Meridian 1

Basic and Network Alternate Route Selection

General description

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Revision history

April 2000

Standard 10.00 This is a global document and is up-issued for X11 Release 25.0x.

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Standard 9.00 for X11 Release 23.0x.

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Standard 8.00 for X11 Release 22.0x.

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Standard 7.00. This document is reissued to include updates and changes for X11 Release 20. All updates are noted with revision bars in the margins.

July 1994

Standard 6.00. This Release introduces the following X11 Release 20 features and capabilities:

- Interchangeable Numbering Plan Area Codes, and
- Federal Communications Commission Equal Access Carrier Access Code Expansion.

All changes are indicated with change bars closest to the outside edge of the page.

August 1993

This document is reissued for updates and changes resulting from X11 Release 19.0x.

August 1992

This document is reissued to include information on system option 81 and equipment required for compatibility with X11 Release 18.0x.

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This document is reissued to include technical content updates.

December 1990

This document is issued to include updates and changes for X11 Release 16.00.

Contents

Introduction

This document is a global document. Contact your system supplier or your Nortel Networks representative to verify that the hardware and software described is supported in your area.

The Basic Alternate Route Selection (BARS) and Network Alternate Route Selection (NARS) features enable a customer with a number of Meridian 1 systems in different locations to create a private telecommunications network (shown in Figure 1). The BARS or NARS features direct a call from a Meridian 1 in one geographical location to a Meridian 1 in any other geographical location in a cost-efficient and easy-to-use manner by:

- eliminating long, complex dialing plans and replacing them with an abbreviated Uniform Dialing Plan (UDP) common to all Meridian 1s that are part of the network
- providing a means of controlling the number and types of trunks that are available to each network caller and a method of controlling the time of day that access to a trunk (or group of trunks) is allowed
- automatically selecting the least-cost trunk route available to complete a call between network switches
- providing uniform network access to stations served directly at a Meridian 1 Node and stations served at Meridian 1 Mains or Conventional Mains connected to a Meridian 1 Node by TIE trunks
- providing the call originator with the option to accept or refuse call completion over an expensive trunk, if less expensive trunks are not currently available
- providing optional queuing features that enable a call originator (when all trunks are busy) to:

remain off hook until a trunk becomes idle, or

hang-up and receive a call back from the Meridian 1 when a trunk becomes idle.

Whether the BARS or NARS feature is used depends on the quantity and placement of Meridian 1s within the customer's private network, as well as the volume of traffic the network is to carry. NARS has the ability to translate location codes while BARS translates codes used for on-net dialing as Special Numbers. Refer to the section titled "Automatic on-net to off-net overflow" on page 35.

When used in large, widely-dispersed applications, NARS forms an integral part of Nortel Networks Electronic Switched Network (ESN) product. For more complete details, refer to *Electronic Switched Network description* .

Document overview

This document describes BARS/NARS, including the following elements:

— Network access codes

— Uniform dialing plan (UDP)

— Dialing transparency

— Automatic least-cost routing

— Digit manipulation

— Time of Day (TOD) routing

— Routing control

— Network controls:

- Network Class of Service (NCOS)
- Traveling Class of Service (TCOS)
- Facility Restriction Level (FRL)
- Class of Service (COS)

— Digit manipulation, translation, restriction, and recognition:

- 1-4 digit translation and 1-7 digit restriction (X11 Release 4)
- 1-4 digit translation, 1-7 digit restriction, and 1-7 digit recognition (X11 Release 5)
- 1-11 digit translation, restriction, and recognition (X11 Release 8)

— Free Calling Area Screening (FCAS)

— Expensive Route Warning Tone (ERWT)

— Interchangeable Numbering Plan Area

— Carrier Access Code

— Flexible Numbering Plan

It also includes sections on implementing BARS and NARS.

Terminology

Terminology used in this publication is based on the following definition of switch types:

Meridian 1 ESN Node

A Meridian 1 equipped with the NARS or BARS feature.

Meridian 1 ESN Main

A Meridian 1 connected by TIE trunks to a Meridian 1 Node and equipped with the Network Signaling (NSIG) feature package. The connected Meridian 1 Node must also be equipped with the NSIG feature package.

Conventional Main

A Meridian 1 switch connected by TIE trunks to a Meridian 1 Node, but not equipped with the Network Signaling feature package. Conventional Main also applies to any other switch type (for example, step-by-step) connected by TIE trunks to a Meridian 1 Node.

Other documentation

Other optional features that enhance the capabilities of BARS or NARS (such as Off-Hook Queuing and Network Authorization Codes) are mentioned briefly in this publication. The following publications describe these optional features:

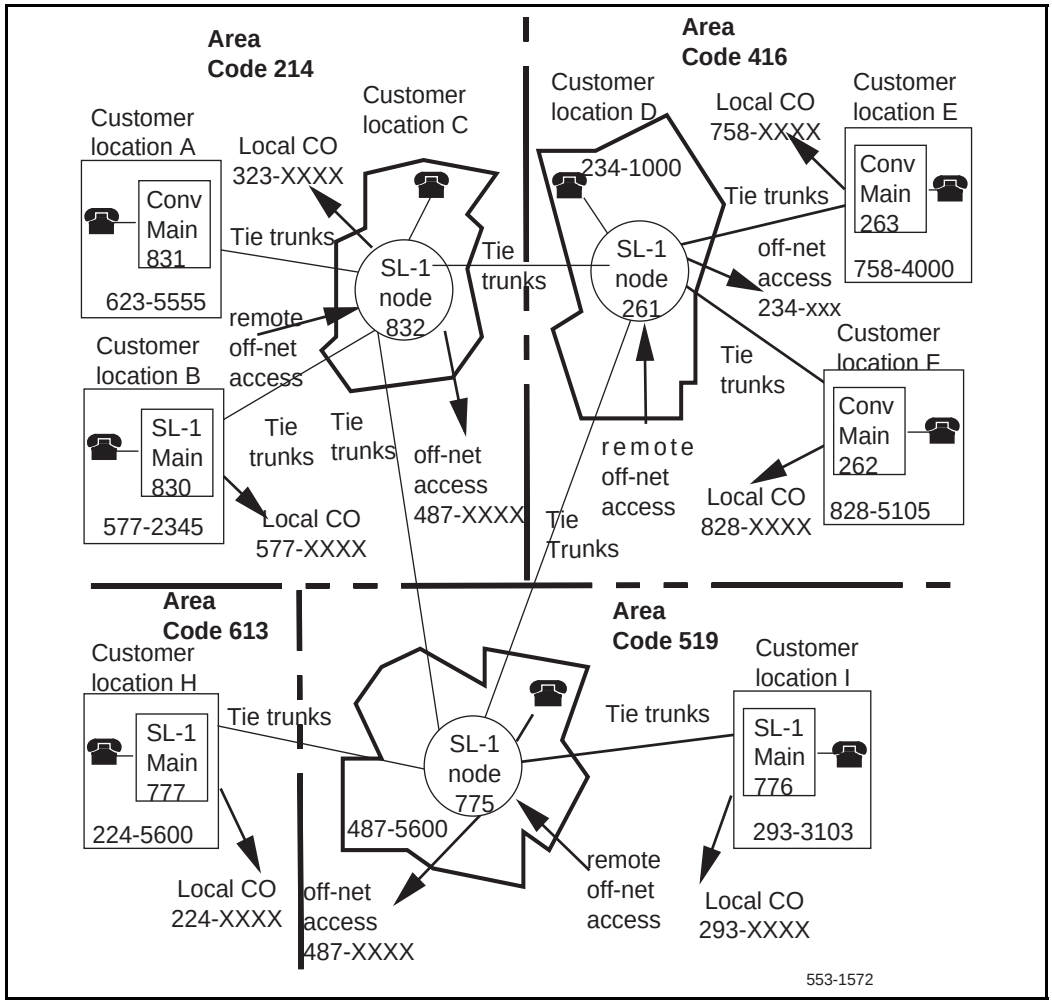
Network Queuing description,

Coordinated Dialing Plan description,

Basic and Network Authorization Code description,

Flexible Numbering Plan description, operation, and administration

Figure 1
A typical private telecommunications network



Basic/Network Alternate Route Selection

The BARS and NARS features provide comprehensive and flexible networking packages that can be configured to satisfy the specific requirements of a customer's private network. The BARS and NARS packages provide benefits to users through simplified dialing plans and reduced communications costs. This section describes the prime elements of the BARS and NARS features.

Access codes

By dialing a one- or two-digit access code, the user can place a long distance, network, or local call. These BARS and NARS access codes are customer-defined.

BARS access code

To make long distance calls and calls to distant company locations (on-network calls) from the Meridian 1 Node, the caller dials the BARS access code (AC1) followed by the desired number. The BARS access code can be any one- or two-digit number, provided there is no conflict with any other part of the dialing plan. It is a customer-defined option whether the caller hears the dial tone after dialing a BARS access code.

Dialing the BARS access code triggers the BARS software to perform the call processing and routing required for call completion. This is accomplished by means of a network translation table associated with the BARS access code. Normal translation is used for all other call types.

NARS access codes

To access NARS, the user dials either of the two customer-defined NARS access codes: AC1 (for on-net and long distance calls) and AC2 (for off-net and local calls). Typically, AC1 is 8 and AC2 is 9. However, any one- or two-digit codes can be used, provided that AC1 is different from AC2 and there is no conflict with any other part of the dialing plan. It is a customer-defined option whether the caller hears the dial tone after dialing a NARS access code.

Dialing a NARS access code triggers the NARS software to perform the call processing and routing required for call completion. This is accomplished by means of Network Translation Tables. There is a Network Translation Table associated with each NARS access code. This translation mechanism is used to implement the NARS Uniform Dialing Plan for private networks.

End-of-dial timing

Prior to X11 Release 20, calls that were routed using Basic Alternate Route Selection (BARS) or NARS used a software defined Network Interdigit Timer (NIT) which was set to eight seconds to determine the end-of-dialing. With X11 Release 20 and later the NIT is now user definable for each customer. It is defined by responding to the NIT prompt in LD 15 with a number in the range from two to eight. This value indicates the maximum number of seconds allowed between digits being dialed. If the user does not dial another digit within the time input in response to the NIT prompt, the software considers dialing as being complete.

To achieve shorter call processing times the user may dial an # (octothorpe, pound, number sign) at the end of a dialed digit string. The # informs the software that all required digits have been dialed and that the digits may now be analyzed for call processing purposes. If the user does not use the #, then the system waits for the NIT to expire prior to analyzing the dialed digits.

Network translation

The normal digit translator reads the dialed network access code, determines if the call is to be processed by BARS or NARS, and selects the appropriate Network Translation (Table 1). BARS or NARS translation determines the method to be used to process the call, refers to Supplementary Digit Restriction and Recognition tables if required, and applies digit restriction or recognition where it is specified. The result of translation is to invoke either route selection with a specified route list, standard call blocking, queuing, or internal recognition.

Table 1
Digit translation

Type	Before X11 Release 8	X11 Release 8 and later
LOC	3	3–7
HLOC	3	3–7
NPA	3–4	3–11
HNPA	3–4	3–11
NXX	3–4	3–8
SPN	1–4	1–11

Any Meridian 1 running a version of X11 software prior to X11 Release 8 will translate the first three digits after the access code—the first 4 digits with 1+ dialing or four digit SPN (Special Number) codes. (SPNs can be one to four digits.)

Each NPA, NXX, SPN, or LOC associates with only one route list index. In a network with multiple switches sharing DID numbers within the same NXX, Coordinated Dialing Plan is needed to route the calls properly.

