephone, key 5 appears to have nothing assigned to it. It is blank in the printout.

*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for the prompts covered by this book.

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## New M2006 telephone

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The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, DNs can be one to four digits.



## New M2006 telephone



*This telephone is limited to having one DN. It must be programmed on key 0 at the bottom of the row of keys.*

### Ringing or Non-ringing DNs

On digital telephones, a DN can be programmed to be a ringing or a non-ringing appearance.

- ◆ When a call comes into a ringing appearance, the telephone rings, if it is idle, and the indicator beside the DN key flashes.
- ◆ When a call comes into a non-ringing appearance of a DN, the DN-key indicator flashes but the telephone does not ring.

If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN on a key.

The term *appearance* means that a DN has been assigned to that telephone or a key on a telephone.

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.

If the telephone rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to key 0 on an M2006 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

## New M2006 telephone



When you want to assign a *Single Call Non-ringing DN* to key 0 on an M2006 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone.

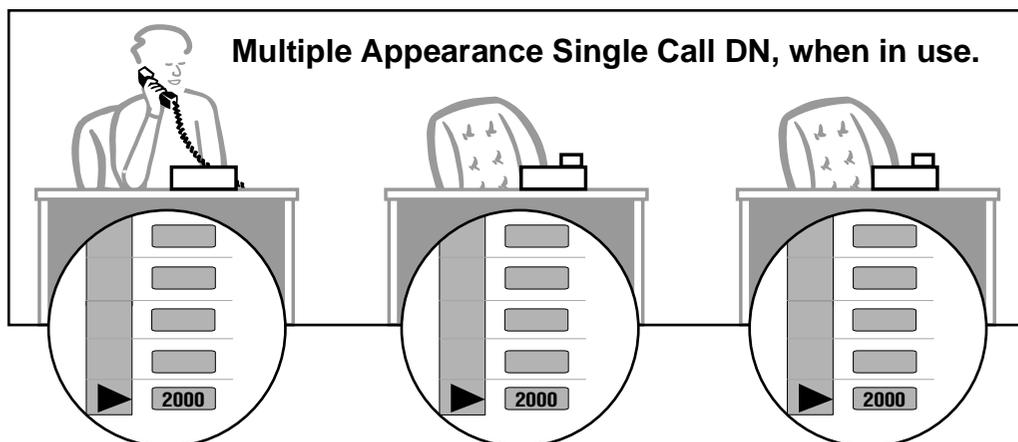
Refer to Task 40, *Multiple Appearance DN Redirection Prime* for important information on a Multiple Appearance DN feature.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

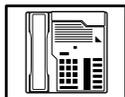
### Single Call DN

The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.



553-0025T SCDN



## New M2006 telephone



If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

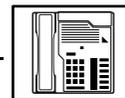
When you want to assign a *Single Call Ringing DN* to key 0 on an M2006 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to key 0 on an M2006 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

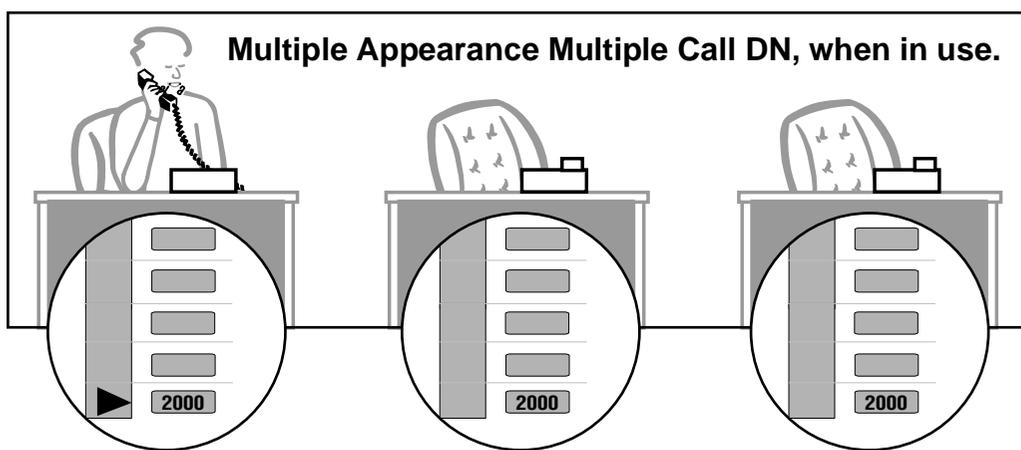
## New M2006 telephone



### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

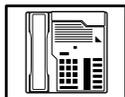


553-0026T MCDN

A multiple call DN is not treated as busy until there are calls on all the programmed appearances of the DN. There can be a maximum of 16 appearances of one DN on systems using software prior to Release 13, after that release there can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DN's.

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.



## New M2006 telephone

When you want to assign a *Multiple Call Ringing DN* to key 0 on an M2006 telephone, you assign the following programming code to the key:

MCR X . . X      where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M2006 telephone, you assign the following programming code to the key:

MCN X . . X      where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.

### Consistent configuration



*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M2006 telephone.

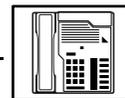
### Prime DN, Key 0

Key 0, which is the key at the bottom of the key strip, *must be* programmed with a DN. This DN is called the prime DN.

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## New M2006 telephone

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### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module in this book.



### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DN's, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.



## New M2006 telephone

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If you are using a system running with Release 15 or later software, it can be equipped with either loops or Superloops. If you are using a system with software prior to Release 15, the system can be equipped with loops only. Loops and Superloops reside in the Network Equipment part of the system.

If you are not sure what type(s) of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment.

Refer to the *You should know this* module for more information on the hardware of your system.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user.

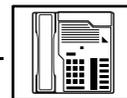
You should consider the impact of this extra traffic load on the loop, or Superloop, to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.

Loops and Superloops perform best when they share equally in the total traffic load carried by the system.

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## New M2006 telephone

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Blockage within the system will be negligible or non-existent when the traffic load for each loop or Superloop is kept within the recommended guidelines. If all of your existing loops and/or Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards. There are two types of line cards for M2006 telephones: quadruple-density and octal-density.

Quadruple (quad) density digital line cards have 16 TNs. Eight of the TNs on the card are for digital telephones and the other eight are for the associated data terminals (if any). Therefore, quad density digital line cards connect to a maximum of eight digital telephones.

Systems using Superloops can use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.

Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

When you program digital telephones, you do not need to tell the system what density the line card is, since it defaults to the density allowed for the network loop or Superloop on which the telephone resides.



## New M2006 telephone

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### Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

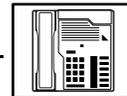
For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.

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## New M2006 telephone

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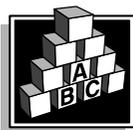


- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

## Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

### Ringling options

#### Distinctive Ringling Groups

There are four different ringling options for the digital telephones. When you program the Class of Service of each telephone, you choose one of the four options to set the ringling tone and ringling cadence. The choices are: DRG1, DRG2, DRG3, or DRG4. DRG stands for Distinctive Ringling Group.

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringling.

Distinctive Ringling can be very useful with the Call Pickup feature. When telephones are ringling in the Pickup group, the users can tell what telephone is ringling and answer calls appropriately.



## New M2006 telephone

### Network and Executive Distinctive Ringing

When you assign Executive Distinctive Ringing to a telephone, terminating telephones ring distinctively when they receive calls from the “Executive” telephone. Network Distinctive Ringing extends this functionality across an ISDN network.

**Table 65**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network Supplementary Features (ISDNS)
	185 – Executive Distinctive Ringing (EDRG)

### Directory Number Delayed Ringing (DNDR)

**Table 66**  
**Software requirements**

Release required	Software package(s) required
21	none

If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user’s telephone.

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## New M2006 telephone

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When you have Multiple Appearance non-ringing DNs, there are many different ways you can choose to implement it. Two examples follow:

- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Distinctive Ringing by DN

You can apply distinctive ringing to each DN or Hotline key on a Meridian Modular telephone in the following ways:

- ◆ DRDN by call source: terminating telephones ring distinctively when the user initiates a call from the key. Each key on the originating telephone can have one of five distinctive ringing patterns.
- ◆ DRDN by call destination: each key has a distinctive ringing pattern when incoming calls are presented to the telephone. Each key can have one of five distinctive ringing patterns.

DRDN by call source overrides DRDN by call destination. The ringing pattern associated with the calling DN is used at the terminating telephone, in cases where the terminating key also has the feature allowed.



## New M2006 telephone

**Table 67**  
**Software requirements**

Release required	Software package(s) required
24	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network Supplementary Features (ISDNS)
	185 – Executive Distinctive Ringing (EDRG)

### Data option

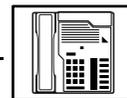
When the Meridian Programmable Data Adapter (MPDA) or Meridian Communications Adapter (MCA) is installed inside the telephone and an RS-232C cable is used, you can set up a computer on the user's desk using the same pair of wires that the telephone uses. If you do this, then key 5 on the telephone must be used as a Program key to control various data parameter settings. There is a Quick Reference Card for the MPDA or MCA that explains these settings and how to use the Program key.

### Control tips



- ◆ A user might attempt to move a telephone by unplugging it from the jack and reconnecting it at a new jack. This does not work. When a telephone is removed from a jack long enough for the computer in the system to do a maintenance routine, a message prints out on the maintenance printer that identifies the jack that has a missing telephone. Tell users not to attempt to move telephones without your assistance. The proper way to move telephones is discussed in Task .

## New M2006 telephone



### Administration tips



- ◆ The M2006 has a red indicator which lights steadily when there are messages waiting. You might want to program a Message Waiting key on one of the keys numbered 1–5, however, so that the user has an easy way of dialing the message center or voice mail when there are messages.

For more information, refer to Task 25, *Message Center*.



- ◆ You might want to consider using one or two standard key layouts for all digital telephones, or at least all M2006 telephones. This can save significant amounts of memory.
- ◆ Keys 1–5 can be programmed for any features with the exception of Voice Call, Dial Intercom, Private Line or Two-Way Hotline. If the user needs those features in addition to a DN, select another kind of digital telephone.
- ◆ The user can access certain features by dialing codes if there are not enough keys for the features needed. Refer to the *You should know this* module for more information on dial accessible features.
- ◆ The M2006 cannot have a modular display added.
- ◆ The M2006 cannot have a Key Expansion module added.

### Training tips



- ◆ If you have a standard key layout on all M2006 telephones, this is an advantage in training users since users can go to any telephone and feel comfortable using it. If all telephones are the same, the users can also explain features to each other.
- ◆ Even though features can be programmed on the keys for easy use, users might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps you both get the most out of the system and in turn the system provides the expected benefits.



## New M2006 telephone

### What to have ready

Make the following preparations before you do the basic programming of a new M2006 telephone.

**Table 68**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN. Decide whether it is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.
	✓	Arrange for the necessary power equipment to be ordered and installed if the external alerter kit, or the MPDA or MCA is required.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

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## New M2006 telephone

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*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

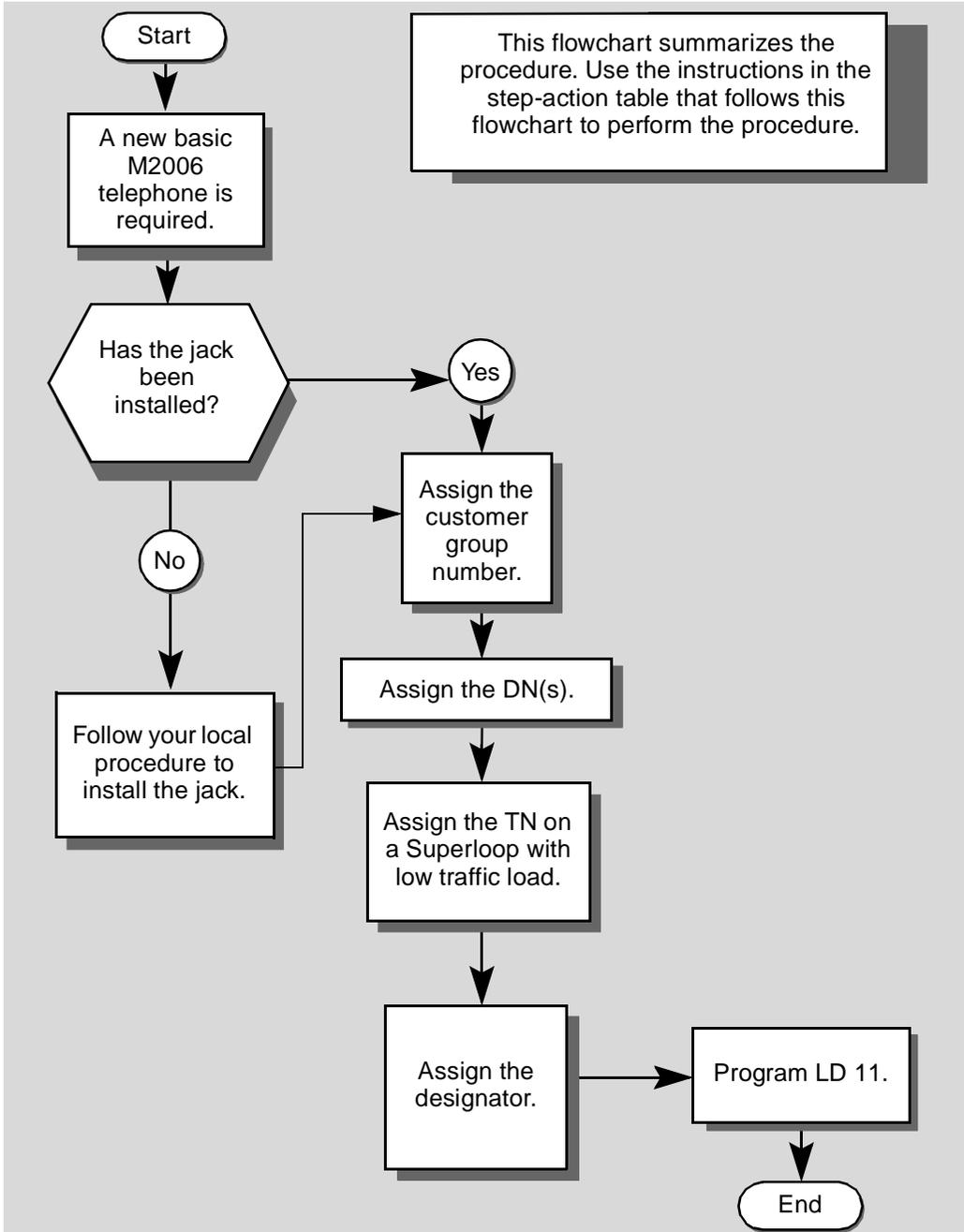
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M2006 telephone.



## New M2006 telephone



## New M2006 telephone



The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M2006 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>— continued —</b>		



## New M2006 telephone

STEP	ACTION						
4	<p><b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
5	<p><b>Print the DN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <pre>&gt; LD 22 or &gt; LD 20 or (Release 17 or later) &gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</pre> <p><b>REQ</b> PRT Request a printout  <b>TYPE</b> DNB DN Block  <b>CUST</b> &lt;cr&gt; All Customer groups  <b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <pre>U.data P.data small systems or MEM AVAIL: (U/P) USED:TOT: large systems</pre> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p> <p style="text-align: center;">— continued —</p>						

## New M2006 telephone



STEP	ACTION	
<b>6</b>	<b>Print the TN Block of the other telephone.</b>	
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>          PRT                  Request a Printout</p> <p><b>TYPE</b>        TNB                    TN Block</p> <p><b>TN</b>            L S C U            Input the Loop Shelf Card and Unit number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>	
<b>7</b>	<b>Assign the same customer group number to the new telephone.</b>	
	Go to step 10.	
<b>8</b>	<b>Arrange with your system supplier to have the new customer group data block programmed.</b>	
<b>9</b>	<b>Assign the new customer group number to the new telephone.</b>	
<b>10</b>	<b>Find out what DNs are available.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you know what DN you want to assign	step 13
	you do not know what DN you want to assign and your system software is Release 19 or later	step 11
	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.
<b>— continued —</b>		



## New M2006 telephone

STEP	ACTION	
<b>11</b>	<b>Print unused DNs in your customer group.</b>	
	Log in if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b>	PRT            Print
	<b>TYPE</b>	LUDN          List unused DNs
	<b>CUST</b>	0 – 99        Input customer group number
	You get a printout of the unused DNs in your customer group.	
<b>12</b>	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>	
<b>13</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	you have access to the print overlay programs	step 14
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.
<b>14</b>	<b>Print out the available TNs on your system.</b>	
	Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20 or	
	> LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)	
	<b>REQ</b>	LUU            List all unused units
		LUVU          List unused voice units (Release 19 or later)
	<b>TYPE</b>	2006          M2006 telephone. If there are no M2006 telephones installed yet, choose a type of digital telephone that has been installed.
	You get a printout of the available digital telephone TNs.	
	— continued —	

## New M2006 telephone



STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<code>&gt; LD 11</code>	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 2006	M2006 telephone
	<b>TN</b> L S C U	Input the TN ( <b>L</b> oop <b>S</b> helf <b>C</b> ard <b>U</b> nit number)
	<b>CDEN</b> <cr>	Carriage return — use the default
	<b>DES</b> A . . A	Designator maximum six characters
	<b>CUST</b> 0 – 99	customer group number
	carriage return until you see the prompt KEY	
	— continued —	



## New M2006 telephone

### STEP ACTION

#### 19 continued ...

Program the key one of the following ways: key 0 must be programmed with a DN -only key 0 can be assigned a DN on an M2006 telephone

**KEY** 0 SCR X . . X

SCR — single call ringing DN

**KEY** 0 SCN X . . X

SCN — single call non-ringing DN

**KEY** 0 MCR X . . X

MCR — multiple call ringing DN

**KEY** 0 MCN X . . X

MCN — multiple call non-ringing DN

X..X represents the actual digits in the DN — type the actual digits

the DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP

Carriage return until you see either of the following messages:

**U.data**            **P.data**            small systems

or

**MEM AVAIL: (U/P) USED:TOT:**            large systems

#### 20 Check that the telephone works.

Try to make a call. Try to receive a call.

**If**

**Do**

telephone works

step 21

telephone does not work

step 1

— continued —

## New M2006 telephone



### STEP ACTION

#### 21 Arrange for a data dump to be performed.

##### If

you do not have access  
to LD 43

##### Do

Contact your system supplier.

you have access to LD 43 step 22

#### 22 Perform a data dump to permanently store the programming you have just completed.



##### CAUTION

Check your maintenance agreement  
before working in LD 43.

Refer to the *Basic programming instructions* module of this book or refer to the *X11 input/output guide* for more information on LD 43.

> LD 43

. EDD <cr>

— continued —



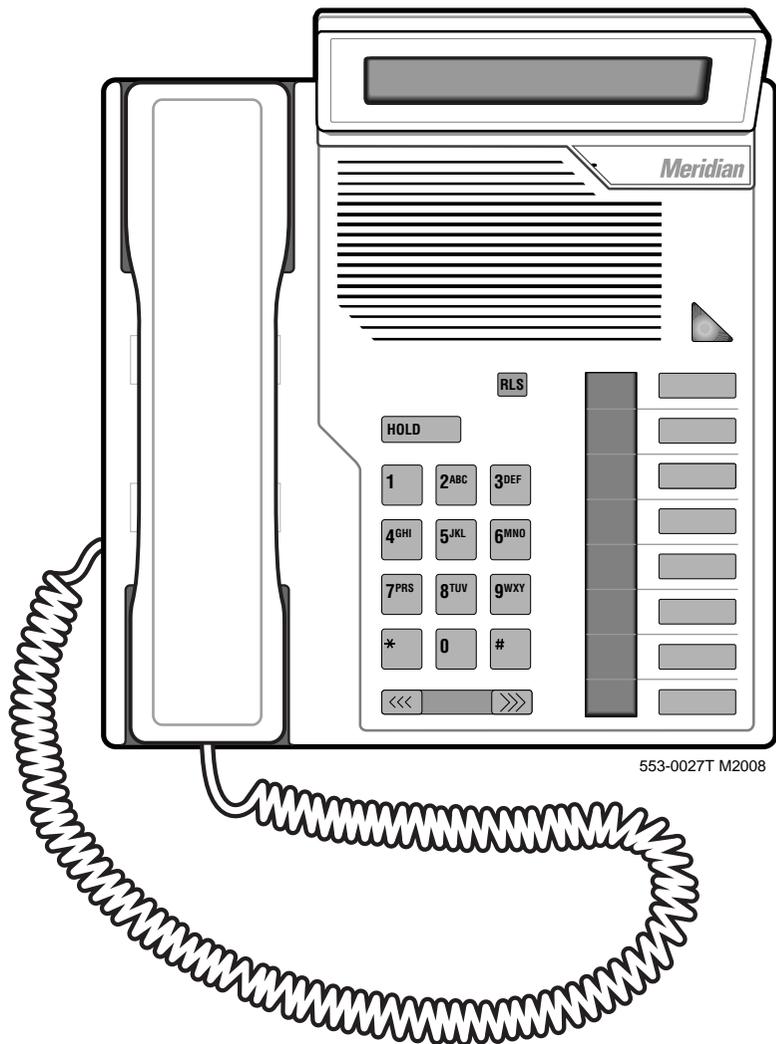
## New M2006 telephone

STEP	ACTION								
23	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b></p> <p>or</p> <p><b>DATA DUMP COMPLETE</b></p> <table border="0"> <tr> <td><b>If</b></td> <td><b>Do</b></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 24</td> </tr> </table>	<b>If</b>	<b>Do</b>	-----		data dump fails	Contact your system supplier.	data dump succeeds	step 24
<b>If</b>	<b>Do</b>								
-----									
data dump fails	Contact your system supplier.								
data dump succeeds	step 24								
24	<p><b>Terminate this overlay program.</b></p> <p>. ****</p>								
25	<p><b>Terminate this programming session.</b></p> <p>Log off.</p> <p>&gt; LOGO</p>								
26	<p><b>You have now completed the minimum programming required to implement a basic new M2006 telephone.</b></p>								

## New M2008/M2008HF telephone

### Purpose

The information in this Task module will help you if a user at your site requires a new M2008 or M2008HF telephone.





## New M2008/M2008HF telephone



The M2008 telephone is not available in Europe.

If the user requires a new telephone, install an M2008 telephone if:

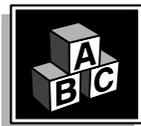
- ◆ the user needs one or several Directory Numbers (DNs)
- ◆ the user has a Personal Computer or will need one at the desk and you want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires
- ◆ the user requires easy access to features or commonly dialed telephone numbers using buttons (or keys)
- ◆ the user can benefit from seeing easy-to-understand prompts on the optional display when accessing features
- ◆ the user can benefit, when answering redirected calls, from seeing a display of the type of feature which redirected the call to the telephone
- ◆ the user wants a display to show a call timer
- ◆ the user wants to adjust the volume of the sound coming through the receiver
- ◆ the users in a group want telephones to ring with different tones so they can tell which telephone is ringing
- ◆ the users want a choice of languages on the optional display when using features
- ◆ the user can benefit from seeing the internal or external telephone number and, optionally, the name of the caller on the optional display before calls are answered
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting

If the user requires handsfree capability in addition to the above, install an M2008HF telephone.

## New M2008/M2008HF telephone



### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Software

**Table 69**  
**Software requirements**

Release required	Software package(s) required
M2008: Release 14	88 (DSET) M2000 Digital Sets
M2008HF: Release 21.41	89 (TSET) M3000 Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling, and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system supplier to do the physical installation work.



It is important to note that if you are using digital line cards on an older system, the card type is Integrated Services Digital Line Card (ISDLC), and the card vintage must be “C” or later for these telephones to work.



## New M2008/M2008HF telephone

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### Power

This telephone requires external power if one of the following items is equipped:

- ◆ the external alerter interface kit
- ◆ the Meridian Programmable Data Adapter (MPDA) or the Meridian Communications Adapter (MCA)
- ◆ the optional display module

Also, there is a power supply board that must be installed inside the telephone. M2008 and M2008HF telephones are shipped with the power supply board, if the display module is ordered. Arrange with your system supplier to get the necessary power equipment ordered and installed. The M2008HF telephone does not require an external power supply for the handsfree capability.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M2008 telephone function. The other prompts in the overlay program, not shown in this task, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator.

For example, the users may need access to certain basic features, such as Call Transfer and Conference. These are denied by default. Also, the telephone system administrator may want to implement corporate-wide policies for telephones which are not met through the default choices.

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## New M2008/M2008HF telephone

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Because the M2008 and M2008HF are digital telephones, they are programmed in overlay program (LD) 11.

### Data, Display, and Handsfree default values

The display screen of a Meridian Modular telephone contains two lines with 24 character spaces on each line. If the telephone has a display module or a data option installed, key 7 is automatically set by the system as a PROGRAM key. This key is needed for the user to make adjustments to the display or data parameters from the telephone keypad.

When you do a TN-Block printout of the information programmed for the telephone, key 7 appears to have nothing assigned to it. It is blank in the printout.

With the M2008HF telephone, when the handsfree capability is enabled, Key 6 is automatically assigned as a handsfree/mute key. Key 7 can only be a program key or NUL.

*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for the prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

## Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.



## New M2008/M2008HF telephone

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the range is one to four digits.

This telephone can be configured to have one or more than one DN. Each of the keys numbered 0–7 on the M2008 telephone can have a DN assigned.

### Ringling or Non-ringling DNs

On digital telephones, a DN can be programmed to be a ringling or a non-ringling appearance.

- ◆ When a call comes into a ringling appearance, the telephone rings, if it is idle, and the indicator beside the DN key flashes.
- ◆ When a call comes into a non-ringling appearance of a DN, the DN-key indicator flashes but the telephone does not ring.

If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

If an M2008 or M2008HF telephone has several DN keys programmed, you can program each DN key to ring or not to ring according to the needs of the user.

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## New M2008/M2008HF telephone

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### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN on a key.

The term *appearance* means a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M2008 or M2008HF telephone, you assign the following programming code to the key:

SCR X . . X where X . . X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to a key on an M2008 or M2008HF telephone, you assign the following programming code to the key:

SCN X . . X where X . . X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone.

Refer to Task 40, *Multiple Appearance DN Redirection Prime* for important information on a Multiple Appearance DN feature.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

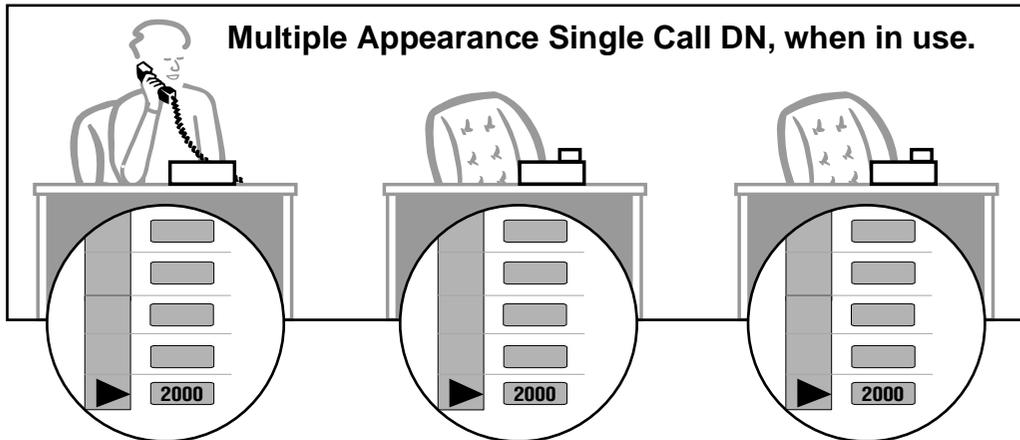


## New M2008/M2008HF telephone

### Single Call DN

The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1 type telephones.



553-0025T SCDN



If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M2008 or M2008HF telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

## New M2008/M2008HF telephone



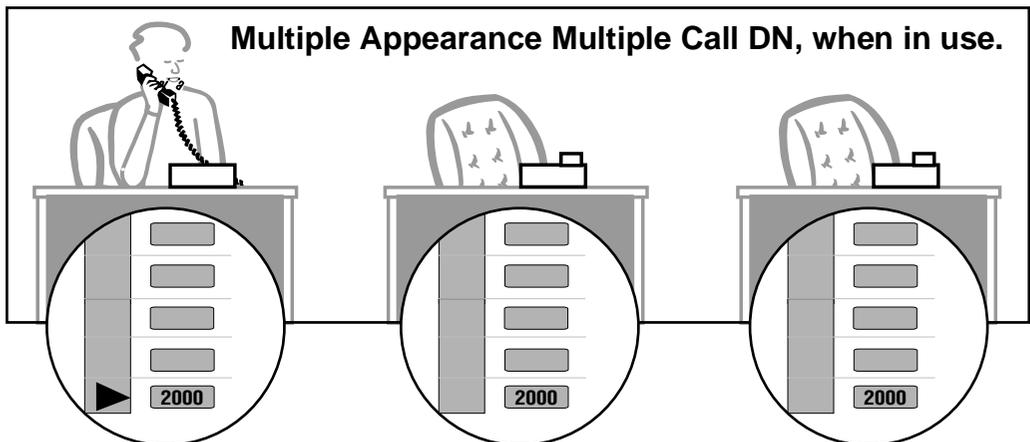
When you want to assign a *Single Call Non-ringing DN* to a key on an M2008 or M2008HF telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1 – 7 digits in length. There must be a space between the SCN code and the digits in the DN.

### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.



553-0026T MCDN



## New M2008/M2008HF telephone

A multiple call DN is not treated as busy until there are calls on all of the programmed appearances of the DN. There can be a maximum of 16 appearances of one DN on systems using software prior to Release 13, after that release there can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DNs.

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M2008 or M2008HF telephone, you assign the following programming code to the key:

MCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M2008 or M2008HF telephone, you assign the following programming code to the key:

MCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.

### Consistent configuration



*Whether you choose Single Call or Multiple Call, all appearances of one DN must be the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal*

The step-action table at the end of this module explains how to assign a DN on a new M2008 or M2008HF telephone.

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## New M2008/M2008HF telephone

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### Prime DN, Key 0

Key 0, which is the key at the bottom of the key strip, *must be* programmed with a DN. This DN is called the prime DN.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and may also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module in this book.



### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DN's, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use.

The step-action table at the end of this module shows you how to do this.



## New M2008/M2008HF telephone

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M2008 and M2008HF are digital telephones, they are programmed in overlay program (LD) 11. In this overlay program, even though a telephone may have more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.

If you are using a system running with Release 15 or later software, it can be equipped with either loops or Superloops. If you are using a system with software prior to Release 15, the system can be equipped with only loops. Loops and Superloops belong in the Network Equipment part of the system.

If you are not sure what type(s) of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment.

Refer to the *You should know this* module for more information on the hardware of your system.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

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## New M2008/M2008HF telephone

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### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the loop, or Superloop, to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.

Loops and Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when traffic load for each loop or Superloop is kept within the recommended guidelines. If all of your existing loops and/or Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards. There are two types of line cards for M2008 and M2008HF telephones: quadruple-density and octal-density.

Quadruple (quad) density digital line cards have 16 TNs. Eight of the TNs on the card are for digital telephones and the other eight are for the associated data terminals (if any). Therefore, quad density digital line cards connect to a maximum of eight digital telephones.



## New M2008/M2008HF telephone

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Systems using Superloops can use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.

Octal-density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal-density digital line cards connect to a maximum of sixteen digital telephones.

When you program digital telephones, you do not need to tell the system what density the digital telephone line card is, since it defaults to the density allowed for the network loop or Superloop on which the telephone resides.

### Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

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## New M2008/M2008HF telephone

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Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.



## New M2008/M2008HF telephone

### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

### Ringling options

#### Distinctive Ringling Groups

There are four different ringling options for the digital telephones. When you program the Class of Service of each telephone, you choose one of the four options to set the ringling tone and ringling cadence. The choices are: DRG1, DRG2, DRG3, or DRG4. DRG stands for Distinctive Ringling Group.

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringling.

Distinctive Ringling can be very useful with the Call Pickup feature. When telephones are ringling in the Pickup group, the users can tell what telephone is ringling and answer calls appropriately.

#### Network and Executive Distinctive Ringling

When you assign Executive Distinctive Ringling to a telephone, terminating telephones ring distinctively when they receive calls from the "Executive" telephone. Network Distinctive Ringling extends this functionality across an ISDN network.

## New M2008/M2008HF telephone



**Table 70**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG) 125 – Flexible Tones and Cadences (FTC) 145 – Integrated Services Digital Network (ISDN) 161 – Integrated Services Digital Network Supplementary Features (ISDNS) 185 – Executive Distinctive Ringing (EDRG)

### Directory Number Delayed Ringing (DNDR)

**Table 71**  
**Software requirements**

Release required	Software package(s) required
21	none

If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user's telephone.



## New M2008/M2008HF telephone

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When you have Multiple Appearance non-ringing DNs, there are many different ways you can choose to implement it. Two examples follow:

- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Distinctive Ringing by DN

You can apply distinctive ringing to each DN or Hotline key on a Meridian Modular telephone in the following ways:

- ◆ DRDN by call source: terminating telephones ring distinctively when the user initiates a call from the key. Each key on the originating telephone can have one of five distinctive ringing patterns.
- ◆ DRDN by call destination: each key has a distinctive ringing pattern when incoming calls are presented to the telephone. Each key can have one of five distinctive ringing patterns.

DRDN by call source overrides DRDN by call destination. The ringing pattern associated with the calling DN is used at the terminating telephone, in cases where the terminating key also has the feature allowed.

## New M2008/M2008HF telephone



**Table 72**  
**Software requirements**

Release required	Software package(s) required
24	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network Supplementary Features (ISDNS)
	185 – Executive Distinctive Ringing (EDRG)

### Display options

There is a Quick Reference Card describing the use of the display. It explains how to use the Program key to set such things as:

- ◆ the contrast
- ◆ the language used for feature prompts
- ◆ the format of the call timer
- ◆ the volume of ringing, buzzing, the speaker, the handset and the handsfree (if present)
- ◆ the key clicks
- ◆ the idle screen format
- ◆ the predialed number for recall

### Three Language Display

All Meridian Modular telephones in North America can be equipped with a Three Language Display. The Three Language Display firmware supports the English, French, and Spanish languages.



## New M2008/M2008HF telephone

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### Electronic Brandling

With X11 Release 23, the Electronic Brandling feature enhances the display functionality of Meridian Modular telephones (M2008, M2008HF, M2016, M2216ACD, and M2616) when they are equipped with a display.

This feature allows the second line on the idle display screen of Meridian Modular telephones to show a custom display. The display contains either a customized brandline or the brandline default. The customized brandline could be the name of a distributor (for example, Alexander G. Bell Telecom) or a customized text string (for example, Employee meeting at 10 AM). The brandline default is "NORTEL".

The Three Language Display is required for the Electronic Brandling feature. For information on the Three Language Display, refer to its description on the previous page.

### Automatic Set Display

With X11 Release 23, when an incoming call is presented to a busy telephone, the Calling Line Identification (CLID) and Calling Party Name Display (CPND) for the incoming call is automatically displayed on the busy telephone. This capability is enabled by programming the Tandem Digit Display (TDD) Class of Service on the telephone.

Previously, this functionality was only available on the M3000 Touchphone. However, the user of the busy telephone had to press the display key for the Calling Line Identification information to be presented.

### Data option

When the Meridian Programmable Data Adapter (MPDA) or the Meridian Communications Adapter (MCA) is installed, you can set up a computer on the user's desk using the same pair of wires that the telephone uses to connect to the system. If you do this, then key 7 on the telephone must be used as a Program key to control various data parameter settings. There is a Quick Reference Card for the MPDA and the MCA which explains these settings and how to use the Program key.

## New M2008/M2008HF telephone



### Control tips



- ◆ If the telephone is equipped with a display, the user can see the trunk group access codes. If you do not want the user accessing certain trunk groups using the direct trunk access code, implement the TGAR feature to prevent it. Refer to Task 45, *Trunk Group Access Restriction* for more information.
- ◆ If the user unplugs an M2008 or M2008HF telephone:
  - the chosen display settings return to the default settings. This is a quick way for you to know if users are unplugging their telephones in an attempt to move them themselves
  - messages print out on the maintenance printer, identifying the TN with the missing telephone
- ◆ If the system initializes:
  - the display settings are not affected
  - messages print out on the maintenance printer to identify the cause(s) of the initialization

### Administration tips



- ◆ The M2008 and M2008HF have a red indicator that lights steadily when there are messages waiting. You might want to program a Message Waiting key on one of the keys numbered 1–7 on M2008 and 1-6 on M2008HF, so that the user has an easy way of dialing the message center or voice mail when there are messages.

Refer to Task 25, *Message Center*.

- ◆ You might want to consider using one or two standard key layouts for all digital telephones, or at least all M2008 and M2008HF telephones. This can save significant amounts of memory.
- ◆ It is not possible to add Key Expansion modules to the M2008 or M2008HF telephone.



## New M2008/M2008HF telephone

- ◆ If there are not enough keys for the features needed, the user can access features by dialing codes. Refer to the *You should know this* module for more information on dial accessible features.

### Training tips



- ◆ If you have a standard key layout on all M2008 and M2008HF telephones, this is an advantage since users can go to any telephone and feel comfortable using it. If all telephones are the same, they can also explain features to each other.
- ◆ Even though users do not have to remember feature access codes, they might need refresher training from time to time. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps you both get the most out of the system and in turn the system provides the expected benefits.
- ◆ If display modules are installed, users need training on the feature prompts which are presented when features are used.

## New M2008/M2008HF telephone



### What to have ready

Make the following preparations before you do the basic programming of a new M2008 or M2008HF telephone.

**Table 73**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s) assigned to the telephone you are about to program. Decide whether it is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to enter as a designator code.
✓		Determine if any of the terminal options, such as the data option, are required.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.
	✓	Arrange for the necessary power equipment to be ordered and installed if the display module or the external alerter kit, or the MPDA is required.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.



## New M2008/M2008HF telephone

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

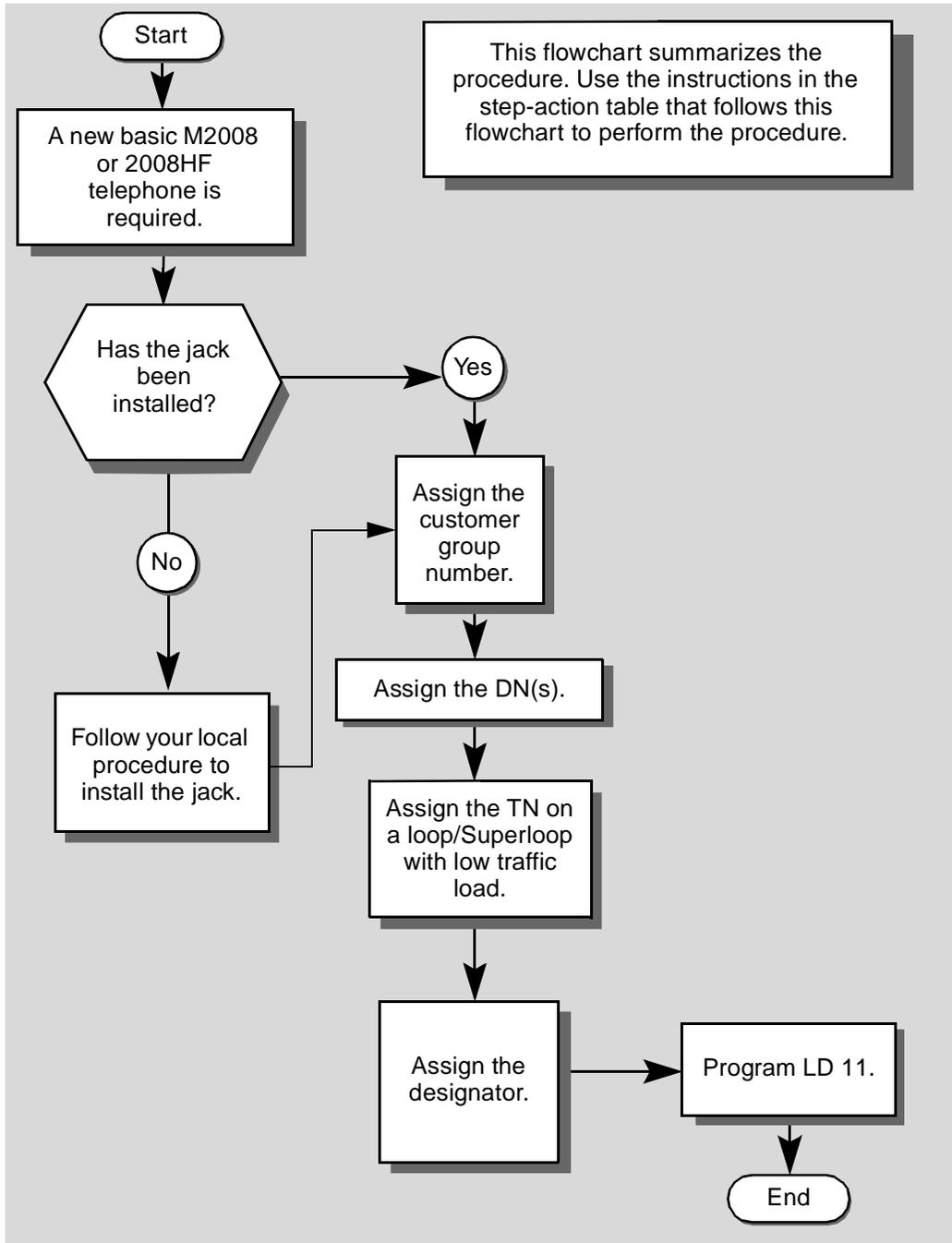
*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M2008 or M2008HF telephone.

## New M2008/M2008HF telephone



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## New M2008/M2008HF telephone

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M2008 or M2008HF telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
— continued —		

## New M2008/M2008HF telephone



### STEP ACTION

#### 4 Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.

**If**

**Do**

you know the DN and not the TN of the other telephone

step 5

you know the TN of the other telephone

step 6

#### 5 Print the DN Block of the other telephone.

Log in. For information on proper login procedures, refer to *Basic programming instructions* in this book.

> LD 22 or

> LD 20 or (Release 17 or later)

> LD 10 or LD 11 or LD 32 (Release 19 or later)

**REQ** PRT Request a printout

**TYPE** DNB DN Block

**CUST** <cr> All Customer groups

**DN** X . X Input the DN of the other telephone

Carriage return until you see either of the following messages:

**U.data** **P.data** small systems

or

**MEM AVAIL: (U/P) USED:TOT:** large systems

You get a printout of the TN of the other telephone.

**Note:** If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.

— continued —



## New M2008/M2008HF telephone

STEP	ACTION								
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>        PRT            Request a Printout</p> <p><b>TYPE</b>       TNB            TN Block</p> <p><b>TN</b>        L S C U        Input the Loop Shelf Card and Unit number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>								
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>								
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>								
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>								
<b>10</b>	<p><b>Find out what DNs are available.</b></p> <table border="0"> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>you know what DN you want to assign</td> <td>step 13</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is Release 19 or later</td> <td>step 11</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is pre-Release 19</td> <td>Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.</td> </tr> </tbody> </table>	If	Do	you know what DN you want to assign	step 13	you do not know what DN you want to assign and your system software is Release 19 or later	step 11	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.
If	Do								
you know what DN you want to assign	step 13								
you do not know what DN you want to assign and your system software is Release 19 or later	step 11								
you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.								
— continued —									

## New M2008/M2008HF telephone



### STEP ACTION

#### 11 Print unused DNs in your customer group.

Log in, if you do not already have an active programming session. For information on proper login procedures, refer to *Basic programming instructions* in this book.

> LD 20

<b>REQ</b>	PRT	Print
<b>TYPE</b>	LUDN	List unused DNs
<b>CUST</b>	0 – 99	Input customer group number

You get a printout of the unused DNs in your customer group.

#### 12 Choose an available DN which fits your Numbering Plan and the needs of the user.

#### 13 Find out what Terminal Numbers are available for the new telephone.

If	Do
you have access to the print overlay programs	step 14
you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.

#### 14 Print out the available TNs on your system.

Log in. For information on proper login procedures, refer to *Basic programming instructions* in this book.

> LD 20 or

> LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)

<b>REQ</b>	LUU	List all unused units
	LUVU	List unused voice units (Release 19 or later)
<b>TYPE</b>	2008	M2008 telephone. If there are no M2008 telephones installed yet, choose a type of digital telephone that has been installed.

You get a printout of the available digital telephone TNs.

— continued —



## New M2008/M2008HF telephone

STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program a new telephone.</b>	
	<b>If</b>	<b>Do</b>
	you are programming a new M2008 telephone	step 20
	you are programming a new M2008HF telephone	step 21
<b>20</b>	<b>Program a new M2008 telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
— continued —		

## New M2008/M2008HF telephone

### STEP ACTION

#### 20 *continued ...*

```

> LD 11
REQ NEW           New telephone
TYPE 2008        M2008 telephone
TN   L S C U     Input the TN (Loop Shelf Card Unit number)
CDEN <cr>       Carriage return — use the default
DES  A . . A     Designator maximum six characters
CUST 0 - 99     customer group number
  
```

carriage return until you see the KEY prompt.

Go to step 24.