11-digit BARS or NARS translation

With 11-digit translation introduced in X11 Release 8, the ESN BARS or NARS translation capabilities are expanded from four digits to a maximum of 11 digits for route selection. This means more digits are translated and therefore make similar codes translate differently. This increases the flexibility for network routing, including international calls. For example, NXX1363 becomes 13634 or 13635. More than one code can be handled by the same route list.

By allowing translation of more than four leading digits, unique nonconflicting routing to a destination is possible. More than one route list can exist for each specific code of a type. For example, the NXX 727 could only translate into one route list previously. With 11-digit translation, as many route lists as are needed to eliminate code conflict or achieve network requirements can be defined by extending translation deeper into the dialed code. Table 1 compares the number of digits that can be translated prior to X11 Release 8 with present capabilities.

Uniform dialing plan

The Uniform Dialing Plan (UDP) is not a feature of BARS or NARS, but is an operation that enables users at a Meridian 1 Node, Meridian 1 Main, or Conventional Main to dial all calls in a uniform manner regardless of the location of the calling party or the route that the call will take. UDP applies to BARS on X11 Release 5 using off-net number recognition and calling Home Location Code (HLOC) and SPN or NXX codes. LOCs are programmed as NXXs or SPNs.

End-of-dial timing

Prior to X11 Release 20, calls that where routed using Basic Alternate Route Selection (BARS) or NARS used a software defined Network Interdigit Timer (NIT) which was set to eight seconds to determine the end-of-dialing. With X11 Release 20 and later the NIT is now user definable on a per-customer basis. It is defined by responding to the NIT prompt in LD 15 with a number in the range from two to eight. This value indicates the maximum number of seconds allowed between digits being dialed. If the user does not dial another digit within the time input in response to the NIT prompt, the software considers dialing as being complete.

To achieve shorter call processing times the user may dial an # (octothorpe,

pound, number sign) at the end of a dialed digit string. The # informs the software that all required digits have been dialed and that the digits may now be analyzed for call processing purposes. If the user does not use the #, then the system waits for the NIT to expire prior to analyzing the dialed digits.

UDP for on-net calling

An on-net call is one that terminates at a customer-owned location. To reach any on-net location, the user dials the NARS or BARS on-net access code (AC1), followed by seven digits. The dialing format for this call would be:

AC1 * LOC + XXXX (for NARS)

AC1 * SPN + XXXX (for BARS)

Legend:

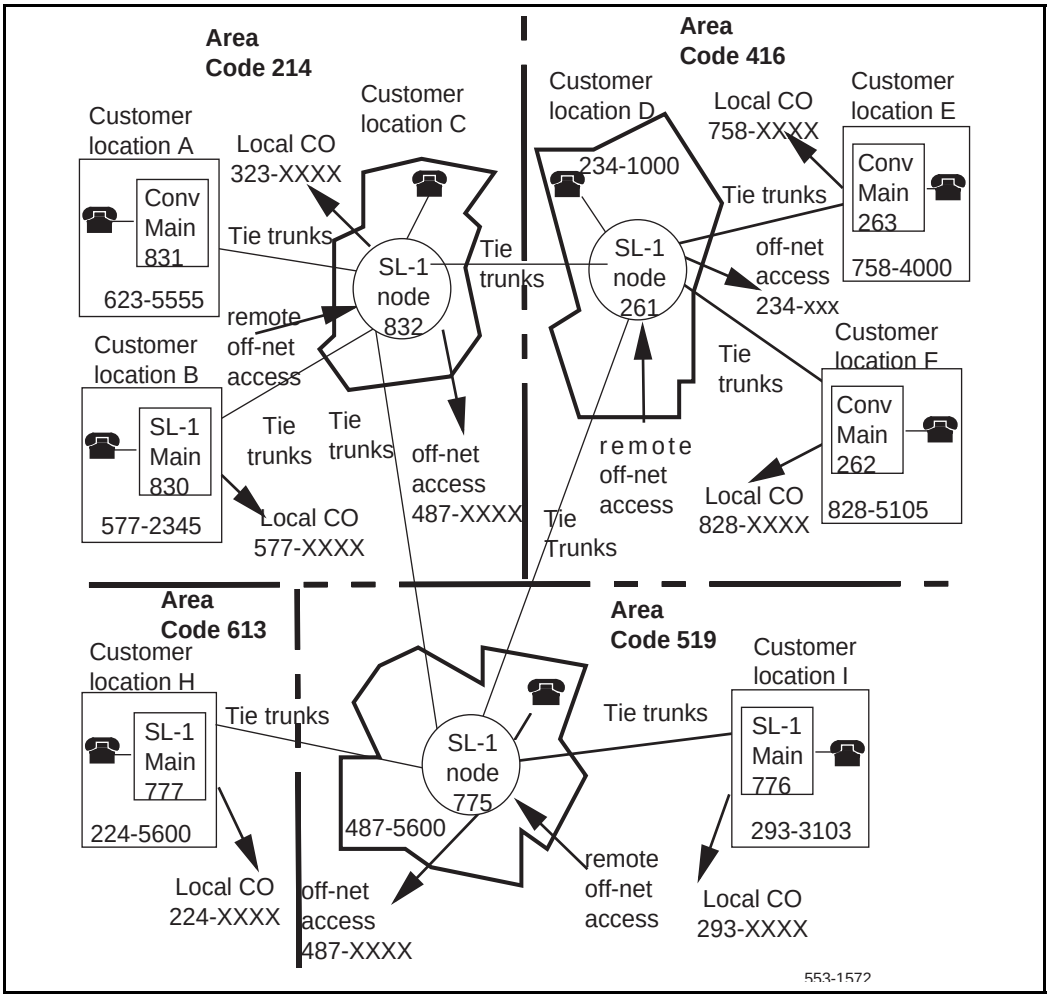
AC1	=	the one-digit or two-digit BARS/NARS on-net access code
*	=	NARS dial tone (optional)
LOC	=	a three-digit location code assigned for the destination location
SPN	=	a three-digit code assigned for the destination location
XXXX	=	the extension number of the party to be reached at the destination location

Each Meridian 1 which is part of the BARS or NARS network is referenced by a unique three-digit location (LOC), SPN, or NXX code assigned at the Meridian 1 Node. There must be no conflict between the Location Code number assigned for a Meridian 1 and the Number Plan Area (NPA) codes, NXX, or other SPN.

A customer-owned location can be either physically connected to the network (by means of private trunk facilities) or virtually connected to the network (by means of public facilities). If a location is virtually connected to the network, the dialed LOC code is translated and converted by the Meridian 1 Node into the public number for the virtual location; for example, the Direct Distance Dialing (DDD) number or the Direct Inward Dialing (DID) number. Using digit manipulation for BARS, an SPN can be changed into the public network LDN.

Figure 2 illustrates a private network with a typical UDP. A user at LOC 830 (customer location B) calling extension number 3283 at LOC 777 (customer location H) would first dial 8 (AC1), pause for NARS dial tone (optional), then dial 777-3283. A user at any other customer location that is part of the network would dial these same numbers to reach extension 3283.

Figure 2
Example of a network with a typical NARS Uniform dialing plan



UDP for off-net calling

An off-net call is one that does not terminate at a customer-owned location, even though some on-net facilities may be used to complete a portion of the call routing. Referring to Figure 2 on page 20, a call would be termed off-net if a user at LOC 776 called a station number associated with CO 758-XXXX in the foreign area code 416.

Tables 2 and 3 list the dialing formats for the various types of NARS and BARS UDP calls, respectively.

Table 2
Dialing formats for NARS UDP calls (Part 1 of 2)

Call type	Dialing format	Code capacity
On-Net (Notes 1, 2, and 3)	AC1 * LOC + XXXX	640
DDD FNPA (Note 1)	AC1 * 1 + NPA + NXX + XXXX	160
Network Speed Call	AC1 * LA + LN	1 - nn
Operator-assisted DDD	AC1 * 0 + NPA + NXX + XXXX	160
International DDD	AC1 * 011 + CC + NN	99
Operator-assisted International DDD	AC1 * 01 + CC + NN	99
DDD HNPA (Note 1)	AC1 or AC2 * 1 + NXX + XXXX	1
DDD Operator	AC2 * 0	1
Local Calls (Note 1)	AC2 * NXX + XXXX	640
Special Local Services	AC2 * SPN	8
Toll-free Calls	AC2 * 800 + NXX + XXXX	1
Toll-free Calls (Note 1)	AC2 * 1 + 800 + NXX + XXXX	1
Toll Special Numbers	AC2 * 900 + NXX + XXXX	1
Toll Special Numbers (Note 1)	AC2 * 1 + 900 + NXX + XXXX	1

Note 1: If 1+ Dialing is used, the On-Net and Local Calls code capacities are increased to 800 and 792 respectively.

Note 2: If the code 1XX is reserved for future 1+ Dialing use, and not for Network Speed Call codes, then the location code capacity will be reduced to 639 if a three-digit Network Speed Call (NSC) code is used, 632 if a two-digit NSC code is used, or 560 if a one-digit NSC code is used.

Note 3: When 1+ Dialing is used, Network Speed Call access will be in the form of 2XX-9XX as a subset of the location codes utilized in the UDP. The location code capacity will be reduced to 799 if a three-digit NSC code is used, 792 if a two-digit NSC code is used, or 720 if a one-digit NSC code is used.

Table 2
Dialing formats for NARS UDP calls (Part 2 of 2)

Legend:	
AC1	Access code for on-net, long distance and Network Speed Calls. Typically the digit “8,” but can be either one or two digits in length.
AC2	Access code for local calls. Typically the digit “9,” but can be either one or two digits in length.
*	Symbol meaning NARS dial tone (optional).
NPA	Numbering Plan Area (NPA) code. Any number of the form NPX for X11 Release 19 and earlier or NXX for X11 Release 20 and later.
HNPA	Home Numbering Plan Area (HNPA) code. Any number of the form NPX for X11 Release 19 and earlier or NXX for X11 Release 20 and later.
FNPA	Foreign Numbering Plan Area (FNPA) code. Any number of the form NPX for X11 Release 9 and earlier or NXX for X11 Release 20 and later.
CC	Country code. Any one, two, or three digits from 2 to 9.
NN	National Number. Depends on national dialing plan; maximum 12 digits including the Country Code.
N	Any of the digits from 2 to 9.
P	The digit 0 or 1.
X	Any of the digits from 0 to 9.
LA	List access code. Any one, two, or three digits from 0 to 9.
LN	List element number. Any one, two, or three digits(0-9, 00-99, 000-999).
LOC	Three-digit location code for each UDP network location.
NXX	Local Exchange Code.
XXXX	Four-digit directory (extension) number.
SPN	Special numbers: for example, 411, 611 or may be XXXX.

Table 3
Dialing formats for BARS calls

Call type	Dialing format
On-Net	(1) AC1 * SPN + XXXX (2) AC1 * NXX + XXXX
DDD FNPA	AC1 * 1 + NPA + NXX + XXXX
Operator-assisted DDD	AC1 * 0 + NPA + NXX + XXXX
International DDD	AC1 * 011 + CC + NN
Operator-assisted International DDD	AC1 * 01 + CC + NN
DDD HNPA (if applicable)	(1) AC1 * 1 + NXX + XXXX (2) AC1 * 1 + NPA + NXX-XXXX (see note)
DDD Operator	AC1 * 0
Local Calls	AC1 * NXX + XXXX
Special Local Services	AC1 * 411, 611 etc.
Toll-free Calls	AC1 * 1 + 800 or 1 + 900 + NXX + XXXX

Note: 1+ Dialing is optional; you can simply enter *1 NPA.*

Legend

AC1	Access code for on-net, long distance and Network Speed Calls. Typically the digit “9” but can be either one or two digits in length.
*	Symbol meaning wait for BARS dial tone (optional).
NPA	Numbering Plan Area (NPA) code. Any number of the form NPX for X11 Release 19 and earlier or NXX for X11 Release 20 and later.
HNPA	Home Numbering Plan Area (HNPA) code. Any number of the form NPX for X11 Release 19 and earlier or NXX for X11 Release 20 and later.
FNPA	Foreign Numbering Plan Area (FNPA) code. Any number of the form NPX for X11 Release 19 and earlier or NXX for X11 Release 20 and later.
CC	Country code. Any one, two, or three digits from 2 to 9.
NN	National Number. Depends on national dialing plan; maximum 12 digits including the Country Code.
N	Any of the digits from 2 to 9.
P	The digit 0 or 1.
X	Any of the digits from 0 to 9.
SPN	Special Number. Code used to identify other office locations on the network, or a number such as 411 or 611.

Flexible numbering plan

Flexible Numbering Plan (FNP) package 160 was introduced to the International marketplace as part of the X11 with Supplementary Features Group E (Phase 5) Release.

FNP accommodates Global Numbering Plan Requirements by modifying the Electronic Switched Network (ESN) dialing plan. The dialing plans are divided into two areas:

- On-net dialing — which deals with all the possible dialing situations required when dialing to a station located within the Local (private) Network, and
- Off-net dialing — which deals with all the possible dialing situations required when dialing to a station that is not part of the Local Network (typically the Public Numbering Plan).

FNP was enhanced in the Group F (Phase 6Biv) Release to include the ability of inhibiting the time out handling process for ESN Basic Alternate Route Selection (BARS) and Network Alternate Route Selection (NARS) Special Numbers (SPN) and Coordinated Dialing Plan (CDP) Trunk Steering Codes (TSC). The enhancement ensures that all digits are collected prior to seizing a trunk. This enhancement meets Chinese requirements.

Network Alternate Route Selection (NARS) package 58 is a prerequisite for FNP.

With X11 Release 20 FNP is introduced to the Global marketplace.

For further information about FNP refer to *Flexible Numbering Plan: Description, Operation, and Administration* (553-2751-105).

Dialing transparency

Extending network access to a Meridian 1 Main or Conventional Main is accomplished by forming a single TIE trunk access group from the Main to the Node. Users at Main switches access the trunk group to the Node by dialing the BARS or NARS on-net access code (AC1). The Node is arranged to insert the digit(s) for AC1 on each incoming call from the Main, thus enabling access to the network facilities of the Node in a transparent fashion. Local calling is arranged through Conventional dial “9” CO trunks at the Main.

Note: If a Meridian 1 Node replaces a tandem switch in a Tandem TIE Trunk Network (TTTN), other tandem switches in the network can "tandem through" the Meridian 1 Node using the same access codes as before. This requires that there are no conflicts between the access codes for the TTTN trunks and the dialing plan implemented at the SL-1 Node.

Automatic least-cost routing

For each network call translated at a Meridian 1 Node, BARS or NARS selects a route from a list of outgoing alternate routes to complete the call. A list of alternate routes to a particular destination is called a route list and each route specified in the list is termed an entry. Any combination of trunks, including Central Office (CO), Foreign Exchange (FX), and TIE, can be specified in a route list.

Note 1: Prior to X11 Release 13, a route list can contain up to eight entries. With X11 Release 13 and later, the route list can contain up to 32 entries.

Note 2: Use of the Bandwidth Controller (DCA System 9000) improves the capacity of T1-based tandem networks. Its dynamic alternate routing capability can independently choose the optimum path for a voice or data call. However, it is necessary to coordinate the Bandwidth Controller routing lists with the ESN routing lists.

Typically, the first entries (routes) in a route list are the less expensive routes to a destination and comprise the initial set (I set) of routes in the list. The remaining routes in the list (if any) are the more expensive routes to a destination and comprise the extended set of routes in the list. An initial set marker, defined through service change, determines which routes comprise the initial route set. Refer to *Electronic Switched Network description* for more information on I set and extended set routes.

A Meridian 1 Node equipped with NARS supports 256 route lists (0-255). A Node equipped with BARS supports 128 route lists (0-127).

Each Route List entry has the following information defined:

— the route number

— the minimum FRL required for access

— the time of day the route can be accessed

— whether Off Hook Queuing (OHQ) or Call Back Queuing (CBQ) is allowed on the route

— whether the route is to receive the Expensive Route Warning Tone (ERWT) treatment

— a digit manipulation table index number

— a Free Calling Area Screening (FCAS) table index number

— whether converting on-net numbers to off-net numbers is allowed (NARS)

Route eligibility

BARS or NARS translates the number dialed (1-11 digits) after an access code into a route list, and searches sequentially the routes in the list for an available route. Route eligibility for a given call is based on the caller's Network Class of Service (NCOS), the NCOS-defined FRL, the current time of day, and the originator's Class of Service (CLS).

Because each entry in a route list has a minimum FRL required for access and all network users are assigned an FRL through their NCOS, the network communications manager can restrict the type of calls allowed to particular users. For example, if the minimum FRL for all calls is 1, except for special local services numbers that are assigned an FRL of 0, a user assigned to an NCOS group with an FRL of 0 would only be able to make calls to the Special Numbers. In addition, the communications manager can restrict the use of high-cost facilities by assigning a high FRL to the expensive routes in a route list and a lower FRL to a user's NCOS.

Digit manipulation

Any trunk type can be specified in a route list. However, when certain trunk types are accessed, the digits dialed by the user must be manipulated to conform to the dialing requirements of the trunk. To do this, BARS or NARS uses digit manipulation tables to modify the dialed digits. There can be a maximum of 256 digit manipulation tables, each referenced by a Digit Manipulation Index number, defined at each Meridian 1 Node. Digit manipulation can delete up to 15 leading digits, and insert up to 24 leading digits.

A user at customer location I (Figure 2) dials 8-613-596-9084 to reach an off-net station in the 613 NPA associated with customer location H. At the Meridian 1 Node, BARS or NARS selects the appropriate route list for call completion to NPA 613 and finds that the only available route to that NPA is a local CO trunk that requires the insertion of the leading digit "1" for long distance calls. The route list entry for this route specifies a Digit Manipulation Index number (0-255). "0" means no digit manipulation is required. BARS or NARS refers to the digit manipulation table indicated by the index number, deletes digits as specified in the table (none in this case), inserts the required digits ("1" in this case), and completes the call on this route.

Time of day routing

BARS or NARS provides for up to eight Time of Day (TOD) schedules, numbered from 0 through 7. Each entry (route) in a route list is assigned to a TOD schedule that specifies the hour(s) during which the particular entry can be accessed. Thus, based on the current time of day, the most cost-effective route alternatives can be specified. A typical TOD schedule is shown in Table 4.

Based on the TOD schedule shown in Table 4, a route list entry assigned to TOD schedule 2 would be accessed only between the hours of 00:00 to 07:44 and 17:30 to 23:59. Access to the route at any other time would be denied. TOD schedules can be turned on or off through service change, as traffic conditions warrant. A TOD schedule is turned on for an entry by turning off all other TOD schedules. An X preceding the schedule number turns that number off. For example, for TOD schedule 2 to run, schedules 1 and 3 must be off.

Table 4
A typical TOD schedule

TOD schedule	Time period
2	00:00 to 07:44 17:30 to 23:59
1	07:45 to 08:59 12:00 to 13:14 16:00 to 17:29
0	09:00 to 11:59 13:15 to 15:59

Note 1: A TOD schedule can be associated with any number of arbitrarily selected 15-minute periods. However, any one 15-minute period can appear only in one TOD schedule.

Note 2: Normally, the user does not define 0, but lets the Meridian 1 define it by calculating times of day not mentioned in schedules 1-7.

Routing control

The Routing Control feature provides a mechanism for changing a user's network-access capabilities when:

— a special TOD schedule is in effect

— an extended TOD is in effect

— the user presses a Routing Control key on the console

NCOS map

With the NARS or BARS feature, TOD schedule 7 is the special TOD schedule. Associated with the special TOD schedule is a Network Class of Service (NCOS) map. The NCOS map lists all NCOS numbers. Associated with each listed NCOS is an alternate NCOS number (greater than, equal to, or smaller than) that replaces the original NCOS number when the special TOD schedule is in effect. Table 5 illustrates a typical NCOS map.

Table 5
A typical NCOS map for routing control

Original NCOS	Alternate NCOS (Note)	Original NCOS	Alternate NCOS (Note)
0	0	8	2
1	0	9	3
2	0	10	3
3	1	11	4
4	1	12	4
5	2	13	5
6	2	14	5
7	2	15	5

Note: The alternate NCOS replaces the user's original NCOS when routing control is in effect, due to TOD 7, Extended Time of Day, or when manually established at the console.

Invoking routing control

The alternate NCOS numbers associated with special TOD schedule 7 are normally invoked when the time specified for TOD schedule 7 corresponds to the time in the system clock. Additionally, the alternate NCOS numbers can be scheduled for implementation (through service change) for the full 24-hour period of specified days of the week. This capability enables network-access capabilities to be changed automatically on weekends or company holidays.

The attendant can also manually invoke the Network Class of Service Map (NMAP) through use of a Routing Control (RTC) key on the console. Pressing the RTC key lights the associated lamp and invokes the NCOS MAP. To deactivate Routing Control, the RTC key must be pressed again. The associated lamp goes dark, the NMAP values are discarded and the original NCOS values are again in effect.

> ***Note:*** Authorization Code can be used to override the restrictions imposed through Routing Control. If a user enters a valid Authorization Code (AUTH), the NCOS number associated with the AUTH is applied for the duration of the call. Routing Control is not affected.

Network class of service

Network Class of Service (NCOS) is an integral part of the BARS and NARS features at a Meridian 1 Node, and of the Network Signaling feature at a Meridian 1 ESN Main.

NCOS provides the means to control:

— which trunk routes are eligible for attempted call completion

— whether queuing is offered to the call originator

— whether the call originator receives a warning tone when an expensive trunk is selected to complete a call

— whether the user is allowed to access the Network Speed Call feature

After NCOS groups are defined through service change, each line, trunk, and attendant group is assigned to the NCOS group that best serves its requirements. The NCOS group to which each line, trunk, or attendant group is assigned is independent of the assigned class of service. TIE trunks incoming from Meridian 1 Mains or Conventional Mains are also assigned to an NCOS group (at the Node), which determines their level of access to the network facilities at the Node. See the *X11 Features and Services* (553-3001-306) or the *X11 Administration* (553-3001-311) for further information.

Table 6 summarizes the NCOS and other parameters for Meridian 1 Nodes and Meridian 1 Mains.

Table 6
Summary of Node and Main parameters

Parameter (Note 4)	BARS Node	NARS Node	ESN Main
NCOS Groups (Note 1)	0–99 (0–7)	0–99 (0–15)	0–99 (0–15)
Facility Restriction Levels	0–7	0–7	0–7
Digit Manipulation Tables	1–255	1–255 [1–999]	—
Route Lists	0–127	0–255 [0-999]	—
Route List Entries	0–63 {0–31} (0–7)	0–63 {0–31} (0–7)	
FCAS Tables (Note 2)	1–127	1–255	—
SDR Tables (Note 2)	0–31	0–255	—
SDRR^{5+} Tables (Note 2)	0–255	0–511	—
TOD Schedules (Note 2)	0–7	0–7	—

Note 1: Values in parenthesis () are for releases prior to X11 Release 13.
Values in braces {} are for releases prior to X11 Release 15.
Values in brackets [] apply if the Flexible Numbering Plan (FNP) package (160) is equipped.