#### 21 Program a new M2008HF telephone.

If	Do
you are allowing handsfree capability	step 22
you are denying handsfree capability	step 23

#### 22 Program a new M2008HF telephone with handsfree capability allowed.

Log in, if you do not already have an active programming session. For information on proper login procedures, refer to *Basic programming instructions* in this book.

— continued —

## New M2008/M2008HF telephone

### STEP ACTION

#### 22 continued ...

```

> LD 11
REQ  NEW           New telephone
TYPE 2008         M2008 telephone
TN   L S C U      Input the TN (Loop Shelf Card Unit number)
CDEN <cr>         Carriage return — use the default
DES  A . . A      Designator maximum six characters
CUST 0-99         customer group number

```

Carriage return until you see the CLS prompt.

```
CLS  HFA           Handsfree Allowed.
```

**Note:** When CLS is set to Handsfree Allowed (HFA), Key 6 is automatically programmed as the Handsfree key. Key 7 is the Program key.

Carriage return until you see the KEY prompt.

**Go to step 24.**

#### 23 Program a new M2008HF telephone with handsfree capability denied.

Log in, if you do not already have an active programming session. For information on proper login procedures, refer to *Basic programming instructions* in this book.

— continued —

## New M2008/M2008HF telephone

### STEP ACTION

#### 23 continued ...

```
> LD 11
REQ NEW           New telephone
TYPE 2008        M2008 telephone
TN  L S C U      Input the TN (Loop Shelf Card Unit number)
CDEN <cr>        Carriage return — use the default
DES  A..A        Designator maximum six characters
CUST 0-99        customer group number
```

Carriage return until you see the CLS prompt.

```
CLS  HFD          Handsfree Denied.
```

Carriage return until you see the KEY prompt.

#### 24 Program DNs on as many keys as you require.

```
Program the key(s) one of XX represents the key number (0-7)
the following ways: key 0 must be programmed with a DN
```

```
KEY XX SCR X..X  SCR — single call ringing DN
KEY XX SCN X..X  SCN — single call non-ringing DN
KEY XX MCR X..X  MCR — multiple call ringing DN
KEY XX MCN X..X  MCN — multiple call non-ringing DN
```

X..X represents the actual digits in the DN  
— type the actual digits

the DN can be 1-7 digits with DNX software package or 1-4 digits without DNX

Carriage return until you see either of the following messages:

```
U.data P.data    small systems
```

or

```
MEM AVAIL: (U/P) USED:TOT:    large systems
```

— continued —

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**New M2008/M2008HF telephone**

STEP	ACTION								
<b>25</b>	<b>Check that the telephone works.</b>								
	Try to make a call. Try to receive a call.								
	<table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td colspan="2">.....</td> </tr> <tr> <td>telephone works</td> <td>step 26</td> </tr> <tr> <td>telephone does not work</td> <td>step 1</td> </tr> </tbody> </table>	If	Do	.....		telephone works	step 26	telephone does not work	step 1
If	Do								
.....									
telephone works	step 26								
telephone does not work	step 1								
<b>26</b>	<b>Arrange for data dump to be performed.</b>								
	<table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td colspan="2">.....</td> </tr> <tr> <td>you do not have access to LD 43</td> <td>Contact your system supplier.</td> </tr> <tr> <td>you have access to LD 43</td> <td>step 27</td> </tr> </tbody> </table>	If	Do	.....		you do not have access to LD 43	Contact your system supplier.	you have access to LD 43	step 27
If	Do								
.....									
you do not have access to LD 43	Contact your system supplier.								
you have access to LD 43	step 27								
<b>27</b>	<b>Perform a data dump to permanently store the programming you have just completed.</b>								
	<div style="border: 1px solid black; padding: 10px; margin: 10px 0;">  <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div> <p>Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.</p> <pre>&gt; LD 43  . EDD &lt;cr&gt;</pre>								
— continued —									

## New M2008/M2008HF telephone

STEP	ACTION						
28	<p>Verify that the data dump was successful.</p> <p>TTY response:</p> <p>NO GO BAD DATA or DATA DUMP COMPLETE</p> <table> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 29</td> </tr> </tbody> </table>	If	Do	data dump fails	Contact your system supplier.	data dump succeeds	step 29
If	Do						
data dump fails	Contact your system supplier.						
data dump succeeds	step 29						
29	<p>Terminate this overlay program.</p> <p>. ****</p>						
30	<p>Terminate this programming session.</p> <p>Log off.</p> <p>&gt; LOGO</p>						
31	<p>You have now completed the minimum programming required to implement a basic new M2008 or M2008HF telephone.</p>						
							

424 Making a telephone work

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of 1776

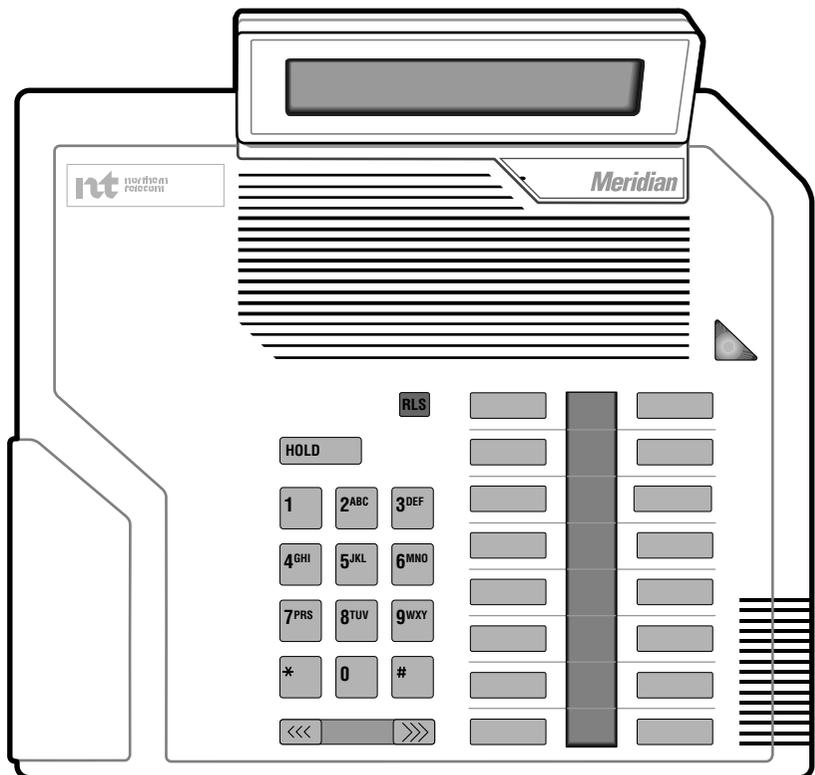
## **New M2008/M2008HF telephone**

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# New M2216ACD telephone

## Purpose

The information in this Task module will help you if a user at your site requires a new M2216ACD telephone. Automatic Call Distribution (ACD), or a Call Center, for which this telephone was primarily designed, is beyond the scope of this book. However, this telephone can be used in a regular business environment and that application is discussed in this module.



553-0028T M2216ACD



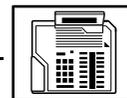
## New M2216ACD telephone

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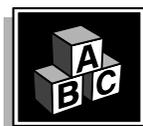
If the user needs a new telephone, install an M2216ACD telephone if:

- ◆ the user wants to be able to use a headset in addition to, or in place of, a handset
- ◆ the user or the supervisor needs to be able to plug in an extra handset or headset while conversations are active and listen in for training or job performance review purposes
- ◆ the user needs one or several Directory Numbers (DNs)
- ◆ the user has a Personal Computer or will need one at the desk and you want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires
- ◆ the user requires easy access to features or commonly dialed telephone numbers using buttons (or keys)
- ◆ the user can benefit from seeing easy-to-understand prompts on the display when accessing features. (There are special displays you can order for Call Center environments)
- ◆ the user can benefit, when answering redirected calls, from knowing the type of feature that redirected the call to the telephone
- ◆ the user wants a display to show a call timer
- ◆ the user wants to adjust the volume of sound coming through the handset or headset
- ◆ the users want a choice of languages on the optional display when using features
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the user can benefit from knowing the internal or external telephone number and, optionally, the name of the caller before calls are answered
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting

## New M2216ACD telephone



### Basic configuration



This part tells you how the telephone has to be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny for the user, refer to the section called *Adding and changing features*.

### Software

**Table 74**  
**Software requirements**

Release required	Software package(s) required
14	88 (DSET) M2000 Digital Sets 89 (TSET) M3000 Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling, and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.



It is important to note that if you are using digital line cards on an older system, the card type is Integrated Services Digital Line Card (ISDLC), and the card vintage must be “C” or later for these telephones to work.



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## New M2216ACD telephone

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### Power

This telephone requires external power if any of the following equipment is installed:

- ◆ an external alerter interface kit
- ◆ a Key Expansion module
- ◆ a Meridian Programmable Data Adapter or a Meridian Communications Adapter

Also, there is a power supply board which must be installed inside the telephone. Arrange with your system supplier to get the necessary power equipment ordered and installed.



The display module is always shipped with the M2216ACD telephone. No extra power equipment is required to make it work.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is also a response, as it programs the default value.

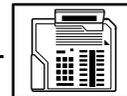
The prompts discussed in this module are the ones to which you must respond to make a basic M2216ACD telephone operate. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator. For example, the user's manager often wants controls placed on the user's calling capabilities. The default responses do not place these controls on the user. Also, the telephone system administrator may want to implement corporate-wide policies for telephones which are not met through the default choices.

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## New M2216ACD telephone

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Because the M2216ACD is a digital telephone, it is programmed in overlay program (LD) 11.

### Data and Display default values

The display screen of a Meridian Modular telephone contains two lines with 24 character spaces on each line.

If the telephone has a display module or a data option installed, key 7 is automatically set by the system as a PROGRAM key. This key is needed for the user to make adjustments to the display or data parameters from the telephone keypad.

When you do a TN-Block printout of the information programmed for the telephone, key 7 appears to have nothing assigned to it. It is blank in the printout.

*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for the prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

## Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.



## New M2216ACD telephone

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The maintenance agreement you have with your system supplier probably specifies what programming they must do and what you may do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software, package 150, is equipped on the system. Without DN Expansion, the DNs can be one to four digits.

This telephone can be configured to have one or more than one DN. Each of the keys numbered 0–15 on the telephone can have a DN assigned.

### Ringling or Non-ringling DNs

On digital telephones, a DN can be programmed to be a ringling or a non-ringling appearance.

- ◆ When a call comes into a ringling appearance, the telephone rings, if it is idle, and the indicator beside the DN key flashes.
- ◆ When a call comes into a non-ringling appearance of a DN, the DN-key indicator flashes but the telephone does not ring.

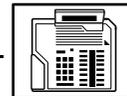
If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

If an M2216ACD telephone has several DN keys programmed, you can program each DN key to ring or not to ring according to the needs of the user.

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## New M2216ACD telephone

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### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN on a key.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M2216ACD telephone, you assign the following programming code to the key:

SCR X . . X where X . . X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to a key on an M2216ACD telephone, you assign the following programming code to the key:

SCN X . . X where X . . X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone.

Refer to Task 40, *Multiple Appearance DN Redirection Prime* for important information on a Multiple Appearance DN feature.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

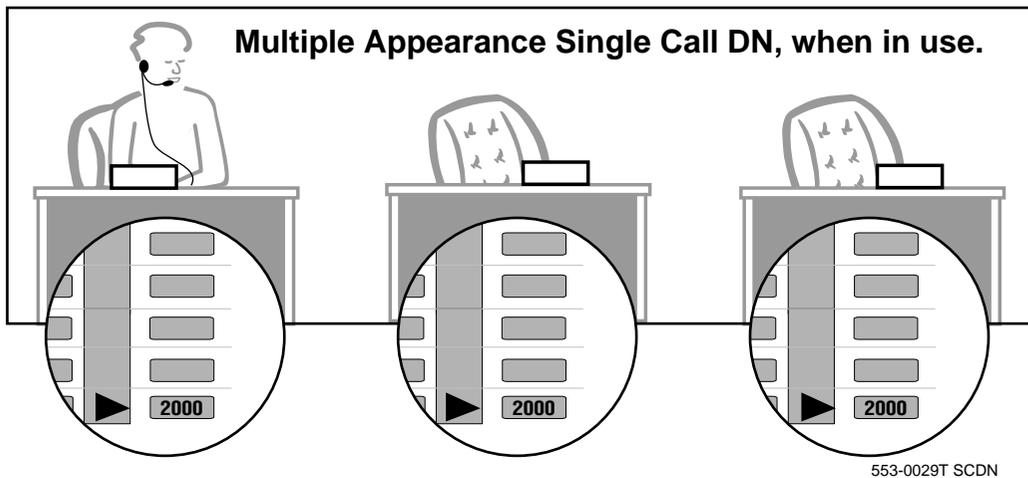


## New M2216ACD telephone

### Single Call DN

The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.



If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M2216ACD telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

## New M2216ACD telephone



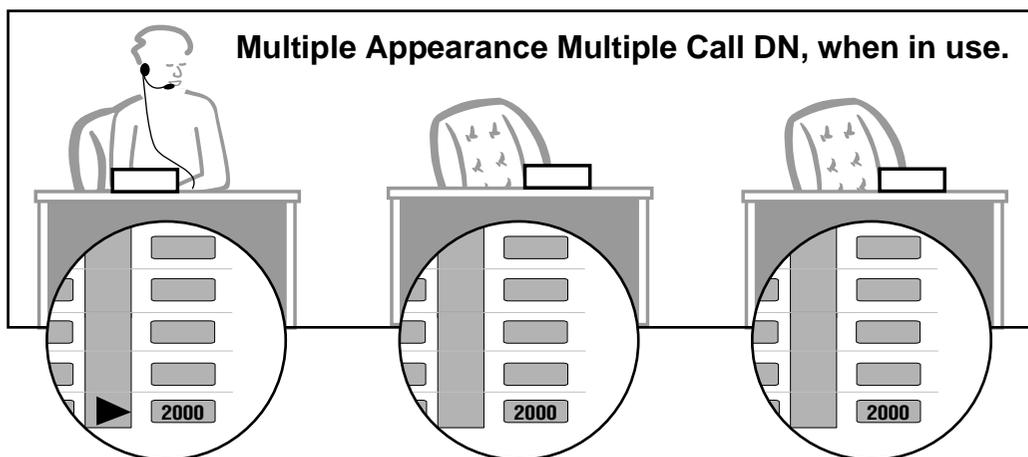
When you want to assign a *Single Call Non-ringing DN* to a key on an M2216ACD telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.



553-0030T MCDN

A Multiple Call DN is not treated as busy until there are calls on all of the programmed appearances of the DN. There can be a maximum of 16 appearances of one DN on systems using software prior to Release 13, after that release there can be a maximum of 30 appearances of the same DN.



## New M2216ACD telephone

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DNs.

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M2216ACD telephone, you assign the following programming code to the key:

MCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M2216ACD telephone, you assign the following programming code to the key:

MCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.

### Consistent configuration



*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M2216ACD telephone.

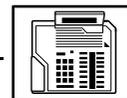
### Prime DN, Key 0

Key 0, which is the key at the bottom of the key strip on the right hand side of the telephone, *must be* programmed with a DN. This DN is called the prime DN.

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## New M2216ACD telephone

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Key 0 is configured with an Automatic Call Distribution (ACD) DN, when used in a Call Center environment. It is called the In-calls key. A discussion of Call Centers is beyond the scope of this book. You can find out more about them in the NTP called *Automatic Call Distribution*.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module in this book.



### DN-Block printout

If you need to know exactly what numbers are presently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DN's, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.



## New M2216ACD telephone

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### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M2216ACD is a digital telephone, it is programmed in overlay program (LD) 11. In this overlay program, when a telephone has more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.

If you are using a system running with Release 15 or later software, it can be equipped with either loops or Superloops. If you are using a system with software prior to Release 15, the system can be equipped with only loops. Loops and Superloops belong in the Network Equipment part of the system.

If you are not sure what type(s) of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment.

Refer to the *You should know this* module for more information on the hardware of your system.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table in this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

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## New M2216ACD telephone

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### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the loop, or Superloop, to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.

Loops and Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each loop or Superloop is kept within the recommended guidelines. If all of your existing loops and/or Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards. There are two kinds of line cards for M2216ACD telephones: quadruple-density and octal-density.

Quadruple (quad) density digital line cards have 16 TNs. Eight of the TNs on the card are for digital telephones and the other eight are for the associated data terminals (if any). Therefore, quad density digital line cards connect to a maximum of eight digital telephones.



## New M2216ACD telephone

Systems using Superloops can use *intelligent* line cards. They are called *intelligent* because they possess microprocessors. These are octal-density.

Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

When you program digital telephones, you do not need to tell the system what density the digital telephone line card is, since it defaults to the density allowed for the network loop or Superloop on which the telephone resides.

### Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

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## New M2216ACD telephone

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Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.



## New M2216ACD telephone

### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

### Ringling options

#### Distinctive Ringing Groups

There are four different ringing options for the digital telephones. When you program the Class of Service of each telephone, you choose one of the four options to set the ringing tone and ringing cadence. The choices are: DRG1, DRG2, DRG3, or DRG4. DRG stands for Distinctive Ringing Group.

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringing.

Distinctive Ringing can be very useful with the Call Pickup feature. When telephones are ringing in the Pickup group, the users can tell what telephone is ringing and answer calls appropriately.

#### Network and Executive Distinctive Ringing

When you assign Executive Distinctive Ringing to a telephone, terminating telephones ring distinctively when they receive calls from the "Executive" telephone. Network Distinctive Ringing extends this functionality across an ISDN network.

## New M2216ACD telephone



**Table 75**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG) 125 – Flexible Tones and Cadences (FTC) 145 – Integrated Services Digital Network (ISDN) 161 – Integrated Services Digital Network Supplementary Features (ISDNS) 185 – Executive Distinctive Ringing (EDRG)

### Directory Number Delayed Ringing (DNDR)

**Table 76**  
**Software requirements**

Release required	Software package(s) required
21	none

If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user's telephone.



## New M2216ACD telephone

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When you have Multiple Appearance non-ringing DNs, there are many different ways you can choose to implement it. Two examples follow:

- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Distinctive Ringing by DN

You can apply distinctive ringing to each DN or Hotline key on a Meridian Modular telephone in the following ways:

- ◆ DRDN by call source: terminating telephones ring distinctively when the user initiates a call from the key. Each key on the originating telephone can have one of five distinctive ringing patterns.
- ◆ DRDN by call destination: each key has a distinctive ringing pattern when incoming calls are presented to the telephone. Each key can have one of five distinctive ringing patterns.

DRDN by call source overrides DRDN by call destination. The ringing pattern associated with the calling DN is used at the terminating telephone, in cases where the terminating key also has the feature allowed.

## New M2216ACD telephone



**Table 77**  
**Software requirements**

Release required	Software package(s) required
24	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network International (ISDN_INTL_SUP)
	185 – Executive Distinctive Ringing (EDRG)

### Display options

There is a Quick Reference Card on the use of the display. It explains how to use the Program key to set such things as

- ◆ the contrast
- ◆ the language used for feature prompts
- ◆ the format of the call timer
- ◆ the volume of ringing, buzzing, the speaker, the handset and the handsfree, if there is one
- ◆ the key clicks
- ◆ the idle screen format
- ◆ the predialed number for recall

### Three Language Display

All Meridian Modular telephones in North America can be equipped with a Three Language Display. The Three Language Display firmware supports the English, French, and Spanish languages.



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## New M2216ACD telephone

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### Electronic Brandlining

With X11 Release 23, the Electronic Brandlining feature enhances the display functionality of Meridian Modular telephones (M2008/M2008HF, M2016, M2216ACD, and M2616) when they are equipped with a display.

This feature allows the second line on the idle display screen of Meridian Modular telephones to show a custom display. The display contains either a customized brandline or the brandline default. The customized brandline could be the name of a distributor (for example, Alexander G. Bell Telecom) or a customized text string (for example, Employee meeting at 10 AM). The brandline default is "NORTEL".

The Three Language Display is required for the Electronic Brandlining feature. For information on the Three Language Display, refer to its description on the previous page.

### Automatic Set Display

With X11 Release 23, when an incoming call is presented to a busy telephone, the Calling Line Identification (CLID) and Calling Party Name Display (CPND) for the incoming call is automatically displayed on the busy telephone. This capability is enabled by programming the Tandem Digit Display (TDD) Class of Service on the telephone.

Previously, this functionality was only available on the M3000 Touchphone. However, the user of the busy telephone had to press the display key for the Calling Line Identification information to be presented.

### Data option

When the Meridian Programmable Data Adapter (MPDA) or the Meridian Communications Adapter (MCA) is installed, you can set up a computer on the user's desk using the same pair of wires that the telephone uses to connect to the system.

## New M2216ACD telephone



If you do this, then key 7 on the telephone must be used as a Program key to control various data parameter settings. There is a Quick Reference Card for the MPDA or the MCA which explains these settings and how to use the Program key.

### Headset

The jack on the telephone for the headset can be used for a handset.

### Key Expansion module

There can be up to two of these 22-key modules added to one M2216ACD telephone. You can assign features or DN's to these keys.

### M2216ACD Telephone Enhancement

With X11 Release 22, there is an option your system supplier can set, to improve the quality of reception on M2216ACD telephones equipped with headsets. This allows the users to hear better through their headsets.

This enhancement is configured by setting a parameter for the system in overlay program (LD) 17. When this parameter is set, all M2216ACD telephones are affected, not just those telephones that are equipped with a headset.

## Control tips



- ◆ If the telephone is equipped with a display, the user can see the trunk group access codes when external incoming calls arrive at the telephone. If you do not want a user to access certain trunk groups using the direct trunk access code, implement the TGAR feature to prevent it. Refer to Task 45, *Trunk Group Access Restriction* for more information.
- ◆ If the user unplugs an M2216ACD telephone:
  - the chosen display settings return to the default settings. This is a quick way for you to know if users are unplugging their telephones in an attempt to move them themselves



## New M2216ACD telephone

- messages print out on the maintenance printer, identifying the TN with the missing telephone
- ◆ If the system initializes:
  - the display settings are not affected
  - messages print out on the maintenance printer to identify the cause(s) of the initialization

### Administration tips



- ◆ The M2216ACD telephone has a red indicator which lights steadily when there are messages waiting. You might want to program a Message Waiting key on one of the keys however, so that the user has an easy way of dialing the message center or voice mail when there are messages waiting.

For more information on Message Waiting, refer to Task 25, *Message Center*

- ◆ You might want to consider using one or two standard key layouts for all digital telephones, or at least all M2216ACD telephones. This can save significant amounts of memory.
- ◆ *A handsfree unit is not a part of this telephone and it cannot be added as an option.*

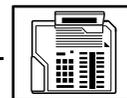


### Training tips



- ◆ If you have a standard key layout on all M2216ACD telephones, this is an advantage in training users, since users can go to any telephone and feel comfortable using it. The users can also explain features to each other if all telephones are the same.
- ◆ Even though features can be programmed on the keys for easy use, users might need refresher training from time to time. This helps to keep users' knowledge levels current about telephone concerns

## New M2216ACD telephone



and it helps to keep you informed about their changing needs. This helps you both get the most out of the system and in turn the system provides the expected benefits.

- ◆ If display modules are installed, users need training on the feature prompts which are presented when features are used.

### What to have ready

Make the following preparations before you do the basic programming of a new M2216ACD telephone.

**Table 78**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s). Decide whether it is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
✓		Arrange for the necessary power equipment to be ordered and installed.
✓		Determine if any optional equipment, such as Key Expansion modules, are required.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.



## New M2216ACD telephone

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Modifying a basic telephone* section for further information on many of these additional features and services.

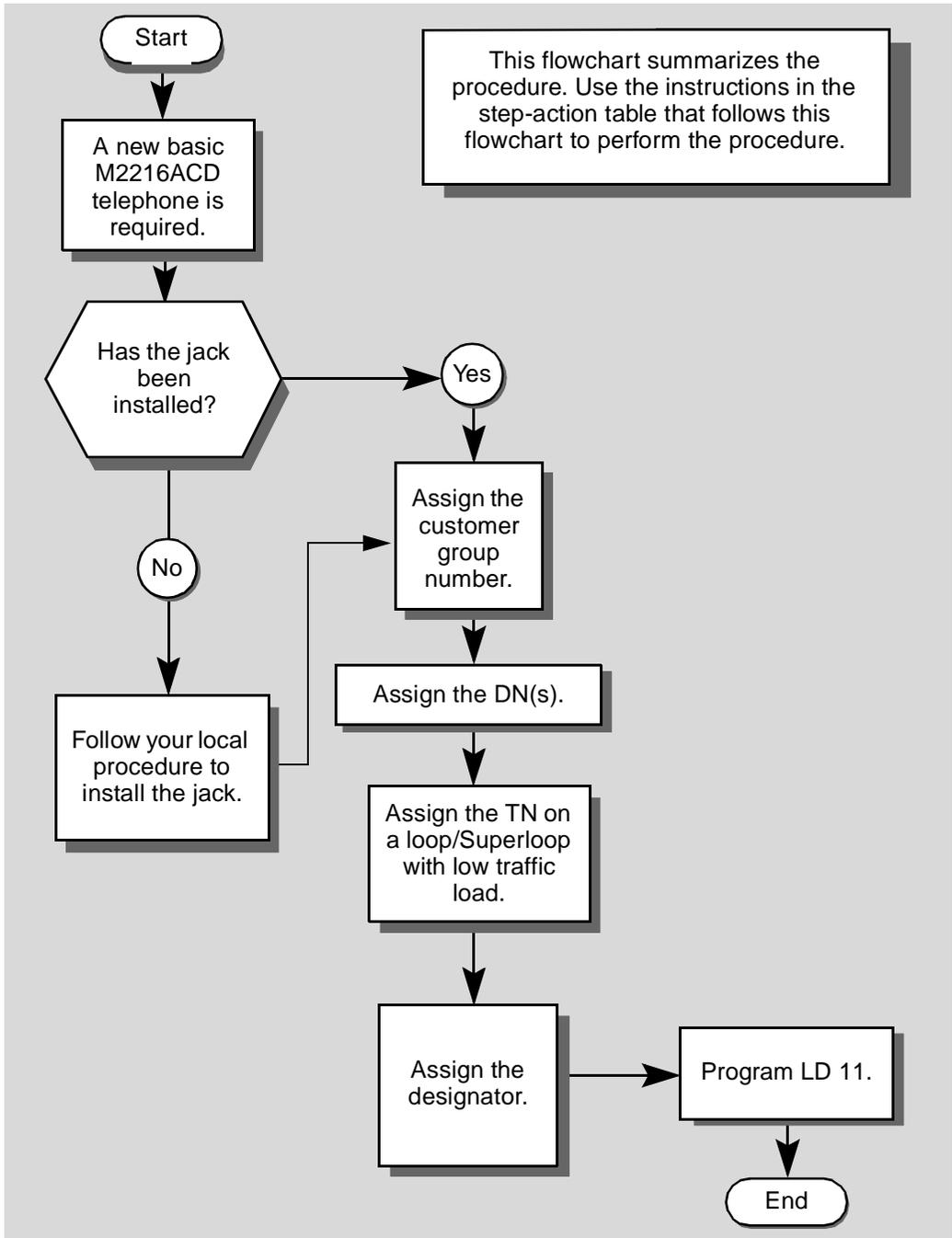
*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M2216ACD telephone.

## New M2216ACD telephone





## New M2216ACD telephone

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M2216ACD telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
More choices on next page...		
— continued —		

## New M2216ACD telephone



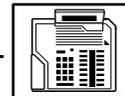
STEP	ACTION	
<b>3 continued ...</b>		
	you know your customer group number	step 10
<b>4</b>	<b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	you know the DN, not the TN of the other telephone	step 5
	you know the TN of the other telephone	step 6
<b>5</b>	<b>Print the DN Block of the other telephone.</b>	
	Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 22 or	
	> LD 20 or	(Release 17 or later)
	> LD 10 or LD 11 or LD 32 (Release 19 or later)	
	<b>REQ</b> PRT	Request a printout
	<b>TYPE</b> DNB	DN Block
	<b>CUST</b> <cr>	All Customer groups
	<b>DN</b> X . . X	Input the DN of the other telephone
	Carriage return until you see either of the following messages:	
	<b>U.data</b> <b>P.data</b>	small systems
	or	
	<b>MEM AVAIL: (U/P) USED:TOT:</b> large systems	
	You get a printout of the TN of the other telephone.	
	<b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.	
— continued —		



## New M2216ACD telephone

STEP	ACTION									
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or &gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <table> <tr> <td><b>REQ</b></td> <td>PRT</td> <td>Request a Printout</td> </tr> <tr> <td><b>TYPE</b></td> <td>TNB</td> <td>TN Block</td> </tr> <tr> <td><b>TN</b></td> <td>L S C U</td> <td>Input the Loop Shelf Card and Unit number of the other telephone</td> </tr> </table> <p>You get a printout of the customer group number of the other telephone.</p>	<b>REQ</b>	PRT	Request a Printout	<b>TYPE</b>	TNB	TN Block	<b>TN</b>	L S C U	Input the Loop Shelf Card and Unit number of the other telephone
<b>REQ</b>	PRT	Request a Printout								
<b>TYPE</b>	TNB	TN Block								
<b>TN</b>	L S C U	Input the Loop Shelf Card and Unit number of the other telephone								
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>									
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>									
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>									
<b>10</b>	<p><b>Find out what DNs are available.</b></p> <table> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>you know what DN you want to assign</td> <td>step 13</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is Release 19 or later</td> <td>step 11</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is pre-Release 19</td> <td>Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.</td> </tr> </tbody> </table>	If	Do	you know what DN you want to assign	step 13	you do not know what DN you want to assign and your system software is Release 19 or later	step 11	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.	
If	Do									
you know what DN you want to assign	step 13									
you do not know what DN you want to assign and your system software is Release 19 or later	step 11									
you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.									
— continued —										

## New M2216ACD telephone



STEP	ACTION	
<b>11</b>	<b>Print unused DNs in your customer group.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b>	PRT                      Print
	<b>TYPE</b>	LUDN                     List unused DNs
	<b>CUST</b>	0 – 99                  Input customer group number
	You get a printout of the unused DNs in your customer group.	
<b>12</b>	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>	
<b>13</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	
	you have access to the print overlay programs	step 14
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.
<b>14</b>	<b>Print out the available TNs on your system.</b>	
	Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20 or	
	> LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)	
	<b>REQ</b>	LJU                        List all unused units
		LUVU                     List unused voice units (Release 19 or later)
	<b>TYPE</b>	2216                     M2216ACD telephone. If there are no M2216ACD telephones installed yet, choose a type of digital telephone that has been installed.
	You get a printout of the available digital telephone TNs.	
	— continued —	



## New M2216ACD telephone

STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<code>&gt; LD 11</code>	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 2216	M2216ACD telephone
	<b>TN</b> L S C U	Input the TN (Loop Shelf Card Unit number)
	<b>CDEN</b> <cr>	Carriage return — use the default
	<b>DES</b> A . .A	Designator maximum six characters
	<b>CUST</b> 0 – 99	customer group number
	carriage return until you see the prompt KEY	
	<b>— continued —</b>	

## New M2216ACD telephone

### STEP ACTION

#### 20 Program DNs on as many keys as you require.

Program the key(s) one of the following ways:

**KEY** XX SCR X . . X

**KEY** XX SCN X . . X

**KEY** XX MCR X . . X

**KEY** XX MCN X . . X

where XX represents the key number (0– 59)

key 0 must be programmed with a DN, or in a Call Center environment, key 0 is an IN CALLS key

SCR — single call ringing DN

SCN — single call non-ringing DN

MCR — multiple call ringing DN

MCN — multiple call non-ringing DN

X..X represents the actual digits in the DN; type the actual digits

the DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP

Carriage return until you see either of the following messages:

**U.data**            **P.data**            small systems

or

**MEM AVAIL: (U/P) USED:TOT:**            large systems

#### 21 Check that the telephone works.

Try to make a call. Try to receive a call.

**If**

**Do**

.....  
telephone works

step 22

telephone does not work

step 1

— continued —

## New M2216ACD telephone

STEP	ACTION
<b>22</b>	<b>Arrange for a data dump to be performed.</b>
<b>If</b>	<b>Do</b>
.....	.....
you do not have access to LD 43	Contact your system supplier.
you have access to LD 43	step 23
<b>23</b>	<b>Perform a data dump to permanently store the programming you have just completed.</b>
<div style="border: 1px solid black; padding: 10px; display: inline-block;">  <div style="margin-left: 10px;"> <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div> </div>	
<p>Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.</p>	
<pre>&gt; LD 43 . EDD &lt;cr&gt;</pre>	
<b>24</b>	<b>Verify that the data dump was successful.</b>
TTY response:	
NO GO BAD DATA	
or	
DATA DUMP COMPLETE	
<b>If</b>	<b>Do</b>
.....	.....
data dump fails	Contact your system supplier.
data dump succeeds	step 25
— continued —	

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**New M2216ACD telephone**

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STEP	ACTION
25	<b>Terminate this overlay program.</b>  • *****
26	<b>Terminate this programming session.</b>  Log off.  > LOGO
27	<b>You have now completed the minimum programming required to implement a basic new M2216ACD telephone.</b>



458 Making a telephone work

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of 1776

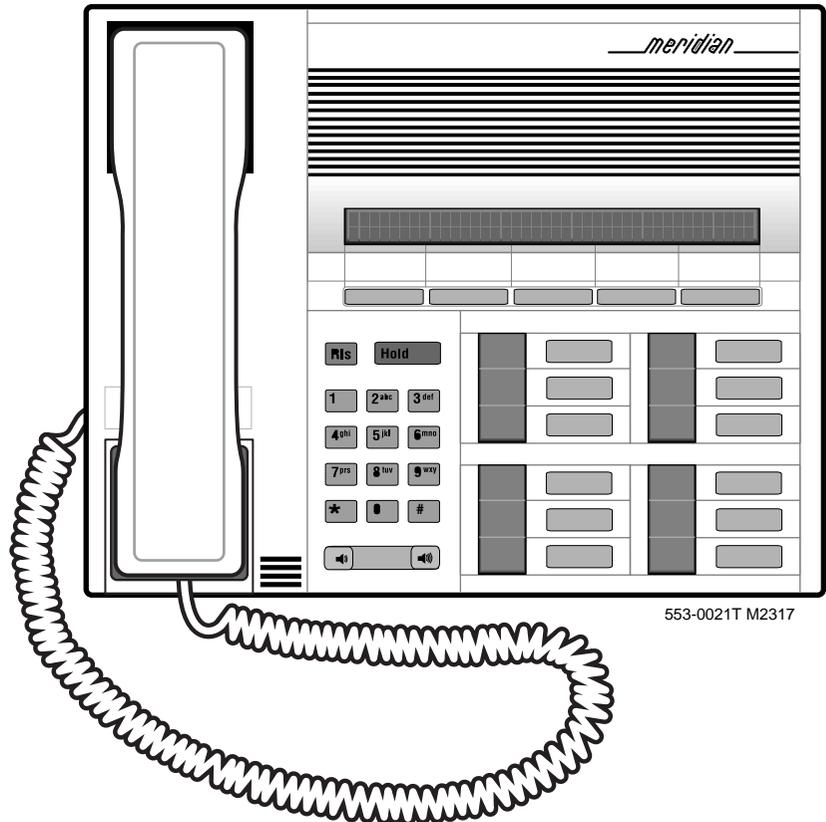
## **New M2216ACD telephone**

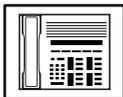
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## New M2317 telephone

### Purpose

The information in this Task module will help you if a user at your site needs a new M2317 telephone.



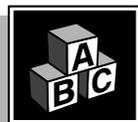


## New M2317 telephone

If the user needs a new telephone, install an M2317 telephone if:

- ◆ the user needs one or several Directory Numbers (DNs)
- ◆ the user has a Personal Computer or will need one at the desk and you want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires
- ◆ the user wants buttons (or keys) for easy access to features or commonly dialed telephone numbers
- ◆ the user can benefit from seeing easy-to-understand prompts on the display when accessing Meridian Mail messages
- ◆ when answering redirected calls, the user can benefit from knowing the type of feature which redirected the call to the telephone
- ◆ the user wants to be able to hear a conversation and speak to a caller without using the handset of the telephone (speakerphone capability)
- ◆ the user wants a display to make feature use very easy and to show a call timer
- ◆ the user wants to adjust the volume of the sound coming through the receiver
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the users want the choice of English or French words on the display when using features
- ◆ the user can benefit from knowing the internal or external telephone number and name of the caller before calls are answered

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

## New M2317 telephone



For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Software

**Table 79**  
**Software requirements**

Release required	Software package(s) required
9	88 — M2000 Digital Sets (DSET) 91 — M2317 Digital Sets (DLT2)

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.



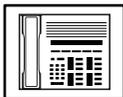
#### Power

This telephone requires external power in order for the display and the handsfree unit to function. Arrange with your system supplier to get the necessary power equipment ordered and installed.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence.

These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.



## New M2317 telephone

The prompts discussed in this module are the ones to which you must respond to make a basic M2317 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator. For example, the user's manager often wants controls placed on the user's calling capabilities. The default responses do not place these controls on the user. Also, the telephone system administrator may want to implement corporate-wide policies for telephones which are not met through the default choices.



*The Handsfree/Mute key functionality does not have to be activated in programming. Its functionality is part of the default hardware configuration of the telephone itself. Key 11 is used to activate and deactivate the Handsfree unit in this telephone.*



*There are features which are assigned to certain keys by default. They are given in Table 80 that follows.*

**Table 80**  
**M2317 default key assignments**

Key number	Feature name	Mnemonic
17	Call Park	PRK
23	Conference 6	AO6
24	Calling Party Number	CPN
25	Charge Account	CHG
26	Call Transfer	TRN
27	Ring Again	RGA
28	Privacy Release	PRS

## New M2317 telephone



*If you do not have the necessary software packages for Call Park, Calling Party Name Display or Charge Account and the option is not enabled in the Customer Data Block, then the default key is not programmed by default.*

*There are recommended keys for additional features you might want to program for this telephone. They are shown in Table 81 that follows.*

**Table 81**  
**Additional features and recommended keys**

Key number	Feature name	Mnemonic
17, 19–28	Call Forward All Calls	CFW
17, 19–28	Directed Call Pickup	DPU
17, 19–28	Call Party Name Display	CPND
17, 19–28	Message Waiting	MWK
17, 19–28	Speed Call User	SCU
17, 19–28	Speed Call Controller	SCC
17, 19–28	System Speed Call User	SSU
17, 19–28	System Speed Call Controller	SSC

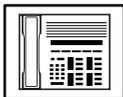
*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for the prompts covered by this book.

The *X11 input/output guide(Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

## Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.



## New M2317 telephone

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Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the DNs can be one to four digits.

This telephone can be configured to have one or more than one DN. Each of the keys numbered 0–10 on the telephone can have a DN assigned.

### Ringling or Non-ringling DNs

On digital telephones, a DN can be programmed to be a ringling or a non-ringling appearance.

- ◆ When a call comes into a ringling appearance, the telephone rings, if it is idle, and the indicator beside the DN key flashes.
- ◆ When a call comes into a non-ringling appearance of a DN, the DN-key indicator flashes but the telephone does not ring.

---

## New M2317 telephone

---



If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

If an M2317 telephone has several DN keys programmed, you can program each DN key to ring or not to ring according to the needs of the user.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN on a key.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.

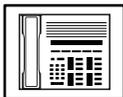
If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M2317 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to a key on an M2317 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.



## New M2317 telephone

**Multiple Appearance DN**s appear on more than one telephone, or more than one key on a telephone such as a digital telephone.

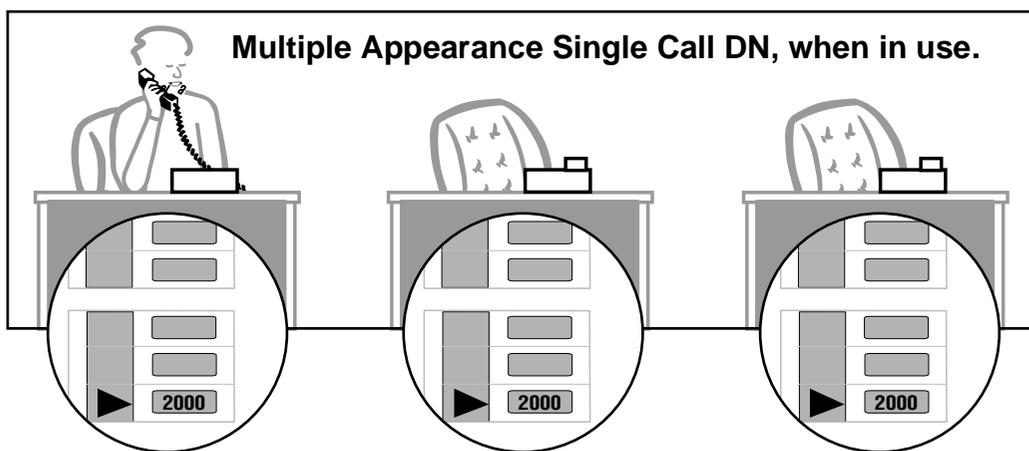
Refer to Task 40, *Multiple Appearance DN Redirection Prime* for important information on a Multiple Appearance DN feature.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

### Single Call DN

The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.



553-0022T SCDN



If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

## New M2317 telephone



When you want to assign a *Single Call Ringing DN* to a key on an M2317 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

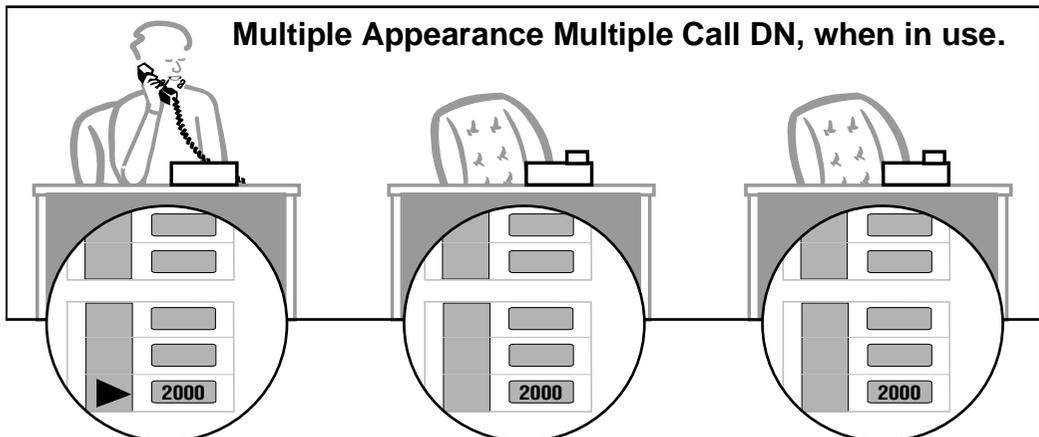
When you want to assign a *Single Call Non-ringing DN* to a key on an M2317 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

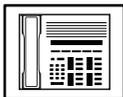
### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.



553-0023T MCDN



## New M2317 telephone

A multiple call DN is not treated as busy until there are calls on all the programmed appearances of the DN. There can be a maximum of 16 appearances of one DN on systems using software prior to Release 13, after that release there can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DNs.

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M2317 telephone, you assign the following programming code to the key:

MCR X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M2317 telephone, you assign the following programming code to the key:

MCN X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.



### Consistent configuration

*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M2317 telephone.

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## New M2317 telephone

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### Prime DN, Key 0

Key 0, which is the key at the bottom of the key strip on the right hand side of the telephone, *must be* programmed with a DN. This DN is called the prime DN.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

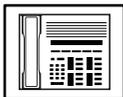
- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module in this book.



### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DN's, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.



## New M2317 telephone

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M2317 is a digital telephone, it is programmed in overlay program (LD) 11. In this overlay program, when a telephone has more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.

If you are using a system running with Release 15 or later software, it can be equipped with either loops or Superloops. If you are using a system with software prior to Release 15, the system can be equipped with loops only. Loops and Superloops reside in the Network Equipment part of the system.

If you are not sure what type(s) of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment.

Refer to the *You should know this* module for more information on the hardware of the system.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

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## New M2317 telephone

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### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the loop, or Superloop, to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.

Loops and Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each loop or Superloop is kept within the recommended guidelines. If all of your existing loops and/or Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

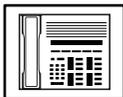
Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards. There are two types of line cards for M2317 telephones: quadruple-density and octal-density.

Quadruple (quad) density digital line cards have 16 TNs. Eight of the TNs on the card are for digital telephones and the other eight are for the associated data terminals (if any). Therefore, quad density digital line cards connect to a maximum of eight digital telephones.



## New M2317 telephone

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Systems using Superloops can use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.

Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

When you program digital telephones, you do not need to tell the system what density the digital telephone line card is, since it defaults to the density allowed for the network loop or Superloop on which the telephone resides.

### Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

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## New M2317 telephone

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Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

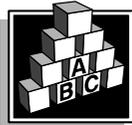
For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.



## New M2317 telephone

### Ringing options

#### Distinctive Ringing Groups

There are four different ringing options for the digital telephones. When you program the Class of Service of each telephone, you choose one of the four options to set the ringing tone and ringing cadence. The choices are: DRG1, DRG2, DRG3, or DRG4. DRG stands for Distinctive Ringing Group.