Note 2: FCAS = Free Calling Area Screening, SDR = Supplemental Digit Restriction,
SDRR = Supplemental Digit Restriction/Recognition, TOD = Time-Of-Day

Note 3: If the NARS and BARS features are equipped in the same switch but for different customers, the highest parameter values apply to that switch. For example, if one customer has NARS and another customer has BARS, the NARS parameters apply to the BARS customer.

Note 4: If the New Flexible Code Restriction (NFCR) feature is equipped in conjunction with BARS or CDP, the number of available NCOSs is 100. Prior to X11 Release 13, only 8 NCOSs are allowed. NFCR is described in the *X11 features and services* NTP.

Network control

Network Control is an enhancement to the Network Class of Service (NCOS) feature that extends NCOS controls to users located at a Meridian 1 Main. Network Control requires that the Meridian 1 Main and serving Meridian 1 Node be equipped with the NSIG feature. The Meridian 1 Main must also be equipped with the NCOS feature.

Meridian 1 Main NCOS

Users (lines, trunks, and attendants) at a Meridian 1 Main are assigned an NCOS that determines their level of access to network facilities at the serving Meridian 1 Node. When a user at a Meridian 1 Main initiates a call to (or through) a Meridian 1 Node, the user's assigned NCOS or TCOS, depending on TIETIE trunk settings (ESN or ESN2, for example), can be transmitted.

Only NCOS 0 through 7 can be assigned at the Node if the user's NCOS is transmitted to the serving Node and the Node is equipped with BARS. Therefore, only NCOS 0 through 7 must be assigned at the ESN Main. An ESN Main equipped with NSIG supports an NCOS of 0 through 99. If the Node is equipped with NARS, an NCOS of 0 through 99 can be assigned at both the Node and the ESN Main. Prior to X11 Release 13, an NCOS of 0 through 15 is supported.

The transmitted NCOS or TCOS overrides the NCOS or FRL assigned to the incoming TIE trunk group at the Node, and is used to determine the user's eligibility for network resources/features at the Meridian 1 Node. Thus, a user at a Meridian 1 Main has the same network-access capabilities as a user at the Meridian 1 Node who is assigned the same NCOS.

> ***Note:*** If the user at the Meridian 1 Main enters a valid Authorization Code prior to placing a BARS or NARS call, the NCOS associated with the Authorization Code is transmitted to the Meridian 1 Node in place of the user's assigned NCOS.

Calls from a Conventional Main to the Meridian 1 Node are controlled by the NCOS assigned to the incoming trunk group at the Meridian 1 Node, as the Conventional Main has no NSIG.

Meridian 1 Node TCOS

Network Control at a Meridian 1 Node can provide a Traveling Class of Service (TCOS) mechanism. TCOS controls route access and Off Hook Queuing (OHQ) eligibility for calls placed to (or through) another Meridian 1 Node or an associated Meridian 1 Main. It also enables the Meridian 1 Node to interface with switches that are part of an Electronic TIE Network (ETN) as long as the SIGO setting on the TIE trunk route is set for ETN at both ends. Nodes can send NCOS if SIGO is set for ESN2, (for example, at both ends of the TIE trunk group).

The Traveling Class of Service is, in effect, the Facility Restrictions Level (FRL) of a user's assigned NCOS. When a user at a Meridian 1 Node initiates a call to another Meridian 1 Node (or a Meridian 1 ESN Main), the TCOS (for example, the FRL of the user's assigned NCOS) is transmitted to the other Meridian 1 Node. At the receiving Meridian 1 Node, the TCOS (0-7) replaces the FRL of the NCOS assigned to the incoming trunk group. Route access and OHQ eligibility for the call are, therefore, based on the NCOS of the incoming trunk group with the modified FRL (for example, TCOS).

> ***Note:*** The Network Control (NCTL) data block (LD 87) is used to define OHQ eligibility on a FRL (TCOS) basis. For example, if FRL 4 is defined as OHQ eligible, then all users with an NCOS with an FRL of 4 are eligible for OHQ on calls placed to another Meridian 1 Node or to an associated Meridian 1 Main.

If a user at a Meridian 1 Main or Conventional Main initiates a call that tandems through the serving Meridian 1 Node to another Meridian 1 Node or Meridian 1 Main, TCOS applies to the call as if the call originated at the serving Meridian 1 Node.

Compatibility with ETN switches

The Meridian 1 TCOS is equivalent to the Traveling Class Mark (TCM) used at ETN switches. (See Technical Publication 42709, “TIE Trunk Signaling Compatibility for Connecting to a DIMENSION PBX,” July 1979.)

When a seven-digit/ten-digit UDP call or a DSC (Distant Steering Code) (CDP) call is made from a Meridian 1 Node to an ETN switch, the dialed digits together with the TCOS number (0-7) are sent to the connected ETN switch. At the ETN switch, the TCOS number received from the Meridian 1 Node is used as a TCM to determine route access and Off-Hook Queuing eligibility at the ETN switch.

Similarly, when a call is made from an ETN switch to a Meridian 1 Node, the dialed digits together with the TCM number (0-7) are sent to the connected Meridian 1 Node. The Meridian 1 Node interprets the received TCM number as a TCOS number. The received TCM (for example, TCOS) replaces the FRL of the NCOS assigned to the incoming trunk group from the ETN switch. This new FRL (for example, TCM) is then used to determine route access and Off-Hook Queuing eligibility for the call. However, if a DSC (CDP) call is terminated on an SL-1 switch as a Local Steering Code (LSC) call, the TCOS value transmitted by the connected switch will not be collected and saved by this switch.

Facility restriction level

A Facility Restriction Level (FRL) number is associated with each NCOS group. The FRL ranges from 0 (low-privilege) to 7 (high-privilege). The FRL is used by the software to determine the Alternate Route Selection choices available for network call attempts by users within an NCOS group.

A user assigned to an NCOS with an FRL of 3 is allowed access to Alternate Route Selection choices that have an assigned FRL of 3 or less. Access to route choices with an FRL greater than 3 is denied. A user whose NCOS has an FRL of 7 has access to any Alternate Route Selection. By assigning low-privilege users to an NCOS with a low FRL, and high-privilege users to an NCOS with a higher FRL, the customer controls worker and management access to all network facilities.

Automatic on-net to off-net overflow

If all on-net facilities to a location are busy or blocked, NARS can convert a dialed NARS UDP number to the Listed Directory Number (LDN) or DID number of the destination location, and use off-net facilities to complete the call. This process is called conversion and this feature is activated on each route list entry where required.

After dialing AC1 + LOC, if an incomplete DN (or no DN at all) is dialed, LDB is outpulsed on routes with conversion (CNV) set to YES. This works because enough digits have been dialed to determine the destination node.

If the Meridian 1 Node is equipped with BARS, digit manipulation tables can be used to convert the dialed number to the off-net number (LDN or DID) of the destination location.

A user at customer location I (Figure 2) dials 8-777-3283 to reach a party with extension number 3283 at customer location H. At the Node, NARS directs the dialed LOC number (777) to a route list, and searches all eligible routes in the list. Failing to find an available TIE trunk route, NARS then seizes local off-net facilities and, to complete the call, outpulses one of two possibilities:

— 224-3283, if customer location H is arranged for DID

— 224-5600, if customer location H is not arranged for DID

Multiple DID office code screening

Prior to X11 Release 5, only one contiguous DID DN range can be defined for each location. DNs outside the range are converted to the LDN.

With X11 Release 5 and later, Multiple DID Office Code Screening enhances On-Net to Off-Net Overflow. This enhancement permits on-net calls that are routed through the public network using on-net to off-net conversion to terminate at any DN that has been defined in the Location Code memory data block. For each LOC defined, Multiple DID Office Code Screening allows the following:

— define multiple NXX codes

— define multiple ranges of DN within each NXX

— route calls to DID ranges with an NXX different from the LDN

The following arrangements of multiple office codes (NXX) and multiple DN ranges are possible:

— single office code with a single DN range

— single office code with multiple DN ranges

— multiple office codes with a single DN range

— multiple office codes with multiple DN ranges

Only one NPA for each LOC code is allowed.

Ranges defined within an LOC code must be unique. Overlapping or duplication of ranges is not permitted.

The number of digits in each DID range must be four.

A maximum of 20 DID ranges can be defined for each Location Code regardless of the number of office codes.

Incoming trunk group exclusion

With X11 Release 5 and later, Incoming Trunk Group Exclusion (ITGE) stops users on Meridian 1 and Conventional Mains from utilizing the network to reach destinations in the home NPA, or other restricted NPAs, NXXs, LOCs, and SPNs. When the feature is configured, users cannot use the network to circumvent the restrictions. Instead, they are forced to dial off-net from their own switch and become subject to whatever restrictions are imposed at the Main.

Standard call blocking is applied on outgoing calls to specific NPAs, NXXs, SPNs or LOCs at the Meridian 1 Node if the call is from a specific incoming trunk group. Two advantages result:

— Loopback routing through the caller's home switch (home NPA, NXX) is prevented. Calls that should have been made off-net from the caller's home switch are blocked outgoing at the Node.

— Main users are prevented from using BARS or NARS to make calls to certain NPA, NXX, SPN or LOC that they are restricted from making at the home switch.

There is one ITGE index (255 groups) for each defined NPA, NXX, SPN or LOC. Each index points to an Incoming Trunk Group Exclusion (ITGE) table. A maximum of 128 restricted routes can be defined in each ITGE table. Incoming Trunk Group Exclusion provides 10-digit restriction for NPA codes, 11-digit restriction for SPN codes, 7-digit restriction for NXX codes, and 3-digit restriction for LOC codes. For LOC codes, the entire code can be restricted as well.

When a call is received, BARS or NARS tests to see if the dialed code is a restricted type (Supplemental Digit Restriction). If it is, BARS or NARS checks whether or not it has an ITGE restriction and if there is an index number (ITEI) associated with it. If an ITEI is defined, the ITGE table corresponding to the dialed code is searched. If the incoming trunk route is a member of the ITGE, the BARS or NARS process is terminated and the call is blocked. If Incoming Trunk Exclusion Digits (ITED) are assigned, BARS or NARS checks the ITED for a match with the dialed digits following the NPA, NXX, or SPN. If they match, and the ITGE includes the originating trunk route, the call is blocked.

Off-net number recognition

With X11 Release 5 and later, Off-Net Number Recognition eliminates the need for using two extra CO trunks when a subscriber using the private network dials a DID or DDD number that terminates at a BARS or NARS location. Calls are routed directly to the dialed DN (DID calls) or to the LDN (DDD calls), rather than being switched from the terminating switch to the CO and back again.

Off-Net Number Recognition parameters for local and remote DDD and DID locations are defined by the customer in the Network Translation Tables, Supplemental Digit Recognition/Restriction blocks (SDRR), Digit Manipulation Tables, and the Route Data Block. (See Tables 7 and 8)

Up to 10 digits can be defined for recognition with X11 Releases 5, 6, and 7. X11 Release 8 and later supports up to 11 digits.