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringing.

Distinctive Ringing can be very useful with the Call Pickup feature. When telephones are ringing in the Pickup group, the users can tell what telephone is ringing and answer calls appropriately.

#### Network and Executive Distinctive Ringing

When you assign Executive Distinctive Ringing to a telephone, terminating telephones ring distinctively when they receive calls from the "Executive" telephone. Network Distinctive Ringing extends this functionality across an ISDN network.

**Table 82**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network Supplementary Features (ISDNS)
	185 – Executive Distinctive Ringing (EDRG)

## New M2317 telephone



### Directory Number Delayed Ringing (DNDR)

Table 83

#### Software requirements

Release required	Software package(s) required
21	none

If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user's telephone.

When you have Multiple Appearance non-ringing DNs, there are many different ways you can choose to implement it. Two examples follow:

- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Language options

There are two language options for the presentation of words on the display. The default language option in the Class of Service programming is French. You can choose English if you prefer.

You can also program key 29 to allow the user to toggle between the two languages. Key 29 coincides with the key under the display which is farthest to the right.



## New M2317 telephone

### Control tips



- ◆ As with any telephone that has a display, the user can see the trunk group access codes when incoming external calls arrive at the telephone. If you do not want a user to access certain trunk groups using the direct trunk access code, implement the TGAR feature to prevent it. Refer to Task 45, *Trunk Group Access Restriction* for more information.
- ◆ A user might attempt to move a telephone by unplugging it from the jack and reconnecting it at a new jack. This does not work. When a telephone is removed from a jack long enough for the computer in the system to do a maintenance routine, a message prints out on the maintenance printer that identifies the jack that has a missing telephone. Tell users not to attempt to move telephones without your assistance. The proper way to move telephones is discussed in Task .

### Administration tips



- ◆ You might want to test whether users prefer to see a flashing indicator beside a key when they have a message waiting or whether the icon showing an envelope on the display suits them better.

If they prefer the flashing indicator, remember to program one of the keys numbered 1–10 for Message Waiting. Refer to Task 25, *Message Center*.

If they prefer the icon, program one of the keys numbered 17 or 19–28.

- ◆ You might want to consider using one or two standard key layouts for all digital telephones, or at least for all M2317 telephones. This can save significant amounts of memory.

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## New M2317 telephone

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### Training tips



- ◆ Users of this type of telephone can use friendly prompts which appear on the display when they access Meridian Mail voice mail. Before they use the telephones for the first time, they may need training in order to become familiar with what to expect.
- ◆ If you have a standard key layout on all M2317 telephones, this has a big advantage in training users since users can go to any telephone and feel comfortable using it. If all telephones are the same, they can also explain features to each other.
- ◆ Even though features can be programmed on the keys for easy use, users might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps you both get the most out of the system and in turn the system provides the expected benefits.
- ◆ This telephone has a Handsfree/Mute key to activate and deactivate the handsfree unit built into the telephone. Guidelines should be in place governing the use of these units. When users misuse and overuse this feature it can irritate users around them. It can have a negative impact on productivity if handsfree conversations are disruptive. You might want to ensure that only people in offices with doors that can be closed can order this type of telephone.
- ◆ Users need training on the use of the display feature prompts, the scrolling capability, adjusting the receiver volume, and choosing a language option. Spending time training each M2317 user can reap rewards.



## New M2317 telephone

### What to have ready

Make the following preparations before you do the basic programming of a new M2317 telephone.

**Table 84**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s). Decide whether each DN is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
✓		Arrange for the necessary power equipment to be ordered and installed.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.

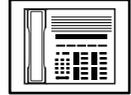
There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

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## New M2317 telephone

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*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

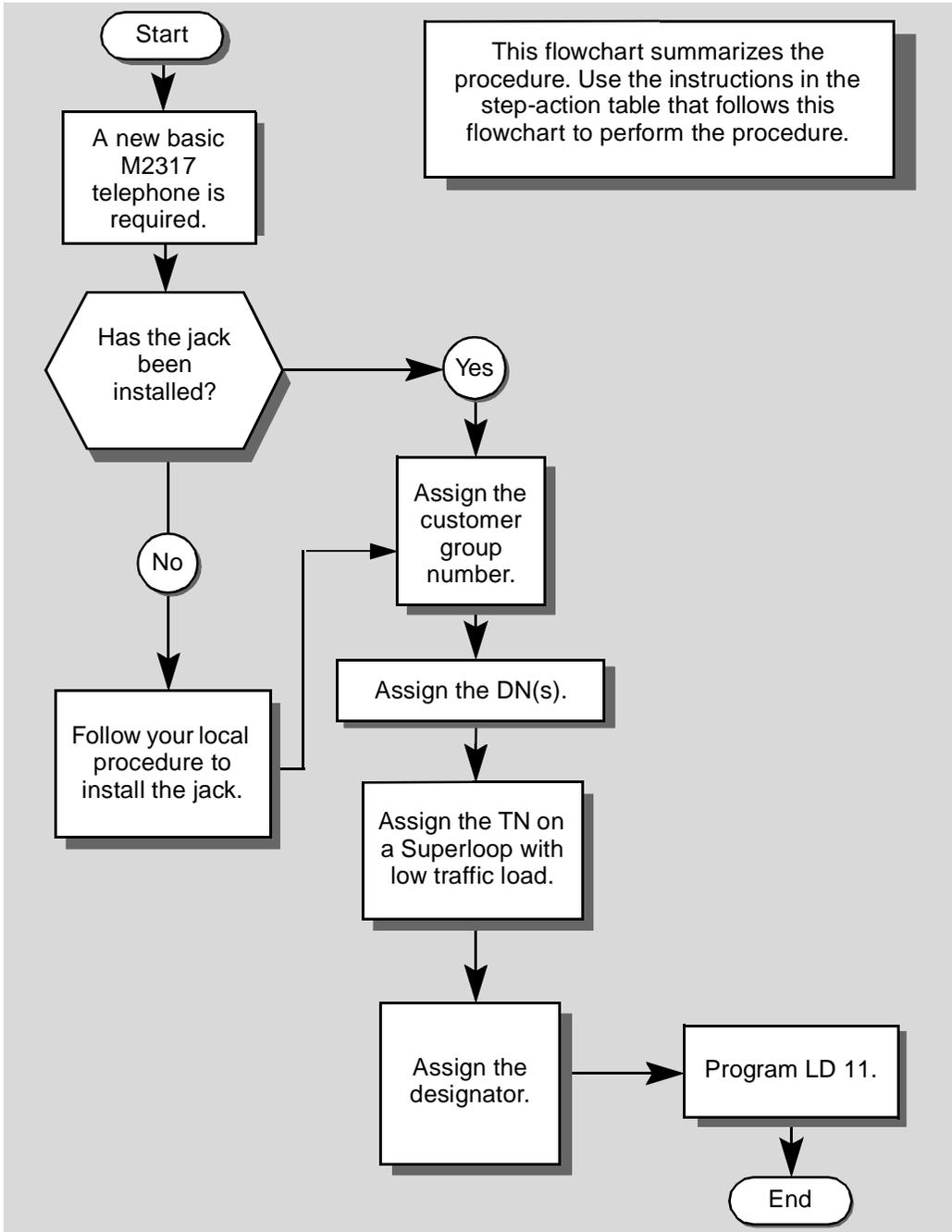
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M2317 telephone.



## New M2317 telephone



## New M2317 telephone



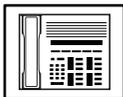
The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M2317 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>— continued —</b>		



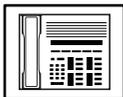
## New M2317 telephone

STEP	ACTION						
4	<p><b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
5	<p><b>Print the DN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <pre>&gt; LD 22 or &gt; LD 20 or (Release 17 or later) &gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</pre> <p><b>REQ</b> PRT Request a printout  <b>TYPE</b> DNB DN Block  <b>CUST</b> &lt;cr&gt; All Customer groups  <b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <pre>U.data      P.data  small systems or MEM AVAIL: (U/P) USED:TOT: large systems</pre> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p> <p style="text-align: center;">— continued —</p>						

## New M2317 telephone



STEP	ACTION	
<b>6</b>	<b>Print the TN Block of the other telephone.</b>	
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>        PRT            Request a Printout</p> <p><b>TYPE</b>       TNB            TN Block</p> <p><b>TN</b>         L S C U        Input the Loop Shelf Card and Unit number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>	
<b>7</b>	<b>Assign the same customer group number to the new telephone.</b>	
	Go to step 10.	
<b>8</b>	<b>Arrange with your system supplier to have the new customer group data block programmed.</b>	
<b>9</b>	<b>Assign the new customer group number to the new telephone.</b>	
<b>10</b>	<b>Find out what DNs are available.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you know what DN you want to assign	step 13
	you do not know what DN you want to assign and your system software is Release 19 or later	step 11
	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.
	<b>— continued —</b>	



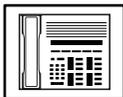
## New M2317 telephone

STEP	ACTION										
<b>11</b>	<b>Print unused DNs in your customer group.</b>										
	<p>Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20</p> <table> <tr> <td><b>REQ</b></td> <td>PRT</td> <td>Print</td> </tr> <tr> <td><b>TYPE</b></td> <td>LUDN</td> <td>List unused DNs</td> </tr> <tr> <td><b>CUST</b></td> <td>0 – 99</td> <td>Input customer group number</td> </tr> </table> <p>You get a printout of the unused DNs in your customer group.</p>		<b>REQ</b>	PRT	Print	<b>TYPE</b>	LUDN	List unused DNs	<b>CUST</b>	0 – 99	Input customer group number
<b>REQ</b>	PRT	Print									
<b>TYPE</b>	LUDN	List unused DNs									
<b>CUST</b>	0 – 99	Input customer group number									
<b>12</b>	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>										
<b>13</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>										
	<b>If</b>	<b>Do</b>									
	you have access to the print overlay programs	step 14									
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.									
<b>14</b>	<b>Print out the available TNs on your system.</b>										
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <table> <tr> <td><b>REQ</b></td> <td>LUU</td> <td>List all unused units</td> </tr> <tr> <td></td> <td>LUVU</td> <td>List unused voice units (Release 19 or later)</td> </tr> <tr> <td><b>TYPE</b></td> <td>2317</td> <td>M2317 telephone. If there are no M2317 telephones installed yet, choose a type of digital telephone that has been installed.</td> </tr> </table> <p>You get a printout of the available digital telephone TNs.</p>		<b>REQ</b>	LUU	List all unused units		LUVU	List unused voice units (Release 19 or later)	<b>TYPE</b>	2317	M2317 telephone. If there are no M2317 telephones installed yet, choose a type of digital telephone that has been installed.
<b>REQ</b>	LUU	List all unused units									
	LUVU	List unused voice units (Release 19 or later)									
<b>TYPE</b>	2317	M2317 telephone. If there are no M2317 telephones installed yet, choose a type of digital telephone that has been installed.									
— continued —											

## New M2317 telephone



STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<code>&gt; LD 11</code>	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 2317	M2317 telephone
	<b>TN</b> L S C U	Input the TN ( <b>L</b> oop <b>S</b> helf <b>C</b> ard <b>U</b> nit number)
	<b>CDEN</b> <cr>	Carriage return - use the default
	<b>DES</b> A . A	Designator maximum six characters
	<b>CUST</b> 0 - 99	customer group number
	carriage return until you see the prompt KEY	
<b>— continued —</b>		



## New M2317 telephone

STEP	ACTION								
20	<p>Program DNs on as many keys as you require.</p> <p>Program the key(s) one of the following ways:</p> <p><b>KEY</b> XX SCR X . . X</p> <p><b>KEY</b> XX SCN X . . X</p> <p><b>KEY</b> XX MCR X . . X</p> <p><b>KEY</b> XX MCN X . . X</p> <p>where XX represents the key number (0–10) Key 0 must be programmed with a DN</p> <p>SCR — single call ringing DN SCN — single call non-ringing DN MCR — multiple call ringing DN MCN — multiple call non-ringing DN</p> <p>X..X represents the actual digits in the DN; type the actual digits the DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP</p> <p>Carriage return until you see either of the following messages:</p> <p><b>U.data P.data</b> small systems</p> <p>or</p> <p><b>MEM AVAIL: (U/P) USED:TOT:</b> large systems</p>								
21	<p><b>Check that the telephone works.</b></p> <p>Try to make a call. Try to receive a call.</p> <table border="0"> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>telephone works</td> <td>step 22</td> </tr> <tr> <td>telephone does not work</td> <td>step 1</td> </tr> </tbody> </table> <p style="text-align: center;">— continued —</p>	If	Do	.....	.....	telephone works	step 22	telephone does not work	step 1
If	Do								
.....	.....								
telephone works	step 22								
telephone does not work	step 1								

## New M2317 telephone



STEP	ACTION								
22	<p><b>Arrange for a data dump to be performed.</b></p> <table border="0"> <tr> <td style="vertical-align: top;"><b>If</b></td> <td style="vertical-align: top;"><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>you do not have access to LD 43</td> <td>Contact your system supplier.</td> </tr> <tr> <td>you have access to LD 43</td> <td>step 23</td> </tr> </table>	<b>If</b>	<b>Do</b>	.....		you do not have access to LD 43	Contact your system supplier.	you have access to LD 43	step 23
<b>If</b>	<b>Do</b>								
.....									
you do not have access to LD 43	Contact your system supplier.								
you have access to LD 43	step 23								
23	<p><b>Perform a data dump to permanently store the programming you have just completed.</b></p> <div style="border: 2px solid black; padding: 10px; margin: 10px 0;">  <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div> <p>Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.</p> <pre>&gt; LD 43 . EDD &lt;cr&gt;</pre>								
24	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response: <b>NO GO BAD DATA</b> or <b>DATA DUMP COMPLETE</b></p> <table border="0"> <tr> <td style="vertical-align: top;"><b>If</b></td> <td style="vertical-align: top;"><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 25</td> </tr> </table> <p style="text-align: center;">— continued —</p>	<b>If</b>	<b>Do</b>	.....		data dump fails	Contact your system supplier.	data dump succeeds	step 25
<b>If</b>	<b>Do</b>								
.....									
data dump fails	Contact your system supplier.								
data dump succeeds	step 25								

**488** Making a telephone work

of 1776

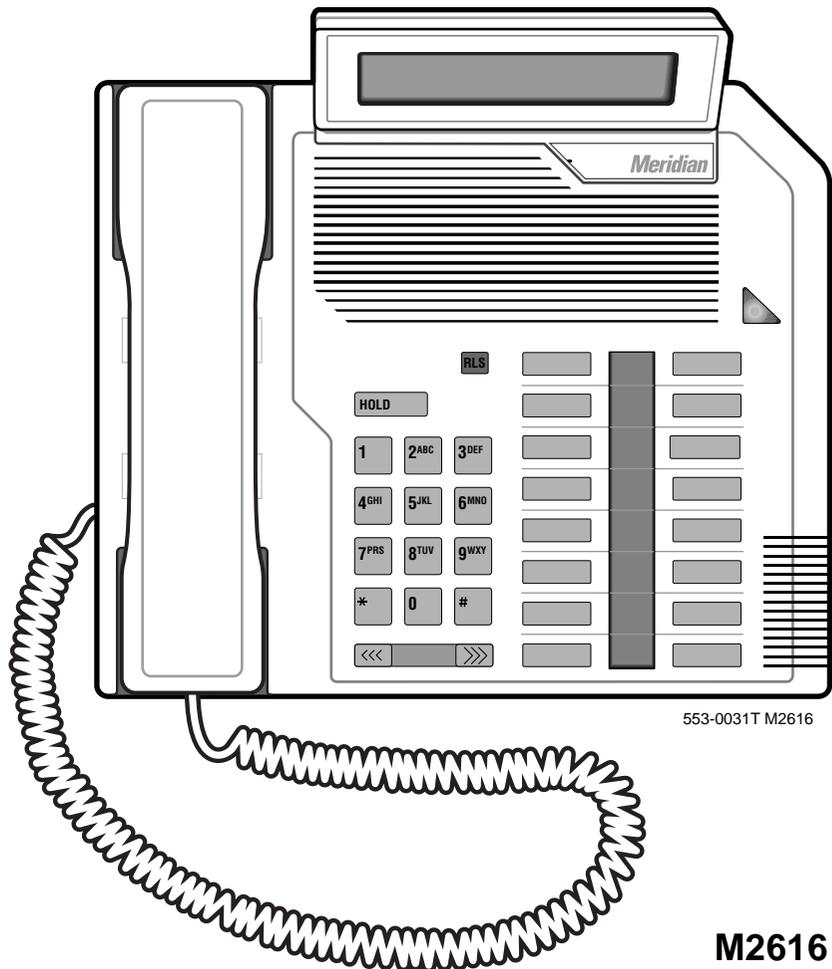
**New M2317 telephone**

STEP	ACTION
25	<b>Terminate this overlay program.</b>  • ****
26	<b>Terminate this programming session.</b>  <b>Log off.</b>  > LOGO
27	<b>You have now completed the minimum programming required to implement a basic new M2317 telephone.</b>
	

## New M2616 and M2616CT telephone

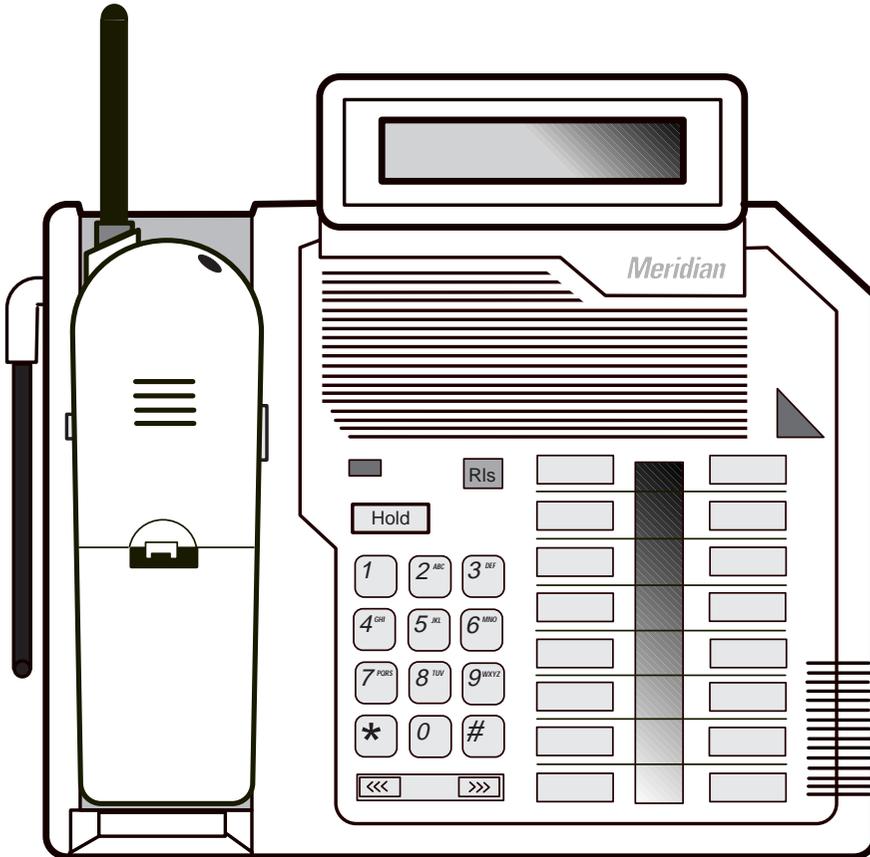
### Purpose

The information in this Task module will help you if a user at your site requires a new M2616 or M2616CT telephone.

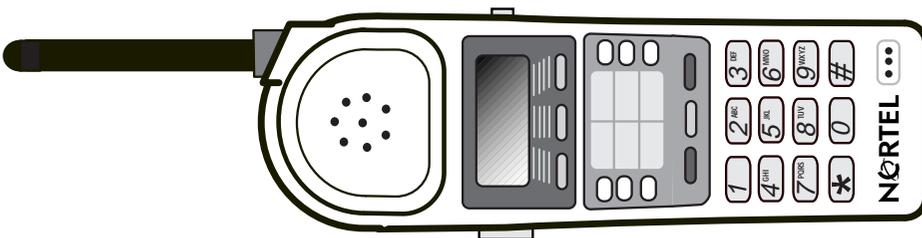




## New M2616 and M2616CT telephone



**M2616CT**



**M2616CT handset**

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## New M2616 and M2616CT telephone

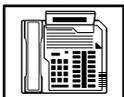
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The M2616 and M2616CT telephones are not available in Europe.

If the user needs a new telephone, install an M2616 telephone if:

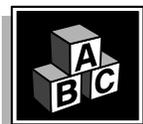
- ◆ the user needs one or several Directory Numbers (DNs)
- ◆ the user has a Personal Computer or will need one at the desk and you want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires
- ◆ the user wants to be able to hear a conversation and speak to a caller without using the handset of the telephone (speakerphone capability)
- ◆ the user wants buttons (or keys) for easy access to features or commonly dialed telephone numbers
- ◆ the user can benefit from using easy-to-understand prompts on the display when accessing features
- ◆ when answering redirected calls, the user can benefit from knowing the type of feature which redirected the call to the telephone
- ◆ the user wants the display to show a call timer
- ◆ the user wants to adjust the volume of the sound coming through the handset
- ◆ the users need the choice of English, or French on the optional display when using features
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the user can benefit from knowing the internal or external telephone number and, optionally, the name of the caller before calls are answered
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting



## New M2616 and M2616CT telephone

Install an M2616CT telephone if the user needs to walk up to 100 feet away from the telephone while speaking.

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Software

**Table 85**  
Software requirements

Release required	Software package(s) required
14	88 (DSET) M2000 Digital Sets 89 (TSET) M3000 Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.



It is important to note that if you are using digital line cards on an older system, the card type is Integrated Services Digital Line Card (ISDLC), and the card vintage must be “C” or later for these telephones to work.

The same line cards are used for M2616 and M2616CT telephones.

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## New M2616 and M2616CT telephone

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### Power

This telephone requires external power if any of the following equipment is installed:

- ◆ an external alerter interface kit
- ◆ a Key Expansion module
- ◆ a Meridian Programmable Data Adapter or a Meridian Communications Adapter



The display module is optional with the M2616 telephone. No extra power equipment is required to make it work.

The handsfree unit, built into the telephone, can be activated or deactivated when the telephone is programmed. No external power supply is required to make it function.

When external power is needed, there is a power supply board which must be installed inside of the telephone.

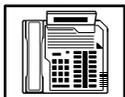
Arrange with your system supplier to get the necessary power equipment ordered and installed.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M2616 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator.



## New M2616 and M2616CT telephone

For example, the user's manager often wants controls placed on the user's calling capabilities. The default responses do not place these controls on the user. Also, the telephone system administrator might want to implement corporate-wide policies for telephones which are not met through the default choices.

Because the M2616 is a digital telephone, it is programmed in overlay program (LD) 11.

### Data, Display, and Handsfree default values

The display screen of a Meridian Modular telephone contains two lines with 24 character spaces on each line.

- ◆ If the telephone has a display module or a data option installed, key 7 is automatically set by the system as a PROGRAM key. This key is needed for the user to make adjustments to the display or data parameters from the telephone keypad.

When you do a TN-Block printout of the information programmed for the telephone, key 7 appears to have nothing assigned to it. It is blank in the printout.

- ◆ If the handsfree unit is enabled in the programming of the telephone, key 15 is automatically set by the system as a Handsfree/Mute key. If you disable the handsfree unit, you can program something else for key 15.

*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

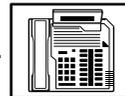
## Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

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## New M2616 and M2616CT telephone

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If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

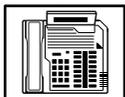
When telephones are installed they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the DNs can be one to four digits.

This telephone can be configured to have one or more than one DN. Each of the keys numbered 0–15 on the telephone can have a DN assigned.



## New M2616 and M2616CT telephone

### Ringling or Non-ringling DNs

On digital telephones, a DN can be programmed to be a ringling or a non-ringling appearance.

- ◆ When a call comes into a ringling appearance, the telephone rings, if it is idle, and the indicator beside the DN key flashes.
- ◆ When a call comes into a non-ringling appearance of a DN, the DN-key indicator flashes but the telephone does not ring.

If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

If an M2616 telephone has several DN keys programmed, you can program each DN key to ring or not to ring according to the needs of the user.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN on a key.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

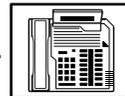
**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.

If a DN rings when a call comes in, it is called a *Single Call Ringling DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringling DN*.

When you want to assign a *Single Call Ringling DN* to a key on an M2616 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

## New M2616 and M2616CT telephone



When you want to assign a *Single Call Non-ringing DN* to a key on an M2616 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

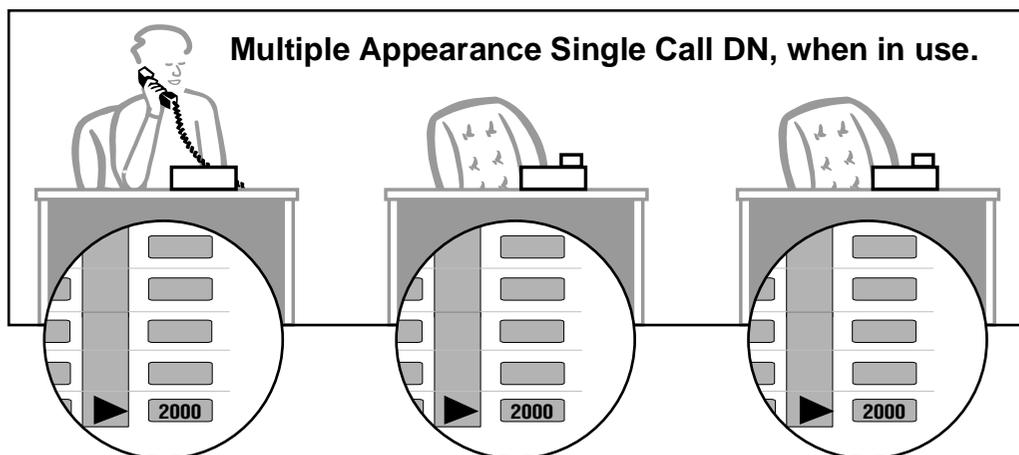
**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone. There is information on an important Multiple Appearance DN feature in Task 40, *Multiple Appearance DN Redirection Prime*.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

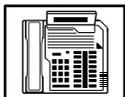
### Single Call DN

The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.



553-0284T SCDN



## New M2616 and M2616CT telephone



If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M2616 telephone, you assign the following programming code to the key:

SCR X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to a key on an M2616 telephone, you assign the following programming code to the key:

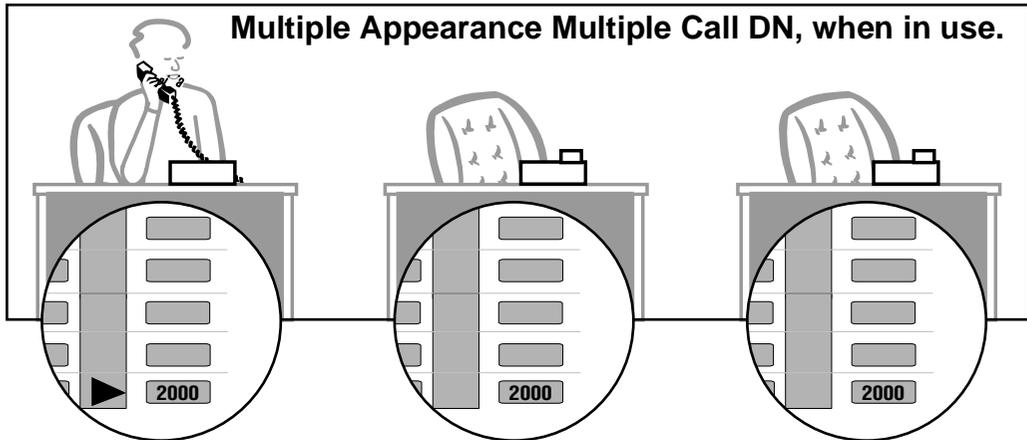
SCN X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

## New M2616 and M2616CT telephone



553-0285T MCDN

A Multiple Call DN is not treated as busy until there are calls on all of the programmed appearances of the DN. There can be a maximum of 16 appearances of one DN on systems using software prior to Release 13, after that release there can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DNs.

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M2616 telephone, you assign the following programming code to the key:

MCR X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.



## New M2616 and M2616CT telephone

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M2616 telephone, you assign the following programming code to the key:

MCN X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.

### Consistent configuration



*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M2616 telephone.

### Prime DN, Key 0

Key 0, which is the key at the bottom of the key strip on the right hand side of the telephone, *must be* programmed with a DN. This DN is called the prime DN.

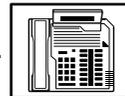
### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

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## New M2616 and M2616CT telephone

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Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module.

### DN-Block printout



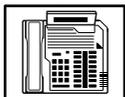
If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DNs, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M2616 is a digital telephone, it is programmed in overlay program (LD) 11. In this overlay program, when a telephone has more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.

If you are using a system running with Release 15 or later software, it can be equipped with either loops or Superloops. If you are using a system with software prior to Release 15, the system can be equipped with loops only. Loops and Superloops reside in the Network Equipment part of the system.



## New M2616 and M2616CT telephone

If you are not sure what type(s) of Network Equipment you are using, ask your system supplier. They can also tell you about your shelf and card equipment.

Refer to the *You should know this* module for more information on the hardware of the system.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the loop, or Superloop, to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.

Loops and Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each loop or Superloop is kept within the recommended guidelines. If all of your existing loops and/or Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

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## New M2616 and M2616CT telephone

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Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

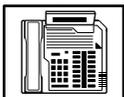
Telephones are connected to interface cards in the system called line cards. There are two types of line cards for M2616 telephones: quadruple-density and octal-density.

Quadruple (quad) density digital line cards have 16 TNs. Eight of the TNs on the card are for digital telephones and the other eight are for the associated data terminals (if any). Therefore, quad density digital line cards connect to a maximum of eight digital telephones.

Systems using Superloops can use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.

Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

When you program digital telephones, you do not need to tell the system what density the digital telephones line card is, since it defaults to the density allowed for the network loop or Superloop on which the telephone resides.



## New M2616 and M2616CT telephone

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### Designator (DES)

When you want printouts of the data associated with telephones you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

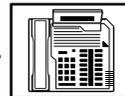
The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

## New M2616 and M2616CT telephone



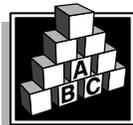
For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

## Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

### Ringling options

#### Distinctive Ringing Groups

There are four different ringing options for the digital telephones. When you program the Class of Service of each telephone, you choose one of the four options to set the ringing tone and ringing cadence. The choices are: DRG1, DRG2, DRG3, or DRG4. DRG stands for Distinctive Ringing Group.



## New M2616 and M2616CT telephone

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringing.

Distinctive Ringing can be very useful with the Call Pickup feature. When telephones are ringing in the Pickup group, the users can tell what telephone is ringing and answer calls appropriately.

### Network and Executive Distinctive Ringing

When you assign Executive Distinctive Ringing to a telephone, terminating telephones ring distinctively when they receive calls from the “Executive” telephone. Network Distinctive Ringing extends this functionality across an ISDN network.

**Table 86**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network Supplementary Features (ISDNS)
	185 – Executive Distinctive Ringing (EDRG)

### Directory Number Delayed Ringing (DNDR)

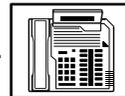
**Table 87**  
**Software requirements**

Release required	Software package(s) required
21	none

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## New M2616 and M2616CT telephone

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If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user's telephone.

When you have Multiple Appearance non-ringing DNs, there are many different ways you can choose to implement it. Two examples follow:

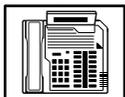
- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Distinctive Ringing by DN (DRDN)

You can apply distinctive ringing to each DN or Hotline key on a Meridian Modular telephone in the following ways:

- ◆ DRDN by call source: terminating telephones ring distinctively when the user initiates a call from the key. Each key on the originating telephone can have one of five distinctive ringing patterns.
- ◆ DRDN by call destination: each key has a distinctive ringing pattern when incoming calls are presented to the telephone. Each key can have one of five distinctive ringing patterns.

DRDN by call source overrides DRDN by call destination. The ringing pattern associated with the calling DN is used at the terminating telephone, in cases where the terminating key also has the feature allowed.



## New M2616 and M2616CT telephone

**Table 88**  
**Software requirements**

Release required	Software package(s) required
24	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network Supplementary Features (ISDNS)
	185 – Executive Distinctive Ringing (EDRG)

### Display options

There is a Quick Reference Card describing the use of the display. It explains how to use the Program key to set such things as:

- ◆ the contrast
- ◆ the language used for feature prompts
- ◆ the format of the call timer
- ◆ the volume of ringing, buzzing, the speaker, the handset and the handsfree unit (if activated)
- ◆ the key clicks
- ◆ the idle screen format
- ◆ the predialed number for recall

### Three Language Display

All Meridian Modular telephones in North America can be equipped with a Three Language Display. The Three Language Display firmware supports the English, French, and Spanish languages.

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## New M2616 and M2616CT telephone

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### Electronic Brandlining

With X11 Release 23, the Electronic Brandlining feature enhances the display functionality of Meridian Modular telephones (M2008, M2008HF, M2016, M2216ACD, and M2616) when they are equipped with a display.

This feature allows the second line on the idle display screen of Meridian Modular telephones to show a custom display. The display contains either a customized brandline or the brandline default. The customized brandline could be the name of a distributor (for example, Alexander G. Bell Telecom) or a customized text string (for example, Employee meeting at 10 AM). The brandline default is “NORTEL”.

The Three Language Display is required for the Electronic Brandlining feature. For information on the Three Language Display, refer to its description on the previous page.

### Automatic Set Display

With X11 Release 23, when an incoming call is presented to a busy telephone, the Calling Line Identification (CLID) and Calling Party Name Display (CPND) for the incoming call is automatically displayed on the busy telephone. This capability is enabled by programming the Tandem Digit Display (TDD) Class of Service on the telephone.

Previously, this functionality was only available on the M3000 Touchphone. However, the user of the busy telephone had to press the display key for the Calling Line Identification information to be presented.

### Handsfree unit

There is a built-in unit which can be enabled or disabled in the Class of Service programming of the telephone. It is disabled by default. If enabled, key 15 on the telephone is automatically configured as the handsfree/mute key. If handsfree operation is disabled, key 15 can be programmed as a feature key or a DN key.

### Headset

The jack on the telephone for the handset can be used for a headset.



## New M2616 and M2616CT telephone

### Key Expansion module

There can be up to two of these 22-key modules added to one M2616 telephone. You can assign features or DNs to these keys.

### Data option

When the Meridian Programmable Data Adapter (MPDA) or the Meridian Communications Adapter (MCA) is installed inside the telephone and an RS-232C cable is used, you can set up a computer on the user's desk to use the same pair of wires that the telephone uses to connect to the system. Key 7 on the telephone acts as a Program key to control various data parameter settings. There is a Quick Reference Card for the MPDA or MCA that explains these settings and how to use the Program key.

## Control tips



- ◆ If the telephone is equipped with a display, the user can see the trunk group access codes when external incoming calls arrive at the telephone. If you do not want a user to access certain trunk groups using the direct trunk access code, implement the TGAR feature to prevent it. Refer to Task 45, *Trunk Group Access Restriction* for more information.
- ◆ If the user unplugs an M2616 telephone:
  - the chosen display settings return to the default settings. This is a quick way for you to know if users are unplugging their telephones in an attempt to move them themselves
  - messages print out on the maintenance printer, identifying the TN with the missing telephone
- ◆ If the system initializes:
  - the display settings are not affected
  - messages print out on the maintenance printer to identify the cause(s) of the initialization

## New M2616 and M2616CT telephone



### Administration tips



- ◆ The M2616 telephone has a red indicator that lights steadily when there are messages waiting. You can program a Message Waiting key on one of the keys so the user has an easy way of dialing the message center or voice mail when there are messages waiting.

For more information on Message Waiting, refer to Task 25, *Message Center*.

- ◆ You might want to consider using one or two standard key layouts for all digital telephones, or at least all M2616 telephones. This can save significant amounts of memory.



- ◆ If users are allowed to have the handsfree functionality you might want to set some guidelines as to who can use that kind of telephone and under what circumstances.

For example, you might make it policy to allow people with enclosed offices to use them providing the office door is closed so people around them are not disturbed during active handsfree calls.

### Training tips



- ◆ If you have a standard key layout on all M2616 telephones, this is an advantage since users can go to any telephone and feel comfortable using it. If all telephones are the same, the users can also explain features to each other.
- ◆ Even though users do not need to remember feature access codes, they might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps you both get the most out of the system and in turn the system provides the expected benefits.
- ◆ If display modules are installed, users need training on the feature prompts that are presented when features are used.



## New M2616 and M2616CT telephone

### What to have ready

Make the following preparations before you do the basic programming of a new M2616 telephone.

**Table 89**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s). Decide whether each DN is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
✓		Determine if any optional equipment, such as Key Expansion modules, are required.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.
	✓	Arrange for the necessary power equipment to be ordered and installed.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

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## New M2616 and M2616CT telephone

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Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

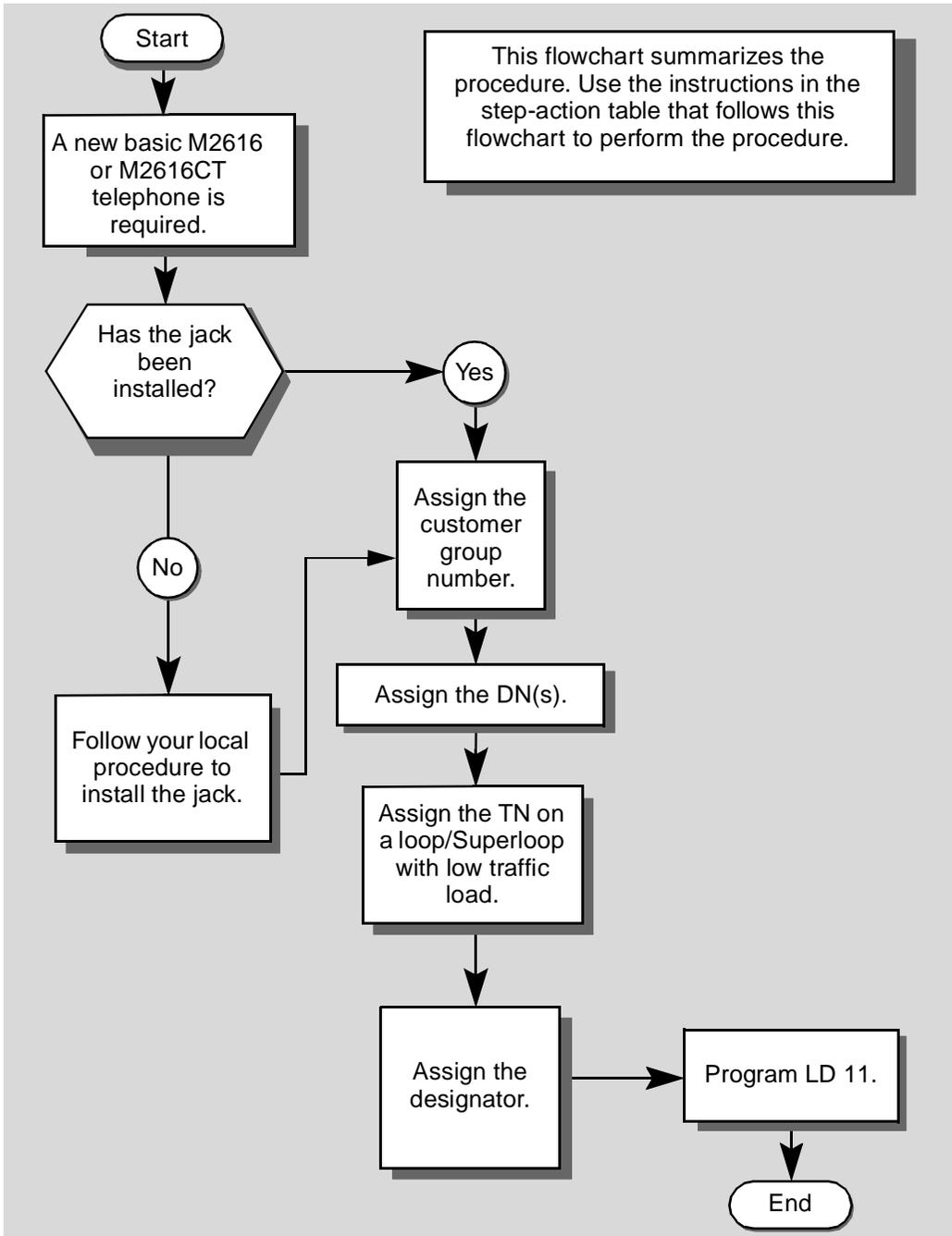
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M2616 telephone.



## New M2616 and M2616CT telephone



## New M2616 and M2616CT telephone



The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M2616 or M2616CT telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

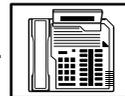
STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>— continued —</b>		



## New M2616 and M2616CT telephone

STEP	ACTION						
<b>4</b>	<b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b>						
	<table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
<b>5</b>	<b>Print the DN Block of the other telephone.</b>						
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 22 or</p> <p>&gt; LD 20 or (Release 17 or later)</p> <p>&gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</p> <p><b>REQ</b> PRT Request a printout</p> <p><b>TYPE</b> DNB DN Block</p> <p><b>CUST</b> &lt;cr&gt; All Customer groups</p> <p><b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <p><b>U.data</b>      <b>P.data</b>      small systems</p> <p>or</p> <p><b>MEM AVAIL: (U/P) USED:TOT:</b>      large systems</p> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p>						
— continued —							

## New M2616 and M2616CT telephone



STEP	ACTION										
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>          <b>PRT</b>                  Request a Printout</p> <p><b>TYPE</b>        <b>TNB</b>                      TN Block</p> <p><b>TN</b>            <b>L S C U</b>                  Input the Loop Shelf Card and Unit number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>										
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>										
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>										
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>										
<b>10</b>	<p><b>Find out what DNs are available.</b></p> <table border="0"> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>you know what DN you want to assign</td> <td>step 13</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is Release 19 or later</td> <td>step 11</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is pre-Release 19</td> <td>Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.</td> </tr> </tbody> </table> <p style="text-align: center;">— continued —</p>	If	Do	.....	.....	you know what DN you want to assign	step 13	you do not know what DN you want to assign and your system software is Release 19 or later	step 11	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.
If	Do										
.....	.....										
you know what DN you want to assign	step 13										
you do not know what DN you want to assign and your system software is Release 19 or later	step 11										
you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.										



## New M2616 and M2616CT telephone

STEP	ACTION									
<b>11</b>	<p><b>Print unused DNs in your customer group.</b></p> <p>Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20</p> <table> <tr> <td><b>REQ</b></td> <td>PRT</td> <td>Print</td> </tr> <tr> <td><b>TYPE</b></td> <td>LUDN</td> <td>List unused DNs</td> </tr> <tr> <td><b>CUST</b></td> <td>0 – 99</td> <td>Input customer group number</td> </tr> </table> <p>You get a printout of the unused DNs in your customer group.</p>	<b>REQ</b>	PRT	Print	<b>TYPE</b>	LUDN	List unused DNs	<b>CUST</b>	0 – 99	Input customer group number
<b>REQ</b>	PRT	Print								
<b>TYPE</b>	LUDN	List unused DNs								
<b>CUST</b>	0 – 99	Input customer group number								
<b>12</b>	<p><b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b></p>									
<b>13</b>	<p><b>Find out what Terminal Numbers are available for the new telephone.</b></p> <table> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>you have access to the print overlay programs</td> <td>step 14</td> </tr> <tr> <td>you do not have access to the print programs</td> <td>Ask your system supplier what TNs are available, then go to step 15.</td> </tr> </tbody> </table>	If	Do	you have access to the print overlay programs	step 14	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.			
If	Do									
you have access to the print overlay programs	step 14									
you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.									
<b>14</b>	<p><b>Print out the available TNs on your system.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <table> <tr> <td><b>REQ</b></td> <td>LUU</td> <td>List all unused units</td> </tr> <tr> <td></td> <td>LUVU</td> <td>List unused voice units (Release 19 or later)</td> </tr> <tr> <td><b>TYPE</b></td> <td>2616</td> <td>M2616 telephone. If there are no M2616 telephones installed yet, choose a type of digital telephone that has been installed.</td> </tr> </table> <p>You get a printout of the available digital telephone TNs.</p> <p style="text-align: center;">— continued —</p>	<b>REQ</b>	LUU	List all unused units		LUVU	List unused voice units (Release 19 or later)	<b>TYPE</b>	2616	M2616 telephone. If there are no M2616 telephones installed yet, choose a type of digital telephone that has been installed.
<b>REQ</b>	LUU	List all unused units								
	LUVU	List unused voice units (Release 19 or later)								
<b>TYPE</b>	2616	M2616 telephone. If there are no M2616 telephones installed yet, choose a type of digital telephone that has been installed.								

## New M2616 and M2616CT telephone

STEP	ACTION						
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>						
	<table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>there is recent traffic study data</td> <td>Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.</td> </tr> <tr> <td>there is no recent traffic study data</td> <td>Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.</td> </tr> </tbody> </table>	If	Do	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
If	Do						
there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.						
there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.						
<b>16</b>	<b>Choose the TN for the new telephone.</b>						
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>						
<b>18</b>	<b>Assign a Designator.</b>						
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.						
<b>19</b>	<b>Program the new telephone.</b>						
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.						
	> LD 11						
	<b>REQ</b> NEW                      New telephone						
	<b>TYPE</b> 2616                    M2616 telephone						
	<b>TN</b> L S C U                Input the TN (Loop Shelf Card Unit number)						
	<b>CDEN</b> <cr>                    Carriage return - use the default						
	<b>DES</b> A . . A                Designator maximum six characters						
	<b>CUST</b> 0-99                    customer group number						
	 carriage return until you see the prompt KEY						
	— continued —						

## New M2616 and M2616CT telephone

STEP	ACTION								
20	<p><b>Program DNs on as many keys as you require.</b></p> <p>Program the key(s) one of the following ways:</p> <p><b>KEY</b> XX SCR X . . X  <b>KEY</b> XX SCN X . . X  <b>KEY</b> XX MCR X . . X  <b>KEY</b> XX MCN X . . X</p> <p>XX represents the key number (0–59)            Key 0 must be programmed with a DN</p> <p>SCR — single call ringing DN            SCN — single call non-ringing DN            MCR — multiple call ringing DN            MCN — multiple call non-ringing DN</p> <p>X..X represents the actual digits in the DN; type the actual digits            the DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP</p> <p>Carriage return until you see either of the following messages:</p> <p><b>U.data    P.data    small systems</b>            or  <b>MEM AVAIL: (U/P) USED:TOT:    large systems</b></p>								
21	<p><b>Check that the telephone works.</b></p> <p>Try to make a call. Try to receive a call.</p> <table border="0"> <tr> <td><b>If</b></td> <td><b>Do</b></td> </tr> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>telephone works</td> <td>step 22</td> </tr> <tr> <td>telephone does not work</td> <td>step 1</td> </tr> </table> <p style="text-align: center;">— continued —</p>	<b>If</b>	<b>Do</b>	.....	.....	telephone works	step 22	telephone does not work	step 1
<b>If</b>	<b>Do</b>								
.....	.....								
telephone works	step 22								
telephone does not work	step 1								

## New M2616 and M2616CT telephone

STEP	ACTION								
22	<p><b>Arrange for a data dump to be performed.</b></p> <table border="0"> <tr> <td style="vertical-align: top;"><b>If</b></td> <td style="vertical-align: top;"><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>you do not have access to LD 43</td> <td>Contact your system supplier.</td> </tr> <tr> <td>you have access to LD 43</td> <td>step 23</td> </tr> </table>	<b>If</b>	<b>Do</b>	.....		you do not have access to LD 43	Contact your system supplier.	you have access to LD 43	step 23
<b>If</b>	<b>Do</b>								
.....									
you do not have access to LD 43	Contact your system supplier.								
you have access to LD 43	step 23								
23	<p><b>Perform a data dump to permanently store the programming you have just completed.</b></p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;">  <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div> <p>Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.</p> <pre>&gt; LD 43  . EDD &lt;cr&gt;</pre>								
24	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b></p> <p>or</p> <p><b>DATA DUMP COMPLETE</b></p> <table border="0"> <tr> <td style="vertical-align: top;"><b>If</b></td> <td style="vertical-align: top;"><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 25</td> </tr> </table> <p style="text-align: center;">— continued —</p>	<b>If</b>	<b>Do</b>	.....		data dump fails	Contact your system supplier.	data dump succeeds	step 25
<b>If</b>	<b>Do</b>								
.....									
data dump fails	Contact your system supplier.								
data dump succeeds	step 25								

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**New M2616 and M2616CT telephone**

STEP	ACTION
<b>25</b>	<b>Terminate this overlay program.</b>  • ****
<b>26</b>	<b>Terminate this programming session.</b>  Log off.  > LOGO
<b>27</b>	<b>You have now completed the minimum programming required to implement a basic new M2616 or M2616CT telephone.</b>
	

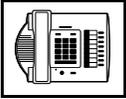
## New M3110 telephone

### Purpose

The information in this Task module will help you if a user at your site requires a new M3110 Meridian Digital Telephone.



553-7201



## New M3110 telephone



The M3110 telephone is only available in Europe.

**Note:** On the M3110 telephone, the Meridian label can be replaced with a system supplier name or logo.

If the user needs a new telephone, install an M3110 telephone if:

- ◆ the user needs one or several Directory Numbers (DNs)
- ◆ the user has a personal computer or will need one at the desk and you want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires
- ◆ the user wants to be able to listen to a call through the speaker, while talking through the handset, so that third parties can listen to both sides of the conversation
- ◆ the user wants buttons (or keys) for easy access to features or commonly dialed telephone numbers
- ◆ the user wants to adjust the volume for the handset, ringing tone, buzz tone, on-hook dialing and group listening
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the user wants the telephone to put calls on hold, automatically, when they go from one call to another on different keys
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting
- ◆ the user wants to be able to position the telephone in three different ways (two desktop positions and a wall mount position)

## Basic configuration

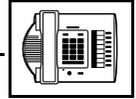


This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

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## New M3110 telephone

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For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Software

**Table 90**  
**Software requirements**

Release required	Software package(s) required
16 and later	88 (DSET) M2000 Digital Sets 89 (TSET) M3000 Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.

### Terminal Options

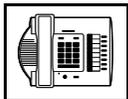
The M3110 telephone supports the following terminal options:

- ◆ MCA data option to provide integrated voice and data
- ◆ external alerter for noisy environments
- ◆ wall mount ability

### Power

This telephone requires external power for the MCA data option and the external alerter.

The built in handsfree unit, used for Group Listening, can be activated or deactivated when the telephone is programmed. No external power supply is required to make the handsfree unit function.



## New M3110 telephone

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When external power is needed, there is a power supply board which must be installed inside of the telephone.

Arrange with your system supplier to get the necessary power equipment ordered and installed.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M3110 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator.

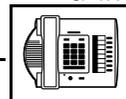
For example, users may need access to certain basic features, such as Call Transfer and Conference. These features are denied by default. Also, the telephone system administrator might want to implement corporate-wide policies for telephones which are not met through the default choices.

Because the M3110 is a digital telephone, it is programmed in overlay program (LD) 11.

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## New M3110 telephone

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### Data and Handsfree default values

- ◆ If the telephone has a data option installed, key 7 is automatically set by the system as a PROGRAM key. This key is needed for the user to make adjustments to the data parameters from the telephone keypad.

When you do a TN-Block printout of the information programmed for the telephone, key 7 appears to have nothing assigned to it. It is blank in the printout.

- ◆ In the programming of the telephone, if the handsfree unit is enabled for Group Listening, key 15 is automatically set by the system as a Handsfree key. If you disable the handsfree unit, you must program key 15 as NUL.

*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for prompts covered by this book.

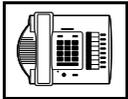
The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.



## New M3110 telephone

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed, they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the DNs can be one to four digits.

This telephone can be configured to have one or more than one DN. Each of the keys numbered 0–7 on the telephone can have a DN assigned.

### Ringling or Non-ringling DNs

On digital telephones, a DN can be programmed to be a ringling or a non-ringling appearance.

- ◆ When a call comes into a ringling appearance, the telephone rings, if it is idle, and the indicator beside the DN key flashes.
- ◆ When a call comes into a non-ringling appearance of a DN, the DN-key indicator flashes but the telephone does not ring.

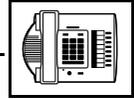
If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

If an M3110 telephone has several DN keys programmed, you can program each DN key to ring or not to ring according to the needs of the user.

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## New M3110 telephone

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### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN on a key.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M3110 telephone, you assign the following programming code to the key:

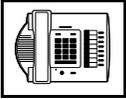
SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to a key on an M3110 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone. There is information on an important Multiple Appearance DN feature in Task 40, *Multiple Appearance DN Redirection Prime*.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

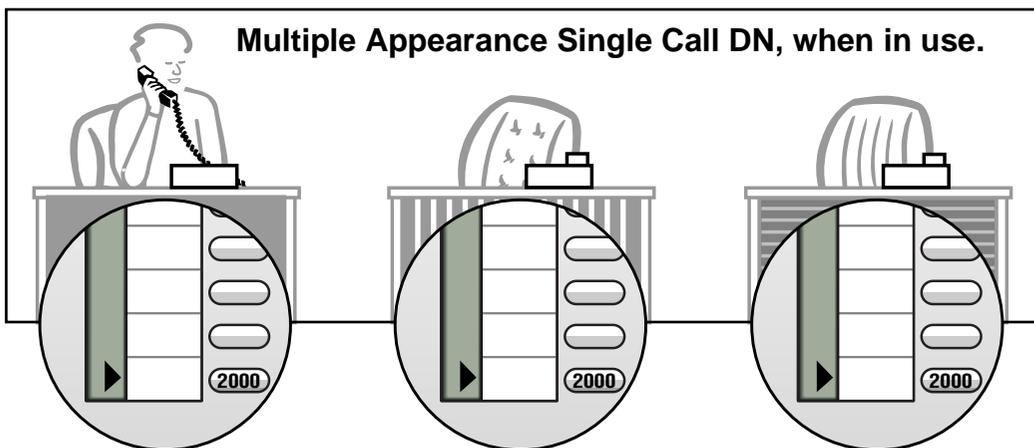


## New M3110 telephone

### Single Call DN

The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.



553-0395T MCDN 3310/3110



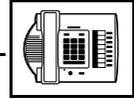
If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M3110 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

## New M3110 telephone



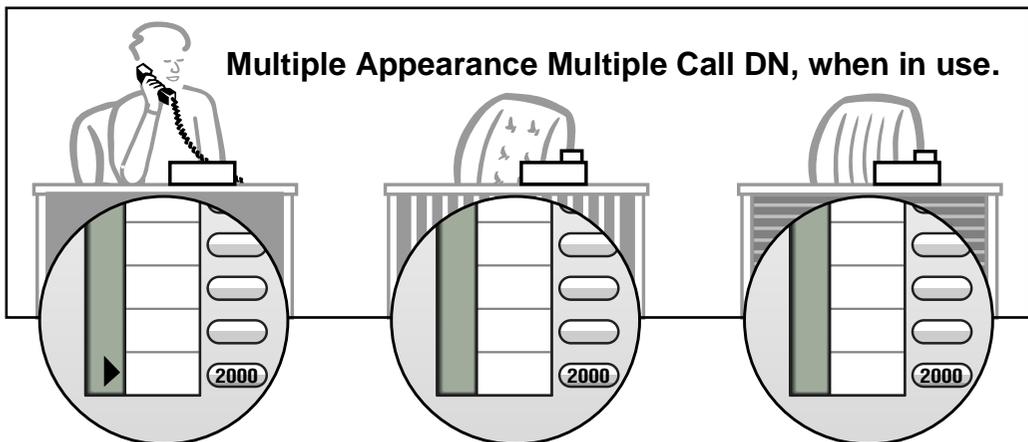
When you want to assign a *Single Call Non-ringing DN* to a key on an M3110 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

### Multiple Call DN

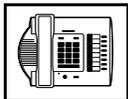
The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.



A Multiple Call DN is not treated as busy until there are calls on all of the programmed appearances of the DN. There can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DN's.



## New M3110 telephone

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M3110 telephone, you assign the following programming code to the key:

MCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M3110 telephone, you assign the following programming code to the key:

MCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.

### Consistent configuration



*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M3110 telephone.

### Prime DN, Key 0

Key 0, which is the key at the bottom of the key strip on the right hand side of the telephone, *must be* programmed with a DN. This DN is called the prime DN.

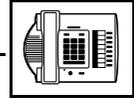
### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to

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## New M3110 telephone

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record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module.

### DN-Block printout

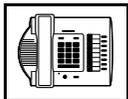


If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DNs, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M3110 is a digital telephone, it is programmed in overlay program (LD) 11. In this overlay program, even though a telephone may have more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.



## New M3110 telephone

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the Superloop, to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.

Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each Superloop is kept within the recommended guidelines. If all of your existing Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

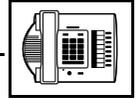
Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system if there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

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## New M3110 telephone

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### Card density

Telephones are connected to interface cards in the system called line cards.

Meridian 1 systems using Superloops use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.

Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

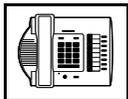
When you program digital telephones, you do not need to tell the system what density the digital telephones line card is, since it defaults to the density allowed for the Superloop on which the telephone resides.

### Designator (DES)

When you want printouts of the data associated with telephones, you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.



## New M3110 telephone

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

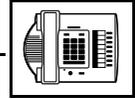
Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

The M3110 telephone is programmed as though it is an M2616 telephone (the TYPE prompt is set to 2616 in Overlay 11). Therefore, it is a good idea to use a DES code as a means of identifying the

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## New M3110 telephone

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telephone type as M3110. Before doing this, however, you should first make certain that you are not using DES codes for some other purpose.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

#### Ringling options

##### Distinctive Ringling Groups

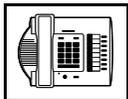
There are four different ringling options for the digital telephones. When you program the Class of Service of each telephone, you choose one of the four options to set the ringling tone and ringling cadence. The choices are: DRG1, DRG2, DRG3, or DRG4. DRG stands for Distinctive Ringling Group.

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringling.

Distinctive Ringling can be very useful with the Call Pickup feature. When telephones are ringling in the Pickup group, the users can tell what telephone is ringling and answer calls appropriately.

##### Network and Executive Distinctive Ringling

When you assign Executive Distinctive Ringling to a telephone, terminating telephones ring distinctively when they receive calls from the “Executive” telephone. Network Distinctive Ringling extends this functionality across an ISDN network.



## New M3110 telephone

**Table 91**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network Supplementary Features (ISDNS)
	185 – Executive Distinctive Ringing (EDRG)

## Directory Number Delayed Ringing (DNDR)

**Table 92**  
**Software requirements**

Release required	Software package(s) required
21	none

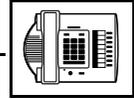
If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user's telephone.

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## New M3110 telephone

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When you have Multiple Appearance non-ringing DN's, there are many different ways you can choose to implement it. Two examples follow:

- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Handsfree unit

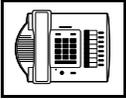
There is a built-in unit which can be enabled or disabled in the Class of Service programming of the telephone. It is disabled by default. If enabled, key 15 on the telephone is automatically configured as the Handsfree key. If handsfree operation is disabled, key 15 must be programmed as NUL.

**Note:** Handsfree capability must be allowed/denied in overlay (LD) 11; however, there is no handsfree transmission with the M3110 telephone. The Handsfree Allowed Class of Service must be set in order to allow Group Listening.

### Group Listening

When you enable Group Listening, both sides of a conversation are transmitted through the speaker of the telephone. The person on the other end cannot hear what you are saying unless you speak into the handset or headset. Verify that it is legal to use this feature in your area.

To allow Group Listening, program the Class of Service as Handsfree Allowed in overlay program (LD) 11. On the telephone, you select Option 1 when you press the Program key to enable and disable Group Listening. When there is a headset connected, the feature is automatically enabled.



## New M3110 telephone

### Key Expansion module

No Key Expansion modules can be added to the M3110 telephone.

### Data option

When the Meridian Communications Adapter (MCA) is installed inside the telephone and an RS-232C cable is used, you can set up a computer on the user's desk to use the same pair of wires that the telephone uses to connect to the system. If you do this, then key 7 on the telephone must be used as a Program key to control various data parameter settings. There is a Quick Reference Card for the MCA that explains these settings and how to use the Program key.

### Control tips



- ◆ If the user unplugs an M3110 telephone messages print out on the maintenance printer, identifying the TN with the missing telephone

### Administration tips



- ◆ The M3110 telephone has a red indicator that lights steadily when there are messages waiting. You can program a Message Waiting key on one of the keys so the user has an easy way of dialing the message center or voice mail when there are messages waiting.

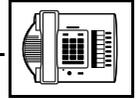
For more information on Message Waiting, refer to Task 25, *Message Center*.

- ◆ You might want to consider using one or two standard key layouts for all digital telephones, or at least all M3110 telephones. This can save significant amounts of memory.

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## New M3110 telephone

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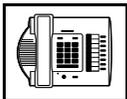
- ◆ If users are allowed to have the Group Listening functionality, you might want to set some guidelines as to who can use that kind of telephone and under what circumstances.

For example, you might make a policy that allows people with enclosed offices to use Group Listening, provided their office door is closed. Therefore, people around them are not disturbed during Group Listening conversations.

### Training tips



- ◆ If you have a standard key layout on all M3110 telephones, this is an advantage since users can go to any telephone and feel comfortable using it. If all telephones are the same, the users can also explain features to each other.
- ◆ Even though users do not need to remember feature access codes, they might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps you both get the most out of the system and in turn the system provides the expected benefits.
- ◆ Make certain that the user understands the information in the *Meridian Digital Telephones User Guide*.



## New M3110 telephone

### What to have ready

Make the following preparations before you do the basic programming of a new M3110 telephone.

**Table 93**  
**Checklist**

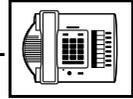
Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s). Decide whether each DN is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
✓		Determine if any of the terminal options, such as the data option, are required.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.
	✓	Arrange for the necessary power equipment to be ordered and installed.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

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## New M3110 telephone

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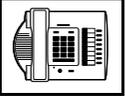
Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

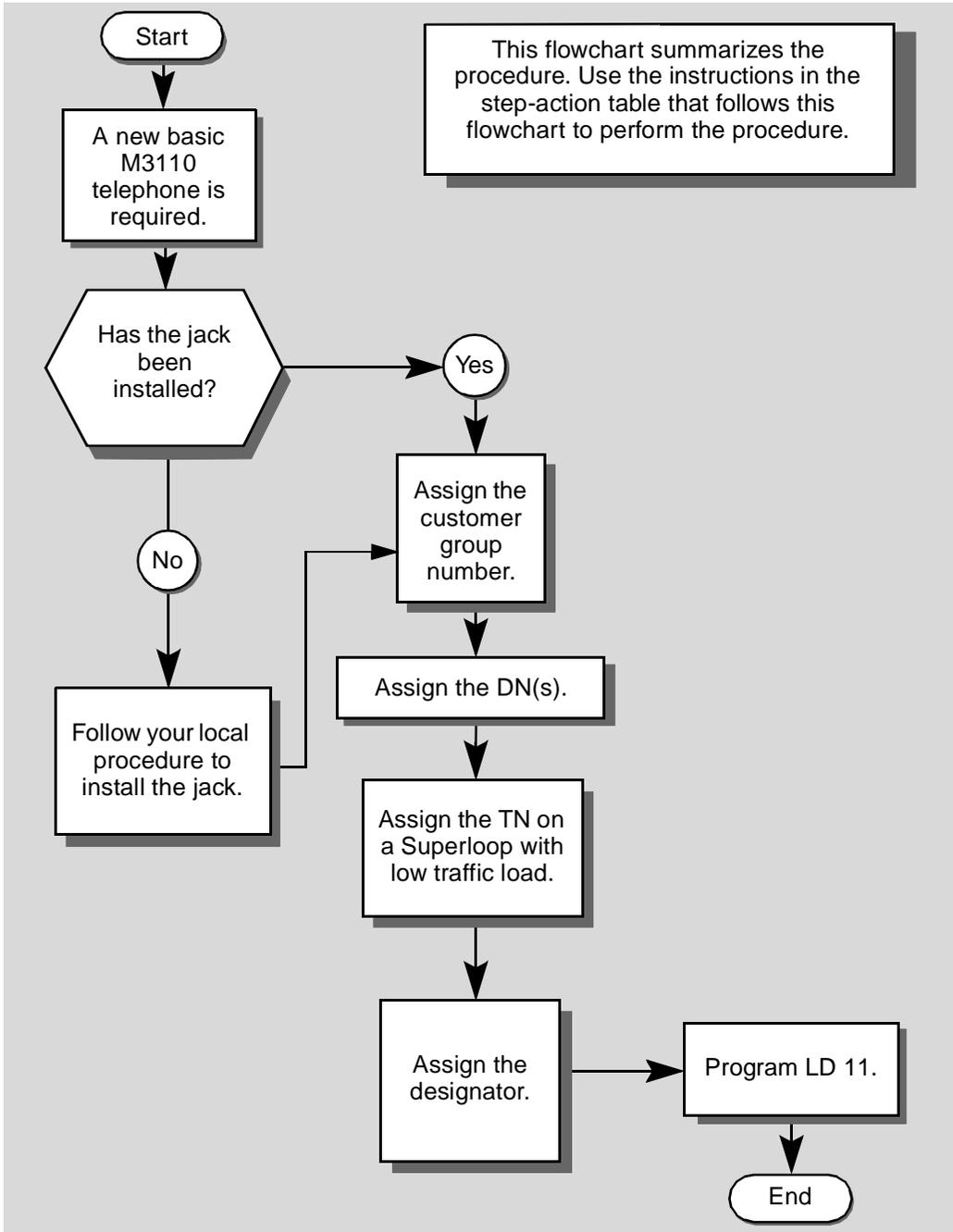
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

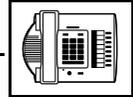
A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M3110 telephone.



## New M3110 telephone



## New M3110 telephone



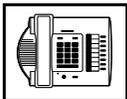
The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M3110 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

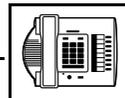
STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>— continued —</b>		



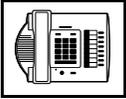
## New M3110 telephone

STEP	ACTION						
4	<b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b>						
	<table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
5	<b>Print the DN Block of the other telephone.</b>						
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 22 or</p> <p>&gt; LD 20 or (Release 17 or later)</p> <p>&gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</p> <p><b>REQ</b> PRT Request a printout</p> <p><b>TYPE</b> DNB DN Block</p> <p><b>CUST</b> &lt;cr&gt; All Customer groups</p> <p><b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <p><b>U.data</b>      <b>P.data</b>      small systems</p> <p>or</p> <p><b>MEM AVAIL: (U/P) USED:TOT:</b>      large systems</p> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p>						
— continued —							

## New M3110 telephone



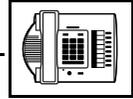
STEP	ACTION										
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>          <b>PRT</b>                  Request a Printout</p> <p><b>TYPE</b>        <b>TNB</b>                    TN Block</p> <p><b>TN</b>            <b>L S C U</b>                Input the Loop Shelf Card and Unit number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>										
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>										
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>										
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>										
<b>10</b>	<p><b>Find out what DNs are available.</b></p> <table border="0"> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>you know what DN you want to assign</td> <td>step 13</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is Release 19 or later</td> <td>step 11</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is pre-Release 19</td> <td>Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.</td> </tr> </tbody> </table> <p style="text-align: center;">— continued —</p>	If	Do	.....	.....	you know what DN you want to assign	step 13	you do not know what DN you want to assign and your system software is Release 19 or later	step 11	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.
If	Do										
.....	.....										
you know what DN you want to assign	step 13										
you do not know what DN you want to assign and your system software is Release 19 or later	step 11										
you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.										



## New M3110 telephone

STEP	ACTION	
<b>11</b>	<b>Print unused DNs in your customer group.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b>	PRT            Print
	<b>TYPE</b>	LUDN          List unused DNs
	<b>CUST</b>	0 – 99        Input customer group number
	You get a printout of the unused DNs in your customer group.	
<b>12</b>	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>	
<b>13</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	you have access to the print overlay programs	step 14
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.
<b>14</b>	<b>Print out the available TNs on your system.</b>	
	Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20 or	
	> LD 10 or LD 11 or LD 20 or LD 32    (Release 19 or later)	
	<b>REQ</b>	LUU            List all unused units
		LUVU          List unused voice units (Release 19 or later)
	<b>TYPE</b>	2616          M2616 telephone. The M3110 is programmed as an M2616 telephone. If there are no M2616 telephones installed yet, choose a type of digital telephone that has been installed.
	You get a printout of the available digital telephone TNs.	
	— continued —	

## New M3110 telephone



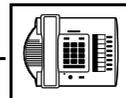
STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<b>If</b>	<b>Do</b>
	the telephone is to have Group Listening capability allowed	step 20
	the telephone is to have Group Listening capability denied	step 21
— continued —		



## New M3110 telephone

STEP	ACTION	
<b>20</b>	<b>Program the new telephone with Group Listening capability allowed.</b>	
	> LD 11	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 2616	M2616 telephone. The M3110 is programmed as an M2616 telephone.
	<b>TN</b> L S C U	Input the TN ( <b>L</b> oop <b>S</b> helf <b>C</b> ard <b>U</b> nit number)
	<b>CDEN</b> <cr>	Carriage return - use the default
	<b>DES</b> M3110	Designator (maximum six characters)
	<b>CUST</b> 0-99	customer group number
	Carriage return until you see the CLS prompt.	
	<b>CLS</b>	Class of Service
	HFA	Handsfree Allowed (Group Listening Allowed)
	NDD	No Digit Display - default
	Carriage return until you see the KEY prompt. Because Group Listening capability is allowed, Key 15 automatically becomes the Handsfree (Group Listening) key.	
	Go to step 22.	
— continued —		

## New M3110 telephone

**STEP ACTION****21 Program the new telephone with Group Listening capability denied.**

> LD 11

<b>REQ</b>	NEW	New telephone
<b>TYPE</b>	2616	M2616 telephone. The M3110 is programmed as an M2616 telephone.
<b>TN</b>	L S C U	Input the TN (Loop Shelf Card Unit number)
<b>CDEN</b>	<cr>	Carriage return - use the default
<b>DES</b>	M3110	Designator (maximum six characters)
<b>CUST</b>	0-99	customer group number

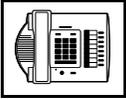
Carriage return until you see the CLS prompt.

<b>CLS</b>	Class of Service
HFD	Handsfree Denied (Group Listening Denied) - default
NDD	No Digit Display - default

Carriage return until you see the KEY prompt. Because Group Listening capability is denied, Key 15 must be programmed as NUL.

Go to step 22.

— continued —



## New M3110 telephone

STEP	ACTION
22	<p><b>Program DNs on as many keys as you require.</b></p> <p>Program the key(s) one of the following ways:</p> <p><b>KEY</b> XX SCR X . . X</p> <p><b>KEY</b> XX SCN X . . X</p> <p><b>KEY</b> XX MCR X . . X</p> <p><b>KEY</b> XX MCN X . . X</p> <p><b>Note:</b> Keys 8-14 are programmed as NUL.</p> <p>XX represents the key number (0–57) Key 0 must be programmed with a DN</p> <p>SCR — single call ringing DN</p> <p>SCN — single call non-ringing DN</p> <p>MCR — multiple call ringing DN</p> <p>MCN — multiple call non-ringing DN</p> <p>X..X represents the actual digits in the DN; type the actual digits</p> <p>The DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP</p> <p>Carriage return until you see either of the following messages:</p> <p><b>U.data    P.data    small systems</b></p> <p>or</p> <p><b>MEM AVAIL: (U/P) USED:TOT:    large systems</b></p>
— continued —	

**New M3110 telephone**

<b>STEP</b>	<b>ACTION</b>								
<b>23</b>	<p><b>Check that the telephone works.</b></p> <p>Try to make a call. Try to receive a call.</p> <table> <thead> <tr> <th><b>If</b></th> <th><b>Do</b></th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>telephone works</td> <td>step 24</td> </tr> <tr> <td>telephone does not work</td> <td>step 1</td> </tr> </tbody> </table>	<b>If</b>	<b>Do</b>	.....	.....	telephone works	step 24	telephone does not work	step 1
<b>If</b>	<b>Do</b>								
.....	.....								
telephone works	step 24								
telephone does not work	step 1								
<b>24</b>	<p><b>Arrange for a data dump to be performed.</b></p> <table> <thead> <tr> <th><b>If</b></th> <th><b>Do</b></th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>you do not have access to LD 43</td> <td>Contact your system supplier.</td> </tr> <tr> <td>you have access to LD 43</td> <td>step 25</td> </tr> </tbody> </table>	<b>If</b>	<b>Do</b>	.....	.....	you do not have access to LD 43	Contact your system supplier.	you have access to LD 43	step 25
<b>If</b>	<b>Do</b>								
.....	.....								
you do not have access to LD 43	Contact your system supplier.								
you have access to LD 43	step 25								
<b>25</b>	<p><b>Perform a data dump to permanently store the programming you have just completed.</b></p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;">  <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div> <p>Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.</p> <pre>&gt; LD 43  . EDD &lt;cr&gt;</pre>								
— continued —									

## New M3110 telephone

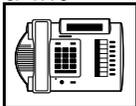
STEP	ACTION								
26	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b></p> <p>or</p> <p><b>DATA DUMP COMPLETE</b></p> <table border="0"> <tr> <td><b>If</b></td> <td><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 27</td> </tr> </table>	<b>If</b>	<b>Do</b>	.....		data dump fails	Contact your system supplier.	data dump succeeds	step 27
<b>If</b>	<b>Do</b>								
.....									
data dump fails	Contact your system supplier.								
data dump succeeds	step 27								
27	<p><b>Terminate this overlay program.</b></p> <p>. * * * *</p>								
28	<p><b>Terminate this programming session.</b></p> <p>Log off.</p> <p>&gt; LOGO</p>								
29	<p><b>You have now completed the minimum programming required to implement a basic new M3110 telephone.</b></p>								
									

## New M3310 telephone

### Purpose

The information in this Task module will help you if a user at your site requires a new M3310 Meridian Digital Telephone.





## New M3310 telephone



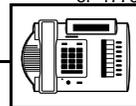
The M3310 telephone is only available in Europe.

*Note:* On the M3310 telephone, the Meridian label can be replaced with a system supplier name or logo.

If the user requires a new telephone, install an M3310 telephone if:

- ◆ the user needs one or several Directory Numbers (DNs)
- ◆ the user has a personal computer or will need one at the desk and you want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires
- ◆ the user wants to be able to hear a conversation and speak to a caller with or without using the handset of the telephone (handsfree capability)
- ◆ the user wants to be able to use a headset
- ◆ the user wants buttons (or keys) for easy access to features or commonly dialed telephone numbers
- ◆ the user can benefit from easy-to-understand prompts on the display when accessing features
- ◆ when answering redirected calls, the user can benefit from knowing the type of feature which redirected the call to the telephone
- ◆ the user wants the display to show a call timer
- ◆ the user wants the telephone to put calls on hold, automatically, when they go from one call to another on different keys
- ◆ the user wants to adjust the volume for the handset/headset, ringing tone, buzz tone, on-hook dialing and group listening, and handsfree
- ◆ the user needs the choice of different languages on the display when using features
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing

## New M3310 telephone



- ◆ the user can benefit from knowing the internal or external telephone number and, optionally, the name of the caller before the calls are answered
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting
- ◆ the user wants to be able to position the telephone in three different ways (two desktop positions and a wall mount position)

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Software

**Table 94**  
Software requirements

Release required	Software package(s) required
16 and later	88 (DSET) M2000 Digital Sets 89 (TSET) M3000 Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.



## New M3310 telephone

### Terminal Options

The M3310 telephone supports the following terminal options:

- ◆ MCA data option to provide integrated voice and data
- ◆ external alerter for noisy environments
- ◆ wall mount ability

### Power

This telephone requires external power for the MCA data option and the external alerter.

The handsfree unit, built into the telephone, can be activated or deactivated when the telephone is programmed. No external power supply is required to make it function.

When external power is needed, there is a power supply board which must be installed inside of the telephone.

Arrange with your system supplier to get the necessary power equipment ordered and installed.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

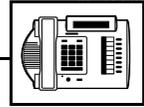
The prompts discussed in this module are the ones to which you must respond to make a basic M3310 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator.

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## New M3310 telephone

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For example, the users may need access to certain basic features, such as Call Transfer and Conference. These features are denied by default. Also, the telephone system administrator might want to implement corporate-wide policies for telephones which are not met through the default choices.

Because the M3310 is a digital telephone, it is programmed in overlay program (LD) 11.

### Data, Display, and Handsfree default values

- ◆ If the telephone has a display module or a data option installed, key 7 is automatically set by the system as a PROGRAM key. This key is needed for the user to make adjustments to the display or data parameters from the telephone keypad.

When you do a TN-Block printout of the information programmed for the telephone, key 7 appears to have nothing assigned to it. It is blank in the printout.

- ◆ If the handsfree unit is enabled in the programming of the telephone, key 15 is automatically set by the system as a Handsfree key. If you disable the handsfree unit, you must program Key 15 as NUL.

*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.



## New M3310 telephone

### Display options

The display screen is a basic component of the M3310 telephone. There is a Quick Reference Card describing the use of the display. It explains how to use the Program key to set such things as:

- ◆ the contrast
- ◆ the language used for feature prompts
- ◆ the call timer
- ◆ the volume of ringing, buzzing, the speaker, the handset and the handsfree unit (if activated)
- ◆ the key clicks
- ◆ the idle screen format

### Language Option

The information on your display screen can be displayed in one of several languages. You choose the language you want by selecting Option 5 under the Program key. There are two different displays available, each of which supports ten languages.

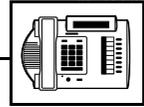
One display has the following language options:

- ◆ English
- ◆ Canadian French
- ◆ French
- ◆ Spanish
- ◆ German
- ◆ Dutch
- ◆ Portuguese
- ◆ Italian
- ◆ Swiss French
- ◆ Swiss Italian

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## New M3310 telephone

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The other display has the following language options:

- ◆ English
- ◆ French
- ◆ German
- ◆ Norwegian
- ◆ Swedish
- ◆ Danish
- ◆ Finnish
- ◆ Polish
- ◆ Czech
- ◆ Hungarian

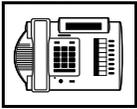
### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.



## New M3310 telephone

When telephones are installed, they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the DNs can be one to four digits.

This telephone can be configured to have one or more than one DN. Each of the keys numbered 0–7 on the telephone can have a DN assigned.

### Ring or Non-ringing DNs

On digital telephones, a DN can be programmed to be a ringing or a non-ringing appearance.

- ◆ When a call comes into a ringing appearance, the telephone rings, if it is idle, and the indicator beside the DN key flashes.
- ◆ When a call comes into a non-ringing appearance of a DN, the DN-key indicator flashes but the telephone does not ring.

If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

If an M3310 telephone has several DN keys programmed, you can program each DN key to ring or not to ring according to the needs of the user.

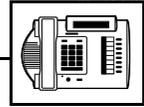
### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN on a key.

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## New M3310 telephone

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The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M3310 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to a key on an M3310 telephone, you assign the following programming code to the key:

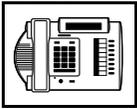
SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone. There is information on an important Multiple Appearance DN feature in Task 40, *Multiple Appearance DN Redirection Prime*.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

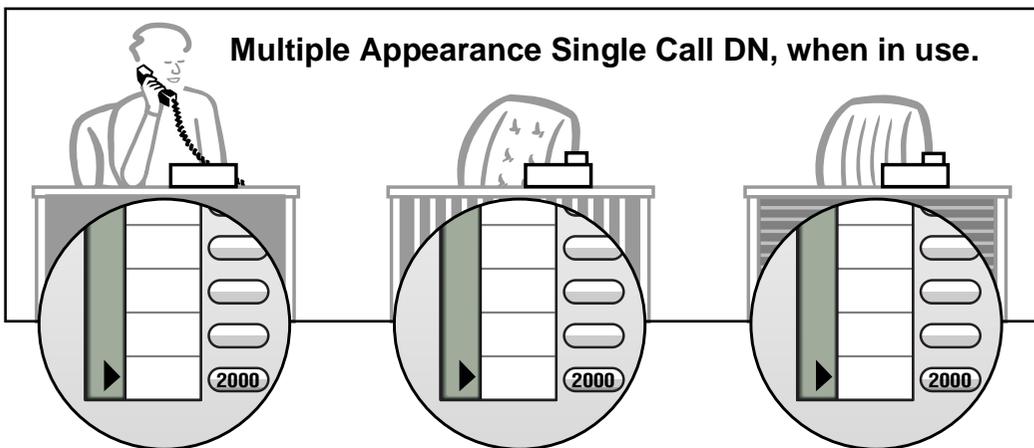
### Single Call DN

The DN can handle one call at a time.



## New M3310 telephone

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.



553-0395T MCDN 3310/3110



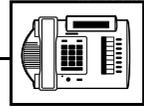
If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M3310 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

## New M3310 telephone



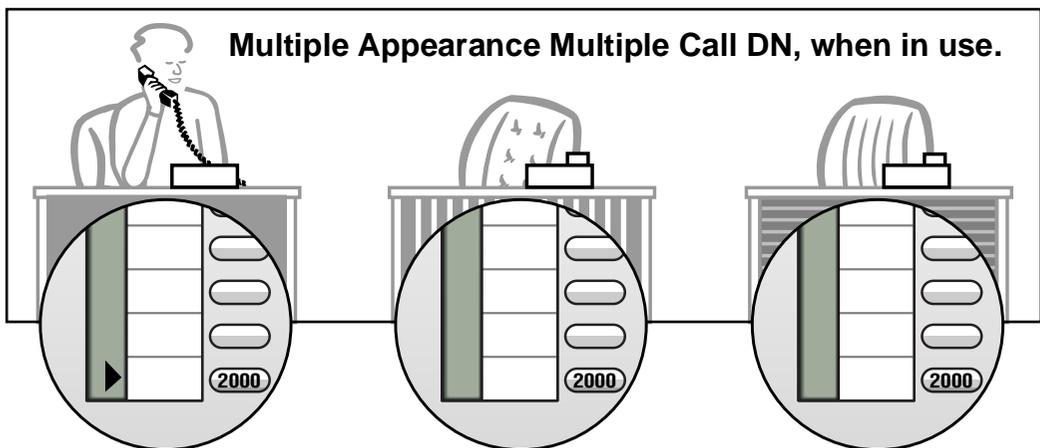
When you want to assign a *Single Call Non-ringing DN* to a key on an M3310 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

### Multiple Call DN

The DN can handle more than one call at a time.

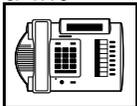
This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.



553-0396T MCDN 3310/3110

A Multiple Call DN is not treated as busy until there are calls on all of the programmed appearances of the DN. There can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DN's.



## New M3310 telephone

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M3310 telephone, you assign the following programming code to the key:

MCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M3310 telephone, you assign the following programming code to the key:

MCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.

### Consistent configuration



*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M3310 telephone.

### Prime DN, Key 0

Key 0, which is the key at the bottom of the key strip on the right hand side of the telephone, *must be* programmed with a DN. This DN is called the prime DN.

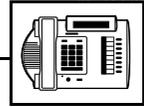
### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to

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## New M3310 telephone

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record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module.

### DN-Block printout

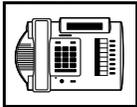


If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DNs, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M3310 is a digital telephone, it is programmed in overlay program (LD) 11. In this overlay program, even though a telephone may have more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.



## New M3310 telephone

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the Superloop to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.

Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each Superloop is kept within the recommended guidelines. If all of your existing Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

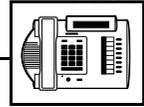
Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system if there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

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## New M3310 telephone

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### Card density

Telephones are connected to interface cards in the system called line cards.

Meridian 1 systems using Superloops use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.

Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

When you program digital telephones, you do not need to tell the system what density the digital telephones line card is, since it defaults to the density allowed for the Superloop on which the telephone resides.

### Designator (DES)

When you want printouts of the data associated with telephones, you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.



## New M3310 telephone

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

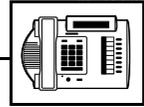
Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

The M3310 telephone is programmed as though it is an M2616 telephone (the TYPE prompt is set to 2616 in Overlay 11). Therefore, it is a good idea to use a DES code as a means of identifying the

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## New M3310 telephone

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telephone type as M3310. Before doing this, however, you should first make certain that you are not using DES codes for some other purpose.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

#### Ringling options

##### Distinctive Ringling Groups

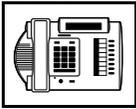
There are four different ringling options for the digital telephones. When you program the Class of Service of each telephone, you choose one of the four options to set the ringling tone and ringling cadence. The choices are: DRG1, DRG2, DRG3, or DRG4. DRG stands for Distinctive Ringling Group.

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringling.

Distinctive Ringling can be very useful with the Call Pickup feature. When telephones are ringling in the Pickup group, the users can tell what telephone is ringling and answer calls appropriately.

##### Network and Executive Distinctive Ringling

When you assign Executive Distinctive Ringling to a telephone, terminating telephones ring distinctively when they receive calls from the “Executive” telephone. Network Distinctive Ringling extends this functionality across an ISDN network.



## New M3310 telephone

**Table 95**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network Supplementary Features (ISDNS)
	185 – Executive Distinctive Ringing (EDRG)

## Directory Number Delayed Ringing (DNDR)

**Table 96**  
**Software requirements**

Release required	Software package(s) required
21	none

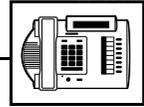
If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user's telephone.

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## New M3310 telephone

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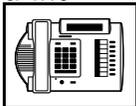
When you have Multiple Appearance non-ringing DNs, there are many different ways you can choose to implement it. Two examples follow:

- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Automatic Set Display

With X11 Release 23, when an incoming call is presented to a busy telephone, the Calling Line Identification (CLID) and Calling Party Name Display (CPND) for the incoming call is automatically displayed on the busy telephone. This capability is enabled by programming the Tandem Digit Display (TDD) Class of Service on the telephone.

Previously, this functionality was only available on the M3000 Touchphone. The user of the busy telephone had to press the display key for the Calling Line Identification information to be presented.



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### Handsfree unit

There is a built-in unit which can be enabled or disabled in the Class of Service programming of the telephone. It is disabled by default. If enabled, key 15 on the telephone is automatically configured as the handsfree key. If handsfree operation is disabled, key 15 must be programmed as NUL.

### Group Listening

When you enable Group Listening, both sides of a conversation are transmitted through the speaker of the telephone. The person on the other end cannot hear what you are saying unless you speak into the handset or headset. Verify that it is legal to use this feature in your area.

To allow Group Listening, program the Class of Service as Handsfree Allowed in overlay program (LD) 11. On the telephone, you select Option 1 when you press the Program key to enable and disable Group Listening. When there is a headset connected, the feature is automatically enabled.

### Headset

A headset can be plugged into the socket on the base of the telephone that is marked with a headset icon.

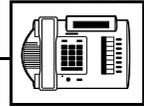
### Key Expansion module

Key Expansion modules cannot be added to the M3310 telephone.

### Data option

When the Meridian Communications Adapter (MCA) is installed inside the telephone and an RS-232C cable is used, you can set up a computer on the user's desk to use the same pair of wires that the telephone uses to connect to the system. If you do this, then key 7 on the telephone must be used as a Program key to control various data parameter settings. There is a Quick Reference Card for the MCA that explains these settings and how to use the Program key.

## New M3310 telephone



### Control tips



- ◆ Because the telephone is equipped with a display, the user can see the trunk group access codes when external incoming calls arrive at the telephone. If you do not want a user to access certain trunk groups using the direct trunk access code, implement the TGAR feature to prevent it. Refer to Task 45, *Trunk Group Access Restriction* for more information.
- ◆ If the user unplugs an M3310 telephone:
  - the chosen display settings, except for the choice of language, return to the default settings. This is a quick way for you to know if users are unplugging their telephones in an attempt to move them themselves
  - messages print out on the maintenance printer, identifying the TN with the missing telephone
- ◆ If the system initializes:
  - the display settings are not affected
  - messages print out on the maintenance printer to identify the cause(s) of the initialization

### Administration tips



- ◆ The M3310 telephone has a red indicator that lights steadily when there are messages waiting. You can program a Message Waiting key on one of the keys so the user has an easy way of dialing the message center or voice mail when there are messages waiting.  
  
For more information on Message Waiting, refer to Task 25, *Message Center*.
- ◆ You might want to consider using one or two standard key layouts for all digital telephones, or at least all M3310 telephones. This can save significant amounts of memory.



## New M3310 telephone



- ◆ If users are allowed to have the handsfree functionality, you might want to set some guidelines as to who can use that kind of telephone and under what circumstances.

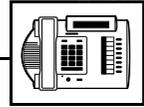
For example, you might make a policy that allows people with enclosed offices to use handsfree functionality, provided their office door is closed. Therefore, people around them are not disturbed during active handsfree conversations.

## Training tips



- ◆ If you have a standard key layout on all M3310 telephones, this is an advantage since users can go to any telephone and feel comfortable using it. If all telephones are the same, the users can also explain features to each other.
- ◆ Even though users do not need to remember feature access codes, they might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps you both get the most out of the system and in turn the system provides the expected benefits.
- ◆ Users need training on the feature prompts that are presented on the display when features are used.
- ◆ Ensure that users understand the information in the *Meridian Digital Telephones User Guide*.

## New M3310 telephone



### What to have ready

Make the following preparations before you do the basic programming of a new M3310 telephone.