Table 7
SDRR (X11 Release 5, 6, and 7)

Call type	Network Translation Table (number of digits)	SDRR block (number of digits)
NPA	3	1–7
1NPA	4	1–7
NXX	3	1–4
1NXX	4	1–4
SPN	4	1–6
ISPN	4	1–7

Table 8
SDRR (X11 Release 8 and later)

Call type	Network Translation Table (number of digits)	SDRR block (number of digits)
NPA	3 - 10	1 - (10 - N)
1NPA	4 - 11	1 - (11 - N)
NXX	3 - 7	1 - (7 - N)
1NXX	4 - 8	1 - (8 - N)
SPN	1 - 11	1 - (10 - N)
ISPN	1 - 4	1 - (11 - N)

Note: The value N is equal to the number of digits defined in the Network Translation Table.

Up to 512 SDRR blocks can be defined for NARS (256 for BARS). Each table can contain up to 64 entries.

Off-Net numbers are recognized at the last intelligent BARS or NARS switch. Translating the NPA, NXX, or SPN identifies the method of call treatment. If the data type is SDRR and the index is an SDRR table index, supplemental digit restriction/recognition is applied:

— If no match is found in the SDRR, route selection is called, call processing resumes, and the call is routed to the CO of the terminating off-net number.

— If a match is found **and** the number is in the denied block, standard call blocking takes place.

— If a match is found **and** the number is recognized as a terminating number at the local switch (for example, the last intelligent BARS or NARS switch), the call is terminated at the station DN (DID calls) or at the attendant DN (DDD calls).

— If a match is found, **and** the dialed number is a recognized number terminating at a remote switch, **and** the switch has chosen a TIE route for call termination, the switch checks the Route Data Block for special digit manipulation. The call is routed directly to the Main. DID calls terminate at the dialed station, and DDD calls terminate at the attendant DN.

Note: Remote recognition applies to TIE trunks only.

Supplemental digit restriction (release dependent)

Supplemental Digit Restriction blocks (see Table 9) function as follows:

— block (deny) access to certain telephone numbers

— recognize off-Net calls dialed to on-Net locations

— prevent routing of calls to the home switch of the originating trunk group by either on-net or off-net facilities.

The customer can also specify through Meridian 1 service change the treatment that blocked calls receive, such as Overflow Tone, Intercept to Attendant, or Recorded Announcement.

Table 9
Supplemental Digit Restriction blocks for NARS or BARS

Network package	X11 Release 4 and earlier maximum	X11 Release 5 and later maximum
NARS	256	512
BARS	32	256

Note: For X11 Release 4 and earlier, one block can restrict up to 16 numbers. For X11 Release 5 and later, one block can recognize or restrict up to 64 numbers.

Digit translation/restriction/recognition

BARS and NARS provide a 1- through 10-digit translation/restriction/ recognition capability through the use of Network Translation Tables and Supplemental Restriction/Recognition tables. There are two Network Translation Tables with NARS, one associated with each of the network access codes (AC1 and AC2). See Figure 3 on page 43 for NARS elements accessed at a Meridian 1 node to process a network call.

Information contained in the Network Translation Tables is as follows:

— For each NPA entry, excluding the Home NPA (HNPA):

- a route list index number (0-255 with NARS, 0-127 with BARS) that indicates which route list to use in processing a call to this NPA entry
- whether there are telephone numbers within this NPA entry to which network calls are to be blocked; for example, denied
- whether there are telephone numbers within this NPA entry to which network calls are to be blocked because of ITGE restrictions (X11 Release 5 and later)
- whether there are numbers under this NPA entry that are to be recognized as DID or DDD codes to an On-Net location (X11 Release 5 and later)
- a list (up to 64) of 1- to 7-digit numbers that follow the NPA and are to be blocked or recognized in this NPA

— For each NXX entry:

- a route list index number (0-255 with NARS; 0-127 with BARS) that indicates which route list to access in processing a call to this NXX entry
- whether there are telephone numbers within this NXX entry to which network calls are to be blocked
- whether there are telephone numbers within this NXX entry to which network calls are to be blocked because of ITGE restrictions (X11 Release 5 and later)
- whether there are numbers under this NXX entry that are to be recognized as DID or DDD codes to an On-Net location (X11 Release 5 and later)
- a list of up to 64 one to four digit numbers that follow the NXX and are to be blocked or recognized in this NXX

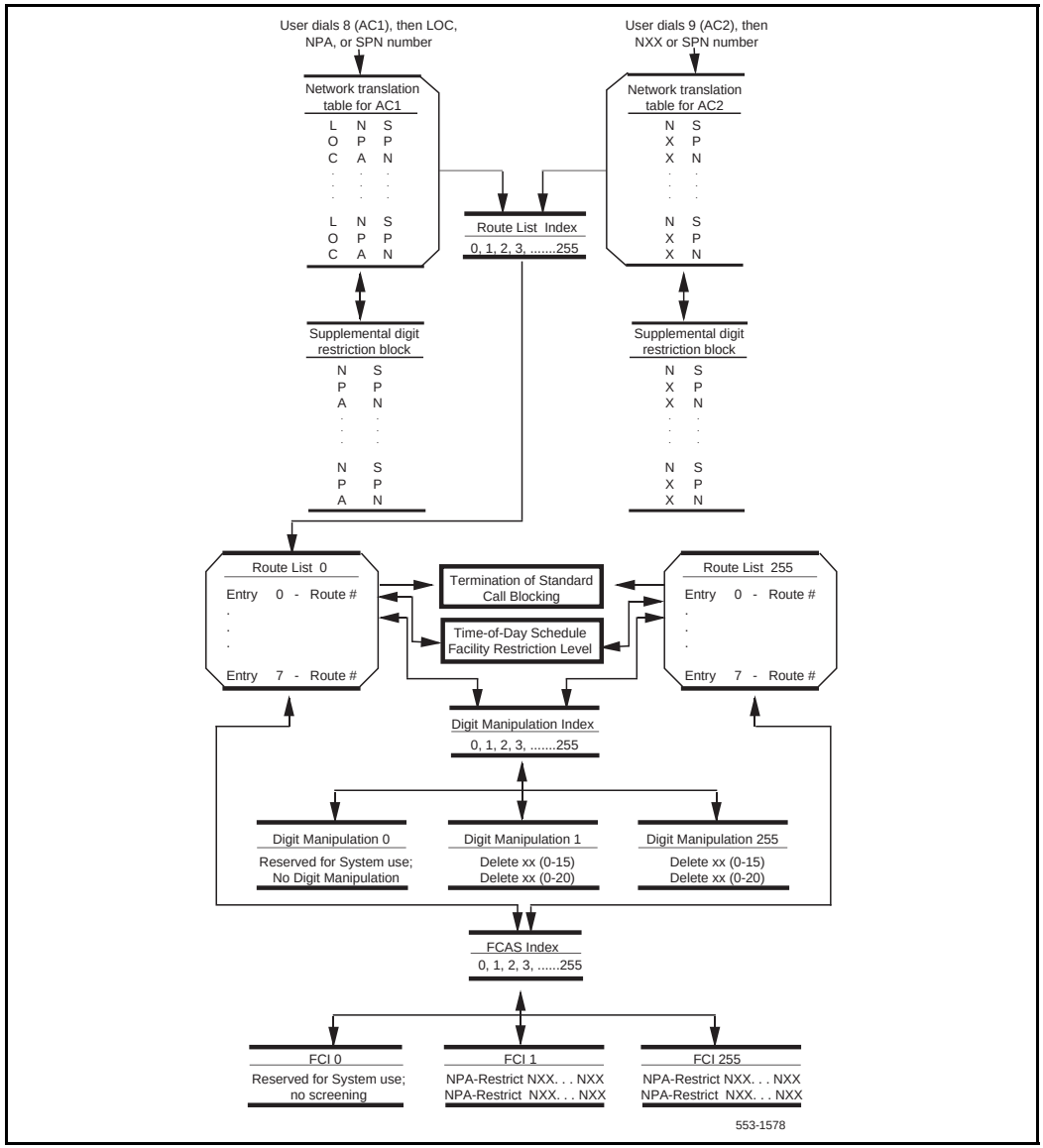
— For each LOC entry, excluding the Home LOC code (not applicable to a BARS-equipped switch):

- a route list index number (0-255) that indicates which route list to access in processing a call to this LOC entry
- the Listed Directory Number (LDN) to which the LOC entry is to be converted when using off-net DDD facilities
- the range of DID numbers to which the LOC entry can be converted when using DID facilities
- office codes associated with the range
- whether there are LOC entries to which network calls are to be blocked because of ITGE restrictions (X11 Release 5 and later)

— For each SPN (special number) entry:

- a route list index number (0-255 with NARS; 0-127 with BARS) that indicates which route list to access in processing a call to this SPN
- whether there are digits following SPN numbers to which network calls are to be blocked
- whether there are SPN numbers for blocking network calls because of ITGE restrictions (X11 Release 5 and later)
- whether there are numbers under this SPN that are to be recognized as DID or DDD codes to an On-Net location (X11 Release 5 and later)
- a list of up to 64 one to ten digit numbers that are to be blocked or recognized when following the SPN

Figure 3
NARS elements accessed at a Meridian 1 Node to process a network call



Free calling area screening

Free Calling Area Screening (FCAS) is a BARS or NARS feature that provides full six-digit (NPA-NXX) screening to determine the route choice for completion of off-net calls. With FCAS, a customer can allow calls to NXX codes within the “free calling area” surrounding a particular on-net location and restrict (deny) calls to those NXX codes that would incur long distance charges.

FCAS is implemented similarly to digit manipulation (through tables). A Meridian 1 Node equipped with NARS can accommodate up to 255 FCAS tables; with BARS, up to 127 FCAS tables. Each table can contain up to 15 NPA codes. (Prior to X11 Release 19, with BARS, each table can contain up to 7 NPA codes.)

Up to 800 NXX codes can be restricted or allowed within each NPA code. Each FCAS table is referenced by a Free Calling Index (FCI) number (0-255 with NARS, 0-127 with BARS); “FCI = 0” is a system default indicating that no Free Calling Area Screening is required. The appropriate FCI number is then assigned to the applicable route list entries.

Whenever a route list entry is being evaluated for an off-net call (for example, 8-NPA-NXX-XXXX), BARS or NARS checks to see if there is an FCI number (other than “0”) referred to by the entry. If an FCI number other than “0” is defined, the appropriate FCAS table for the dialed NPA is found and used for NXX screening. If the dialed NXX is denied in the table, BARS or NARS will not use the route list entry for call completion, but will continue to search for another eligible route list entry. If the dialed NXX is not denied or specifically allowed in the table, the route list entry is eligible for the call. Calls to the LDN of a location are screened only if the NPA is included as part of the LDN. NXXs allowed in an FCI table are the only ones allowed for that route list entry.

BARS or NARS bypass control

A customer can allow selected users to bypass the BARS or NARS feature for call completion between any two locations; for example, two locations that share a high community of interest. To do this, routes and trunks are set up between the two locations and are assigned an access code distinct from the AC1 and AC2 codes used to access BARS or NARS. The normal trunk controls, like Trunk Group Access Restriction (TGAR), Class of Service, and Code Restriction, are then used to enable access only to the selected users. All other users are denied access to the trunk group, and thus are forced to use BARS or NARS for all calls.

Network speed call

The Network Speed Call (NSC) feature enables a user at a Meridian 1 Node who is normally restricted from making certain types of BARS or NARS calls to make such a call if the destination is a company-approved number defined in a System Speed Call (SSC) list. This feature requires that the System Speed Call feature (see the *X11 Features and Services* (553-3001-306)) be equipped, in addition to Network Speed Call. NSC can also be accessed by users at a Meridian 1 Main or Conventional Main, provided a BARS or NARS access code is used to initiate the call.