**Table 97**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s). Decide whether each DN is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
✓		Determine if any of the options, such as the data option, are required.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.
	✓	Arrange for the necessary power equipment to be ordered and installed.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other



## New M3310 telephone

telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

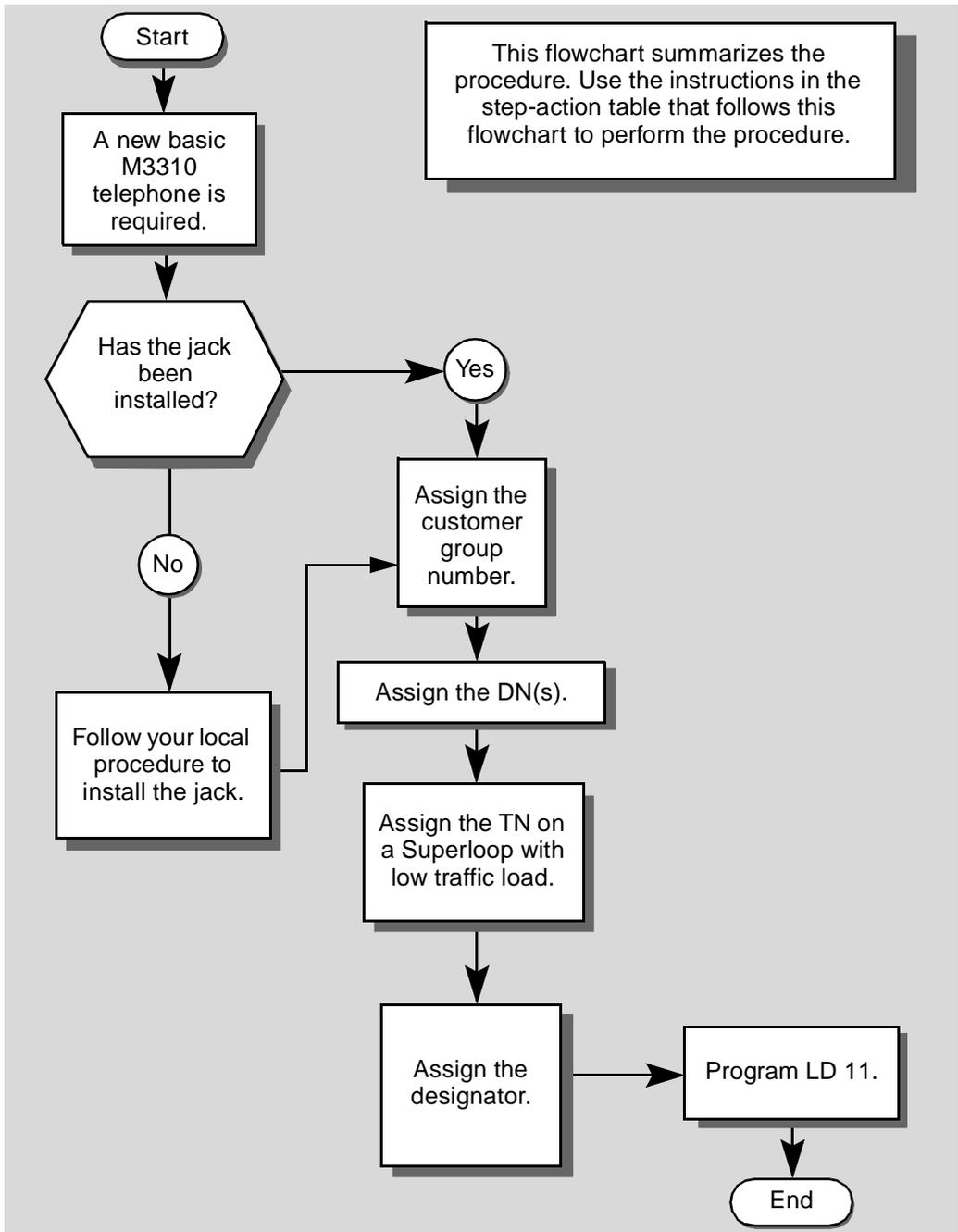
*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

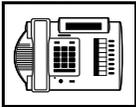
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M3310 telephone.

## New M3310 telephone





## New M3310 telephone

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

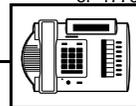
This step-action table covers the prompts related to the implementation of a basic M3310 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
— continued —		

## New M3310 telephone

**STEP ACTION****4 Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.****If****Do**

you know the DN and not the TN of the other telephone      step 5

you know the TN of the other telephone      step 6

**5 Print the DN Block of the other telephone.**

Log in. For information on proper login procedures, refer to *Basic programming instructions* in this book.

> LD 22 or

> LD 20 or (Release 17 or later)

> LD 10 or LD 11 or LD 32 (Release 19 or later)

**REQ**      PRT      Request a printout

**TYPE**      DNB      DN Block

**CUST**      <cr>      All Customer groups

**DN**      X . . X      Input the DN of the other telephone

Carriage return until you see either of the following messages:

**U.data**      **P.data**      small systems

or

**MEM AVAIL: (U/P) USED:TOT:**      large systems

You get a printout of the TN of the other telephone.

**Note:** If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.

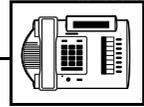
— continued —



## New M3310 telephone

STEP	ACTION										
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>          PRT          Request a Printout</p> <p><b>TYPE</b>        TNB          TN Block</p> <p><b>TN</b>          L S C U      Input the Loop Shelf Card and Unit number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>										
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>										
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>										
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>										
<b>10</b>	<p><b>Find out what DNs are available.</b></p> <table border="0"> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>you know what DN you want to assign</td> <td>step 13</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is Release 19 or later</td> <td>step 11</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is pre-Release 19</td> <td>Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.</td> </tr> </tbody> </table>	If	Do	.....	.....	you know what DN you want to assign	step 13	you do not know what DN you want to assign and your system software is Release 19 or later	step 11	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.
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.....	.....										
you know what DN you want to assign	step 13										
you do not know what DN you want to assign and your system software is Release 19 or later	step 11										
you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.										
— continued —											

## New M3310 telephone



STEP	ACTION									
11	<p><b>Print unused DNs in your customer group.</b></p> <p>Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20</p> <table> <tr> <td><b>REQ</b></td> <td>PRT</td> <td>Print</td> </tr> <tr> <td><b>TYPE</b></td> <td>LUDN</td> <td>List unused DNs</td> </tr> <tr> <td><b>CUST</b></td> <td>0-99</td> <td>Input customer group number</td> </tr> </table> <p>You get a printout of the unused DNs in your customer group.</p>	<b>REQ</b>	PRT	Print	<b>TYPE</b>	LUDN	List unused DNs	<b>CUST</b>	0-99	Input customer group number
<b>REQ</b>	PRT	Print								
<b>TYPE</b>	LUDN	List unused DNs								
<b>CUST</b>	0-99	Input customer group number								
12	<p><b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b></p>									
13	<p><b>Find out what Terminal Numbers are available for the new telephone.</b></p> <table> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>you have access to the print overlay programs</td> <td>step 14</td> </tr> <tr> <td>you do not have access to the print programs</td> <td>Ask your system supplier what TNs are available, then go to step 15.</td> </tr> </tbody> </table>	If	Do	you have access to the print overlay programs	step 14	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.			
If	Do									
you have access to the print overlay programs	step 14									
you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.									
14	<p><b>Print out the available TNs on your system.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <table> <tr> <td><b>REQ</b></td> <td>LJU</td> <td>List all unused units</td> </tr> <tr> <td></td> <td>LJVU</td> <td>List unused voice units (Release 19 or later)</td> </tr> <tr> <td><b>TYPE</b></td> <td>2616</td> <td>M2616 telephone. The M3310 is programmed as an M2616 telephone. If there are no M2616 telephones installed yet, choose a type of digital telephone that has been installed.</td> </tr> </table> <p>You get a printout of the available digital telephone TNs.</p> <p style="text-align: center;">— continued —</p>	<b>REQ</b>	LJU	List all unused units		LJVU	List unused voice units (Release 19 or later)	<b>TYPE</b>	2616	M2616 telephone. The M3310 is programmed as an M2616 telephone. If there are no M2616 telephones installed yet, choose a type of digital telephone that has been installed.
<b>REQ</b>	LJU	List all unused units								
	LJVU	List unused voice units (Release 19 or later)								
<b>TYPE</b>	2616	M2616 telephone. The M3310 is programmed as an M2616 telephone. If there are no M2616 telephones installed yet, choose a type of digital telephone that has been installed.								



## New M3310 telephone

STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the loops/Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the loops/Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<b>If</b>	<b>Do</b>
	the telephone is to have handsfree capability allowed	step 20
	the telephone is to have handsfree capability denied	step 21 or leave CLS programmed with default (HFD) and go to step 22.
— continued —		

## New M3310 telephone

### STEP ACTION

#### 20 Program the new telephone with handsfree capability allowed.

> LD 11

<b>REQ</b>	NEW	New telephone
<b>TYPE</b>	2616	M2616 telephone. The M3310 is programmed as an M2616 telephone.
<b>TN</b>	L S C U	Input the TN ( <b>L</b> oop <b>S</b> helf <b>C</b> ard <b>U</b> nit number
<b>C DEN</b>	<cr>	Carriage return - use the default
<b>DES</b>	M3310	Designator maximum six characters
<b>CUST</b>	0-99	customer group number

Carriage return until you see the CLS prompt.

<b>CLS</b>	HFA	Class of Service Handsfree Allowed
------------	-----	------------------------------------

Carriage return until you see the KEY prompt. Because handsfree capability is allowed, Key 15 automatically becomes the handsfree key.

Go to step 22.

— continued —

## New M3310 telephone

STEP	ACTION	
<b>21</b>	<b>Program the new telephone with handsfree capability denied.</b>	
	> LD 11	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 2616	M2616 telephone. The M3310 is programmed as an M2616 telephone.
	<b>TN</b> L S C U	Input the TN ( <b>L</b> oop <b>S</b> helf <b>C</b> ard <b>U</b> nit number)
	<b>CDEN</b> <cr>	Carriage return - use the default
	<b>DES</b> M3310	Designator maximum six characters
	<b>CUST</b> 0-99	customer group number
<p>Carriage return until you see the CLS prompt.</p>		
	<b>CLS</b> HFD	Class of Service Handsfree Denied
<p>Carriage return until you see the KEY prompt. Because handsfree capability is denied, Key 15 must be programmed as NUL.</p>		
<p>Go to step 22.</p>		
— continued —		

## New M3310 telephone

STEP	ACTION								
22	<b>Program DNs on as many keys as you require.</b>								
	Program the key(s) one of the following ways:								
	<b>KEY XX SCR X . . X</b>								
	<b>KEY XX SCN X . . X</b>								
	<b>KEY XX MCR X . . X</b>								
	<b>KEY XX MCN X . . X</b>								
	<b>Note:</b> Keys 8-14 are programmed as NUL.								
	XX represents the key number (0–57)								
	Key 0 must be programmed with a DN								
	SCR — single call ringing DN								
	SCN — single call non-ringing DN								
	MCR — multiple call ringing DN								
	MCN — multiple call non-ringing DN								
	X..X represents the actual digits in the DN; type the actual digits								
	The DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP								
	Carriage return until you see either of the following messages:								
	<b>U.data      P.data      small systems</b>								
	or								
	<b>MEM AVAIL: (U/P) USED:TOT:      large systems</b>								
23	<b>Check that the telephone works.</b>								
	Try to make a call. Try to receive a call.								
	<table border="0"> <tr> <td style="text-align: left;"><b>If</b></td> <td style="text-align: right;"><b>Do</b></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>telephone works</td> <td style="text-align: right;">step 24</td> </tr> <tr> <td>telephone does not work</td> <td style="text-align: right;">step 1</td> </tr> </table>	<b>If</b>	<b>Do</b>	-----		telephone works	step 24	telephone does not work	step 1
<b>If</b>	<b>Do</b>								
-----									
telephone works	step 24								
telephone does not work	step 1								
	— continued —								

## New M3310 telephone

STEP	ACTION
<b>24</b>	<b>Arrange for a data dump to be performed.</b>
<b>If</b>	<b>Do</b>
.....	.....
you do not have access to LD 43	Contact your system supplier.
you have access to LD 43	step 25
<b>25</b>	<b>Perform a data dump to permanently store the programming you have just completed.</b>
<div style="border: 1px solid black; padding: 10px; display: inline-block;">  <div style="margin-left: 10px;"> <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div> </div>	
<p>Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.</p>	
<pre>&gt; LD 43 . EDD &lt;cr&gt;</pre>	
<b>26</b>	<b>Verify that the data dump was successful.</b>
TTY response:	
<b>NO GO BAD DATA</b>	
or	
<b>DATA DUMP COMPLETE</b>	
<b>If</b>	<b>Do</b>
.....	.....
data dump fails	Contact your system supplier.
data dump succeeds	step 27
— continued —	

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**New M3310 telephone**

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STEP	ACTION
27	<b>Terminate this overlay program.</b>  • ****
28	<b>Terminate this programming session.</b>  Log off.  > LOGO
29	<b>You have now completed the minimum programming required to implement a basic new M3310 telephone.</b>
	

590 Making a telephone work

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of 1776

## **New M3310 telephone**

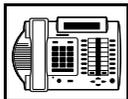
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## New M3820 telephone

### Purpose

The information in this Task module will help you if a user at your site requires a new M3820 Meridian Digital Telephone.





## New M3820 telephone



The M3820 telephone is only available in Europe.

**Note:** On the M3820 telephone, the Meridian label can be replaced with a system supplier name or logo.

If the user needs a new telephone, install an M3820 telephone if:

- ◆ the user needs one or several Directory Numbers (DNs)
- ◆ the user has a personal computer or will need one at the desk and you want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires
- ◆ the user wants to be able to hear a conversation and speak to a caller with or without using the handset of the telephone (speakerphone capability)
- ◆ the user wants to be able to use a headset
- ◆ the user wants to be able to dial stored numbers from a directory
- ◆ the user wants to log calls made or received
- ◆ the user wants buttons (or keys) for easy access to features or commonly dialed telephone numbers
- ◆ the user can benefit from easy-to-understand prompts on the display when accessing features
- ◆ when answering redirected calls, the user can benefit from knowing the type of feature which redirected the call to the telephone
- ◆ the user wants the display to show a call timer
- ◆ the user wants the telephone to put calls on hold, automatically, when they go from one call to another on different keys
- ◆ the user wants to be able to adjust the volume for the handset/headset, ringing tone, buzz tone, on-hook dialing and group listening, and handsfree

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## New M3820 telephone

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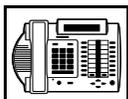
- ◆ the user needs the choice of different languages on the display when using features
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the user can benefit from knowing the internal or external telephone number and, optionally, the name of the caller before the calls are answered
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting
- ◆ the user wants to be able to position the telephone in three different ways (two desktop positions and a wall mount position)
- ◆ the user wants to add up to two Key Expansion modules

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.



## New M3820 telephone

### Software

**Table 98**  
Software requirements

Release required	Software package(s) required
16 and later	88 (DSET) M2000 Digital Sets 89 (TSET) M3000 Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.

### Terminal Options

The M3820 telephone supports the following terminal options:

- ◆ MCA data option to provide integrated voice and data
- ◆ external alerter for noisy environments
- ◆ wall mount ability
- ◆ add-on 22 Key Expansion Modules (maximum of two)

### Power

This telephone requires external power for the MCA data option and the external alerter.

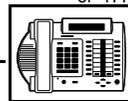
The handsfree unit, built into the telephone, can be activated or deactivated when the telephone is programmed. No external power supply is required to make it function.

When external power is needed, there is a power supply board which must be installed inside the telephone.

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## New M3820 telephone

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Arrange with your system supplier to get the necessary power equipment ordered and installed.

### Default values

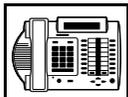
The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M3820 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator.

For example, the users may need access to certain basic features, such as Call Transfer and Conference. These features are denied by default. Also, the telephone system administrator might want to implement corporate-wide policies for telephones which are not met through the default choices.

Because the M3820 is a digital telephone, it is programmed in overlay program (LD) 11.



## New M3820 telephone

### Data, Display, and Handsfree default values

- ◆ With the display module and data option installed, key 7 is automatically set by the system as a PROGRAM key. This key is needed for the user to make adjustments to the display or data parameters from the telephone keypad.

When you do a TN-Block printout of the information programmed for the telephone, key 7 appears to have nothing assigned to it. It is blank in the printout.

- ◆ If the handsfree unit is enabled in the programming of the telephone, key 15 is automatically set by the system as a Handsfree key. If you disable the handsfree unit, you must program key 15 as NUL. Please refer to *Appendix 3*, at the end of this guide, for a Meridian Digital Telephone Worksheet (M3820). This work sheet shows you the key layout for the M3820 telephone.

*Appendix 2*, at the end of this guide, lists the prompts, responses (including the defaults) and the Task modules by number for prompts covered by this book.

The *X11 input/output guide (Administration)*, which was shipped with your system, provides detailed information on all prompts and responses in all of the administration overlay programs.

### Display options

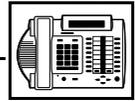
The display screen is a basic component of the M3820 telephone. There is a Quick Reference Card describing the use of the display. It explains how to use the Program key to set such things as:

- ◆ the contrast
- ◆ the language used for feature prompts
- ◆ the call timer
- ◆ the volume of ringing, buzzing, the speaker, the handset and the handsfree unit (if activated)
- ◆ the key clicks
- ◆ the idle screen format

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## New M3820 telephone

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### Language Option

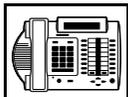
The information on your display can be displayed in one of several languages. You choose the language you want by selecting Option 5 under the Program key. There are two different displays available, each of which supports ten languages.

One display has the following language options:

- ◆ English
- ◆ Canadian French
- ◆ French
- ◆ Spanish
- ◆ German
- ◆ Dutch
- ◆ Portuguese
- ◆ Italian
- ◆ Swiss French
- ◆ Swiss Italian

The other display has the following language options:

- ◆ English
- ◆ French
- ◆ German
- ◆ Norwegian
- ◆ Swedish
- ◆ Danish
- ◆ Finnish
- ◆ Polish
- ◆ Czech
- ◆ Hungarian



## New M3820 telephone

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### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed, they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

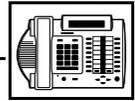
DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the DNs can be one to four digits.

The M3820 telephone has 13 fully programmable feature keys that can be assigned to any combination of DNs and features.

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## New M3820 telephone

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If Short Hunting to other DN's on the telephone is to operate, then Key 1 must be configured as a Single Call Ringing (SCR) key with the same DN as Key 0. For Multiple Appearance Redirection Prime (MARP) to operate with Short Hunting configured, Key 1 must be configured as the MARP key.

For information on Short Hunting, refer to Task 38, *Hunting*. For information on Single Call Ringing, see the *Single Appearance DN's* section in this module. For information on MARP, see Task 40, *Multiple Appearance DN Redirection Prime*.

### Ringling or Non-ringling DN's

On digital telephones, a DN can be programmed to be a ringling or a non-ringling appearance.

- ◆ When a call comes into a ringling appearance, the telephone rings, if it is idle, and the indicator beside the DN key flashes.
- ◆ When a call comes into a non-ringling appearance of a DN, the DN-key indicator flashes but the telephone does not ring.

If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

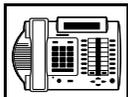
If an M3820 telephone has several DN keys programmed, you can program each DN key to ring or not to ring according to the needs of the user.

### Single Appearance or Multiple Appearance DN's

You must understand the following terms in order to program a DN on a key.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DN's** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.



## New M3820 telephone

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If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M3820 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

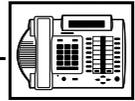
When you want to assign a *Single Call Non-ringing DN* to a key on an M3820 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone. There is information on an important Multiple Appearance DN feature in Task 40, *Multiple Appearance DN Redirection Prime*.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

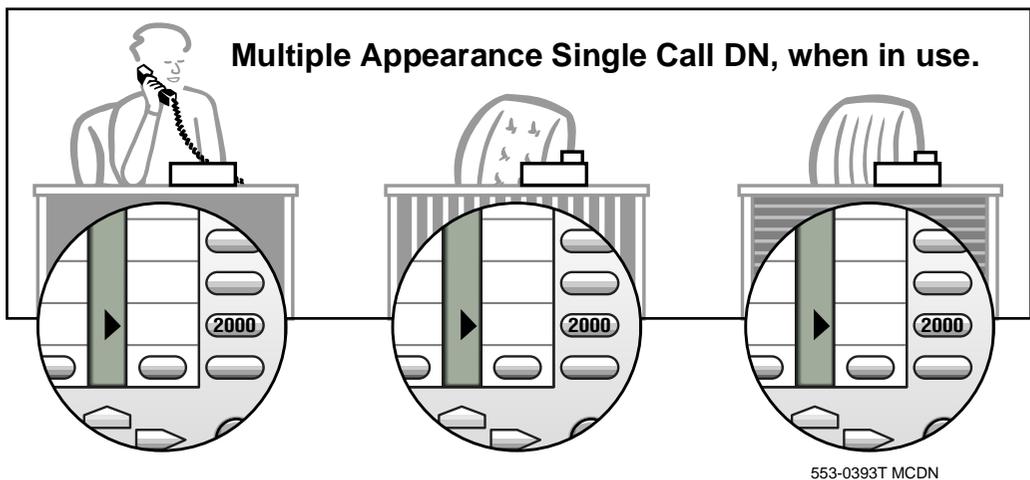
## New M3820 telephone



### Single Call DN

The DN can handle one call at a time.

This means that when one person is using the DN, the indicator is lit steadily at other appearances of that DN on digital telephones or SL-1-type telephones.

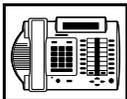


If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

When you want to assign a *Single Call Ringing DN* to a key on an M3820 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1 – 7 digits in length. There must be a space between the SCR code and the digits in the DN.



## New M3820 telephone

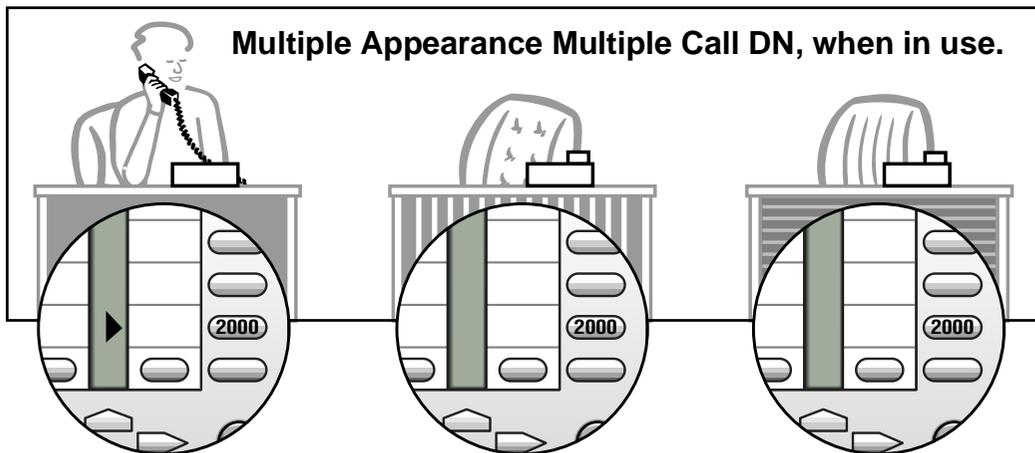
When you want to assign a *Single Call Non-ringing DN* to a key on an M3820 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.

### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.



553-0394T MCDN

A Multiple Call DN is not treated as busy until there are calls on all of the programmed appearances of the DN. There can be a maximum of 30 appearances of one DN.

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DN's.

## New M3820 telephone



If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M3820 telephone, you assign the following programming code to the key:

MCR X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M3820 telephone, you assign the following programming code to the key:

MCN X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.

### Consistent configuration



*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

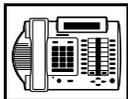
The step-action table at the end of this module explains how to assign a DN on a new M3820 telephone.

### Prime DN, Key 0

Key 0, the second key from the bottom on the right hand side of the telephone, *must be* programmed with a DN. This DN is called the prime DN.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to



## New M3820 telephone

record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module.

### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DNs, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.



### Terminal Number (TN)

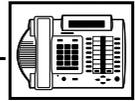
Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M3820 is a digital telephone, it is programmed in overlay program (LD) 11. In this overlay program, even though a telephone may have more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.

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## New M3820 telephone

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If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

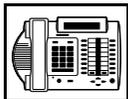
There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the Superloop, to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.

Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each Superloop is kept within the recommended guidelines. If all of your existing Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system when there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.



## New M3820 telephone

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### Card density

Telephones are connected to interface cards in the system called line cards.

Meridian 1 systems using Superloops use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.

Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

When you program digital telephones, you do not need to tell the system what density the digital telephones line card is, since it defaults to the density allowed for the Superloop on which the telephone resides.

### Designator (DES)

When you want printouts of the data associated with telephones, you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

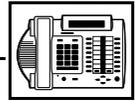
With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

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## New M3820 telephone

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You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

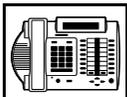
Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

The M3820 telephone is programmed as though it is an M2616 telephone (the TYPE prompt is set to 2616 in Overlay 11). Therefore, it is a good idea to use a DES code as a means of identifying the



## New M3820 telephone

telephone type as M3820. Before doing this, however, you should first make certain that you are not using DES codes for some other purpose.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

## Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

### Ringling options

#### Distinctive Ringing Groups

There are four different ringing options for the digital telephones. When you program the Class of Service of each telephone, you choose one of the four options to set the ringing tone and ringing cadence. The choices are: DRG1, DRG2, DRG3, or DRG4. DRG stands for Distinctive Ringing Group.

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringing.

Distinctive Ringing can be very useful with the Call Pickup feature. When telephones are ringing in the Pickup group, the users can tell what telephone is ringing and answer calls appropriately.

#### Network and Executive Distinctive Ringing

When you assign Executive Distinctive Ringing to a telephone, terminating telephones ring distinctively when they receive calls from the "Executive" telephone. Network Distinctive Ringing extends this functionality across an ISDN network.

## New M3820 telephone



**Table 99**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG) 125 – Flexible Tones and Cadences (FTC) 145 – Integrated Services Digital Network (ISDN) 161 – Integrated Services Digital Network Supplementary Features (ISDNS) 185 – Executive Distinctive Ringing (EDRG)

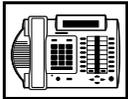
## Directory Number Delayed Ringing (DNDR)

**Table 100**  
**Software requirements**

Release required	Software package(s) required
21	none

If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user's telephone.



## New M3820 telephone

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When you have Multiple Appearance non-ringing DNs, there are many different ways you can choose to implement it. Two examples follow:

- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Automatic Set Display

With X11 Release 23, when an incoming call is presented to a busy telephone, the Calling Line Identification (CLID) and Calling Party Name Display (CPND) for the incoming call is automatically displayed on the busy telephone. This capability is enabled by programming the Tandem Digit Display (TDD) Class of Service on the telephone.

Previously, this functionality was only available on the M3000 Touchphone. However, the user of the busy telephone had to press the display key for the Calling Line Identification information to be presented.

### Callers List

The Callers List shows up to the last 20 calls that have been made to your M3820 telephone. You can decide what types of incoming calls you want to be saved to the Callers List. For instance, you may only want unanswered calls stored in the list, rather than all calls that arrive at your telephone. In order to make this specification, as well as other changes to the Callers List, use Option 2 under the Program key.

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## New M3820 telephone

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You can also make a call directly from the Callers List. To access the Callers List, use the Callers List key. The Callers List and the Redial List are both accessed using the Callers List key. To access the Callers List, after you press the Callers List key, press the Down-arrow cursor.

### Redial List

The Redial List shows the last five calls that you have made from your M3820 telephone. The Callers List and the Redial List are both accessed using the Callers List key. To access the Redial List, after you press the Callers List key, press the Up- arrow cursor.



Be aware that when you place a call, all of the dialed digits are stored in the Redial List, including Authorization Codes and Passwords.

### Directory

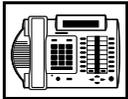
The Directory allows up to 75 names and numbers to be stored and displayed in alphabetical order on your M3820 telephone. It is convenient for you to store frequently called numbers in this directory. To access the Directory, press the Directory key. You can dial directly from the Directory by pressing the Dial key after you have selected the number that you wish to call. Entries from the Callers List and the Redial List can be stored in the Directory.

### Handsfree unit

There is a built-in unit which can be enabled or disabled in the Class of Service programming of the telephone. It is disabled by default. If enabled, key 15 on the telephone is automatically configured as the handsfree key. If handsfree operation is disabled, key 15 must be programmed as NUL.

### Group Listening

When you enable Group Listening, both sides of a conversation are transmitted through the speaker of the telephone. The person on the other end cannot hear what you are saying unless you speak into the handset or headset. Verify that it is legal to use this feature in your area.



## New M3820 telephone

To allow Group Listening, program the Class of Service as Handsfree Allowed in overlay program (LD) 11. On the telephone, you select Option 1 when you press the Program key to enable and disable Group Listening. When there is a headset connected, the feature is automatically enabled.

### Headset

A headset can be plugged into the socket marked with a headset icon on the base of the telephone.

### Key Expansion module

Up to two 22-key expansion modules can be added to the M3820 telephone for a total of 58 feature keys.

### Data option

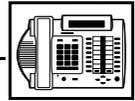
When the Meridian Communications Adapter (MCA) is installed inside the telephone and an RS-232C cable is used, you can set up a computer on the user's desk to use the same pair of wires that the telephone uses to connect to the system. If you do this, then key 7 on the telephone must be used as a Program key to control various data parameter settings. There is a Quick Reference Card for the MCA that explains these settings and how to use the Program key.

## Control tips



- ◆ Because the telephone is equipped with a display, the user can see the trunk group access codes when external incoming calls arrive at the telephone. If you do not want a user to access certain trunk groups using the direct trunk access code, implement the TGAR feature to prevent it. Refer to Task 45, *Trunk Group Access Restriction* for more information.
- ◆ If the user unplugs an M3820 telephone:
  - the chosen display settings, except for the choice of language, return to the default settings. This is a quick way for you to know if users are unplugging their telephones in an attempt to move them themselves

## New M3820 telephone



- messages print out on the maintenance printer, identifying the TN with the missing telephone
- ◆ If the system initializes:
  - the display settings are not affected
  - messages print out on the maintenance printer to identify the cause(s) of the initialization

### Administration tips



- ◆ The M3820 telephone has a red indicator that lights steadily when there are messages waiting. You can program a Message Waiting key on one of the keys so the user has an easy way of dialing the message center or voice mail when there are messages waiting.

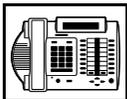
For more information on Message Waiting, refer to Task 25, *Message Center*.

- ◆ You might want to consider using one or two standard key layouts for all digital telephones, or at least all M3820 telephones. This can save significant amounts of memory.



- ◆ If users are allowed to have the handsfree functionality, think about setting some guidelines regarding who can use that kind of telephone and under what circumstances.

For example, you might make a policy that allows people with enclosed offices to use handsfree functionality, provided their office door is closed. Therefore, people around them are not disturbed during active handsfree conversations.



## New M3820 telephone

### Training tips



- ◆ If you have a standard key layout on all M3820 telephones, this is an advantage since users can go to any telephone and feel comfortable using it. If all telephones are the same, the users can also explain features to each other.
- ◆ Even though users do not need to remember feature access codes, they might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps you both get the most out of the system and in turn the system provides the expected benefits.
- ◆ Users need training on the feature prompts that are presented on the display when features are used.
- ◆ Users benefit from individual instruction on programming and using features, such as Callers List and Directory. Make certain that the user understands the information in the *Meridian Digital Telephones User Guide*.

## New M3820 telephone



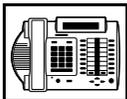
### What to have ready

Make the following preparations before you do the basic programming of a new M3820 telephone.

**Table 101**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s). Decide whether each DN is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
✓		Determine if any of the terminal options, such as Key Expansion modules, are required.
✓		Determine if any of the terminal options, such as the data option, are required.
	✓	Find a recent traffic study showing traffic load on the Superloops of your system. If no study data is available, estimate the traffic.
	✓	Arrange for the necessary power equipment to be ordered and installed.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.



## New M3820 telephone

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

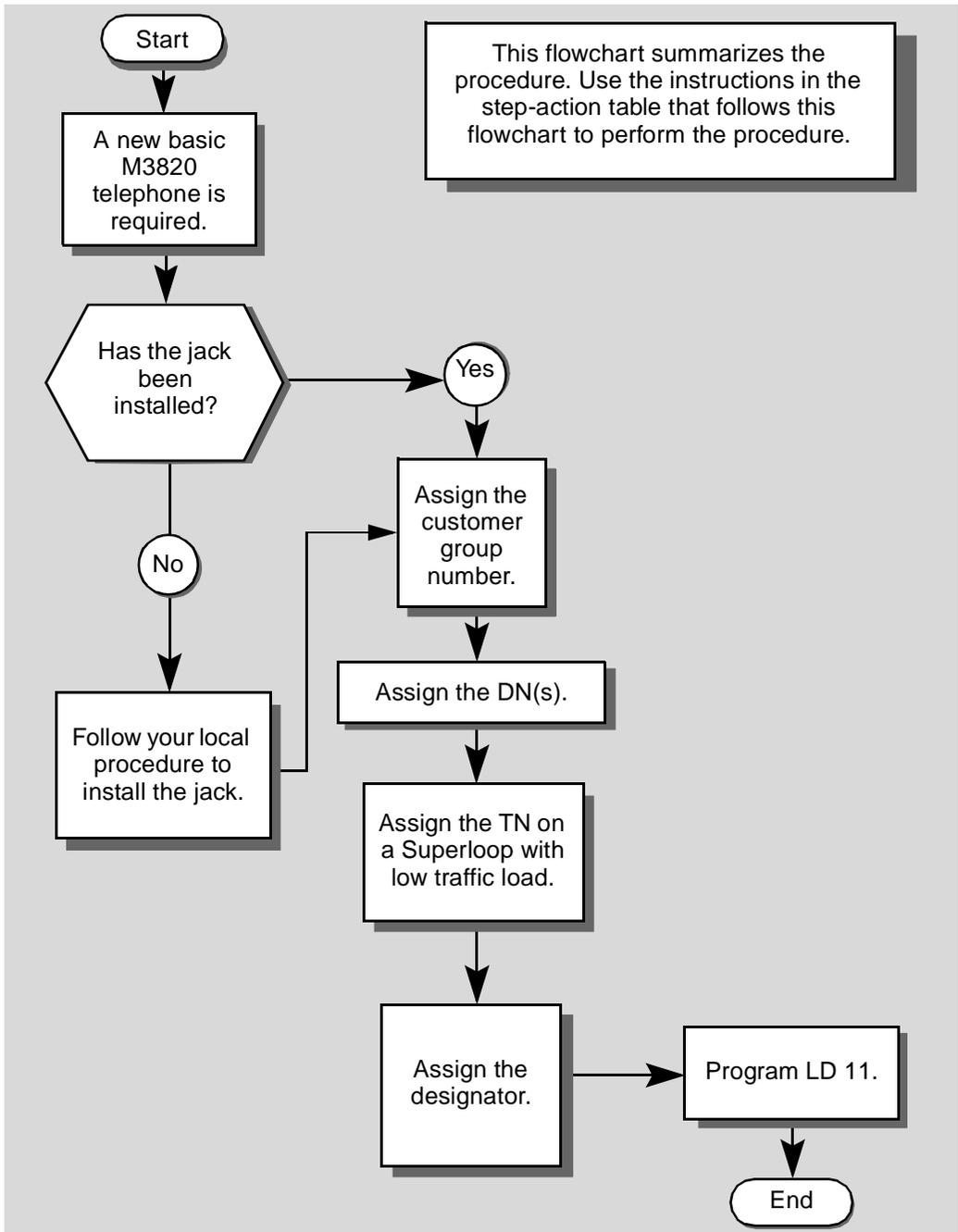
*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M3820 telephone.

## New M3820 telephone





## New M3820 telephone

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

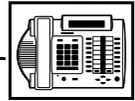
This step-action table covers the prompts related to the implementation of a basic M3820 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
— continued —		

## New M3820 telephone

**STEP ACTION****4 Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.****If****Do**

you know the DN and not the TN of the other telephone      step 5

you know the TN of the other telephone      step 6

**5 Print the DN Block of the other telephone.**

Log in. For information on proper login procedures, refer to *Basic programming instructions* in this book.

> LD 22 or

> LD 20 or (Release 17 or later)

> LD 10 or LD 11 or LD 32 (Release 19 or later)

**REQ**      PRT      Request a printout

**TYPE**      DNB      DN Block

**CUST**      <cr>      All Customer groups

**DN**      X. .X      Input the DN of the other telephone

Carriage return until you see either of the following messages:

**U.data**      **P.data**      small systems

or

**MEM AVAIL: (U/P) USED:TOT:**      large systems

You get a printout of the TN of the other telephone.

**Note:** If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.

— continued —



## New M3820 telephone

STEP	ACTION									
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <table> <tr> <td><b>REQ</b></td> <td>PRT</td> <td>Request a Printout</td> </tr> <tr> <td><b>TYPE</b></td> <td>TNB</td> <td>TN Block</td> </tr> <tr> <td><b>TN</b></td> <td>L S C U</td> <td>Input the Loop Shelf Card and Unit number of the other telephone</td> </tr> </table> <p>You get a printout of the customer group number of the other telephone.</p>	<b>REQ</b>	PRT	Request a Printout	<b>TYPE</b>	TNB	TN Block	<b>TN</b>	L S C U	Input the Loop Shelf Card and Unit number of the other telephone
<b>REQ</b>	PRT	Request a Printout								
<b>TYPE</b>	TNB	TN Block								
<b>TN</b>	L S C U	Input the Loop Shelf Card and Unit number of the other telephone								
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>									
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>									
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>									
<b>10</b>	<p><b>Find out what DNs are available.</b></p> <table> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>you know what DN you want to assign</td> <td>step 13</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is Release 19 or later</td> <td>step 11</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is pre-Release 19</td> <td>Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.</td> </tr> </tbody> </table>	If	Do	you know what DN you want to assign	step 13	you do not know what DN you want to assign and your system software is Release 19 or later	step 11	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.	
If	Do									
you know what DN you want to assign	step 13									
you do not know what DN you want to assign and your system software is Release 19 or later	step 11									
you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.									
— continued —										

## New M3820 telephone

STEP	ACTION										
<b>11</b>	<b>Print unused DNs in your customer group.</b>										
	<p>Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20</p> <table> <tr> <td><b>REQ</b></td> <td>PRT</td> <td>Print</td> </tr> <tr> <td><b>TYPE</b></td> <td>LUDN</td> <td>List unused DNs</td> </tr> <tr> <td><b>CUST</b></td> <td>0-99</td> <td>Input customer group number</td> </tr> </table> <p>You get a printout of the unused DNs in your customer group.</p>		<b>REQ</b>	PRT	Print	<b>TYPE</b>	LUDN	List unused DNs	<b>CUST</b>	0-99	Input customer group number
<b>REQ</b>	PRT	Print									
<b>TYPE</b>	LUDN	List unused DNs									
<b>CUST</b>	0-99	Input customer group number									
<b>12</b>	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>										
<b>13</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>										
	<b>If</b>	<b>Do</b>									
	.....	.....									
	you have access to the print overlay programs	step 14									
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.									
<b>14</b>	<b>Print out the available TNs on your system.</b>										
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <table> <tr> <td><b>REQ</b></td> <td>LJU</td> <td>List all unused units</td> </tr> <tr> <td></td> <td>LUVU</td> <td>List unused voice units (Release 19 or later)</td> </tr> <tr> <td><b>TYPE</b></td> <td>2616</td> <td>M2616 telephone. The M3820 is programmed as an M2616 telephone. If there are no M2616 telephones installed yet, choose a type of digital telephone that has been installed.</td> </tr> </table> <p>You get a printout of the available digital telephone TNs.</p>		<b>REQ</b>	LJU	List all unused units		LUVU	List unused voice units (Release 19 or later)	<b>TYPE</b>	2616	M2616 telephone. The M3820 is programmed as an M2616 telephone. If there are no M2616 telephones installed yet, choose a type of digital telephone that has been installed.
<b>REQ</b>	LJU	List all unused units									
	LUVU	List unused voice units (Release 19 or later)									
<b>TYPE</b>	2616	M2616 telephone. The M3820 is programmed as an M2616 telephone. If there are no M2616 telephones installed yet, choose a type of digital telephone that has been installed.									
<b>— continued —</b>											

## New M3820 telephone

STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<b>If</b>	<b>Do</b>
	the telephone is to have handsfree capability allowed	step 20
	the telephone is to have handsfree capability denied	step 21
— continued —		

## New M3820 telephone

### STEP ACTION

#### 20 Program the telephone with handsfree capability allowed.

> LD 11

<b>REQ</b>	NEW	New telephone
<b>TYPE</b>	2616	M2616 telephone. The M3820 telephone is programmed as an M2616 telephone.
<b>TN</b>	L S C U	Input the TN ( <b>L</b> oop <b>S</b> helf <b>C</b> ard <b>U</b> nit number)
<b>CDEN</b>	<cr>	Carriage return - use the default
<b>DES</b>	M3820	Designator (maximum six characters)
<b>CUST</b>	0-99	customer group number

Carriage return until you see the CLS prompt. You enter each mnemonic, a space and then the next mnemonic. When you reach the last mnemonic, finish with a <cr>.

<b>CLS</b>	Class of Service
<b>HFA</b>	Handsfree Allowed
<b>AHA</b>	Automatic Hold Allowed
<b>DNDD</b>	Dialed Name Display Denied
<b>CNDA</b>	Call Party Name Display Allowed
<b>CNIA</b>	Call Number Information Allowed
<b>LNA</b>	Last Number Redial Allowed

The Class of Service settings shown above are required for the proper operation of the Callers List capability.

Carriage return until you see the KEY prompt. Because handsfree capability is allowed, Key 15 automatically becomes the handsfree key.

Go to step 22.

— continued —

## New M3820 telephone

STEP	ACTION	
21	<b>Program the telephone with handsfree capability denied.</b>	
	> LD 11	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 2616	M2616 telephone. The M3820 telephone is programmed as an M2616 telephone.
	<b>TN</b> L S C U	Input the TN ( <b>L</b> oop <b>S</b> helf <b>C</b> ard <b>U</b> nit number)
	<b>CDEN</b> <cr>	Carriage return - use the default
	<b>DES</b> M3820	Designator (maximum six characters)
	<b>CUST</b> 0-99	customer group number
	Carriage return until you see the CLS prompt. You enter each mnemonic, a space and then the next mnemonic. When you reach the last mnemonic, finish with a <cr>.	
	<b>CLS</b>	
	HFD	Handsfree Denied
	AHA	Automatic Hold Allowed
	DNDD	Dialed Name Display Denied
	CNDA	Call Party Name Display Allowed
	CNIA	Call Number Information Allowed
	LNA	Last Number Redial Allowed
	The Class of Service settings shown above are required for the proper operation of the Callers List capability.	
	Carriage return until you see the KEY prompt. Because handsfree capability is denied, Key 15 must be programmed as NUL.	
	Go to step 22.	
— continued —		

## New M3820 telephone

### STEP ACTION

#### 22 Program DNs on as many keys as you require, except Key 1.

Program the key(s) one of the following ways:

**KEY XX SCR X . . X**

**KEY XX SCN X . . X**

**KEY XX MCR X . . X**

**KEY XX MCN X . . X**

**Note 1:** Key 01 must be programmed as NUL (01 NUL), unless Short Hunt is required.

**Note 2:** If Short Hunt is configured, then Key 1 must be configured as an SCR key with the same DN as key 0. For MARP to operate with Short Hunt configured, Key 1 must be configured as the MARP key.

XX represents the key number (0–57)

Key 0 must be programmed with a DN

SCR — single call ringing DN

SCN — single call non-ringing DN

MCR — multiple call ringing DN

MCN — multiple call non-ringing DN

X..X represents the actual digits in the DN; type the actual digits

The DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP.

Carriage return until you see either of the following messages:

**U.data      P.data      small systems**

or

**MEM AVAIL: (U/P) USED:TOT:      large systems**

— continued —

## New M3820 telephone

STEP	ACTION
<b>23</b>	<b>Check that the telephone works.</b>
	Try to make a call. Try to receive a call.
<b>If</b>	<b>Do</b>
.....	.....
telephone works	step 24
telephone does not work	step 1
<b>24</b>	<b>Arrange for a data dump to be performed.</b>
<b>If</b>	<b>Do</b>
.....	.....
you do not have access to LD 43	Contact your system supplier.
you have access to LD 43	step 25
<b>25</b>	<b>Perform a data dump to permanently store the programming you have just completed.</b>
<div style="border: 2px solid black; padding: 10px; display: inline-block;">  <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div>	
Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.	
<pre>&gt; LD 43 . EDD &lt;cr&gt;</pre>	
— continued —	

**New M3820 telephone**

<b>STEP</b>	<b>ACTION</b>								
<b>26</b>	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b></p> <p>or</p> <p><b>DATA DUMP COMPLETE</b></p> <table border="0"> <tr> <td><b>If</b></td> <td><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 27</td> </tr> </table>	<b>If</b>	<b>Do</b>	.....		data dump fails	Contact your system supplier.	data dump succeeds	step 27
<b>If</b>	<b>Do</b>								
.....									
data dump fails	Contact your system supplier.								
data dump succeeds	step 27								
<b>27</b>	<p><b>Terminate this overlay program.</b></p> <p>. * * * *</p>								
<b>28</b>	<p><b>Terminate this programming session.</b></p> <p>Log off.</p> <p>&gt; LOGO</p>								
<b>29</b>	<p><b>You have now completed the minimum programming required to implement a basic new M3820 telephone.</b></p>								



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## **New M3820 telephone**

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## New M3901 telephone

### Purpose

The information in this Task module will help you if a user at your site requires a new M3901 Meridian Digital Telephone.





## New M3901 telephone

If the user needs a new telephone, install an M3901 telephone if:

- ◆ the user needs one Directory Number (DN)
- ◆ the user wants a button for easy access to five features along with a feature activation LED and a feature card on the telephone
- ◆ the user wants to adjust the volume for the handset and ringing tone
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting
- ◆ the user wants to have a desktop or a wall mount telephone

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

## New M3901 telephone



### Software

**Table 102**  
Software requirements

Release required	Software package(s) required
24	88 (DSET) Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.

### Accessories

The M3901 telephone supports the following accessory:

- ◆ Headset, connected using the handset jack and an MPA (amplifier)

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M3901 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.



## New M3901 telephone

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Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator.

For example, users may need access to certain basic features, such as Call Transfer and Conference. These features are denied by default. Also, the telephone system administrator might want to implement corporate-wide policies for telephones which are not met through the default choices.

Because the M3901 is a digital telephone, it is programmed in overlay program (LD) 11.

*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

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## New M3901 telephone

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When telephones are installed, they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the DNs can be one to four digits.

This telephone can be configured to have one DN.

### Ringling or Non-ringling DNs

On digital telephones, a DN can be programmed to be a ringling or a non-ringling appearance.

- ◆ When a call comes into a ringling appearance, the telephone rings, if it is idle. The call status indicator flashes. It is beside the message waiting indicator at the top of the telephone faceplate.
- ◆ When a call comes into a non-ringling appearance of a DN, the call status indicator flashes but the telephone does not ring.

If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN on a key.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DN**s appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.



## New M3901 telephone

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

### Single Call DN

The DN can handle only one call at a time.

This means that if there are other appearances of that DN on digital telephones or SL 1-type telephones, the indicator is lit steadily at all telephones, when one person is using the DN.

When you want to assign a *Single Call Ringing DN* to a key on an M3901 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to a key on an M3901 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.



If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone. There is information on an important Multiple Appearance DN feature in Task 40, *Multiple Appearance DN Redirection Prime*.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

Refer to the information in this module on Single call DNs.

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## New M3901 telephone

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### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

A Multiple Call DN is not treated as busy until there are calls on all of the programmed appearances of the DN. There can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DNs.

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M3901 telephone, you assign the following programming code to the key:

MCR X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M3901 telephone, you assign the following programming code to the key:

MCN X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.



## New M3901 telephone



### Consistent configuration

*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M3901 telephone.

### Prime DN, Key 0

The button labelled *Line* is programmed as Key 0. It *must be* programmed with a DN. This DN is called the prime DN. The DN can be a Multiple Call ringing or non-ringing DN, a Single Call ringing or non-ringing DN or a Private Line ringing or non-ringing DN. It can also be configured with an ACD DN when used in a Call Center environment. A discussion of Call Centers is beyond the scope of this book. You can find out more about them in the NTP called *Automatic Call Distribution*.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

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## New M3901 telephone

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Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module.

### DN-Block printout



If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 to do this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DNs, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M3901 is a digital telephone, it is programmed in overlay program (LD) 11. Even though some models of telephone have more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

### Features key

The user has access to five features that do not require a display when they use the Features key. You must program the five features in LD 11. Each one has a number from 1-5 associated with it. The user



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## New M3901 telephone

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must press the Features key and then a number (1-5) to activate the feature they want. The feature card attached to the telephone reminds the user which code is associated with each of the five features.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the Superloop, to which you are adding this telephone.

Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each Superloop is kept within the recommended guidelines. If all of your existing Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system if there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards.

Meridian 1 systems using Superloops use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.

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## New M3901 telephone

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Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

When you program digital telephones, you do not need to tell the system what density the digital telephones line card is, since it defaults to the density allowed for the Superloop on which the telephone resides.

### Designator (DES)

When you want printouts of the data associated with telephones, you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.



## New M3901 telephone

For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

## Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

### Ringing options

#### Distinctive Ringing Groups

There are four different ringing options for the digital telephones. The choices are: DRG1, DRG2, DRG3, or DRG4. (DRG stands for Distinctive Ringing Group.) When you program the Class of Service of each telephone, you choose one of the four options to set the ringing tone and ringing cadence.

## New M3901 telephone



You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringing.

Distinctive Ringing can be very useful with the Call Pickup feature. When telephones are ringing in the Pickup group, the users can tell what telephone is ringing and answer calls appropriately.

### Network and Executive Distinctive Ringing

When you assign Executive Distinctive Ringing to a telephone, terminating telephones ring distinctively when they receive calls from the “Executive” telephone. Network Distinctive Ringing extends this functionality across an ISDN network.

**Table 103**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG) 125 – Flexible Tones and Cadences (FTC) 145 – Integrated Services Digital Network (ISDN) 161 – Integrated Services Digital Network Supplementary Features (ISDNS) 185 – Executive Distinctive Ringing (EDRG)

### Directory Number Delayed Ringing (DNDR)

**Table 104**  
**Software requirements**

Release required	Software package(s) required
21	none



## New M3901 telephone

If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user's telephone.

When you have Multiple Appearance non-ringing DNs, there are many different ways you can choose to implement it. Two examples follow:

- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Key Expansion module

You cannot use Key Expansion modules with the M3901 telephone.

### Control tips



- ◆ If the user unplugs an M3901 telephone messages print out on the maintenance printer, identifying the TN with the missing telephone

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## New M3901 telephone

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### Administration tips



- ◆ The M3901 telephone has a red indicator that lights when there are messages waiting. You can program one of the five features keys as an Autodial key. This gives the user an easy way of dialing the message center or voice mail when there are messages waiting.

For more information on Message Waiting, refer to Task 25, *Message Center*.

- ◆ Consider using one or two standard key layouts for all digital telephones, or at least all M3901 telephones. This can save significant amounts of memory.

### Training tips



- ◆ It is an advantage if you have a standard feature layout on all M3901 telephones, since users can go to any telephone and feel comfortable using it. If all telephones are the same, the users can also explain features to each other.
- ◆ Even though users do not need to remember feature access codes, they might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps everyone get the most out of the system. In turn, the system provides the expected benefits.
- ◆ Make certain that the users know where to get more information about how to use their telephones and features.



## New M3901 telephone

### What to have ready

Make the following preparations before you do the basic programming of a new M3901 telephone.

**Table 105**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN. Decide whether the DN is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

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## New M3901 telephone

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Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

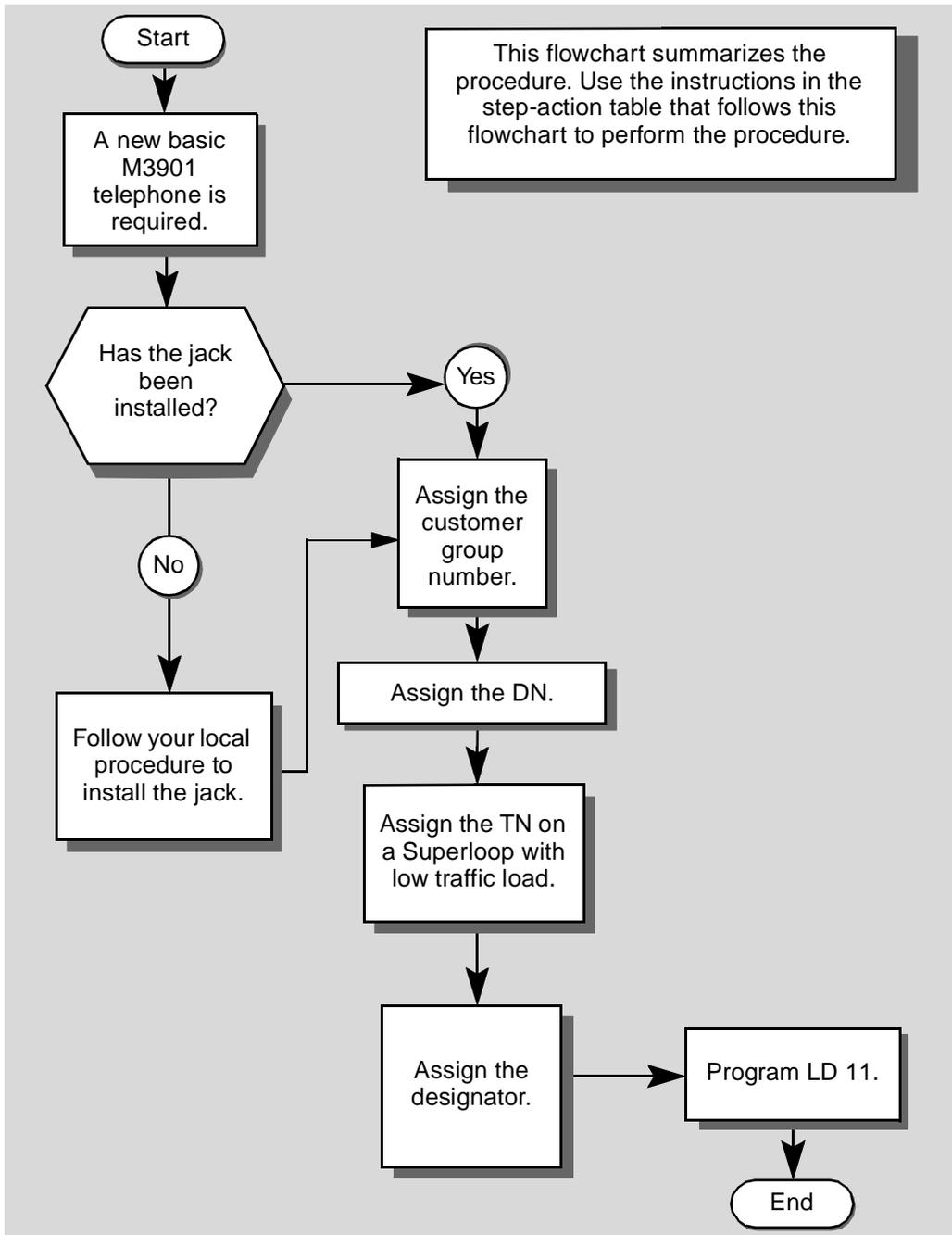
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M3901 telephone.



## New M3901 telephone



## New M3901 telephone



The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M3901 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>— continued —</b>		



## New M3901 telephone

STEP	ACTION						
4	<p><b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
5	<p><b>Print the DN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <pre>&gt; LD 22 or &gt; LD 20 or (Release 17 or later) &gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</pre> <p><b>REQ</b> PRT Request a printout  <b>TYPE</b> DNB DN Block  <b>CUST</b> &lt;cr&gt; All Customer groups  <b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <pre>U.data P.data small systems or MEM AVAIL: (U/P) USED:TOT: large systems</pre> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p> <p style="text-align: center;">— continued —</p>						

## New M3901 telephone



STEP	ACTION										
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>          <b>PRT</b>          Request a Printout</p> <p><b>TYPE</b>        <b>TNB</b>          TN Block</p> <p><b>TN</b>          <b>L S C U</b>      Input the <b>Loop Shelf Card Unit</b> number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>										
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>										
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>										
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>										
<b>10</b>	<p><b>Find out what DNs are available.</b></p> <table border="0"> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>you know what DN you want to assign</td> <td>step 13</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is Release 19 or later</td> <td>step 11</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is pre-Release 19</td> <td>Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.</td> </tr> </tbody> </table> <p style="text-align: center;">— continued —</p>	If	Do	.....	.....	you know what DN you want to assign	step 13	you do not know what DN you want to assign and your system software is Release 19 or later	step 11	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.
If	Do										
.....	.....										
you know what DN you want to assign	step 13										
you do not know what DN you want to assign and your system software is Release 19 or later	step 11										
you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.										



## New M3901 telephone

STEP	ACTION	
<b>11</b>	<b>Print unused DNs in your customer group.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b>	PRT            Print
	<b>TYPE</b>	LUDN          List unused DNs
	<b>CUST</b>	0 – 99        Input customer group number
	You get a printout of the unused DNs in your customer group.	
<b>12</b>	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>	
<b>13</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	you have access to the print overlay programs	step 14
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.
<b>14</b>	<b>Print out the available TNs on your system.</b>	
	Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20 or	
	> LD 10 or LD 11 or LD 20 or LD 32    (Release 19 or later)	
	<b>REQ</b>	LUU            List all unused units
		LUVU          List unused voice units (Release 19 or later)
	<b>TYPE</b>	3901          M3901 telephone. If there are no M3901 telephones installed yet, choose a type of digital telephone that has been installed.
	You get a printout of the available digital telephone TNs.	
	— continued —	

## New M3901 telephone



STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<b>&gt; LD 11</b>	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 3901	M3901 telephone
	<b>TN</b> L S C U	Input the TN (Loop Shelf Card Unit number)
	<b>CDEN</b> <cr>	Carriage return — use the default
	<b>DES</b> A . . A	Designator maximum six characters
	<b>CUST</b> 0 – 99	customer group number
	carriage return until you see the prompt KEY	
	— continued —	



## New M3901 telephone

### STEP ACTION

#### 19 continued ...

Program key 0 in one of the following ways:

<b>KEY</b> 0	SCR X . . X	SCR — single call ringing DN
<b>KEY</b> 0	SCN X . . X	SCN — single call non-ringing DN
<b>KEY</b> 0	MCR X . . X	MCR — multiple call ringing DN
<b>KEY</b> 0	MCN X . . X	MCN — multiple call non-ringing DN
<b>KEY</b> 0	PVR X . . X	PVR — private line ringing DN
<b>KEY</b> 0	PVN X . . X	PVN — private line non-ringing DN

X.X represents the actual digits in the DN; type the actual digits

The DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP

#### 20 Program up to five features to be accessed using the Features key.

<b>KEY</b> 1	aaayyy zzz	Refer to <i>Adding and changing features</i> .
<b>KEY</b> 2	aaayyy zzz	
<b>KEY</b> 3	aaayyy zzz	
<b>KEY</b> 4	aaayyy zzz	
<b>KEY</b> 5	aaayyy zzz	

Carriage return until you see either of the following messages:

**U.data**      **P.data**      small systems

or

**MEM AVAIL: (U/P) USED:TOT:**      large systems

— continued —

## New M3901 telephone

**STEP ACTION****21 Check that the telephone works.**

Try to make a call. Try to receive a call.

**If****Do**

.....

telephone works

step 24

telephone does not work

step 1

**22 Arrange for a data dump to be performed.****If****Do**

.....

you do not have access  
to LD 43

Contact your system supplier.

you have access to LD 43

step 25

**23 Perform a data dump to permanently store the programming you have just completed.****CAUTION**

Check your maintenance agreement  
before working in LD 43.

Refer to the *Basic programming instructions* module of this book or refer to the *X11 input/output guide* for more information on LD 43.

> LD 43

. EDD <cr>

— continued —

## 654 Making a telephone work

of 1776



## New M3901 telephone

STEP	ACTION								
24	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b></p> <p>or</p> <p><b>DATA DUMP COMPLETE</b></p> <table border="0"> <tr> <td><b>If</b></td> <td><b>Do</b></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 27</td> </tr> </table>	<b>If</b>	<b>Do</b>	-----		data dump fails	Contact your system supplier.	data dump succeeds	step 27
<b>If</b>	<b>Do</b>								
-----									
data dump fails	Contact your system supplier.								
data dump succeeds	step 27								
25	<p><b>Terminate this overlay program.</b></p> <p>. ****</p>								
26	<p><b>Terminate this programming session.</b></p> <p>Log off.</p> <p>&gt; LOGO</p>								
27	<p><b>You have now completed the minimum programming required to implement a basic new M3901 telephone.</b></p>								

## New M3902 telephone

### Purpose

The information in this Task module will help you if a user at your site requires a new M3902 Meridian Digital Telephone.





## New M3902 telephone



The M3902 telephone is not available in Europe.

If the user needs a new telephone, install an M3902 telephone if:

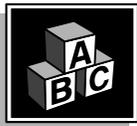
- ◆ the user needs one Directory Number (DN)
- ◆ the user has a personal computer or the user wants to use first party CTI applications. You want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires. You want the user to be able to control the telephone from the PC using applications such as Call Manager.
- ◆ the user wants handsfree conversation capability with the ability to mute the speech path
- ◆ the user wants three buttons (or keys) for easy access to features or commonly dialed telephone numbers
- ◆ the user wants to adjust the volume for handset listen, headset listen, headset talk, headset side tone, handsfree volume, ringing tone, and buzz tone
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting
- ◆ the user wants a display
- ◆ the user needs the choice of different languages on the display when using features
- ◆ the user wants to connect an analogue device such as a FAX machine or modem to the telephone
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the user wants to be able to position the telephone in two different ways (desktop position and a wall mount position)

## New M3902 telephone



- ◆ the user wants to be able to download a new version of firmware from the Meridian 1 switch to a single M3900 series of telephone, or a range of M3900 series of telephone
- ◆ the user wants to be able to choose one of six languages available on their M3902 telephone

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Software

**Table 106**  
Software requirements

Release required	Software package(s) required
16 and later	88 (DSET) Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.



## New M3902 telephone

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### Accessories

The M3902 telephone supports the following accessories:

- ◆ MCA data option to provide integrated voice and data at a baud rate of 28.8 Kbps (baud rate option 9, when you program the telephone in LD 11)
- ◆ External Alerter Interface/Recorder Interface to connect a remote ringer or light to indicate when the telephone rings and when it is off-hook
- ◆ Headset, connected using the handset jack and an MPA (amplifier)
- ◆ Analogue Terminal Adapter (ATA) to connect an analogue device such as a FAX machine or modem to the telephone

There is an Accessory Connection Module (ACM) to be installed inside the terminal stand.

### Power

Talk to your system supplier about the power requirements for accessories you are adding to the telephone.

### Language Display Options

The information on your display screen can be displayed in one of fifteen languages.

You can choose from the following language options:

- ◆ English
- ◆ French (neutral)
- ◆ Spanish (neutral)
- ◆ German
- ◆ Dutch
- ◆ Portuguese (neutral)
- ◆ Italian
- ◆ Danish

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## New M3902 telephone

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- ◆ Norwegian
- ◆ Swedish
- ◆ Finnish
- ◆ Polish
- ◆ Czech
- ◆ Hungarian
- ◆ Japanese

**Note:** The term neutral means that the language is presented in a way that is understood globally.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M3902 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator.

For example, users may need access to certain basic features, such as Call Transfer and Conference. These features are denied by default. Also, the telephone system administrator might want to implement corporate-wide policies for telephones which are not met through the default choices.



## New M3902 telephone

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Because the M3902 is a digital telephone, it is programmed in overlay program (LD) 11.

*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed, they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

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## New M3902 telephone

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### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the DNs can be one to four digits.

This telephone can be configured to have one DN. Only key 0 can have a DN assigned.

### Ringling or Non-ringling DNs

On digital telephones, a DN can be programmed to be a ringling or a non-ringling appearance.

- ◆ When a call comes into a ringling appearance, the telephone rings, if it is idle. The call status indicator flashes. It is at the top of the telephone faceplate.
- ◆ When a call comes into a non-ringling appearance of a DN, the call status indicator flashes but the telephone does not ring.

If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN on a key.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.

If a DN rings when a call comes in, it is called a *Single Call Ringling DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringling DN*.



## New M3902 telephone

### Single Call DN

The DN can handle only one call at a time.

This means that if there are other appearances of that DN on digital telephones or SL 1-type telephones, the indicator is lit steadily at all telephones, when one person is using the DN.

When you want to assign a *Single Call Ringing DN* to a key on an M3902 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to a key on an M3902 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.



If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

**Multiple Appearance DN**s appear on more than one telephone, or more than one key on a telephone such as a digital telephone. There is information on an important Multiple Appearance DN feature in Task 40, *Multiple Appearance DN Redirection Prime*.

There are two configurations to choose from when dealing with Multiple Appearance DN, Single Call and Multiple Call.

Refer to the information in this module on Single call DN.

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## New M3902 telephone

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### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

A Multiple Call DN is not treated as busy until there are calls on all of the programmed appearances of the DN. There can be a maximum of 30 appearances of the same DN.

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DNs.

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M3902 telephone, you assign the following programming code to the key:

MCR X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M3902 telephone, you assign the following programming code to the key:

MCN X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.



## New M3902 telephone



### Consistent configuration

*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M3902 telephone.

### Prime DN, Key 0

*Key 0 must be programmed with a DN. This DN is called the prime DN. The DN can be a Multiple Call ringing or non-ringing DN, a Single Call ringing or non-ringing DN, or a Private Line ringing or non-ringing DN. It can also be configured with an ACD DN when used in a Call Center environment. A discussion of Call Centers is beyond the scope of this book. You can find out more about them in the NTP called *Automatic Call Distribution*.*

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

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## New M3902 telephone

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Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module.

### DN-Block printout



If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DNs, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M3902 is a digital telephone, it is programmed in overlay program (LD) 11. Even though some models of telephone have more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.



## New M3902 telephone

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### Soft-labelled programmable feature keys

There are three keys under the display that you can program with features the user needs. The name of the feature appears above the key, once you have programmed it.

The Class of Service of this telephone defaults to Automatic Digit Display allowed.

### Fixed feature keys

Key 4 is automatically configured as a Call Transfer key. The key is labelled *Transfer*. You can program the Conference feature (three- or six-party) on the key, if you prefer.

Key 5 is fixed as a Message Waiting key. The indicator at the top of the faceplate lights up when there is a message waiting at a Message Center.

There is also a fixed key labelled *Options*. It is part of the telephone; you do not have to activate it in programming. You use the navigation keys that are in a cluster to move left, right, up and down to access and select options that appear on the display.

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the Superloop, to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.

Superloops perform best when they share equally in the total traffic load carried by the system.

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## New M3902 telephone

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Blockage within the system will be negligible or non-existent when the traffic load for each Superloop is kept within the recommended guidelines. If all of your existing Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system if there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards.

Meridian 1 systems using Superloops use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.

Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

When you program digital telephones, you do not need to tell the system what density the digital telephones line card is, since it defaults to the density allowed for the Superloop on which the telephone resides.

### Designator (DES)

When you want printouts of the data associated with telephones, you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically,



## New M3902 telephone

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especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

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## New M3902 telephone

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Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

#### Ringing options

##### Distinctive Ringing Groups

There are four different ringing options for the digital telephones. The choices are: DRG1, DRG2, DRG3, or DRG4. (DRG stands for Distinctive Ringing Group.) When you program the Class of Service of each telephone, you choose one of the four options to set the ringing tone and ringing cadence. The user can change the ringing group using the Options key.

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringing.

Distinctive Ringing can be very useful with the Call Pickup feature. When telephones are ringing in the Pickup group, the users can tell what telephone is ringing and answer calls appropriately.



## New M3902 telephone

### Network and Executive Distinctive Ringing

When you assign Executive Distinctive Ringing to a telephone, terminating telephones ring distinctively when they receive calls from the “Executive” telephone. Network Distinctive Ringing extends this functionality across an ISDN network.

**Table 107**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network Supplementary Features (ISDNS)
	185 – Executive Distinctive Ringing (EDRG)

### Directory Number Delayed Ringing (DNDR)

**Table 108**  
**Software requirements**

Release required	Software package(s) required
21	none

If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user’s telephone.

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## New M3902 telephone

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When you have Multiple Appearance non-ringing DN's, there are many different ways you can choose to implement it. Two examples follow:

- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Handsfree unit

The handsfree unit must be enabled or disabled in the Class of Service programming of the telephone. You can allow or deny it in overlay (LD) 11, using the mnemonic HFA (handsfree allowed) or HFD, (handsfree denied).

### Group Listening

When you enable Group Listening, both sides of a conversation are transmitted through the speaker of the telephone. The person on the other end cannot hear what you are saying unless you speak into the handset or headset. Verify that it is legal to use this feature in your area.

You program Group Listening in the Class of Service of the telephone in overlay (LD) 11. Use the mnemonic GRLA for Group Listening allowed or GRLD for Group Listening denied. On the telephone, use the Options key to select Group Listening Control and turn it on or off.



## New M3902 telephone

### Key Expansion module

You cannot use Key Expansion modules with the M3902 telephone.

### Data option

When the Meridian Communications Adapter (MCA) is installed, you can set up a computer on the user's desk to use the same pair of wires that the telephone uses to connect to the system.

The baud rate of 28.8 Kbps has been introduced for the M3900 series telephones. You select the baud rate when you program the telephone in overlay (LD) 11.

### Analogue Terminal Adapter (ATA)

This device allows you to connect an analogue device such as a FAX machine or modem to the telephone. You must allow this capability in the Class of Service of the telephone.

### Brandlining

There is a removable insert that you can replace with an insert showing the system supplier's logo.

## Control tips



- ◆ If the user unplugs an M3902 telephone messages print out on the maintenance printer, identifying the TN with the missing telephone

## Administration tips



- ◆ The M3902 telephone has a red indicator that lights when there are messages waiting. You can program one of the three soft-labelled programmable features keys as an Autodial key. This gives the user an easy way of dialing the message center or voice mail when there are messages waiting.

## New M3902 telephone



For more information on Message Waiting, refer to Task 25, *Message Center*.

- ◆ Consider using one or two standard key layouts for all digital telephones, or at least all M3902 telephones. This can save significant amounts of memory.
- ◆ If users are allowed to have the Handsfree or Group Listening functionalities, set some guidelines as to who can use that kind of feature and under what circumstances.



For example, you might make a policy that allows people with enclosed offices to use Group Listening, provided their office door is closed. Therefore, people around them are not disturbed during Group Listening conversations.

### Training tips



- ◆ If you have a standard key layout on all M3902 telephones, this is an advantage since users can go to any telephone and feel comfortable using it. If all telephones are the same, the users can also explain features to each other.
- ◆ Even though users do not need to remember feature access codes, they might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps everyone get the most out of the system. In turn, the system provides the expected benefits.
- ◆ Make certain that the users know where to get more information about how to use their telephones and features.



## New M3902 telephone

### What to have ready

Make the following preparations before you do the basic programming of a new M3902 telephone.

**Table 109**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN. Decide whether each DN is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
✓		Determine if any of the accessories, such as the data option, are required.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.
	✓	Arrange for the necessary power equipment to be ordered and installed.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

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## New M3902 telephone

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Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

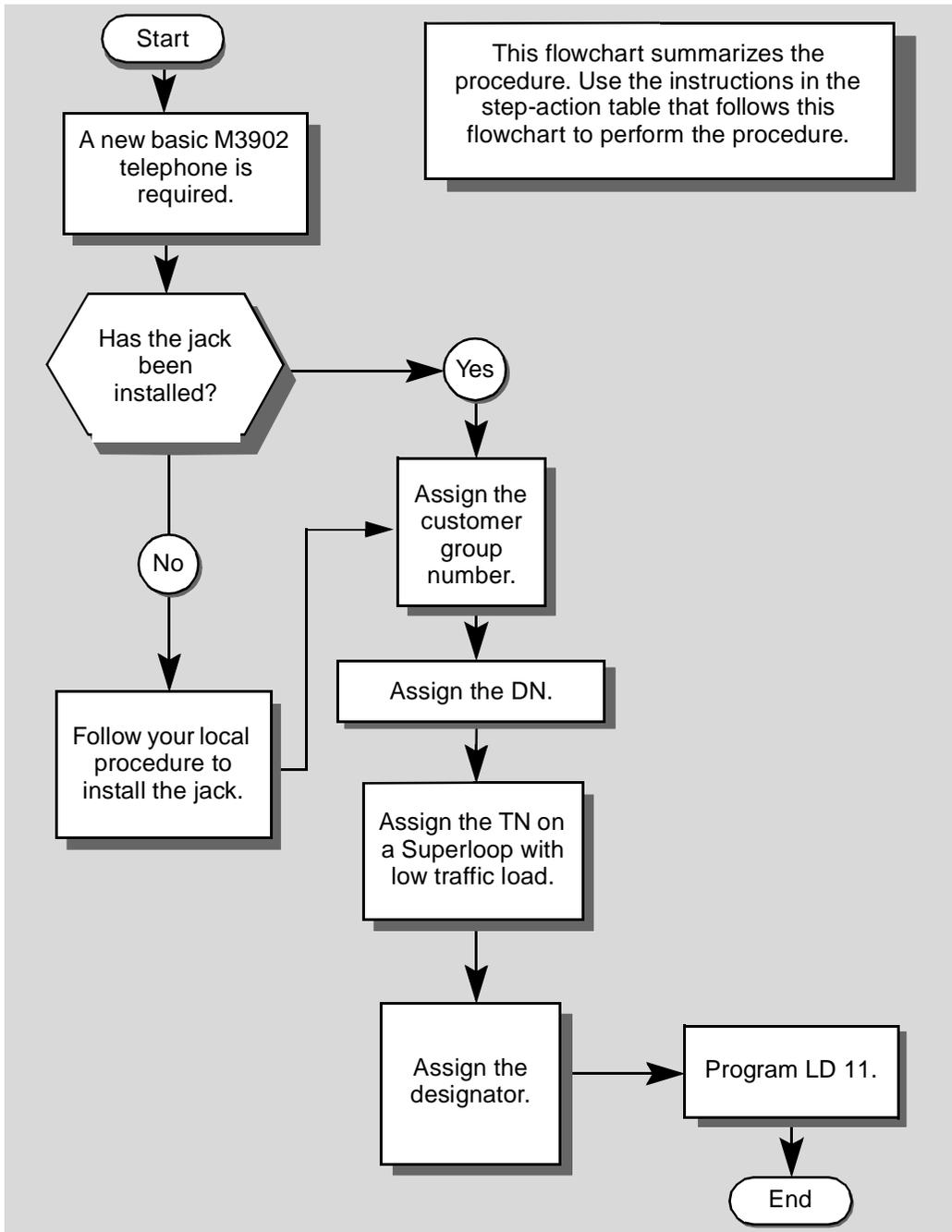
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M3902 telephone.



## New M3902 telephone



## New M3902 telephone



The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M3902 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>— continued —</b>		



## New M3902 telephone

STEP	ACTION						
<b>4</b>	<b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b>						
	<table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
<b>5</b>	<b>Print the DN Block of the other telephone.</b>						
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 22 or</p> <p>&gt; LD 20 or (Release 17 or later)</p> <p>&gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</p> <p><b>REQ</b> PRT Request a printout</p> <p><b>TYPE</b> DNB DN Block</p> <p><b>CUST</b> &lt;cr&gt; All Customer groups</p> <p><b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <p><b>U.data</b>      <b>P.data</b>      small systems</p> <p>or</p> <p><b>MEM AVAIL: (U/P) USED:TOT:</b>      large systems</p> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p>						
— continued —							

## New M3902 telephone



STEP	ACTION	
<b>6</b>	<b>Print the TN Block of the other telephone.</b>	
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>          <b>PRT</b>                  Request a Printout</p> <p><b>TYPE</b>        <b>TNB</b>                      TN Block</p> <p><b>TN</b>            <b>L S C U</b>                  Input the Loop Shelf Card and Unit number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>	
<b>7</b>	<b>Assign the same customer group number to the new telephone.</b>	
	Go to step 10.	
<b>8</b>	<b>Arrange with your system supplier to have the new customer group data block programmed.</b>	
<b>9</b>	<b>Assign the new customer group number to the new telephone.</b>	
<b>10</b>	<b>Find out what DNs are available.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you know what DN you want to assign	step 13
	you do not know what DN you want to assign and your system software is Release 19 or later	step 11
	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.
	<b>— continued —</b>	



## New M3902 telephone

STEP	ACTION	
<b>11</b>	<b>Print unused DNs in your customer group.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b>	PRT            Print
	<b>TYPE</b>	LUDN          List unused DNs
	<b>CUST</b>	0 – 99        Input customer group number
	You get a printout of the unused DNs in your customer group.	
<b>12</b>	<b>Choose an available DN which fits your Numbering Plan and the needs of the user.</b>	
<b>13</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	you have access to the print overlay programs	step 14
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.
<b>14</b>	<b>Print out the available TNs on your system.</b>	
	Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20 or	
	> LD 10 or LD 11 or LD 20 or LD 32    (Release 19 or later)	
	<b>REQ</b>	LUU            List all unused units
		LUVU          List unused voice units (Release 19 or later)
	<b>TYPE</b>	3902          M3902 telephone. If there are no M3902 telephones installed yet, choose a type of digital telephone that has been installed.
	You get a printout of the available digital telephone TNs.	
	— continued —	

## New M3902 telephone



STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<code>&gt; LD 11</code>	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 3902	M3902 telephone.
	<b>TN</b> L S C U	Input the TN (Loop Shelf Card Unit number)
	<b>CDEN</b> <cr>	Carriage return - use the default
	<b>DES</b> A . . A	Designator maximum six characters
	<b>CUST</b> 0-99	customer group number
	Carriage return until you see the KEY prompt.	
	— continued —	



## New M3902 telephone

### STEP ACTION

#### 19 continued ...

Program key 0 in one of the following ways:

<b>KEY</b> 0	SCR X . . X	SCR — single call ringing DN
<b>KEY</b> 0	SCN X . . X	SCN — single call non-ringing DN
<b>KEY</b> 0	MCR X . . X	MCR — multiple call ringing DN
<b>KEY</b> 0	MCN X . . X	MCN — multiple call non-ringing DN
<b>KEY</b> 0	PVR X . . X	PVR — private line ringing DN
<b>KEY</b> 0	PVN X . . X	PVN — private line non-ringing DN

X.X represents the actual digits in the DN; type the actual digits

The DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP

#### 20 Program up to three features on the soft-labelled keys.

**KEY** 1 aaayyy zzz Refer to *Adding and changing features*.

**KEY** 2 aaayyy zzz

**KEY** 3 aaayyy zzz

**Note 1:** Key 4 is pre-configured as TRN (Call Transfer) by default. You can change it to AO3 or AO6, if you prefer. Refer to the *Conference* module.

**Note 2:** Key 5 is pre-configured as a Message Waiting key. Refer to the *Message Center* module.

Carriage return until you see either of the following messages:

**U.data P.data** small systems

or

**MEM AVAIL: (U/P) USED:TOT:** large systems

— continued —

## New M3902 telephone

**STEP ACTION****21 Check that the telephone works.**

Try to make a call. Try to receive a call.

**If****Do**

.....  
telephone works

step 24

telephone does not work

step 1

**22 Arrange for a data dump to be performed.****If****Do**

.....  
you do not have access  
to LD 43

Contact your system supplier.

you have access to LD 43

step 25

**23 Perform a data dump to permanently store the programming you have just completed.****CAUTION**

Check your maintenance agreement  
before working in LD 43.

Refer to the *Basic programming instructions* module of this book or refer to the *X11 input/output guide* for more information on LD 43.

> LD 43

. EDD <cr>

— continued —

## 684 Making a telephone work

of 1776



## New M3902 telephone

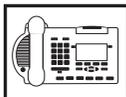
STEP	ACTION								
24	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b></p> <p>or</p> <p><b>DATA DUMP COMPLETE</b></p> <table border="0"> <tr> <td><b>If</b></td> <td><b>Do</b></td> </tr> <tr> <td colspan="2">-----</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 27</td> </tr> </table>	<b>If</b>	<b>Do</b>	-----		data dump fails	Contact your system supplier.	data dump succeeds	step 27
<b>If</b>	<b>Do</b>								
-----									
data dump fails	Contact your system supplier.								
data dump succeeds	step 27								
25	<p><b>Terminate this overlay program.</b></p> <p>. ****</p>								
26	<p><b>Terminate this programming session.</b></p> <p>Log off.</p> <p>&gt; LOGO</p>								
27	<p><b>You have now completed the minimum programming required to implement a basic new M3902 telephone.</b></p>								

## New M3903 telephone

### Purpose

The information in this Task module will help you if a user at your site requires a new M3903 Meridian Digital Telephone.





## New M3903 telephone



The M3903 telephone is not available in Europe.

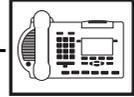
If the user needs a new telephone, install an M3903 telephone if:

- ◆ the user needs up to two Directory Numbers (DNs)
- ◆ the user has a personal computer or the user wants to use first party CTI applications. You want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires. You want the user to be able to control the telephone from the PC using applications such as Call Manager.
- ◆ the user wants handsfree conversation capability with the ability to mute the speech path
- ◆ the user wants to use a headset
- ◆ the user wants buttons (or keys) for easy access to features or commonly dialed telephone numbers
- ◆ the user wants to adjust the volume for handset listen, headset listen, headset talk, headset side tone, handsfree volume, ringing tone, and buzz tone
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting
- ◆ the user wants a display
- ◆ the user needs the choice of different languages on the display when using features
- ◆ the user wants a telephone that logs calls
- ◆ the user wants to connect an analogue device such as a FAX machine or modem to the telephone
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the user wants to be able to position the telephone in two different ways (desktop position and a wall mount position)

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## New M3903 telephone

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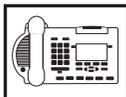
- ◆ the user wants the convenience of having soft keys that show only the features that can be used on the telephone, whether the phone is on-hook, off-hook, or on a call, and whether the Options List, Directory/Log, or Applications are in use
- ◆ the user wants to send a customized visual message to another M3903 (or M3904) telephone
- ◆ the user wants access to a corporate directory from the M3903 telephone
- ◆ the user wants to log in to another designated M3903 (or M3904) telephone, and use their individual telephone configuration on that other telephone
- ◆ the user wants to be able to download a new version of firmware from the Meridian 1 switch to a single M3900 series of telephone, or a range of M3900 series of telephone
- ◆ the user wants to be able to choose one of six languages available on their M3903 telephone

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.



## New M3903 telephone

### Software

**Table 110**  
Software requirements

Release required	Software package(s) required
16 and later	88 (DSET) Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.

### Accessories

The M3903 telephone supports the following accessories:

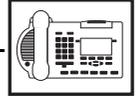
- ◆ MCA data option to provide integrated voice and data at a baud rate of 28.8 Kbps (baud rate option 9, when you program the telephone in LD 11)
- ◆ External Alerter Interface/Recorder Interface to connect a remote ringer or light to indicate when the telephone rings and when it is off-hook
- ◆ Direct Connect Headset which allows the headset to operate while the handset is on hook
- ◆ Analogue Terminal Adapter (ATA) to connect an analogue device such as a FAX machine or modem to the telephone

There is an Accessory Connection Module (ACM) to be installed inside the terminal stand.

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## New M3903 telephone

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### Power

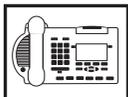
Talk to your system supplier about the power requirements for accessories you are adding to the telephone.

### Language Display Options

The information on your display screen can be displayed in one of fifteen languages. You can choose from the following language options:

- ◆ English
- ◆ French (neutral)
- ◆ Spanish (neutral)
- ◆ German
- ◆ Dutch
- ◆ Portuguese (neutral)
- ◆ Italian
- ◆ Danish
- ◆ Norwegian
- ◆ Swedish
- ◆ Finnish
- ◆ Polish
- ◆ Czech
- ◆ Hungarian
- ◆ Japanese

**Note:** The term neutral means that the language is presented in a way that is understood globally.



## New M3903 telephone

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### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M3903 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator.

For example, users may need access to certain basic features, such as Call Transfer and Conference. These features are denied by default. Also, the telephone system administrator might want to implement corporate-wide policies for telephones which are not met through the default choices.

Because the M3903 is a digital telephone, it is programmed in overlay program (LD) 11.

*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

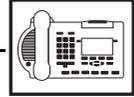
### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

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## New M3903 telephone

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If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

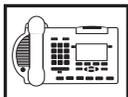
When telephones are installed, they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the DNs can be one to four digits.

This telephone can be configured to have one or two DNs. Keys numbered 0 and 1 can have a DN assigned.



## New M3903 telephone

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### Ringling or Non-ringling DN

On digital telephones, a DN can be programmed to be a ringling or a non-ringling appearance.

- ◆ When a call comes into a ringling appearance, the telephone rings, if it is idle. The call status indicator flashes. It is at the top of the telephone faceplate.
- ◆ When a call comes into a non-ringling appearance of a DN, the call status indicator flashes but the telephone does not ring.

If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

If an M3903 telephone has two DN keys programmed, you can program each DN key to ring or not to ring, according to the needs of the user.

### Single Appearance or Multiple Appearance DN

You must understand the following terms in order to program a DN on a key.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DN**s appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.

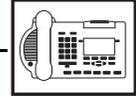
If a DN rings when a call comes in, it is called a *Single Call Ringling DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringling DN*.

### Single Call DN

The DN can handle only one call at a time.

This means that if there are other appearances of that DN on digital telephones or SL 1-type telephones, the indicator is lit steadily at all telephones, when one person is using the DN.

## New M3903 telephone



When you want to assign a *Single Call Ringing DN* to a key on an M3903 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to a key on an M3903 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.



If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone. There is information on an important Multiple Appearance DN feature in Task 40, *Multiple Appearance DN Redirection Prime*.

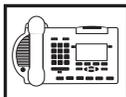
There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

A Multiple Call DN is not treated as busy until there are calls on all of the programmed appearances of the DN. There can be a maximum of 30 appearances of the same DN.



## New M3903 telephone

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DN.

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M3903 telephone, you assign the following programming code to the key:

MCR X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M3903 telephone, you assign the following programming code to the key:

MCN X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.

### Consistent configuration



*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M3903 telephone.

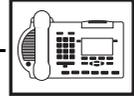
### Prime DN, Key 0

Key 0 *must be* programmed with a DN. This DN is called the prime DN. The DN can be a Multiple Call ringing or non-ringing DN, a Single Call ringing or non-ringing DN or a Private Line ringing or non-ringing DN. It can also be configured with an ACD DN when

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## New M3903 telephone

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used in a Call Center environment. A discussion of Call Centers is beyond the scope of this book. You can find out more about them in the NTP called *Automatic Call Distribution*. You can configure Key 1 as a Multiple Call ringing or non-ringing DN, a Single Call ringing or non-ringing DN, or a Private Line ringing or non-ringing DN.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

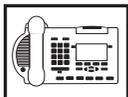
- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module.

### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DN's, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.





## New M3903 telephone

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### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M3903 is a digital telephone, it is programmed in overlay program (LD) 11. Even though some models of telephone have more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

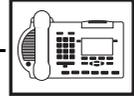
Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Soft-labelled programmable feature keys

There are four keys under the display that you can program with features the user needs. The user presses the *More* key to access more features. The name of the feature appears above the key, once you have programmed it.

The Class of Service of this telephone defaults to Automatic Digit Display allowed.

## New M3903 telephone



### Fixed feature keys

#### Recommended key assignments

Table 111

Key number	Feature
16	MWK – Message Waiting
17	TRN – Call Transfer
18	AO3 – Three-party Conference AO6 – Six-party Conference
19	CFW – Call Forward All Calls
20	RGA – Ring Again
21	PRK – Call Park
22	RNP – Ringing Number Pickup
23	SCU – Speed Call User SCC – Speed Call Controller SSU – System Speed Call User SSC – System Speed Call Controller
24	PRS – Privacy Release
25	CHG – Charge Account
26	CPN – Calling Party Number

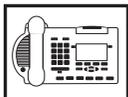
#### Options key

The Options key is part of the telephone; you do not have to activate it in programming. You use the navigation keys that are in a cluster to move left, right, up and down to access and select options that appear on the display.

#### Call Log

The Call Log key allows the user to access these lists:

- ◆ Callers List
- ◆ Redial List



## New M3903 telephone

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These lists can be password protected. A default password (12345678) is downloaded to the telephone if the administrator resets the password using overlay program 32.

The Call Log is a list of the names and numbers associated with incoming calls. At this time, it holds up to 10 entries (it will hold 20 entries in the future). You can set up the Call Log to record all incoming calls or only unanswered incoming calls.

### Shift key

Pressing the shift key gives you another layer of lines or features programmed against the soft keys on the sides of the display.

## Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the Superloop, to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.

Superloops perform best when they share equally in the total traffic load carried by the system.

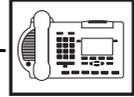
Blockage within the system will be negligible or non-existent when the traffic load for each Superloop is kept within the recommended guidelines. If all of your existing Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system if there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

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## New M3903 telephone

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The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards.

Meridian 1 systems using Superloops use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.

Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

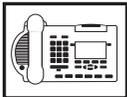
When you program digital telephones, you do not need to tell the system what density the digital telephones line card is, since it defaults to the density allowed for the Superloop on which the telephone resides.

### Designator (DES)

When you want printouts of the data associated with telephones, you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.



## New M3903 telephone

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You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

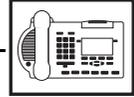
Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

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## New M3903 telephone

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### Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

#### Ringling options

##### Distinctive Ringling Groups

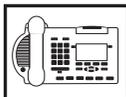
There are four different ringling options for the digital telephones. The choices are: DRG1, DRG2, DRG3, or DRG4. (DRG stands for Distinctive Ringling Group.) When you program the Class of Service of each telephone, you choose one of the four options to set the ringling tone and ringling cadence. The user can change the ringling group using the Options key.

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringling.

Distinctive Ringling can be very useful with the Call Pickup feature. When telephones are ringling in the Pickup group, the users can tell what telephone is ringling and answer calls appropriately.

##### Network and Executive Distinctive Ringling

When you assign Executive Distinctive Ringling to a telephone, terminating telephones ring distinctively when they receive calls from the “Executive” telephone. Network Distinctive Ringling extends this functionality across an ISDN network.