Access to the NSC feature is allowed after a NARS or BARS access code is dialed. Upon receipt of the BARS or NARS dial tone (optional), the user dials a Network Speed Call access code (one to three digits). The NSC access code must be unique from all LOC, NPA and NXX codes and Special Numbers defined in the translator for the BARS or NARS access code.

The NSC access code is associated with a previously-defined System Speed Call list (0-4095) through service change in the network translation load. If the SSC list has its length (size) changed, the list access code and list number must be deleted and reentered into the NARS translator. Associated with the SSC list is an NCOS number. The NCOS assigned to the SSC list is applied to the call only if the FRL (0-7) is greater than that associated with the call originator's assigned NCOS.

> ***Note:*** With X11 Release 13 and later, the number of SSC lists has expanded from 254 (0-253) to 4096 (0-4095), depending on available system memory and other speed call usage.

If 1+ Dialing is specified for an NPA, NXX or SPN number in a translator, the digit 1 must not be used as the leading digit for Network Speed Call list codes in that translator.

The user dials the number of the desired entry (0-999) in the SSC list. Upon completion of dialing, the digits defined for the list entry are passed to BARS or NARS translation for processing. Route and feature (OHQ, CBQ) eligibility for call completion are based on the NCOS associated with the SSC list, if the FRL of the user's assigned NCOS is lower than that of the list.

Network call transfer

This feature improves the operation of the existing Call Transfer (XFER) feature between two Meridian 1 systems when a call is transferred back to the originating switch. The regular XFER feature requires two TIE trunks to complete the call. With Network Call Transfer (NXFER), if the call is transferred back to the originating switch by means of the same TIE trunk group, the originating switch completes the transfer within itself and the TIE trunks are dropped.

> ***Note:*** Both Meridian 1 switches must be equipped with NSIG and NXFER software for this feature to operate.

The benefits derived from the NXFER feature, which operates the same as the XFER feature, include:

— minimal use of access TIE lines

— improved transmission performance because TIE lines are not used for the completed connection

Figures 4 and 5 assume that station A receives an incoming trunk call from B and transfers it to C. As shown in Figure 4, the NXFER feature allows station A at one ESN switch (I) to transfer the TIE trunk call from station B (switch II) to a third party, station C (switch II). In addition to NXFER software, NSIG software is needed at both ends of the TIE trunk. If the transfer is allowed, stations B and C are connected on switch II and the TIE trunks are dropped (see Figure 6). In comparison, regular Call Transfer (XFER) requires two TIE trunks and both switches to transfer and connect stations B and C.

Figure 4
Connection without NXFER

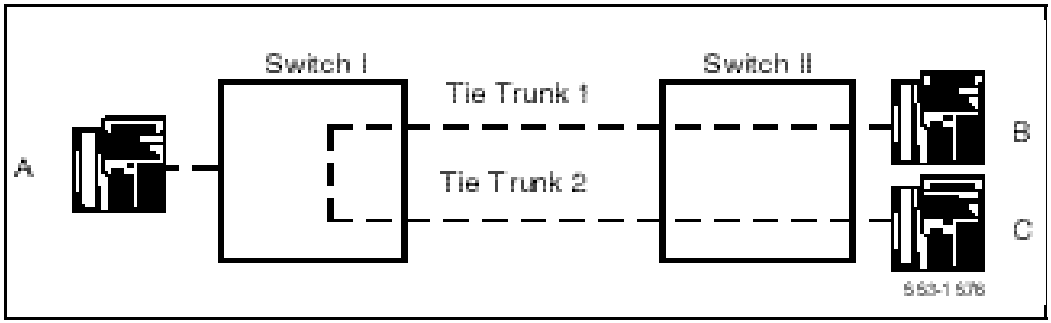


Figure 5
Connection during

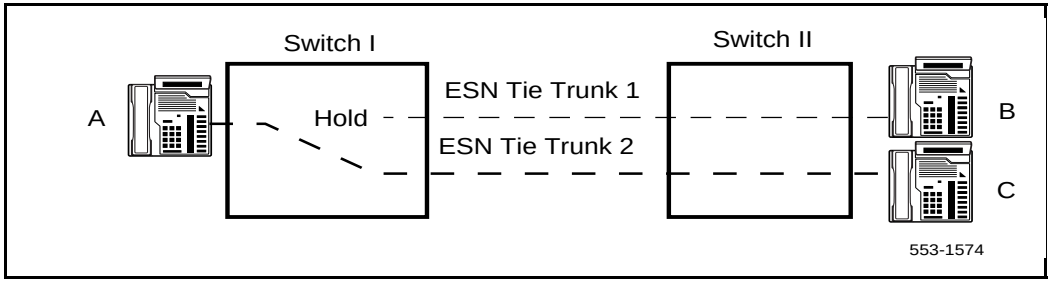
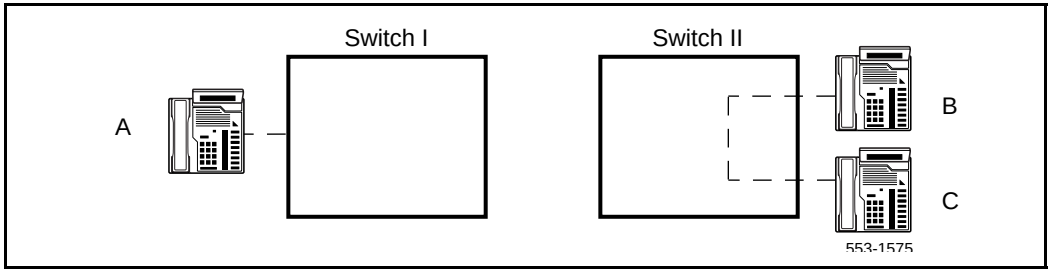


Figure 6
Connection after XFER



1+ dialing

Translation tables

With 1+ Dialing, the BARS or NARS translation tables are equipped for four digit translation (based on the first one to four digits), or 11-digit translation with X11 Release 8 on, thus allowing BARS or NARS access codes for long distance calls. NARS provides two translation tables and BARS provides one. Refer to Table 2 for dialing formats for NARS Uniform Dialing Plan (UDP) calls and Table 3 for BARS calls.

Code ambiguity

The 1+ dialing capability also eliminates ambiguity between identical originating and terminating 3-digit NPA, NXX and LOC codes for BARS or NARS originated calls. Thus, the BARS or NARS customer can route calls to any NPA, NXX or LOC code that conflicts with one of its 3-digit codes.

Limitation

If 1+ Dialing is specified for an NPA, NXX or SPN number in a translator, it cannot conflict with any NPA, NXX, or SPN in the same table.

Interchangeable numbering plan area codes impact

Due to the depletion of available Numbering Plan Area (NPA) codes in North America, the Interchangeable NPA codes plan was developed. This plan modifies the North American Numbering Plan (NANP) by removing the limitation of zero (0) or one (1) being the second digit in the three digit NPA code. By allowing the second digit of area codes to be any number between zero (0) and nine (9) the available NPA codes are increased from 160 to 800; but due to the fact that eight NPA codes are reserved for special purposes the actual increase is from 152 to 792. Interchangeable NPA codes are effective from July 1, 1995. Table 10 shows the NANP dialing formats with and without Interchangeable NPA codes.

Table 10
NANP dialing formats with and without Interchangeable NPA codes

Dialing format with Interchangeable NPA codes	Call type
[0/1] + NXX + NXX + XXXX	10 digit public number (NPA)
[0/1] + NXX + XXXX	7 digit public number (NXX)
NXX + XXXX	7 digit private number (LOC)
Dialing format without Interchangeable NPA codes	**Call type**
[0/1] + NPX + NXX + XXXX	10 digit public number (NPA)
[0/1] + NXX + XXXX	7 digit public number (NXX)
NXX + XXXX	7 digit private number (LOC)

Legend:	
[0/1]	Optional digits: 0 indicates operator assisted call. 1 indicates Direct Distance Dial (DDD) call.
N	Digits 2 to 9.
P	Digits 0 or 1.
X	Digits 0 to 9.

Home Number Plan Area (HNPA) codes and NPAs using the NPX format only are allowed in X11 Release 19 and earlier, while HNPAs and NPAs using both NPX and NXX formats are allowed in X11 Release 20 and later.

Due to the fact that the NPA codes now use the NXX format in North America, dialing plan conflicts are inevitable. Bellcore recommends the use of 1+ Dialing. Under the recommended 1+ Dialing method all ten digit calls are preceded by the digit "1" while no seven digit calls are preceded by the digit "1". Table 11 shows the Bellcore recommended 1+ Dialing format:

Table 11
Bellcore recommended 1+ Dialing format

Dialing format	Call type
[0] + 1 + NXX + NXX + XXXX	10 digit public number (NPA)
[0] + NXX + XXXX	7 digit public number (NXX)
NXX + XXXX	7 digit private number (LOC)
Legend:	
[0]	Optional: indicates operator assisted call
1	Indicates 10 digit public number to follow (NPA).
N	Digits 2 to 9.
X	Digits 0 to 9.

For implementation information, see the section titled "1+ Dialing dialing plan implementation for Interchangeable NPA codes" on page 99.

System administrators must also be aware of the fact that the North American Toll Denied (TLD) class of service restriction will no longer bar all toll calls with Interchangeable NPA codes due to the fact that the TLD class of service restriction only checks to see if the second digit of an NPA is "0" or "1". Similarly, the North American toll CDR option will also cease to function accurately.

If toll calls are to be restricted with Interchangeable NPA codes the system administrator must use either the Code Restriction or the New Flexible Code Restriction feature for calls that are not routed by BARS or NARS. BARS and NARS will still be able to reliably identify toll calls.

Network signaling

The Network Signaling (NSIG) feature provides the required signaling protocol to interface Meridian 1 Nodes with Meridian 1 ESN Mains, Meridian 1 Nodes with other Meridian 1 Nodes, Meridian 1Meridian 1 Nodes with Conventional Mains, and Meridian 1 Nodes with Electronic TIE Network (ETN) switches.

When equipped with NSIG, a Meridian 1 Conventional Main is enhanced and becomes an ESN Main. When callers at an ESN Main place calls through a Node or Nodes with NSIG, the NCOS or TCOS travels with the call and is interpreted at other Meridian 1 switches that are equipped with NSIG. The TIE trunk settings determine and control the operation of this feature.

When the NSIG feature is equipped at a switch, options are available in Route Data Block, LD 16, to define the signaling arrangements between that switch and any other switch that may be connected to it by means of TIE trunks. These options define what call information is to be transmitted to a connected switch and what call information is to be received from a connected switch. The option selected depends on the type of connected switch (Node, Main, Conventional Main, ETN) and the options (for example, CCBQ, CBQCM) that are available to the connected switch.

The signaling options are: STD (standard), ESN (Electronic Switched Network), ESN2, ESN3, ESN5, and ETN (Electronic TIE Network).

STD Arranges the TIE trunk group for transmission/reception of the called number between switches. Sends outpulsed digits.

ESN (X11 Release 2 only) Arranges the TIE trunk group for transmission/reception of the call type, NCOS/TCOS, and called number between switches.

ESN2 (X11 Release 3 and later) Arranges the TIE group as described for ESN in X11 Release 2. Used unless switch has NXFER or Satellite Link Control (SAT).

ESN3 (X11 Release 3 or 4) Arranges the TIE group as described for ESN in X11 Release 2; is required on systems equipped with the Network Call Transfer (NXFER) or Satellite Link Control features.