## New M3903 telephone

**Table 112**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network Supplementary Features (ISDNS)
	185 – Executive Distinctive Ringing (EDRG)

## Directory Number Delayed Ringing (DNDR)

**Table 113**  
**Software requirements**

Release required	Software package(s) required
21	none

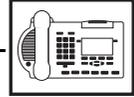
If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user's telephone.

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## New M3903 telephone

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When you have Multiple Appearance non-ringing DN's, there are many different ways you can choose to implement it. Two examples follow:

- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

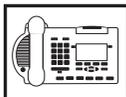
### Handsfree unit

The handsfree unit must be enabled or disabled in the Class of Service programming of the telephone. You can allow or deny it in overlay (LD) 11, using the mnemonic HFA (handsfree allowed) or HFD, (handsfree denied).

### Group Listening

When you enable Group Listening, both sides of a conversation are transmitted through the speaker of the telephone. The person on the other end cannot hear what you are saying unless you speak into the handset or headset. Verify that it is legal to use this feature in your area.

You program Group Listening in the Class of Service of the telephone in overlay (LD) 11. Use the mnemonic GRLA for Group Listening allowed or GRLD for Group Listening denied. On the telephone, use the Options key to select Group Listening Control and turn it on or off.



## New M3903 telephone

### Key Expansion module

You cannot use Key Expansion modules with the M3903 telephone.

### Data option

When the Meridian Communications Adapter (MCA) is installed, you can set up a computer on the user's desk to use the same pair of wires that the telephone uses to connect to the system.

The baud rate of 28.8 Kbps has been introduced for the M3900 series telephones. You select the baud rate when you program the telephone in overlay (LD) 11.

### Analogue Terminal Adapter (ATA)

This device allows you to connect an analogue device such as a FAX machine or modem to the telephone. You must allow this capability in the Class of Service of the telephone.

### Brandlining

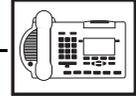
There is a removable insert that you can replace with an insert showing the system supplier's logo. The M3903 supports electronic brandlining.

## Control tips



- ◆ If the user unplugs an M3903 telephone messages print out on the maintenance printer, identifying the TN with the missing telephone

## New M3903 telephone



### Administration tips



- ◆ The M3903 telephone has a red indicator that lights steadily when there are messages waiting. The telephone has a Message Waiting key so the user has an easy way of dialing the message center or voice mail when there are messages waiting.

For more information on Message Waiting, refer to Task 25, *Message Center*.

- ◆ Consider using one or two standard key layouts for all digital telephones, or at least all M3903 telephones. This can save significant amounts of memory.



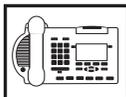
- ◆ If users are allowed to have the Handsfree or Group Listening functionalities, set some guidelines as to who can use that kind of feature and under what circumstances.

For example, you might make a policy that allows people with enclosed offices to use Group Listening, provided their office door is closed. Therefore, people around them are not disturbed during Group Listening conversations.

### Training tips



- ◆ If you have a standard key layout on all M3903 telephones, this is an advantage since users can go to any telephone and feel comfortable using it. If all telephones are the same, the users can also explain features to each other.
- ◆ Even though users do not need to remember feature access codes, they might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps you both get the most out of the system and in turn the system provides the expected benefits.
- ◆ Make certain that the users know where to get more information about how to use their telephones and features.



## New M3903 telephone

### What to have ready

Make the following preparations before you do the basic programming of a new M3903 telephone.

**Table 114**  
**Checklist**

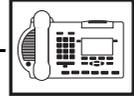
Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s). Decide whether each DN is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
✓		Determine if any of the accessories, such as the data option, are required.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.
	✓	Arrange for the necessary power equipment to be ordered and installed.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

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## New M3903 telephone

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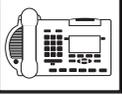
Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

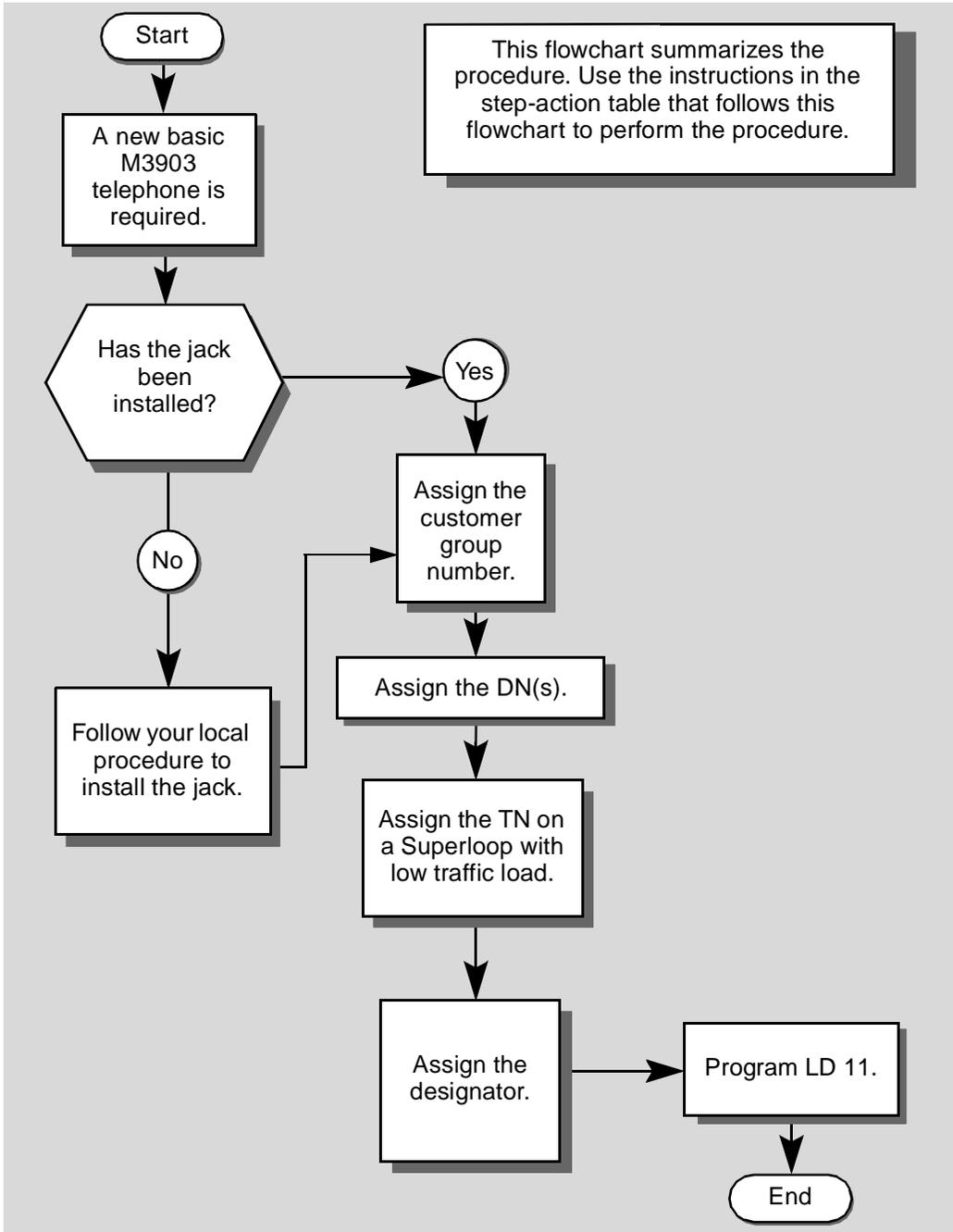
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

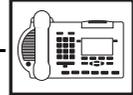
A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M3903 telephone.



## New M3903 telephone



## New M3903 telephone



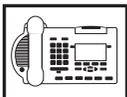
The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M3903 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

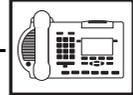
STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>— continued —</b>		



## New M3903 telephone

STEP	ACTION						
4	<b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b>						
	<table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
5	<b>Print the DN Block of the other telephone.</b>						
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 22 or</p> <p>&gt; LD 20 or (Release 17 or later)</p> <p>&gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</p> <p><b>REQ</b> PRT Request a printout</p> <p><b>TYPE</b> DNB DN Block</p> <p><b>CUST</b> &lt;cr&gt; All Customer groups</p> <p><b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <p><b>U.data</b>      <b>P.data</b>      small systems</p> <p>or</p> <p><b>MEM AVAIL: (U/P) USED:TOT:</b>      large systems</p> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p>						
— continued —							

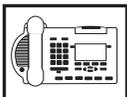
## New M3903 telephone



STEP	ACTION	
<b>6</b>	<b>Print the TN Block of the other telephone.</b>	
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>          PRT                  Request a Printout</p> <p><b>TYPE</b>        TNB                  TN Block</p> <p><b>TN</b>            L S C U            Input the Loop Shelf Card and Unit number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>	
<b>7</b>	<b>Assign the same customer group number to the new telephone.</b>	
	Go to step 10.	
<b>8</b>	<b>Arrange with your system supplier to have the new customer group data block programmed.</b>	
<b>9</b>	<b>Assign the new customer group number to the new telephone.</b>	
<b>10</b>	<b>Find out what DNs are available.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you know what DN you want to assign	step 13
	you do not know what DN you want to assign and your system software is Release 19 or later	step 11
	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.
	— continued —	

## 712 Making a telephone work

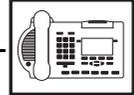
of 1776



## New M3903 telephone

STEP	ACTION										
<b>11</b>	<b>Print unused DNs in your customer group.</b>										
	<p>Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20</p> <table> <tr> <td><b>REQ</b></td> <td>PRT</td> <td>Print</td> </tr> <tr> <td><b>TYPE</b></td> <td>LUDN</td> <td>List unused DNs</td> </tr> <tr> <td><b>CUST</b></td> <td>0 – 99</td> <td>Input customer group number</td> </tr> </table> <p>You get a printout of the unused DNs in your customer group.</p>		<b>REQ</b>	PRT	Print	<b>TYPE</b>	LUDN	List unused DNs	<b>CUST</b>	0 – 99	Input customer group number
<b>REQ</b>	PRT	Print									
<b>TYPE</b>	LUDN	List unused DNs									
<b>CUST</b>	0 – 99	Input customer group number									
<b>12</b>	<b>Choose one or two available DN(s) from your Numbering Plan, according to the needs of the user.</b>										
<b>13</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>										
	<b>If</b>	<b>Do</b>									
	you have access to the print overlay programs	step 14									
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.									
<b>14</b>	<b>Print out the available TNs on your system.</b>										
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <table> <tr> <td><b>REQ</b></td> <td>LUU</td> <td>List all unused units</td> </tr> <tr> <td></td> <td>LUVU</td> <td>List unused voice units (Release 19 or later)</td> </tr> <tr> <td><b>TYPE</b></td> <td>3903</td> <td>M3903 telephone. If there are no M3903 telephones installed yet, choose a type of digital telephone that has been installed.</td> </tr> </table> <p>You get a printout of the available digital telephone TNs.</p>		<b>REQ</b>	LUU	List all unused units		LUVU	List unused voice units (Release 19 or later)	<b>TYPE</b>	3903	M3903 telephone. If there are no M3903 telephones installed yet, choose a type of digital telephone that has been installed.
<b>REQ</b>	LUU	List all unused units									
	LUVU	List unused voice units (Release 19 or later)									
<b>TYPE</b>	3903	M3903 telephone. If there are no M3903 telephones installed yet, choose a type of digital telephone that has been installed.									
— continued —											

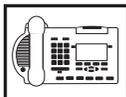
## New M3903 telephone



STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<code>&gt; LD 11</code>	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 3903	M3903 telephone.
	<b>TN</b> L S C U	Input the TN (Loop Shelf Card Unit number)
	<b>CDEN</b> <cr>	Carriage return - use the default
	<b>DES</b> A . . A	Designator maximum six characters
	<b>CUST</b> 0-99	customer group number
	Carriage return until you see the KEY prompt.	
	— continued —	

## 714 Making a telephone work

of 1776



## New M3903 telephone

**STEP ACTION****19 continued ...**

Program keys 0 (and 1, if required) in one of the following ways:

<b>KEY</b> X SCR X . . X	SCR — single call ringing DN
<b>KEY</b> X SCN X . . X	SCN — single call non-ringing DN
<b>KEY</b> X MCR X . . X	MCR — multiple call ringing DN
<b>KEY</b> X MCN X . . X	MCN — multiple call non-ringing DN
<b>KEY</b> X PVR X . . X	PVR — private line ringing DN
<b>KEY</b> X PVN X . . X	PVN — private line non-ringing DN

x = 0 or 1

X..X represents the actual digits in the DN; type the actual digits

The DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP

**20 Program the features on the soft-labelled keys.**

**KEY** XX aaayyy zzz Refer to the table on page 697 for the key assignments. Refer to *Adding and changing features* for more information about each feature.

Carriage return until you see either of the following messages:

**U.data P.data** small systems

or

**MEM AVAIL: (U/P) USED:TOT:** large systems

— continued —

**New M3903 telephone****STEP ACTION****21 Check that the telephone works.**

Try to make a call. Try to receive a call.

**If****Do**

.....

telephone works

step 24

telephone does not work

step 1

**22 Arrange for a data dump to be performed.****If****Do**

.....

you do not have access  
to LD 43

Contact your system supplier.

you have access to LD 43

step 25

**23 Perform a data dump to permanently store the programming you have just completed.****CAUTION**

Check your maintenance agreement  
before working in LD 43.

Refer to the *Basic programming instructions* module of this book or refer to the *X11 input/output guide* for more information on LD 43.

> LD 43

. EDD <cr>

— continued —

## New M3903 telephone

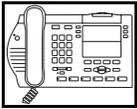
STEP	ACTION								
24	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b></p> <p>or</p> <p><b>DATA DUMP COMPLETE</b></p> <table border="0"> <tr> <td><b>If</b></td> <td><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 27</td> </tr> </table>	<b>If</b>	<b>Do</b>	.....		data dump fails	Contact your system supplier.	data dump succeeds	step 27
<b>If</b>	<b>Do</b>								
.....									
data dump fails	Contact your system supplier.								
data dump succeeds	step 27								
25	<p><b>Terminate this overlay program.</b></p> <p>. * * * *</p>								
26	<p><b>Terminate this programming session.</b></p> <p>Log off.</p> <p>&gt; LOGO</p>								
27	<p><b>You have now completed the minimum programming required to implement a basic new M3903 telephone.</b></p>								
									

## New M3904 telephone

### Purpose

The information in this Task module will help you if a user at your site requires a new M3904 Meridian Digital Telephone.





## New M3904 telephone

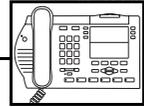


The M3904 telephone is not available in Europe.

If the user needs a new telephone, install an M3904 telephone if:

- ◆ the user needs up to six Directory Numbers (DNs)
- ◆ the user has a personal computer or the user wants to use first party CTI applications. You want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires. You want the user to be able to control the telephone from the PC using applications such as Call Manager.
- ◆ the user wants handsfree conversation capability with the ability to mute the speech path
- ◆ the user wants to use a headset
- ◆ the user wants up to 32 keys for easy access to features/lines or commonly dialed telephone numbers - the Key-based Accessory (KBA) allows you to configure up to 54 keys; a second KBA allows up to 76 keys
- ◆ the user wants to adjust the volume for handset listen, headset listen, headset talk, headset side tone, handsfree volume, ringing tone, and buzz tone
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting
- ◆ the user wants a display
- ◆ the user needs the choice of different languages on the display when using features
- ◆ the user wants a telephone that logs calls
- ◆ the user wants a telephone that has a personal directory
- ◆ the user wants to connect an analogue device such as a FAX machine or modem to the telephone
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing

## New M3904 telephone



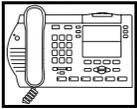
- ◆ the user wants the convenience of having soft keys that show only the features that can be used on the telephone, whether the telephone is on-hook, off-hook, or on a call, and whether the Options List, Directory/Log, or Applications are in use
- ◆ the user wants to send a customized visual message to another M3904 (or M3903) telephone
- ◆ the user wants access to a corporate directory from the M3904 telephone
- ◆ the user wants to log in to another designated M3904 (or M3903) telephone, and use their individual telephone configuration on that other telephone
- ◆ the user wants to be able to download a new version of firmware from the Meridian 1 switch to a single M3900 series of telephone, or a range of M3900 series of telephone
- ◆ the user wants to be able to choose one of six languages available on their M3904 telephone
- ◆ the user requires an accessory that provides a single strip of eight additional keys

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.



## New M3904 telephone

### Software

**Table 115**  
**Software requirements**

Release required	Software package(s) required
16 and later	88 (DSET) Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

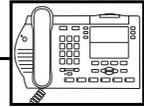
When you are installing a new telephone, ask your system maintainer to do the physical installation work.

### Accessories

The M3904 telephone supports the following accessories:

- ◆ MCA data option to provide integrated voice and data at a baud rate of 28.8 Kbps (baud rate option 9, when you program the telephone in LD 11)
- ◆ External Alerter Interface/Recorder Interface to connect a remote ringer or light to indicate when the telephone rings and when it is off-hook
- ◆ Personal Directory PC Utility which allows the user to transfer information from and to a PC

## New M3904 telephone



- ◆ Key-based Add-on Module allows you to configure ranges of keys as follows: up to 32 keys with no KBA activated, 54 keys with one KBA activated, and 76 keys with two KBAs activated.
- ◆ Direct Connect Headset which allows the headset to operate while the handset is on hook
- ◆ Analogue Terminal Adapter (ATA) to connect an analogue device such as a FAX machine or modem to the telephone
- ◆ Display-based Expansion module, that provides a single strip of eight additional keys. The user presses the Display key on the Display-based Expansion module to access three different layers of keys

There is an Accessory Connection Module (ACM) to be installed inside the terminal stand.

The M3904 telephone can sit on a desk or be mounted on a wall.

### Key-based Add-on Module

The Key-based Add-on Module allows you to program up to 76 feature and line keys by programming two modules when you program the telephone. When you program one module in the programming of the telephone, you can program up to 54 keys. The functions for the keys are accessed using the soft-labelled feature names on the display.

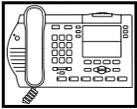
### Power

Talk to your system supplier about the power requirements for accessories you are adding to the telephone.

### Language Display Options

The information on your display screen can be displayed in one of fifteen languages. You can choose from the following language options:

- ◆ English
- ◆ French (neutral)
- ◆ Spanish (neutral)



## New M3904 telephone

- ◆ German
- ◆ Dutch
- ◆ Portuguese (neutral)
- ◆ Italian
- ◆ Danish
- ◆ Norwegian
- ◆ Swedish
- ◆ Finnish
- ◆ Polish
- ◆ Czech
- ◆ Hungarian
- ◆ Japanese

*Note:* The term neutral means that the language is presented in a way that is understood globally.

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

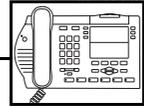
The prompts discussed in this module are the ones to which you must respond to make a basic M3904 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator.

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## New M3904 telephone

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For example, users may need access to certain basic features, such as Call Transfer and Conference. These features are denied by default. Also, the telephone system administrator might want to implement corporate-wide policies for telephones which are not met through the default choices.

Because the M3904 is a digital telephone, it is programmed in overlay program (LD) 11.

*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

### Customer group

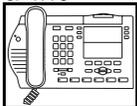
Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

When telephones are installed, they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number,



## New M3904 telephone

or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the DNs can be one to four digits.

This telephone can be configured to have one or more than one DN. Each of the keys numbered 0– 11 on the telephone can have a DN assigned. The DN on keys numbered 0-5 are on the first screen of the display. It is not recommended to use keys 6-11 for DN; use them for features instead.

### Ring or Non-ringing DNs

On digital telephones, a DN can be programmed to be a ringing or a non-ringing appearance.

- ◆ When a call comes into a ringing appearance, the telephone rings, if it is idle. The call status indicator flashes. It is at the top of the telephone faceplate.
- ◆ When a call comes into a non-ringing appearance of a DN, the call status indicator flashes but the telephone does not ring.

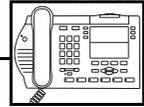
If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

If an M3904 telephone has several DN keys programmed, you can program each DN key to ring or not to ring according to the needs of the user.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN on a key.

## New M3904 telephone



The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DN**s appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.

If a DN rings when a call comes in, it is called a *Single Call Ringing DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringing DN*.

### Single Call DN

The DN can handle only one call at a time.

This means that if there are other appearances of that DN on digital telephones or SL 1-type telephones, the indicator is lit steadily at all telephones, when one person is using the DN.

When you want to assign a *Single Call Ringing DN* to a key on an M3904 telephone, you assign the following programming code to the key:

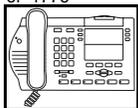
SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to a key on an M3904 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.



If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.



## New M3904 telephone

**Multiple Appearance DN**s appear on more than one telephone, or more than one key on a telephone such as a digital telephone. There is information on an important Multiple Appearance DN feature in Task 40, *Multiple Appearance DN Redirection Prime*.

There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

A Multiple Call DN is not treated as busy until there are calls on all of the programmed appearances of the DN. There can be a maximum of 30 appearances of the same DN.

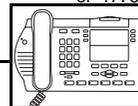
Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DN.

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M3904 telephone, you assign the following programming code to the key:

MCR X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

## New M3904 telephone



When you want to assign a *Multiple Call Non-ringing DN* to a key on an M3904 telephone, you assign the following programming code to the key:

MCN X . . X where X..X represents a DN which can range from 1 – 7 digits in length. There must be a space between the MCN code and the digits in the DN.

### Consistent configuration



*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

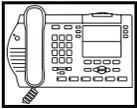
The step-action table at the end of this module explains how to assign a DN on a new M3904 telephone.

### Prime DN, Key 0

Key 0 *must be* programmed with a DN. This DN is called the prime DN. The DN can be a Multiple Call ringing or non-ringing DN, a Single Call ringing or non-ringing DN or a Private Line ringing or non-ringing DN. It can also be configured with an ACD DN when used in a Call Center environment. A discussion of Call Centers is beyond the scope of this book. You can find out more about them in the NTP called *Automatic Call Distribution*. You can configure Keys 1–11 as Multiple Call ringing or non-ringing DNs, Single Call ringing or non-ringing DNs, or Private Line ringing or non-ringing DNs. It is recommended that you only configure DNs on keys 0-5.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example,



## New M3904 telephone

you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module.

### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DNs, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use.

The step-action table at the end of this module shows you how to do this.



### Terminal Number (TN)

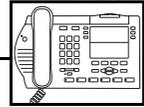
Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M3904 is a digital telephone, it is programmed in overlay program (LD) 11. Even though some models of telephone have more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.

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## New M3904 telephone

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If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Soft-labelled programmable feature keys

There are four keys under the display that you can program with features the user needs. The user presses the *More* key to access more features. The name of the feature appears above the key, once you have programmed it.

The Class of Service of this telephone defaults to Automatic Digit Display allowed.

### Fixed feature keys

#### Shift key

Pressing the shift key gives you another layer of lines or features programmed against the soft keys on the sides of the display.

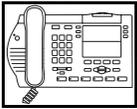
#### Options key

The Options key is part of the telephone; you do not have to activate it in programming. You use the navigation keys that are in a cluster to move left, right, up and down to access and select options that appear on the display.

#### Directory/Log

The Directory/Log key allows the user to access three lists:

- ◆ Personal Directory
- ◆ Callers List
- ◆ Redial List



## New M3904 telephone

These lists can be password protected. A default password (12345678) is downloaded to the telephone if the administrator resets the password using overlay program 32.

The Call Log is a list of the names and numbers associated with incoming calls. It holds up to 100 entries. The user can copy from this list to the Personal Directory. You can set up the Call Log to record all incoming calls or only unanswered incoming calls.

### Personal Directory PC Utility

This accessory allows the user to transfer directory information from and to a PC. The user can store up to three numbers for one entry in the Directory. This is useful when you want to enter a secondary telephone number and a FAX number for a person listed in the directory.

## Recommended key assignments

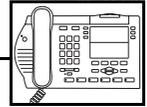
Table 116

Key number	Feature
16	MWK – Message Waiting
17	TRN – Call Transfer
18	AO3 – Three-party Conference AO6 – Six-party Conference
19	CFW – Call Forward All Calls
20	RGA – Ring Again
21	PRK – Call Park
22	RNP – Ringing Number Pickup
23	SCU – Speed Call User SCC – Speed Call Controller SSU – System Speed Call User SSC – System Speed Call Controller
24	PRS – Privacy Release
25	CHG – Charge Account
26	CPN – Calling Party Number

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## New M3904 telephone

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### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the Superloop, to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.

Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each Superloop is kept within the recommended guidelines. If all of your existing Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

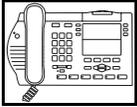
Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system if there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards.

Meridian 1 systems using Superloops use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.



## New M3904 telephone

Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

When you program digital telephones, you do not need to tell the system what density the digital telephones line card is, since it defaults to the density allowed for the Superloop on which the telephone resides.

### Designator (DES)

When you want printouts of the data associated with telephones, you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

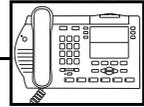
The DES code can be a maximum of six alphanumeric characters.

You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

## New M3904 telephone



For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.
- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

## Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

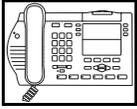
### Ringling options

#### Distinctive Ringing Groups

There are four different ringing options for the digital telephones. The choices are: DRG1, DRG2, DRG3, or DRG4. (DRG stands for Distinctive Ringing Group.) When you program the Class of Service of each telephone, you choose one of the four options to set the ringing tone and ringing cadence. The user can change the ringing group using the Options key.

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## New M3904 telephone

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringing.

Distinctive Ringing can be very useful with the Call Pickup feature. When telephones are ringing in the Pickup group, the users can tell what telephone is ringing and answer calls appropriately.

### Network and Executive Distinctive Ringing

When you assign Executive Distinctive Ringing to a telephone, terminating telephones ring distinctively when they receive calls from the “Executive” telephone. Network Distinctive Ringing extends this functionality across an ISDN network.

**Table 117**  
**Software requirements**

Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG)
	125 – Flexible Tones and Cadences (FTC)
	145 – Integrated Services Digital Network (ISDN)
	161 – Integrated Services Digital Network Supplementary Features (ISDNS)
	185 – Executive Distinctive Ringing (EDRG)

### Directory Number Delayed Ringing (DNDR)

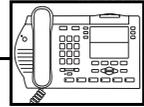
**Table 118**  
**Software requirements**

Release required	Software package(s) required
21	none

---

## New M3904 telephone

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If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user's telephone.

When you have Multiple Appearance non-ringing DNs, there are many different ways you can choose to implement it. Two examples follow:

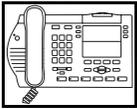
- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Handsfree unit

The handsfree unit must be enabled or disabled in the Class of Service programming of the telephone. You can allow or deny it in overlay (LD) 11, using the mnemonic HFA (handsfree allowed) or HFD, (handsfree denied).

### Group Listening

When you enable Group Listening, both sides of a conversation are transmitted through the speaker of the telephone. The person on the other end cannot hear what you are saying unless you speak into the handset or headset. Verify that it is legal to use this feature in your area.



## New M3904 telephone

You program Group Listening in the Class of Service of the telephone in overlay (LD) 11. Use the mnemonic GRLA for Group Listening allowed or GRLD for Group Listening denied. On the telephone, use the Options key to select Group Listening Control and turn it on or off.

### Data option

When the Meridian Communications Adapter (MCA) is installed, you can set up a computer on the user's desk to use the same pair of wires that the telephone uses to connect to the system.

The baud rate of 28.8 Kbps has been introduced for the M3900 series telephones. You select the baud rate when you program the telephone in overlay (LD) 11.

### Analogue Terminal Adapter (ATA)

This device allows you to connect an analogue device such as a FAX machine or modem to the telephone. You must allow this capability in the Class of Service of the telephone.

### Brandlining

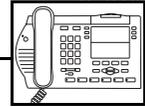
There is a removable insert that you can replace with an insert showing the system supplier's logo. The M3904 supports electronic brandlining.

## Control tips



- ◆ If the user unplugs an M3904 telephone messages print out on the maintenance printer, identifying the TN with the missing telephone

## New M3904 telephone



### Administration tips



- ◆ The M3904 telephone has a red indicator that lights steadily when there are messages waiting. The telephone has a Message Waiting key so the user has an easy way of dialing the message center or voice mail when there are messages waiting.

For more information on Message Waiting, refer to Task 25, *Message Center*.

- ◆ You might want to consider using one or two standard key layouts for all digital telephones, or at least all M3904 telephones. This can save significant amounts of memory.



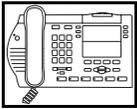
- ◆ If users are allowed to have the Handsfree or Group Listening functionalities, set some guidelines as to who can use that kind of feature and under what circumstances.

For example, you might make a policy that allows people with enclosed offices to use Group Listening, provided their office door is closed. Therefore, people around them are not disturbed during Group Listening conversations.

### Training tips



- ◆ If you have a standard key layout on all M3904 telephones, this is an advantage since users can go to any telephone and feel comfortable using it. If all telephones are the same, the users can also explain features to each other.
- ◆ Even though users do not need to remember feature access codes, they might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps you both get the most out of the system and in turn the system provides the expected benefits.
- ◆ Make certain that the users know where to get more information about how to use their telephones and features.



## New M3904 telephone

### What to have ready

Make the following preparations before you do the basic programming of a new M3904 telephone.

**Table 119**  
**Checklist**

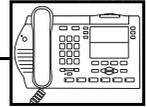
Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s). Decide whether each DN is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
✓		Determine if any of the accessories, such as the data option, are required.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.
	✓	Arrange for the necessary power equipment to be ordered and installed.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.

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## New M3904 telephone

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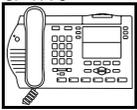
Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

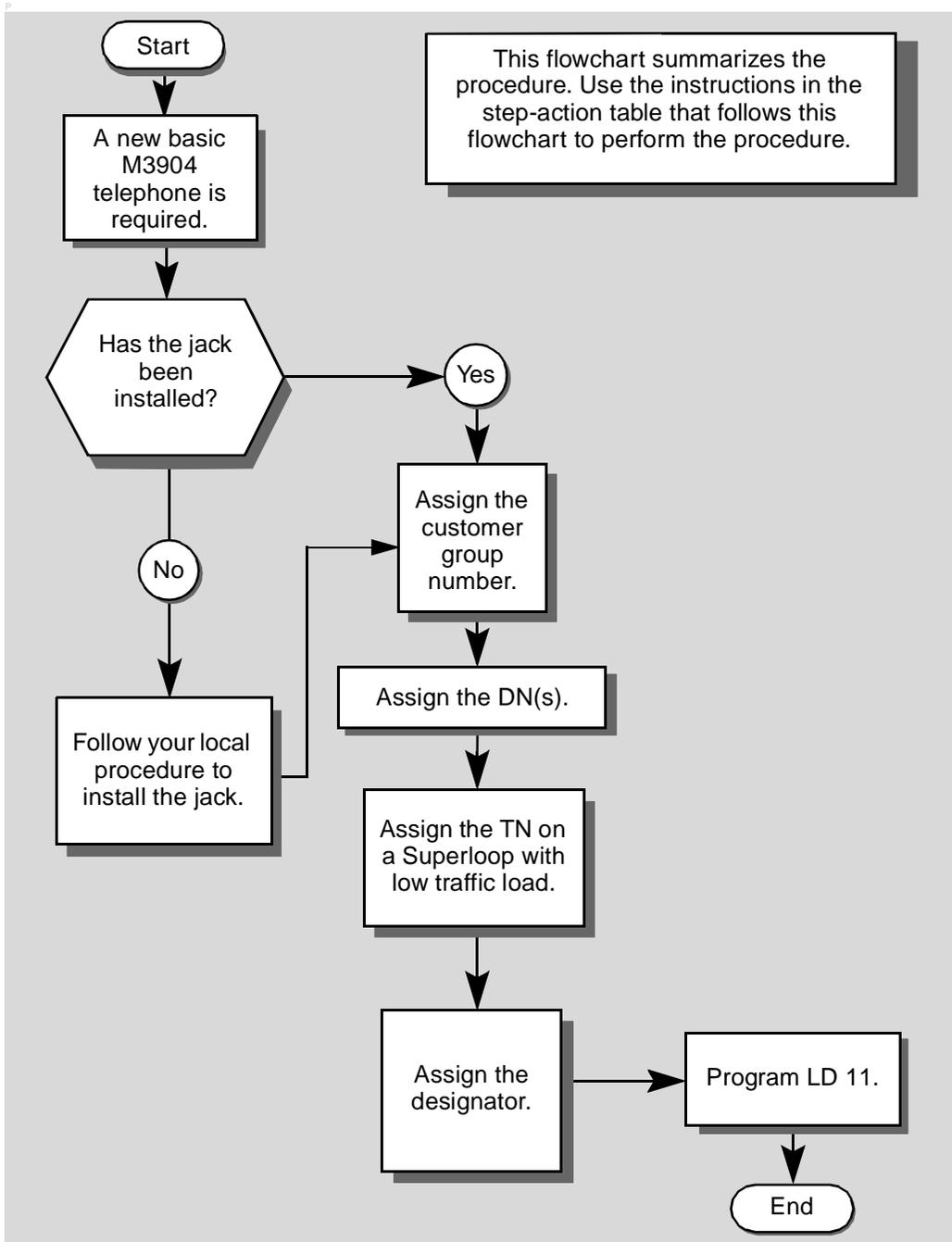
### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

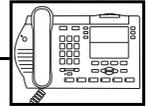
A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M3904 telephone.



## New M3904 telephone



## New M3904 telephone



The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M3904 telephone only.

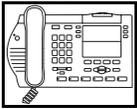


SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	.....	.....
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to the print programs	Ask your system maintainer what your customer group number is, then do step 10.
	you know your customer group number	step 10
<b>— continued —</b>		

## 742 Making a telephone work

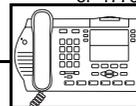
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## New M3904 telephone

STEP	ACTION						
4	<p><b>Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>you know the DN and not the TN of the other telephone</td> <td>step 5</td> </tr> <tr> <td>you know the TN of the other telephone</td> <td>step 6</td> </tr> </tbody> </table>	If	Do	you know the DN and not the TN of the other telephone	step 5	you know the TN of the other telephone	step 6
If	Do						
you know the DN and not the TN of the other telephone	step 5						
you know the TN of the other telephone	step 6						
5	<p><b>Print the DN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 22 or</p> <p>&gt; LD 20 or (Release 17 or later)</p> <p>&gt; LD 10 or LD 11 or LD 32 (Release 19 or later)</p> <p><b>REQ</b> PRT Request a printout</p> <p><b>TYPE</b> DNB DN Block</p> <p><b>CUST</b> &lt;cr&gt; All Customer groups</p> <p><b>DN</b> X..X Input the DN of the other telephone</p> <p>Carriage return until you see either of the following messages:</p> <p><b>U.data</b>      <b>P.data</b>      small systems</p> <p>or</p> <p><b>MEM AVAIL: (U/P) USED:TOT:</b>      large systems</p> <p>You get a printout of the TN of the other telephone.</p> <p><b>Note:</b> If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.</p> <p style="text-align: center;">— continued —</p>						

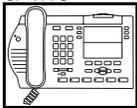
## New M3904 telephone



STEP	ACTION										
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>          <b>PRT</b>                  Request a Printout</p> <p><b>TYPE</b>        <b>TNB</b>                      TN Block</p> <p><b>TN</b>            <b>L S C U</b>                  Input the Loop Shelf Card and Unit number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>										
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>										
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>										
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>										
<b>10</b>	<p><b>Find out what DNs are available.</b></p> <table border="0"> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>you know what DN you want to assign</td> <td>step 13</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is Release 19 or later</td> <td>step 11</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is pre-Release 19</td> <td>Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.</td> </tr> </tbody> </table>	If	Do	.....	.....	you know what DN you want to assign	step 13	you do not know what DN you want to assign and your system software is Release 19 or later	step 11	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.
If	Do										
.....	.....										
you know what DN you want to assign	step 13										
you do not know what DN you want to assign and your system software is Release 19 or later	step 11										
you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.										
<b>— continued —</b>											

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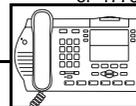
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## New M3904 telephone

STEP	ACTION	
<b>11</b>	<b>Print unused DNs in your customer group.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20	
	<b>REQ</b>	PRT            Print
	<b>TYPE</b>	LUDN          List unused DNs
	<b>CUST</b>	0 – 99        Input customer group number
	You get a printout of the unused DNs in your customer group.	
<b>12</b>	<b>Choose available DNs which fit your Numbering Plan and the needs of the user.</b>	
<b>13</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	you have access to the print overlay programs	step 14
	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.
<b>14</b>	<b>Print out the available TNs on your system.</b>	
	Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	> LD 20 or	
	> LD 10 or LD 11 or LD 20 or LD 32    (Release 19 or later)	
	<b>REQ</b>	LUU            List all unused units
		LUVU          List unused voice units (Release 19 or later)
	<b>TYPE</b>	3904          M3904 telephone. If there are no M3904 telephones installed yet, choose a type of digital telephone that has been installed.
	You get a printout of the available digital telephone TNs.	
	— continued —	

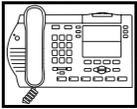
## New M3904 telephone



STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<code>&gt; LD 11</code>	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 3904	M3904 telephone.
	<b>TN</b> L S C U	Input the TN (Loop Shelf Card Unit number)
	<b>CDEN</b> <cr>	Carriage return - use the default
	<b>DES</b> A . . A	Designator maximum six characters
	<b>CUST</b> 0-99	customer group number
	Carriage return until you see the KEY prompt.	
	<b>— continued —</b>	

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## New M3904 telephone

**STEP ACTION****19 continued ...**

Program the DNs the user needs on keys 0-11 in one of the following ways:

**KEY** XX SCR X . . X

**KEY** XX SCN X . . X

**KEY** XX MCR X . . X

**KEY** XX MCN X . . X

XX represents the key number (0–11). It is recommended that you assign DNs to keys 0–5 only.

Key 0 must be programmed with a DN

SCR — single call ringing DN

SCN — single call non-ringing DN

MCR — multiple call ringing DN

MCN — multiple call non-ringing DN

X..X represents the actual digits in the DN; type the actual digits

The DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP

**20 Program the features on the soft-labelled keys.**

**KEY** XX aaayyy zzz Refer to the table on page 730 for the key assignments. Refer to *Adding and changing features* for more information about each feature.

Carriage return until you see either of the following messages:

**U.data P.data** small systems

or

**MEM AVAIL: (U/P) USED:TOT:** large systems

— continued —

**New M3904 telephone****STEP ACTION****21 Check that the telephone works.**

Try to make a call. Try to receive a call.

**If****Do**

.....

telephone works

step 24

telephone does not work

step 1

**22 Arrange for a data dump to be performed.****If****Do**

.....

you do not have access  
to LD 43

Contact your system supplier.

you have access to LD 43

step 25

**23 Perform a data dump to permanently store the programming you have just completed.****CAUTION**

Check your maintenance agreement  
before working in LD 43.

Refer to the *Basic programming instructions* module of this book or refer to the *X11 input/output guide* for more information on LD 43.

> LD 43

. EDD <cr>

— continued —

## New M3904 telephone

STEP	ACTION								
24	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b></p> <p>or</p> <p><b>DATA DUMP COMPLETE</b></p> <table border="0"> <tr> <td><b>If</b></td> <td><b>Do</b></td> </tr> <tr> <td colspan="2">.....</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 27</td> </tr> </table>	<b>If</b>	<b>Do</b>	.....		data dump fails	Contact your system supplier.	data dump succeeds	step 27
<b>If</b>	<b>Do</b>								
.....									
data dump fails	Contact your system supplier.								
data dump succeeds	step 27								
25	<p><b>Terminate this overlay program.</b></p> <p>. * * * *</p>								
26	<p><b>Terminate this programming session.</b></p> <p>Log off.</p> <p>&gt; LOGO</p>								
27	<p><b>You have now completed the minimum programming required to implement a basic new M3904 telephone.</b></p>								
									

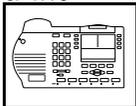
## New M3905 telephone

### Purpose

The M3905 telephone is designed specifically for a Call Center environment. The features related to Call Centers are beyond the scope of this book. Ask your system supplier for more information.



30408 JWP

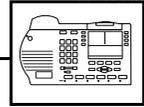


## New M3905 telephone

If the user needs a new telephone, install an M3905 telephone if:

- ◆ the user needs up to eight Directory Numbers (DNs)
- ◆ the user wants a telephone designed for headset use but one where a handset can be used, if required
- ◆ the user requires easy-to-use keys for Call Center features (such as Supervisor, Emergency, Not Ready, Make Busy, and In-Calls)
- ◆ the user has a PC or the user wants to use first party CTI applications. You want to take advantage of the digital telephone's ability to provide simultaneous voice and data paths over a single pair of wires. You want the user to be able to control the telephone from the PC using applications such as Call Manager.
- ◆ the user wants handsfree conversation capability with the ability to mute the speech path
- ◆ the user wants up to 32 keys for easy access to features/lines or commonly dialed telephone numbers - the Key-based Accessory (KBA) allows you to configure up to 54 keys; a second KBA allows up to 76 keys
- ◆ the user wants to adjust the volume for handset listen, headset listen, headset talk, headset side tone, handsfree volume, ringing tone, and buzz tone
- ◆ the user wants a highly visible indication on the telephone when there are messages waiting
- ◆ the user wants a display
- ◆ the user wants a telephone that logs calls
- ◆ the user needs the choice of different languages on the display when using features
- ◆ the user wants to connect an analogue device such as a FAX machine or modem to the telephone
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing

## New M3905 telephone



- ◆ the user wants to be able to download a new version of firmware from the Meridian 1 switch to a single M3900 series of telephone, or a range of M3900 series of telephone
- ◆ the user wants to be able to choose one of six languages available on their M3905 telephone
- ◆ the user requires an accessory that provides a single strip of eight additional keys

### Basic configuration



This part tells you how the telephone must be programmed to make basic operation possible. It addresses the *minimum* amount of programming required to allow the user to make and receive calls.

For information on the additional features and capabilities you can allow or deny the user, refer to the section called *Adding and changing features*.

### Software

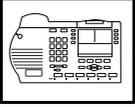
**Table 120**  
Software requirements

Release required	Software package(s) required
16 and later	88 (DSET) Digital Sets 170 (ARIE) Aries Digital Sets

### Hardware

The installation of cabling and telephone and system hardware is not explained in detail in this book. There is information on these topics in the *Installation and Maintenance Guide* and the *Planning and Engineering Guide*. These books are shipped with every system.

When you are installing a new telephone, ask your system maintainer to do the physical installation work.



## New M3905 telephone

### Accessories

The M3905 telephone supports the following accessories:

- ◆ MCA data option to provide integrated voice and data at a baud rate of 28.8 Kbps (baud rate option 9, when you program the telephone in LD 11)
- ◆ External Alerter Interface/Recorder Interface to connect a remote ringer or light to indicate when the telephone rings and when it is off-hook
- ◆ Direct Connect Headset which allows the headset to operate while the handset is on hook
- ◆ Key-based Add-on Module allows you to configure ranges of keys as follows: up to 32 keys with no KBA activated, 54 keys with one KBA activated, and 76 keys with two KBAs activated.
- ◆ Analogue Terminal Adapter (ATA) to connect an analogue device such as a FAX machine or modem to the telephone

There is an Accessory Connection Module (ACM) to be installed inside the terminal stand.

The M3905 telephone can sit on a desk or be mounted on a wall.

### Key-based Add-on Module

The Key-based Add-on Module allows you to program up to 76 feature and line keys by programming two modules when you program the telephone. When you program one module in the programming of the telephone, you can program up to 54 keys. The functions for the keys are accessed using the soft-labelled feature names on the display.

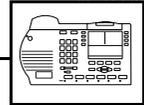
### Power

Talk to your system supplier about the power requirements for accessories you are adding to the telephone.

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## New M3905 telephone

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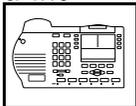
### Language Display Options

The information on your display screen can be displayed in one of fifteen languages.

You can choose from the following language options:

- ◆ English
- ◆ French (neutral)
- ◆ Spanish (neutral)
- ◆ German
- ◆ Dutch
- ◆ Portuguese (neutral)
- ◆ Italian
- ◆ Danish
- ◆ Norwegian
- ◆ Swedish
- ◆ Finnish
- ◆ Polish
- ◆ Czech
- ◆ Hungarian
- ◆ Japanese

**Note:** The term neutral means that the language is presented in a way that is understood globally.



## New M3905 telephone

### Default values

The overlay program you use for this task presents a series of programming mnemonics called prompts. The system presents these to the programmer in a specific sequence. These prompts require a response from the programmer in order to make the telephone function. A carriage return is considered a response, as it programs the default value.

The prompts discussed in this module are the ones to which you must respond to make a basic M3905 telephone function. The other prompts in the overlay program, not shown in this module, pertain to additional functions and features that you can allow or deny for each telephone.

Investigate the default responses to the other prompts because the default programming rarely suits the overall needs of any user, the user's manager or the telephone system administrator.

For example, users may need access to certain basic features, such as Call Transfer and Conference. These features are denied by default. Also, the telephone system administrator might want to implement corporate-wide policies for telephones which are not met through the default choices.

Because the M3905 is a digital telephone, it is programmed in overlay program (LD) 11.

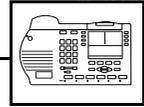
*Appendix 2* at the end of this guide lists the prompts, responses (including the defaults) and the Task modules by number for prompts covered by this book.

The *X11 input/output guide (Administration)* which was shipped with your system provides detailed information on all prompts and responses in all of the administration overlay programs.

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## New M3905 telephone

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### Customer group

Most systems provide service to one group of users who belong to one company, organization or customer group. The telephones are assigned a customer group number for programming purposes.

If there is more than one customer group on your system, you must have a good understanding of what equipment belongs to each group.

Overlay program (LD) 15, the Customer Data Block, defines many customer-wide parameters. It is beyond the scope of this book to discuss this entire overlay program in detail. However, this book does describe programming which must be done in LD 15, if it is relevant to a telephone-related programming task.

The maintenance agreement you have with your system supplier probably specifies what programming you may do and what they must do. Check agreements of that nature before programming the Customer Data Block yourself. It is assumed, in this book, that your system supplier carries out the programming in LD 15.

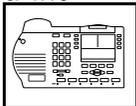
When telephones are installed, they must be assigned to the correct customer group to operate properly. The step-action table at the end of this module tells you how to find out your customer group number, or, you can ask your system supplier what it is. On a single-customer site the customer group number most often used is 0. You must input a customer group number when you program telephones.

### Directory Number (DN)

Directory Numbers (DNs) are the numbers assigned to the individual telephones. These are the numbers users dial to call each other.

DNs can be one to seven digits in length when the DN Expansion (DNXP) software package 150 is equipped on the system. Without DN Expansion, the DNs can be one to four digits.

This telephone can be configured to have one or more than one DN. Each of the keys numbered 1 – 7 on the telephone can have a DN assigned.



## New M3905 telephone

### Ringling or Non-ringling DNs

On digital telephones, a DN can be programmed to be a ringling or a non-ringling appearance.

- ◆ When a call comes into a ringling appearance, the telephone rings, if it is idle. The call status indicator flashes. It is at the top of the telephone faceplate.
- ◆ When a call comes into a non-ringling appearance of a DN, the call status indicator flashes but the telephone does not ring.

If a DN appears on more than one digital telephone, you can program it to ring or not ring at each telephone, as required.

If an M3905 telephone has several DN keys programmed, you can program each DN key to ring or not to ring according to the needs of the user.

### Single Appearance or Multiple Appearance DNs

You must understand the following terms in order to program a DN on a key.

The term *appearance* means that a DN has been assigned to a telephone or a key on a telephone.

**Single Appearance DNs** appear on only one telephone. A Single Appearance DN can only be configured to handle one call at a time. This is referred to as a *Single Call DN*.

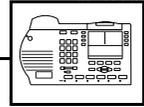
If a DN rings when a call comes in, it is called a *Single Call Ringling DN*. If it does not ring but flashes only, it is called a *Single Call Non-ringling DN*.

### Single Call DN

The DN can handle only one call at a time.

This means that if there are other appearances of that DN on digital telephones or SL 1-type telephones, the indicator is lit steadily at all telephones, when one person is using the DN.

## New M3905 telephone



When you want to assign a *Single Call Ringing DN* to a key on an M3905 telephone, you assign the following programming code to the key:

SCR X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCR code and the digits in the DN.

When you want to assign a *Single Call Non-ringing DN* to a key on an M3905 telephone, you assign the following programming code to the key:

SCN X . . X where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the SCN code and the digits in the DN.



If you share a Single Call DN with an analog dial or Digitone telephone, there is no privacy. People can break in on calls in progress on that DN.

**Multiple Appearance DNs** appear on more than one telephone, or more than one key on a telephone such as a digital telephone. There is information on an important Multiple Appearance DN feature in Task 40, *Multiple Appearance DN Redirection Prime*.

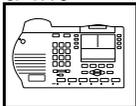
There are two configurations to choose from when dealing with Multiple Appearance DNs, Single Call and Multiple Call.

### Multiple Call DN

The DN can handle more than one call at a time.

This means that when one person is using the DN, the indicator is not lit at other appearances of that DN on digital telephones or SL-1-type telephones. These other appearances are available to receive additional calls, or can be used to make calls.

A Multiple Call DN is not treated as busy until there are calls on all of the programmed appearances of the DN. There can be a maximum of 30 appearances of the same DN.



## New M3905 telephone

Your system might have memory constraints which prevent you from reaching those maximums. Consult with your system supplier before you implement Multiple Appearance DNs.

If a DN rings when a call comes in, it is called a *Multiple Call Ringing DN*. If it does not ring but flashes only, it is called a *Multiple Call Non-ringing DN*.

When you want to assign a *Multiple Call Ringing DN* to a key on an M3905 telephone, you assign the following programming code to the key:

MCR X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCR code and the digits in the DN.

When you want to assign a *Multiple Call Non-ringing DN* to a key on an M3905 telephone, you assign the following programming code to the key:

MCN X . . X    where X..X represents a DN which can range from 1–7 digits in length. There must be a space between the MCN code and the digits in the DN.

### Consistent configuration



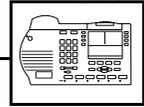
*Whether you choose Single Call or Multiple Call, all appearances of one DN must have the same configuration. You cannot have one appearance of a DN programmed as Single Call and another appearance of the same DN as Multiple Call. If you attempt to do that, you will see a Service Change Error message on your programming terminal.*

The step-action table at the end of this module explains how to assign a DN on a new M3905 telephone.

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## New M3905 telephone

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### Prime DN, Key 0

Key 0 is configured with an Automatic Call Distribution (ACD) DN, when used in a Call Center environment. It is called the In-calls key. A discussion of Call Centers is beyond the scope of this book. You can find out more about them in the NTP called *Automatic Call Distribution*.

### Numbering Plan

Many systems have a carefully planned scheme for the use of numbers such as Directory Numbers (DNs), trunk-group access codes, and feature-access codes. This is called the Numbering Plan. It is used to record the numbers which are currently in use on a site and might also include numbers that are reserved for some future use. If, for example, you have reserved Direct-Inward-Dial (DID) telephone numbers with your telephone company for future use, it is important to record that in the Numbering Plan.

Careful planning is required in order to:

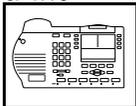
- ◆ prevent conflicts between numbers used for different purposes
- ◆ organize the use of numbers to help simplify the administration of the system
- ◆ ensure there will be enough available numbers to accommodate the foreseeable growth of the system

Keep a summary of the Numbering Plan on site. For more information on the Numbering Plan refer to the *Terms and abbreviations* module.

### DN-Block printout

If you need to know exactly what numbers are currently in use on your system, you can get a printout. You can use LD 22 for this on any system or, if you have Release 19 or later running on your system, you can use any one of LDs 10, 11, 20, 22, or 32. To get a printout of all the assigned DN's, you can request a DN-Block printout. This printout also includes trunk-group access codes which are currently in use. The step-action table at the end of this module shows you how to do this.





## New M3905 telephone

### Terminal Number (TN)

Use programming to identify the physical location of every telephone in the hardware of the system. The physical location or address is composed of a Loop number, Shelf number, Card number, and Unit number. These numbers make up the Terminal Number (TN) of the telephone.

Because the M3905 is a digital telephone, it is programmed in overlay program (LD) 11. Even though some models of telephone have more than one DN, the telephone is only assigned one TN. The DNs assigned are configured in software only.

If you are installing a new telephone, ask the person installing the jack and connecting it to the system what Terminal Number (TN) that person plans to assign to the new telephone.

Sometimes TNs are pre-configured. Follow the print procedure in the step-action table at the end of this module if you want to find out for yourself what Terminal Numbers are available.

Data terminals also require TNs, and if the user needs a data terminal, a separate Terminal Number must be assigned before you can program it. Talk to your system supplier about this.

### Soft-labelled programmable feature keys

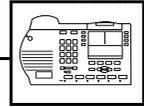
There are four keys under the display that you can program with features the user needs. The user presses the *More* key to access more features. The name of the feature appears above the key, once you have programmed it.

The Class of Service of this telephone defaults to Automatic Digit Display allowed.

### Options/Program

One of the soft-labelled programmable feature keys (key 7) is pre-assigned as Options/Program.

## New M3905 telephone



### Call log

Key 6 is used for Call Log/Redial List, if it is not configured as a line or other feature.

## Recommended key assignments

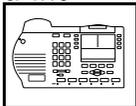
Table 121

Key number	Feature
16	MWK – Message Waiting
17	TRN – Call Transfer
18	AO3 – Three-party Conference AO6 – Six-party Conference
19	CFW – Call Forward All Calls
20	RGA – Ring Again
21	PRK – Call Park
22	RNP – Ringing Number Pickup
23	SCU – Speed Call User SCC – Speed Call Controller SSU – System Speed Call User SSC – System Speed Call Controller
24	PRS – Privacy Release
25	CHG – Charge Account
26	CPN – Calling Party Number

### Traffic

When you install telephones (or trunks and digitone receivers), you should consider the extra traffic load.

There will be additional traffic because of the calls that will be made and received by the telephone user. You should consider the impact of this extra traffic load on the Superloop, to which you are adding this telephone. If there is an associated data terminal, it must be connected to the same card as the telephone. The expected traffic going to and coming from that terminal must also be calculated.



## New M3905 telephone

Superloops perform best when they share equally in the total traffic load carried by the system.

Blockage within the system will be negligible or non-existent when the traffic load for each Superloop is kept within the recommended guidelines. If all of your existing Superloops are at their recommended capacity, consider adding more to your system, to allow for extra terminals in the future.

Refer to the *You should know this* module and the *Traffic* module for more information on traffic concerns. Use the information on how to estimate the traffic on your system if there is no traffic study data available. This information is in the section on TFS001, in the *Traffic* module.

The step-action table contains information on how to relate traffic concerns to the selection of the TN for the new telephone.

### Card density

Telephones are connected to interface cards in the system called line cards.

Meridian 1 systems using Superloops use *intelligent* line cards. They are called intelligent because they possess microprocessors. These are octal-density.

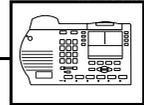
Octal density digital line cards have 32 TNs. Sixteen of the TNs on the card are for digital telephones and the other sixteen are for the associated data terminals (if any). Therefore, octal density digital line cards connect to a maximum of sixteen digital telephones.

When you program digital telephones, you do not need to tell the system what density the digital telephones line card is, since it defaults to the density allowed for the Superloop on which the telephone resides.

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## New M3905 telephone

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### Designator (DES)

When you want printouts of the data associated with telephones, you can request DN-Block and TN-Block printouts. Using only those printouts it might be difficult to identify each telephone specifically, especially if several telephones share the same DN. For example, you might find it easier if a department name prints out along with the other data.

With Office Data Administration System (ODAS) software equipped on a system, you can program each telephone in the database with a designator (DES) code.

The DES code can be a maximum of six alphanumeric characters.

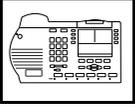
You can use the designator to identify telephones in many different ways for your own purposes. Here are some suggestions:

- ◆ location in the building, for instance the floor number or room number
- ◆ cable pair
- ◆ telephone user's department, to be used for billing or inventory purposes
- ◆ user's name, although the name does not display when the user makes calls

Once the designators have been assigned, you can request printouts of telephones according to the DES codes you have assigned.

For example:

- ◆ you might want to know what telephones are in a specific department so you can bill the department manager. You would request a printout of the telephones that share the same department identifier you assigned as the DES code for that department.



## New M3905 telephone

- ◆ you might have a group of telephones that share the same DN. If you want to move, change or remove one of them, you can print the telephone with the DES code that is specific to that telephone and find what TN is assigned to it.
- ◆ you can print the data for all the telephones that share a DN and use the DES codes to help you identify quickly which telephone is to be moved, changed, or removed.

Check to see if you have a policy on assigning DES codes to telephones. If there is no policy in place, decide if DES codes can be of use to you. If not, you can enter any code you like when the prompt appears. On most systems you *must* enter a code in order for the next prompt to appear.

You can use the step-action table at the end of this module for help in assigning a DES code to a new telephone.

## Improving performance



The parts that follow make you aware of issues that could affect implementation. You should resolve these issues before you begin programming. Use the checklist under *What to have ready* to confirm that you have what you need.

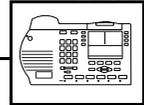
### Ringing options

#### Distinctive Ringing Groups

There are four different ringing options for the digital telephones. The choices are: DRG1, DRG2, DRG3, or DRG4. (DRG stands for Distinctive Ringing Group.) When you program the Class of Service of each telephone, you choose one of the four options to set the ringing tone and ringing cadence. The user can change the ringing group using the Options key.

You can make each telephone in one department ring a different way. When a telephone rings and a user has stepped away from the area, the way the telephone rings helps the user identify which telephone is ringing.

## New M3905 telephone



Distinctive Ringing can be very useful with the Call Pickup feature. When telephones are ringing in the Pickup group, the users can tell what telephone is ringing and answer calls appropriately.

### Network and Executive Distinctive Ringing

When you assign Executive Distinctive Ringing to a telephone, terminating telephones ring distinctively when they receive calls from the “Executive” telephone. Network Distinctive Ringing extends this functionality across an ISDN network.

**Table 122**  
**Software requirements**

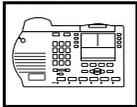
Release required	Software package(s) required
16.67G	74 – Distinctive Ringing Package (DRNG) 125 – Flexible Tones and Cadences (FTC) 145 – Integrated Services Digital Network (ISDN) 161 – Integrated Services Digital Network Supplementary Features (ISDNS) 185 – Executive Distinctive Ringing (EDRG)

### Directory Number Delayed Ringing (DNDR)

**Table 123**  
**Software requirements**

Release required	Software package(s) required
21	none

If you want a non-ringing appearance of a Single Call DN or Multiple Call DN to begin to ring if it has not been answered after a specified amount of time, you can activate a DNDR timer.



## New M3905 telephone

You can program a different DNDR timer for each telephone. The DNDR timer applies to any unanswered non-ringing DN at that user's telephone.

When you have Multiple Appearance non-ringing DNs, there are many different ways you can choose to implement it. Two examples follow:

- ◆ if a non-ringing DN appears at three telephones and you want one of those users to know when the DN is not answered, program that user's telephone to begin to ring after a programmable number of seconds. Leave the DNDR timer deactivated at the other two telephones.
- ◆ if a non-ringing DN appears at three telephones and you want one of those telephones to begin to ring after 12 seconds and the second one to ring after 18 seconds, you can program the telephones with different DNDR timers. The third telephone can have a third setting or the default setting which is 0 (off).

### Data option

When the Meridian Communications Adapter (MCA) is installed, you can set up a computer on the user's desk to use the same pair of wires that the telephone uses to connect to the system.

The baud rate of 28.8 Kbps has been introduced for the M3900 series telephones. You select the baud rate when you program the telephone in overlay (LD) 11.

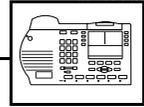
### Analogue Terminal Adapter (ATA)

This device allows you to connect an analogue device such as a FAX machine or modem to the telephone. You must allow this capability in the Class of Service of the telephone.

### Brandling

There is a removable insert that you can replace with an insert showing the system supplier's logo. The M3905 supports electronic brandling.

## New M3905 telephone



### Control tips



- ◆ If the user unplugs an M3905 telephone messages print out on the maintenance printer, identifying the TN with the missing telephone

### Administration tips



- ◆ The M3905 telephone has a red indicator that lights steadily when there are messages waiting. The telephone has a Message Waiting key so the user has an easy way of dialing the message center or voice mail when there are messages waiting.

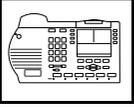
For more information on Message Waiting, refer to Task 25, *Message Center*.

- ◆ You might want to consider using one or two standard key layouts for all digital telephones, or at least all M3905 telephones. This can save significant amounts of memory.



- ◆ If users are allowed to have the Handsfree or Group Listening functionalities, set some guidelines as to who can use that kind of feature and under what circumstances.

For example, you might make a policy that allows people with enclosed offices to use Group Listening, provided their office door is closed. Therefore, people around them are not disturbed during Group Listening conversations.



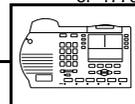
## New M3905 telephone

### Training tips



- ◆ If you have a standard key layout on all M3905 telephones, this is an advantage since users can go to any telephone and feel comfortable using it. If all telephones are the same, the users can also explain features to each other.
- ◆ Even though users do not need to remember feature access codes, they might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This helps you both get the most out of the system and in turn the system provides the expected benefits.
- ◆ Make certain that the users know where to get more information about how to use their telephones and features.

## New M3905 telephone



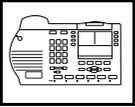
### What to have ready

Make the following preparations before you do the basic programming of a new M3905 telephone.

**Table 124**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s). Decide whether each DN is a Single Call or Multiple Call, ringing or non-ringing DN.
✓		Determine the TN to assign to this telephone. If you do not assign TNs, ask your system supplier.
✓		Decide what alphanumeric characters (up to six) you want to use as a designator code.
✓		Determine if any of the accessories, such as the data option, are required.
	✓	Find a recent traffic study showing traffic load on the loops and/or Superloops of your system. If no study data is available, estimate the traffic.
	✓	Arrange for the necessary power equipment to be ordered and installed.

There are sample overlay worksheets in *Appendix 4* at the end of this book. If you are a novice programmer, it is a good idea to prepare an overlay worksheet before you start your programming session.



## New M3905 telephone

Follow the procedures in this Task module for the basic programming instructions to get the telephone to function. At the same time, or at a later date, you can do the additional programming for the other telephone features and services you want to apply to the telephone. Use the Task modules in the *Adding and changing features* section for further information on many of these additional features and services.

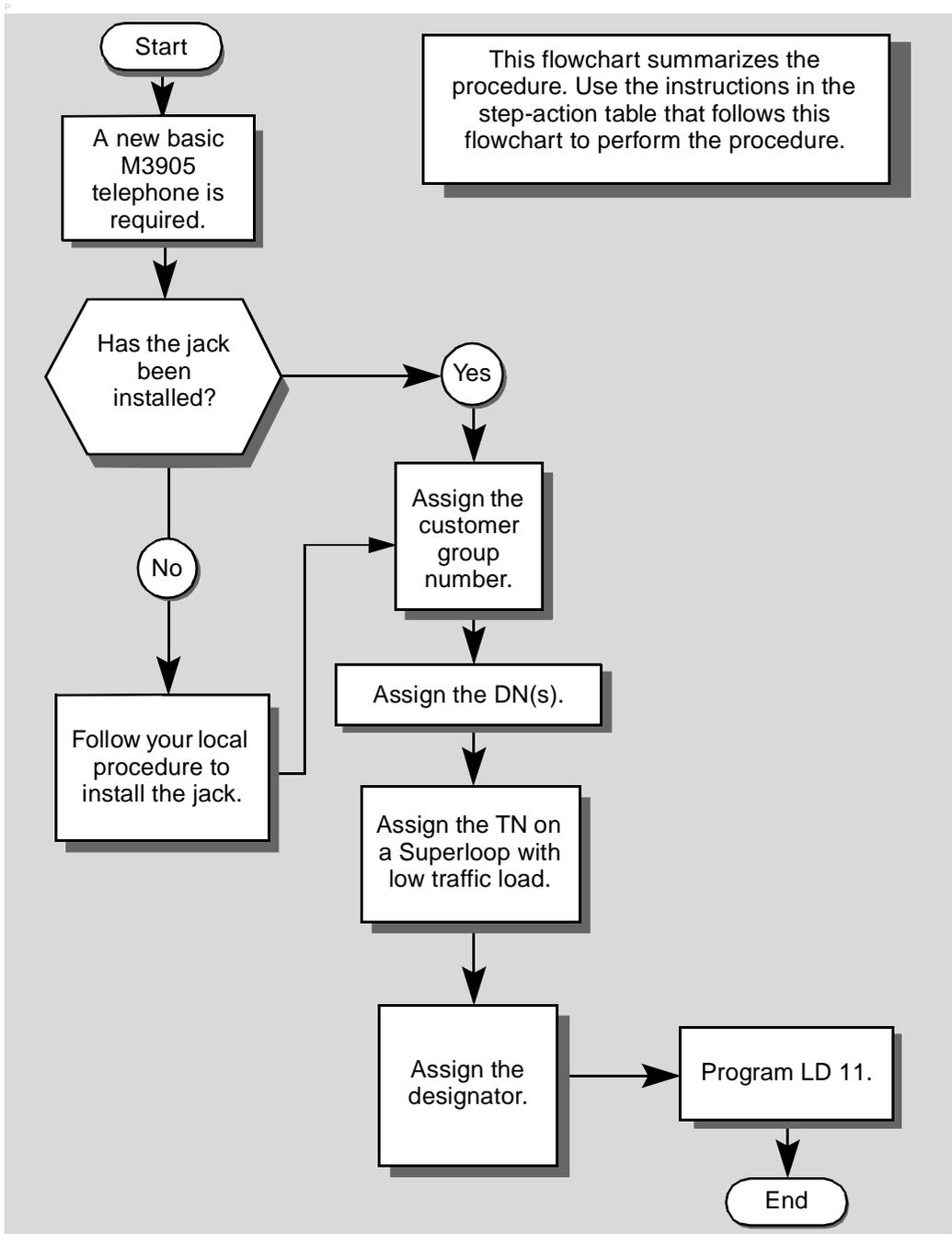
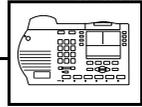
*Appendix 2* (for LD 11) at the back of the book lists all the prompts and responses covered in this book. Beside each one there is a reference to a Task module where you can get further information.

### What's next?

A flowchart follows which summarizes the implementation decisions and procedures.

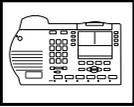
A step-action table follows the flowchart. Use it to do the programming steps necessary for basic programming of an M3905 telephone.

## New M3905 telephone



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## New M3905 telephone

The preceding material in this module contains essential information. You should be aware of this information before you proceed.

This step-action table covers the prompts related to the implementation of a basic M3905 telephone only.



SCH codes can appear when you are programming. Refer to the *Basic programming instructions* module for more information.

STEP	ACTION	
<b>1</b>	<b>Arrange to have a new jack installed, if required.</b>	
	Talk to your system supplier to get this done.	
<b>2</b>	<b>Assign a customer group number to the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	the telephone is being added to an existing customer group	step 3
	the telephone is the first one in a new customer group	step 8
<b>3</b>	<b>Find out your customer group number.</b>	
	<b>If</b>	<b>Do</b>
	you do not know your customer group number and you have access to the print overlay programs	step 4
	you do not know your customer group number and you do not have access to print programs	Ask your system maintainer what your customer group number is, then go to step 10.
	you know your customer group number	step 10
— continued —		

## New M3905 telephone

**STEP ACTION****4 Print the customer group number of another telephone used by someone in the same organization as the user of the new telephone.****If****Do**

you know the DN and not the TN of the other telephone

step 5

you know the TN of the other telephone

step 6

**5 Print the DN Block of the other telephone.**

Log in. For information on proper login procedures, refer to *Basic programming instructions* in this book.

> LD 22 or

> LD 20 or (Release 17 or later)

> LD 10 or LD 11 or LD 32 (Release 19 or later)

**REQ** PRT Request a printout

**TYPE** DNB DN Block

**CUST** <cr> All Customer groups

**DN** X . . X Input the DN of the other telephone

Carriage return until you see either of the following messages:

**U.data**            **P.data**    small systems

or

**MEM AVAIL: (U/P) USED:TOT:**    large systems

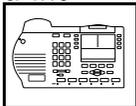
You get a printout of the TN of the other telephone.

**Note:** If you have two or more telephones with the same DN, in different customer groups, get help from your system supplier to identify the TN with the correct customer group number.

— continued —

## 774 Making a telephone work

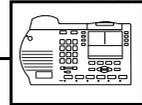
of 1776



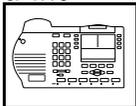
## New M3905 telephone

STEP	ACTION								
<b>6</b>	<p><b>Print the TN Block of the other telephone.</b></p> <p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <p><b>REQ</b>        PRT        Request a Printout</p> <p><b>TYPE</b>       TNB        TN Block</p> <p><b>TN</b>        L S C U    Input the Loop Shelf Card and Unit number of the other telephone</p> <p>You get a printout of the customer group number of the other telephone.</p>								
<b>7</b>	<p><b>Assign the same customer group number to the new telephone.</b></p> <p>Go to step 10.</p>								
<b>8</b>	<p><b>Arrange with your system supplier to have the new customer group data block programmed.</b></p>								
<b>9</b>	<p><b>Assign the new customer group number to the new telephone.</b></p>								
<b>10</b>	<p><b>Find out what DNs are available.</b></p> <table border="0"> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>you know what DN you want to assign</td> <td>step 13</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is Release 19 or later</td> <td>step 11</td> </tr> <tr> <td>you do not know what DN you want to assign and your system software is pre-Release 19</td> <td>Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.</td> </tr> </tbody> </table>	If	Do	you know what DN you want to assign	step 13	you do not know what DN you want to assign and your system software is Release 19 or later	step 11	you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.
If	Do								
you know what DN you want to assign	step 13								
you do not know what DN you want to assign and your system software is Release 19 or later	step 11								
you do not know what DN you want to assign and your system software is pre-Release 19	Print a DN Block. Refer to step 5 for information on printing a DN Block. Carriage return at the DN prompt to printout all DNs. Then go to step 12.								
— continued —									

## New M3905 telephone



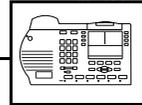
STEP	ACTION									
<b>11</b>	<b>Print unused DNs in your customer group.</b>									
	<p>Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20</p> <table> <tr> <td><b>REQ</b></td> <td>PRT</td> <td>Print</td> </tr> <tr> <td><b>TYPE</b></td> <td>LUDN</td> <td>List unused DNs</td> </tr> <tr> <td><b>CUST</b></td> <td>0-99</td> <td>Input customer group number</td> </tr> </table> <p>You get a printout of the unused DNs in your customer group.</p>	<b>REQ</b>	PRT	Print	<b>TYPE</b>	LUDN	List unused DNs	<b>CUST</b>	0-99	Input customer group number
<b>REQ</b>	PRT	Print								
<b>TYPE</b>	LUDN	List unused DNs								
<b>CUST</b>	0-99	Input customer group number								
<b>12</b>	<b>Choose available DNs which fit your Numbering Plan and the needs of the user.</b>									
<b>13</b>	<b>Find out what Terminal Numbers are available for the new telephone.</b>									
	<table> <thead> <tr> <th>If</th> <th>Do</th> </tr> </thead> <tbody> <tr> <td>you have access to the print overlay programs</td> <td>step 14</td> </tr> <tr> <td>you do not have access to the print programs</td> <td>Ask your system supplier what TNs are available, then go to step 15.</td> </tr> </tbody> </table>	If	Do	you have access to the print overlay programs	step 14	you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.			
If	Do									
you have access to the print overlay programs	step 14									
you do not have access to the print programs	Ask your system supplier what TNs are available, then go to step 15.									
<b>14</b>	<b>Print out the available TNs on your system.</b>									
	<p>Log in. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.</p> <p>&gt; LD 20 or</p> <p>&gt; LD 10 or LD 11 or LD 20 or LD 32 (Release 19 or later)</p> <table> <tr> <td><b>REQ</b></td> <td>LJU</td> <td>List all unused units</td> </tr> <tr> <td></td> <td>LJVU</td> <td>List unused voice units (Release 19 or later)</td> </tr> <tr> <td><b>TYPE</b></td> <td>3905</td> <td>M3905 telephone. If there are no M3905 telephones installed yet, choose a type of digital telephone that has been installed.</td> </tr> </table> <p>You get a printout of the available digital telephone TNs.</p> <p style="text-align: center;">— continued —</p>	<b>REQ</b>	LJU	List all unused units		LJVU	List unused voice units (Release 19 or later)	<b>TYPE</b>	3905	M3905 telephone. If there are no M3905 telephones installed yet, choose a type of digital telephone that has been installed.
<b>REQ</b>	LJU	List all unused units								
	LJVU	List unused voice units (Release 19 or later)								
<b>TYPE</b>	3905	M3905 telephone. If there are no M3905 telephones installed yet, choose a type of digital telephone that has been installed.								



## New M3905 telephone

STEP	ACTION	
<b>15</b>	<b>Consider traffic when choosing a TN to use for the new telephone.</b>	
	<b>If</b>	<b>Do</b>
	there is recent traffic study data	Analyze the data for the Superloops with available TNs. For more information, refer to the <i>Traffic</i> module in this book.
	there is no recent traffic study data	Estimate traffic on the Superloops with available TNs — use the examples in the TFS001 section of the <i>Traffic</i> module for help.
<b>16</b>	<b>Choose the TN for the new telephone.</b>	
<b>17</b>	<b>Verify with your system maintainer that the new jack is cross-connected to the TN you chose.</b>	
<b>18</b>	<b>Assign a Designator.</b>	
	According to your local procedures, choose up to six alphanumeric characters to identify the telephone for your records.	
<b>19</b>	<b>Program the new telephone.</b>	
	Log in, if you do not already have an active programming session. For information on proper login procedures, refer to <i>Basic programming instructions</i> in this book.	
	<code>&gt; LD 11</code>	
	<b>REQ</b> NEW	New telephone
	<b>TYPE</b> 3905	M3905 telephone.
	<b>TN</b> L S C U	Input the TN (Loop Shelf Card Unit number)
	<b>CDEN</b> <cr>	Carriage return - use the default
	<b>DES</b> A . . A	Designator maximum six characters
	<b>CUST</b> 0-99	customer group number
	Carriage return until you see the KEY prompt.	
	— continued —	

## New M3905 telephone

**STEP ACTION****19 continued ...**

Program the DNs the user needs on keys 1 -7 in one of the following ways:

**KEY** XX SCR X. .X

**KEY** XX SCN X. .X

**KEY** XX MCR X. .X

**KEY** XX MCN X. .X

XX represents the key number (1 -7)

Key 0 must be programmed with an ACD DN. It is a Call Center in-calls key. Ask for help from your system supplier.

SCR — single call ringing DN

SCN — single call non-ringing DN

MCR — multiple call ringing DN

MCN — multiple call non-ringing DN

X..X represents the actual digits in the DN; type the actual digits

The DN can be 1–7 digits with DNXP software package or 1–4 digits without DNXP

**20 Program the features on the soft-labelled keys.**

**KEY** XX aaayyy zzz Refer to the table on page 761 for the key assignments. Refer to *Adding and changing features* for more information about each feature.

Carriage return until you see either of the following messages:

**U.data**    **P.data**    small systems

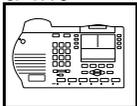
or

**MEM AVAIL:** (U/P) **USED:TOT:**    large systems

— continued —

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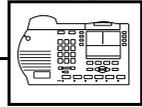
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## New M3905 telephone

STEP	ACTION								
21	<p><b>Check that the telephone works.</b></p> <p>Try to make a call. Try to receive a call.</p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>telephone works</td> <td>step 24</td> </tr> <tr> <td>telephone does not work</td> <td>step 1</td> </tr> </tbody> </table>	If	Do	.....	.....	telephone works	step 24	telephone does not work	step 1
If	Do								
.....	.....								
telephone works	step 24								
telephone does not work	step 1								
22	<p><b>Arrange for a data dump to be performed.</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;">If</th> <th style="text-align: left;">Do</th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>you do not have access to LD 43</td> <td>Contact your system supplier.</td> </tr> <tr> <td>you have access to LD 43</td> <td>step 25</td> </tr> </tbody> </table>	If	Do	.....	.....	you do not have access to LD 43	Contact your system supplier.	you have access to LD 43	step 25
If	Do								
.....	.....								
you do not have access to LD 43	Contact your system supplier.								
you have access to LD 43	step 25								
23	<p><b>Perform a data dump to permanently store the programming you have just completed.</b></p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;">  <p><b>CAUTION</b> Check your maintenance agreement before working in LD 43.</p> </div> <p>Refer to the <i>Basic programming instructions</i> module of this book or refer to the <i>X11 input/output guide</i> for more information on LD 43.</p> <pre>&gt; LD 43  . EDD &lt;cr&gt;</pre>								
— continued —									

## New M3905 telephone



STEP	ACTION								
24	<p><b>Verify that the data dump was successful.</b></p> <p>TTY response:</p> <p><b>NO GO BAD DATA</b></p> <p>or</p> <p><b>DATA DUMP COMPLETE</b></p> <table border="0"> <thead> <tr> <th style="text-align: left;"><b>If</b></th> <th style="text-align: left;"><b>Do</b></th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>data dump fails</td> <td>Contact your system supplier.</td> </tr> <tr> <td>data dump succeeds</td> <td>step 27</td> </tr> </tbody> </table>	<b>If</b>	<b>Do</b>	.....	.....	data dump fails	Contact your system supplier.	data dump succeeds	step 27
<b>If</b>	<b>Do</b>								
.....	.....								
data dump fails	Contact your system supplier.								
data dump succeeds	step 27								
25	<p><b>Terminate this overlay program.</b></p> <p>. ****</p>								
26	<p><b>Terminate this programming session.</b></p> <p>Log off.</p> <p>&gt; LOGO</p>								
27	<p><b>You have now completed the minimum programming required to implement a basic new M3905 telephone.</b></p>								



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## **New M3905 telephone**

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## New i2004 Internet Telephone

### Purpose

The information in this Task module will help if you want to install a new i2004 Internet Telephone at your site.



The i2004 Internet Telephone allows you to make calls using your company's existing data network. It connects directly to the LAN over a single Ethernet connection. This gives you a direct connection to the LAN, which in turn connects your telephone to your existing data network. The i2004 Internet Telephone translates voice into data packets for transport using the Internet Protocol (IP).



## New i2004 Internet Telephone

There are many advantages to having the i2004 Internet Telephone. They are:

- ◆ the i2004 Internet Telephone positions you to take advantage of advances in IP technology
- ◆ the i2004 Internet Telephone allows you to fully integrate your voice and data networks.
- ◆ the system can accommodate a greater capacity of these telephones compared to traditional telephones. This can result in fewer line cards required for your system.
- ◆ timeslot usage is reduced. When i2004 Internet Telephones connect to other i2004 Internet Telephones, no timeslot is used
- ◆ with the i2004 Internet Telephone, basic traditional features are still available, but you can take advantage of advances in IP technology.



To support the i2004 Internet Telephone, the Meridian Internet Telephony Gateway (ITG) Line 2.0 card must be equipped on the Meridian 1 switch. The ITG Line 2.0 card acts as the gateway between the voice switching network and the data network (LAN).

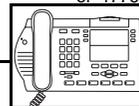
Install an i2004 Internet Telephone if the user needs a new telephone, and needs the following features and capabilities:

- ◆ the user needs a telephone that can access both data and voice networks
- ◆ the user needs a telephone that has self-labeled feature keys, rather than keys that have to be paper-labeled
- ◆ the user needs handsfree conversation capability with the ability to mute the speech path
- ◆ the user needs to use a headset
- ◆ the user needs to access their voice mail by using a key on their telephone
- ◆ the user needs to be able to time the duration of a call

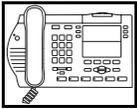
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## New i2004 Internet Telephone

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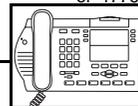
- ◆ the user needs to automatically dial a specific number by pressing a key
- ◆ the user needs to trace a nuisance call
- ◆ the user needs to notify another user by using a buzz sound on their telephone
- ◆ the user needs to make an announcement over the paging system
- ◆ the user needs to page someone over the paging system, and wait on the telephone until that person answers the page
- ◆ the user needs to make an announcement or page someone, over someone else's telephone speaker
- ◆ the user needs to charge a call to a specific account
- ◆ the user needs to cut in to an active call
- ◆ the user needs to be notified of something, by programming their telephone to call them at a certain defined time
- ◆ the user needs to be able to cause the handset or speaker to make a clicking sound when they press the telephone keys
- ◆ the user needs to adjust the volume for handset listen, headset listen, headset talk, headset side tone, handsfree volume, ringing tone, and buzz tone
- ◆ the user needs to be able to adjust the contrast on the display
- ◆ the user needs a highly visible indication on the telephone when there are messages waiting
- ◆ the user needs a large multi-field display
- ◆ the user needs the choice of different languages on the display when using features



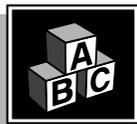
## New i2004 Internet Telephone

- ◆ the user needs to use the ACD features on the telephone
- ◆ the user needs to connect an analogue device such as a FAX machine or modem to the telephone
- ◆ the users in a group want telephones to ring with different sounds so they can tell which telephone is ringing
- ◆ the user has an occasional need to work without being interrupted, so they want a telephone that appears to be busy to callers
- ◆ the user needs to talk to more than one person at a time on the same call
- ◆ while the user is away from their desk, the user needs to forward their telephone to another number, or needs to prevent their telephone from being used by someone else
- ◆ the user needs to use the telephone in a hotel, and needs to use certain capabilities that were designed specifically for a hotel:
  - the hotel employee needs to be able to use the display to read, change, or reset meters that log the telephone calls made from guest rooms
  - the hotel employee needs to keep track of which rooms have been cleaned by maids
  - the hotel employee needs to know the status of guest rooms

## New i2004 Internet Telephone



### Basic configuration



This part gives you information about the i2004 Internet Telephone that will help you understand how it functions, and how it can be of benefit to company.



In this module, programming information is not included, since your system supplier or network administrator will perform the tasks for you.



The i2004 Internet Telephone physically looks like, and provides similar features to, the M3900 family of telephones. However, the i2004 Internet Telephone is a unique telephone that has specific programming requirements. It is very important that you discuss the programming of your i2004 Internet Telephone with your system supplier. And before you talk to your system supplier, it is strongly recommended that you read the i2004 Internet Telephone user guides and associated documentation. These documents will help you understand at what point you will need the assistance of the system supplier, and possibly, your network administrator.



## New i2004 Internet Telephone

### Features

The feature highlights of the i2004 Internet Telephone are:

- ◆ Multiple lines
- ◆ 6 self-labelled programmable line/feature keys. One must be the DN key.
- ◆ 6 icon-labelled fixed feature keys
- ◆ 4 self-labelled programmable feature keys provide access to multiple features
- ◆ Handsfree with LED
- ◆ Dual purpose LED indicator: Message waiting (solid), Incoming call (flashing)
- ◆ Navigation cluster (up/down, left/right)
- ◆ Direct connect headset port

### Self-labelled keys

The i2004 Internet Telephone eliminates paper labelled keys. Line and feature keys are now "self-labelled". This means that once the telephone is configured within the system, the line and feature key labels are automatically displayed on the telephone. This reduces the initial installation and designation time. It also reduces ongoing maintenance charges associated with re-designation when programming changes occur or new features are added.

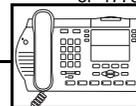
### Portability

It is not necessary to physically connect the i2004 Internet Telephone to a specific hardware port on a line card. Therefore, it is easier to move i2004 Internet Telephones than traditional telephones that require cross-connect changes at the switch.

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## New i2004 Internet Telephone

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### ACD features

The i2004 Internet Telephone supports Meridian 1 ACD features. However, there are specific limitations if you are using the telephone in an ACD environment:

- ◆ There are six feature keys you can program for ACD functionality, one for ACD in-calls and five others.
- ◆ The headset does not support the ACD Walkaway feature. If the headset is unplugged, ACD Walkaway is not activated.

### Configuration on the Meridian 1 switch

This section gives you some information about the software configuration that must be done on the Meridian 1 switch to support the i2004 Internet Telephone.

#### Virtual TNs, Virtual Superloops, and Physical TNs

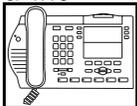
Virtual TNs (VTNs) allow you to configure service data for an i2004 Internet Telephone, such as key layout and class of service, without requiring the i2004 Internet Telephone to be dedicated (hard-wired) to a port on an ITG Line 2.0 card. Calls are made between an i2004 Internet Telephone and traditional telephones or trunks using the Meridian 1 features.

In X11 Release 25.15, Virtual Superloops were introduced to support i2004 Internet Telephone configuration. Virtual Superloops are comprised of Virtual TNs. To configure an i2004 Internet Telephone, which uses a VTN, a Virtual Superloop must be programmed first. You can configure up to 1024 VTNs on a single Virtual Superloop, compared to the 512 TNs on a traditional Superloop.

For a non-blocking Virtual Superloop configuration, do not exceed 120 i2004 Virtual TNs, since there are 120 timeslots available on the Virtual Superloop.



When doing your capacity planning, be aware that Virtual Superloops use up some of the capacity reserved for loops in the system, along with standard Superloops, digital trunk loops and all service loops.



## New i2004 Internet Telephone

Each ITG Line 2.0 card provides 24 physical TNs that act as gateways to the LAN. Once configured, the ITG physical TNs (IPTNs) appear as TIE trunks to the system.

### i2004 Internet Telephone IP addressing

Each i2004 Internet Telephone requires an IP address, which can be automatically assigned when the telephone is plugged in. The IP address can also be manually assigned. Discuss manual assignment with your network administrator.

### Software

**Table 125**  
Software requirements

Release required	Software package(s) required
25.15 and later	88 (DSET) 170 (ARIE)

### Incremental Software Management (ISM) limits

You must purchase one NTZC82AA Internet Telephone ISM parameter for each i2004 Internet Telephone installed.

### i2004 Internet Telephone firmware

The i2004 Internet Telephone uses firmware that is upgradable on site. A copy of this firmware is stored on each ITG Line 2.0 card in the system. You keep your telephone firmware current by keeping the ITG Line 2.0 card current. Nortel Networks has a website that allows you to download the latest version of ITG Line 2.0 card firmware. This card automatically downloads the latest version of the firmware to your i2004 Internet Telephones.

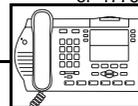


Therefore, all i2004 Internet Telephones use the same version of firmware as the ITG Line 2.0 card.

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## New i2004 Internet Telephone

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### Real time factors

The total real time capacity of the Meridian 1 depends on factors such as:

- ◆ calling patterns
- ◆ feature operation
- ◆ telephone and trunk signaling
- ◆ system CPU capacity

Your system provider uses these factors to provision the i2004 Internet Telephones on your Meridian 1 system.

### Hardware

The installation of cabling, telephones, and system hardware is not explained in detail in this book. Your system provider will perform the tasks for you.

### Power

Talk to your system supplier about the power requirements for your i2004 Internet Telephone. It uses local power.

### Language Display Options

You can configure any one of multiple languages on your i2004 Internet Telephone. Your system supplier can tell you which languages are supported in your region.



## New i2004 Internet Telephone

### Control tips



- ◆ Ensure that users do not try to plug in their i2004 Internet Telephone without the assistance of your system supplier. Telephones can be damaged if they are not plugged in correctly.

### Administration tips



- ◆ The i2004 Internet Telephone has a red indicator that lights steadily when there are messages waiting. The telephone has a Message Waiting key so the user has an easy way of dialing the message center or voice mail when there are messages waiting.

For more information on Message Waiting, refer to Task 25, *Message Center*.

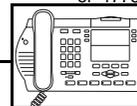
- ◆ You might want to consider using one or two standard key layouts for all i2004 Internet Telephones. This can save significant amounts of memory.
- ◆ If users are allowed to have the Handsfree functionality, set some guidelines as to who can use that kind of feature and under what circumstances.
- ◆ To administer and maintain i2004 Internet Telephones and ITG Line 2.0 cards, you must have MAT 6.67.07 (with update disk and loss plan patch)/OTM 1.0 or later.



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## New i2004 Internet Telephone

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### Training tips



- ◆ If you have a standard key layout on all i2004 Internet Telephones, this is an advantage since users can go to any telephone and feel comfortable using it. If all telephones are the same, the users can also explain features to each other.
- ◆ Even though users do not need to remember feature access codes, they might, from time to time, need refresher training. This helps to keep users' knowledge levels current about telephone concerns and it helps to keep you informed about their changing needs. This ensures the system provides the expected benefits.
- ◆ Make certain that the users know where to get more information about how to use their telephones and features.



## New i2004 Internet Telephone

### What to have ready

Make the following preparations before your system supplier does the basic programming of a new i2004 Internet Telephone.

**Table 126**  
**Checklist**

Basic	Optional	Preparation
✓		Determine the customer group number for the telephone.
✓		According to the Numbering Plan on your site and the needs of the user, decide on the DN(s). Decide whether each is a Single Call or Multiple Call, ringing or non-ringing DN.
	✓	Find a recent traffic study showing traffic load on the loops and/or Virtual Superloops of your system. If no study data is available, estimate the traffic.
	✓	Ensure local power is available where the telephone is to be installed.
✓		Make sure that your system supplier and network administrator have properly configured the following on the Meridian 1 switch: <ul style="list-style-type: none"> <li>◆ Virtual Superloops</li> <li>◆ Virtual TNs</li> <li>◆ IP addressing</li> <li>◆ the i2004 Internet Telephones</li> <li>◆ the latest version of firmware on the ITG Line 2.0 card</li> </ul>
✓		Verify that the Meridian 1 switch is running X11 Release 25.15 or later software.
✓		Verify the ISM System Limit supports the number of i2004 Internet Telephones you want to install.

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PO Number: P0912434

Document release: Standard 6.00

Date: October 2000

Printed in Canada

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