ESN5 (X11 Release 5 and later) Arranges the TIE trunk group as described for ESN in X11 Release 2; needed with DTI.

ETN Arranges the TIE trunk group for transmission/reception of the called number and TCOS/TCM between switches and is used when connected to an ETN switch. Sends outpulsed digits and TCOS.

Application

The following is a description of how these options accommodate the different switch types that can be connected to a Meridian 1 Main or Meridian 1 Node that is equipped with the NSIG feature.

Meridian 1 Node A Meridian 1 Node can be connected by means of TIE trunks to another Meridian 1 Node, a Meridian 1 Main, a Conventional Main, and/or an ETN switch.

— If the Meridian 1 Node connects to another Meridian 1 Node, both ends of the connecting TIE trunk group are defined with the ETN option (the called number plus TCOS/TCM), ESN2, ESN3, or ESN5.

— If the Meridian 1 Node connects to a Meridian 1 Main, both ends of the connecting TIE trunk group are defined with the ESN option (call type plus NCOS/TCOS plus the called number).

— If the Meridian 1 Node connects to a Conventional Main, the Node-end of the TIE trunk group is defined with the STD option (the called number).

— If the Meridian 1 Node connects to an ETN switch, the Node-end of the TIE trunk group is defined with the ETN option (the called number plus TCOS-TCM).

Meridian 1 ESN Main A Meridian 1 Main can be connected by means of TIE trunks to a Meridian 1 Node and satellite switches.

For connection to a Meridian 1 Node, both ends of the connecting TIE trunk group are defined with the ESN option (call type plus NCOS/TCOS plus the called number). If there are satellite switches connected to the Meridian 1 Main, the Main-end of the TIE trunk groups from the satellite switches are defined with the STD option (the called number).

Requirements

The following requirements apply:

— As a Meridian 1 Main can connect to only one Meridian 1 Node, both switches must be equipped with the NSIG feature for NSIG-related features.

— TIE trunks between Meridian 1 Nodes and Meridian 1 Mains must be arranged for DTMF sending/receiving and wink-start operation.

— Meridian 1 Node compatibility with ETN switches is limited to seven-digit on-network, 10-digit off-network, and DSC (CDP) calls.

Satellite link control

Tandem trunk calls, when connected through more than one communications satellite trunk, are subject to transmission distortion because of propagation to and from communications satellites. The Satellite Link Control feature ensures that the configuration of a call does not include more than one communications satellite trunk.

When accessing an SCC, the SL-1TD is instructed to look for one of the following tones:

— Busy or Overflow Tone

— SCC dial tone or regular dial tone

— Ringback tone

This feature applies to ESN network calls (BARS or NARS/CDP) only.

ESN Proprietary Signaling (NSIG) is required among ESN switches.

Routes that receive digits from satellites or send digits to satellites must be marked as SATELLITE routes for this feature to operate.

Simultaneously a timer is started whose value is an approximation of the period in which Ringback tone is normally received. When the timer expires prior to a response from the SL-1TD, the software sends a status request message to the SL-1TD. The response from the SL-1TD indicates that a tone has been detected but is not yet identified. Based on the sequence in which tones are checked, the software assumes the tone under investigation is Ringback tone and can continue the SCC call processing.

Flexible ESN “0” routing

Flexible ESN “0” Routing, available beginning with X11 Release 16, uses four prefixes

- 0 - to call the local operator
- 00 - to call the international operator
- 011 - to make station to station international calls
- 01 - to use a calling card, call collect, or other operator-assisted international calls

Normally, the ESN translation table only contains leftwise unique numbers; for example, if one entry begins with the digits “123,” no other entry can begin with the digits “123”. These four special “0” prefixes, which are not leftwise unique, are an exception to this rule.

Flexible ESN “0” Routing is part of the existing BARS (57) and NARS (58) packages and interacts only with these features. Since NARS has two translation tables, two Flexible ESN “0” Routing data blocks are included in NARS. A call could be routed in two different ways.

Flexible ESN “0” Routing applies to all route types and network types that are supported by ESN. For information on the appropriate prompts and responses in service change (LD 90), refer to the *X11 Administration* (553-3001-311)Federal Communication Commission equal access carrier access code expansion impact

In May 1991, the Federal Communications Commission (FCC) mandated that Call Aggregators (CA) allow customers *Equal Access* to interexchange carriers. This capability is available with X11 Release 17 and later. This allows callers to use interexchange carriers regardless of the CA’s prescribed carrier. As a concession to CA’s the FCC has allowed the optional restriction of direct dialed Equal Access toll calls.

Any call preceded by a Carrier Access Code (CAC) is considered to be an Equal Access call. The CAC consists of an Equal Access identifier and a Carrier Identification Code (CIC) which identifies the desired interexchange carrier for a given call. The FCC Equal Access CAC Expansion allows the Equal Access identifier to be expanded from two to three digits, and the CIC to be expanded from three to four digits. Table 12 gives examples of both the original and expanded CAC formats:

Table 12
Original and expanded CAC formats

CAC formats	Equal Access Identifier	Carrier Identification Code
Original	10	XXX
Expanded	101	XXXX

The expanded format is effective from the first quarter of 1995. Both formats, original and expanded, will be allowed to coexist for approximately 18 months at which time the original format will be discontinued during the fourth quarter of 1996.

Along with the introduction of the expanded CAC the FCC Equal Access CAC Expansion feature also eliminates the Selective Carrier Restriction method capabilities, while retaining the General Carrier Restriction capabilities. This results in a single restriction method which will be referred to as Equal Access toll call restriction.

Dialing plan considerations

Tables 13 shows the CAC formats that are supported.:

Table 13
CAC formats supported from June 1, 1996

Operator-assisted dialing to North American and International locations:
101XXXX + 0
101XXXX + 0 + NPA + NXX + XXXX
101XXXX + 0 + NXX + XXXX
101XXXX + 0 + SAC + NXX + XXXX
101XXXX + 01 + CC + NN
Direct Distance Dial (DDD) dialing to North American and International locations:
101XXXX + 1 + NPA + NXX + XXXX
101XXXX + 1 + NXX + XXXX
101XXXX + 011 + CC + NN

During the time when both original and expanded CAC formats are supported it must be noted that the original CICs will be supported by the expanded CAC format if “0” is dialed before the original CIC. Table 14 shows the interactions between CAC formats during the various time frames:

Table 14
CAC format interactions

Supported CAC formats	Dialing sequences	Example
Original only	10XXX + ...	10123 + 1 + NPA + NXX + XXXX
Original and Expanded	10XXX + ... 1010XXX + ...	10123 + 1 + NPA + NXX + XXXX 1010123 + 1 + NPA + NXX + XXXX
Expanded only	1010XXX + ...	1010123 + 1 + NPA + NXX + XXXX

Carrier access code dialing sequences with special characters

The Meridian 1 recognizes two special characters in any dialing sequence. These characters are the * (star or asterisk) and # (number sign, pound, or octothorpe). The *, when detected in a dialing sequence, causes a pause in the outpulsing of digits, while the #, when detected in a dialing sequence, indicates end-of-dialing; that is, no further digits are required to process the call.

Due to an interaction with Equal Access if the Meridian 1 is configured to restrict international toll calls, then direct dialed Equal Access operator calls (101XXXX + 0) can not be terminated with an #. If the Equal Access operator call is terminated with an # the call will be restricted. Table 15 depicts this interaction:

Table 15
Octothorpe with Equal Access interaction

If	101XXX + 011 + CC + NN **calls are restricted**
Then	101XXX + 0 + # **calls will also be restricted**
But	101XXXX + 0 **will not be restricted**

Configuring equal access within a network

Equal Access toll restriction is intended for use on an outgoing route from a Meridian 1 to a Central Office. This feature is not intended for restriction of calls which terminate on a network node. Therefore, network signaling (ESN3, ESN5, or ETN) is not supported.

Within a network Equal Access toll calls must be restricted at the outgoing node (the node which is directly connected to the Central Office). For implementation information see “Network implementation of Equal Access” on page 107.

Network traffic measurements

The Network Traffic (NTRF) feature provides Traffic Measurement data related to network performance and network traffic at each Meridian 1 Node and Meridian 1 Main. Effective use of this data enables the network communications manager to assess the effectiveness of the network, and to identify specific areas of network operation where improvements are warranted.

Areas of network operation that are measured include NCOS, OHQ, CBQ, and routing. These measurements are provided in addition to existing non-network traffic data in *Traffic Measurement: Formats and Output* (553-2001-450).

TFN001 routing measurements

The routing measurements provide data related to route list utilization. A route list is a list of alternate trunk routes that are identified through interpretation of the dialed number. For each defined route list, these measurements show:

— how often the list was used

— which routes in the list were used

— the number of calls that were unsuccessful in completing a route list selection or connection

— queuing (OHQ and CBQ) information

This data comprises both the usage and the average duration of each call against the route list. Data is output only for route lists upon which calls were attempted during the traffic study interval.

OHQ measurements

The OHQ measurements are associated with route lists, NCOS, and incoming trunk groups. OHQ enables a user to wait off hook for a network facility to become available. The network communications manager can control the conditions for, and the duration of, the wait. The measurements present both the usage and the average duration if the OHQ feature. This data comprises part of the routing measurements.

CBQ measurements

The CBQ measurements are associated with route lists, NCOS, and incoming trunk groups. If the system cannot select a route, the caller may opt to have the system establish the call at a later time when a route becomes available. The measurements indicate usage and the length of time a caller waits for an established call. The communications manager can control the conditions for CBQ and the advancement of a call within the queue. This data comprises part of the routing measurements.

TFN002 NCOS measurements

The Network Class of Service (assigned through service change) indicates the network facilities available to the user. Traffic Measurements, for example, queuing and blocking delay, are accumulated for each NCOS and indicate the grade of service provided by the system. The communications manager can change the NCOS if a grade of service is inappropriate for a user category, the definition of the NCOS is inaccurate, or the routing parameters need updating.

TFN003 incoming trunk group measurements

These measurements relate to the incremental traffic that was imposed on the incoming trunk groups by network queuing features (for example, Off Hook Calling (OHQ), Call Back Queueing (CBQ), Co-ordinated Call Back Queueing (CCBQ), Call Back Queueing for a Conventional Main (CBQCM).

The measurements show:

— how often the incoming trunk group was offered OHQ

— the average time in the OHQ

— how often the incoming trunk group was offered CCBQ or CBQCM, and the number of acceptances

— the average time in CCBQ or CBQCM

— how often an access line was blocked when attempting a CCBQ or CBQCM call back

— how often CCBQ or CBQCM call backs were not answered or were canceled

Expensive route warning tone

In some cases, expensive trunk routes can be assigned an FRL that allows the routes to be accessed by certain network users. This feature enables the network communications manager to identify users who should receive an Expensive Route Warning Tone (ERWT). The tone (three 256-ms bursts of 440 Hz) notifies the user that BARS or NARS has selected facilities designated as expensive to complete the call. The user then has the choice of allowing the call to complete over the expensive facilities, going on-hook to avoid the increased expense, or queuing on the I set routes. The user must make this choice within a programmable time of 0 to 10 seconds.

If the call originator is located at a Meridian 1 Node or Meridian 1 Main and the user is eligible for both the Ring Again feature and for CBQ type A, then Ring Again can be activated to queue the call. See *Network Queuing: Description* (553-2751-101).

If the Meridian 1 Node is equipped for Call Detail Recording (CDR), acceptance of an expensive route after ERWT is received is noted in the CDR record.

ERWT eligibility is defined through the user's assigned NCOS group. NCOS groups must have CBQ type A in order to hear ERWT. The tones must be activated for the customer group. The expensive route cannot be part of the I set in the route list. For more information on the ERT timer, refer to LD 86 in the *X11 Administration* (553-3001-311).

Queuing features

Eligibility for the OHQ or CBQ features is defined through the user's assigned NCOS group. See the *Network Queuing: Description* (553-2751-101) NTP for more information.

Interchangeable numbering plan area

The Interchangeable NPA codes plan was developed in the 1960s to manage the inevitable depletion of available codes. Prior to 1995, all area codes had an N(0/1)X format, where N was any digit from 2 to 9 inclusive and X was any digit, 0 to 9. As of January 1995, area codes have an NXX format, increasing the available codes to 640.

Modifications to X11 software, including changes to LDs that accept NPA or Home NPA codes, have eliminated dependencies and limitations associated with the old NPA code format.

The introduction of Interchangeable NPAs means that an area code (NPA) can appear identical to a central office prefix or a private network Location Code (LOC).

BARS/NARS prohibits the entry of identical NPAs, central office prefixes, or LOCs under the same ESN access code. Customers often have constructed translation tables with NPA and LOC codes associated with one Access Code and central office codes associated with a second Access Code. Now that LOC and NPA codes may be identical, this option is no longer feasible.

Table 16 summarizes the options.

Table 16
Access Codes and 1+ dialing

# of Access Codes	Need LOC?	Use 1+?	Results
2	yes	yes	no conflicts
2	yes	no	must ensure that no LOC is identical to any NPA
2	no	yes	no conflict
1	no	yes	no conflict
1	no	no	not recommended
1	yes	yes	not recommended

Nortel Networks recommends a dialing plan that uses 1+ dialing to distinguish NPA calls. (Digit Manipulation can remove the "1" for customers whose central office does not support 1+ dialing.)

Customers with two Access Codes that do not want to use 1+ dialing must ensure that no LOCS in the database are identical to existing NPAs. (The database needs to be checked whenever a new NPA is introduced.)

Customers who do not need LOCs can use a single Access Code and 1+ dialing or two Access Codes, one for NPA and one for the central office prefix.

Software modifications enable users to enter the new interchangeable NPAs in the following tables:

— Electronic Switched Networking (ESN) Translation tables, LD 90

— Free Calling Area Screening (FCAS) tables, LD 87

— Feature Group D (FGD) Code Restriction tables, LD 19

— M911 NPID tables, LD 16

This software is available beginning with X11 Release 19. Upgrades may also require hardware modification depending on route selection capabilities, system type, and software release.

Refer to the *Electronic Switched Network description* NTP for more information.

Carrier access code

A telephone user can select any interexchange carrier for any given call by using a Carrier Access Code (CAC). A CAC comprises an Equal Access identifier and a Carrier Identification Code (CIC), as described in the following paragraph. Any call preceded by a CAC is called an Equal Access call.

Prior to the first quarter of 1995, this code is defined as 10XXX, where "10" is the Equal Access identifier and XXX is the CIC. During the first quarter of 1995, the CAC will become 101XXXX (an Equal Access identifier of "101" followed by a four-digit CIC). For an interim period of 18 months following introduction of the new CAC format, both old and new formats will be accepted. During the third quarter of 1996, support for the 10XXX format will terminate. Meridian 1 software permits both formats.

Equal Access determines restrictions without looking at a call's originating type. (Equal Access is not a BARS/NARS feature and does not require BARS/NARS dialing.) To configure BARS/NARS to route Equal Access calls, simply use a special number (SPN) of 10 or 101 (the Equal Access codes) to identify the calls as Equal Access calls and route them accordingly.

Flexible numbering plan

Flexible numbering permits a private network to use up to ten digits for station numbers and up to seven digits for location codes. The total number of digits that need to be dialed can differ from station to station.

Flexible numbering cannot easily determine when digit dialing is complete. Call connection occurs immediately only if the number dialed has the maximum number of digits. Otherwise, the interdigit timer must expire, before triggering call connection. To speed up connections to stations with short numbers, callers can press the Fast Connect key, the octothorpe (#), to force immediate call connection.

Supplemental digit restriction and recognition

The Supplemental Digit Restriction and Recognition (SDDR) feature is modified to allow up to seven digits in the digit restriction table. (This is independent of the number of digits entered in response to the NPA, central office, or LOC service change prompts.)

Basic Alternate Route Selection (BARS) implementation

This section provides the procedures necessary to configure Basic Alternate Route Selection (BARS). Only the service change information for BARS is shown here. For a complete discussion of prompts and responses, refer to the *X11 Administration* (553-3001-311). The following procedure shows the steps that must be performed to correctly implement your BARS system.

Procedure 1
Implementing BARS

1 Gather data for each NCOS group. (LD 87)

2 Gather data to define BARS feature parameters. (LD 86)

3 Gather data for each Digit Manipulation Index (DMI). (LD 86)

4 Gather data for each Free Calling Area Screening (FCAS). (LD 87)

5 Gather data for each Route List associated with A DMI. (LD 86)

6 Gather data for each Incoming Trunk Group Exclusion index (ITGE). (LD 86)

7 Gather BARS translation data. (LD 90)

8 Gather data to configure a Conventional Main for Off-Net Number Recognition. (LD 16)

9 Gather data to assign a Network Class of Service group number to a list of items

10 Enter data into the database

Step 1
Gather data for each NCOS group. (LD 87)

Prompt	Response	Description
REQ	NEW CHG OUT	Create, change, or remove data
CUST	0-99	Customer number
FEAT	NCTL	Feature = Network control
NCOS	0-99	Network Class of Service group number to be added, changed, or removed
- FRL	0-7	Facility restriction level. Your entry determines the entries in a Route List Index (RLI) to which it has access. 0 is the most restrictive, 7 is the least restrictive and can access more entries. FRL is assigned to each NCOS.
- RWTA	(NO) YES	Allow Expensive route warning tone

Step 2
Gather data to define BARS feature parameters. (LD 86) (Part 1 of 2)

Prompt	Response	Description
REQ	NEW CHG OUT	Create, change, or remove data
CUST	0-99	Customer number
FEAT	ESN	Feature = Electronic Switched Network
MXSD	0-1500	Maximum number of Supplemental Digit restriction blocks
MXIX	0-127	Maximum number of incoming trunk group exclusion tables that can be defined. Enter 0 if not required.
MXDM	0-xxxx	Maximum number of digit manipulation tables, where xxxx = 0-256 if FNP package 160 is not equipped; 0-1000 if FNP package 160 is equipped
MXFC	0-127	Maximum number of free calling area screening tables
MXRL	0-128	Maximum number of route lists. If MXRL = 0, the system will not allow the creation of any route lists.
AC1	xx	One or two digit BARS access code one
DLTN	(YES) NO	Dial tone after dialing AC1 or AC2

Step 2
Gather data to define BARS feature parameters. (LD 86) (Part 2 of 2)

Prompt	Response	Description
ERWT	(YES) NO	Is Expensive route warning tone provided? ERWT is not supported on TIE trunks.
ERDT	0-(6)-10	Time in seconds that a user has to accept or reject an expensive route after ERWT is given; default is 6 seconds; range is in 2-second intervals
TODS	x hh mm hh mm	Start and end time-of-day schedules. Where: x = schedule number for BARS = 0-7, hh = hour, mm = minutes
TGAR	(NO) YES	Trunk Group Access Restrictions YES = Examine TGAR/TARG when call is placed NO = Ignore TGAR/TARG when call is placed

Step 3
Gather data for each Digit Manipulation Index (DMI). (LD 86)

Prompt	Response	Description
REQ	NEW CHG OUT	Create, change, or remove data
CUST	0-99	Customer number
FEAT	DGT	Feature = Digit manipulation index
DMI	1-xxxx	Digit manipulation table index, xxxx = 0-255 if FNP package 160 is not equipped; 0-1000 if FNP package 160 is equipped. The maximum number of Digit manipulation tables is defined by prompt MXDM.
DEL	(0)-19	Number of leading digits to be deleted from the dialed number; the default is 0.
INST	x...x	Up to 31 leading digits to be inserted

Step 4
Gather data for each Free Calling Area Screening (FCAS). (LD 87)

Prompt	Response	Description
REQ	NEW CHG PRT	Action request
CUST	0-99	Customer number
FEAT	FCAS	Feature = Free Calling Area Screening
FCI	1-127	Free calling area screening table index number
NPA		Numbering Plan Area code translation. BARS allows up to 15 NPA codes per table with a maximum of 800 NXX codes each.
	xxx	NPA code translation, where xxx = 200-999. The first digit must be 2-9; the second and third digits can be 0-9. Omit the “1” if using1+NPA format.
	xxx y..y z..z	Extended NPA code translation, where xxx = 3 digits, y..y = 1-3 digits and z..z = 1-4 digits. Separate xxx, y..y and z..z entries with a space. Omit the “1” if using1+NPA format.
NXX	aaaa	Allow or Deny NXX codes for NPA, where aaaa = DENY or ALOW
DENY	xxx xxx	NXX code or range of codes to be denied
ALOW	xxxx xxxx	NXX code or range of codes to be allowed

Step 5
Gather data for each Route List associated with A DMI. (LD 86) (Part 1 of 2)

Prompt	Response	Description
REQ	NEW CHG OUT	Create, change, or remove data
CUST	0-99	Customer number
FEAT	RLB	Feature = Route list data block
RLI	0-127	Route list index number
ENTR	0-63	Route list entry number
ROUT	0-511	Route number associated with the index
TDET	(NO) YES	Is Tone detector used?

Step 5
Gather data for each Route List associated with A DMI. (LD 86) (Part 2 of 2)

Prompt	Response	Description
TYPE	aaa	Type of tone detector application, where aaa can be: (CC1) = Tone detector for Special Common Carrier Type 1 TIE = Tone detector for on-net calls CC2 = Tone detector for Special Common Carrier Type 2
TONE	a..a	Type of tone expected from Special Common Carrier, where a..a can be: DIAL = normal dial tone (SCC) = SCC dial tone
TOD	0-7	Time-of-Day schedule associated with the entry; precede entry with X to turn off a time-of-day schedule
EXP	(NO) YES	Entry is (is not) classed as expensive
FRL	(0)-7	Minimum Facility Restriction Level a user must have to access the entry
DMI	1-xxxx	Digit manipulation table index, xxxx = 0-255 if FNP package 160 is not equipped; 0-1000 if FNP package 160 is equipped. The maximum number of Digit manipulation tables is defined by prompt MXDM.
FCI	1-127	Free calling area screening table index number (FCAS) (0) = no FCAS required
OHQ	(NO) YES	Off Hook Queuing is (is not) allowed on the entry
CBQ	(NO) YES	Call Back Queuing is (is not) allowed on the entry
ISET	(0)-64	Number of entries in the Initial route Set
MFRL	(MIN), 0-7	Minimum Facility Restriction Level, where: 0-7 = the minimum FRL used to determine autocode prompting; (MIN) = default minimum FRL value.

Step 6
Gather data for each Incoming Trunk Group Exclusion index (ITGE). (LD 86)

Prompt	Response	Description
REQ	NEW CHG OUT	Create, change, or remove data
CUST	xx	Customer number, where xx = 0-99
FEAT	ITGE	Feature = Incoming trunk group exclusion data block
ITEI	1-127	Incoming trunk group exclusion index number; if REQ was “OUT” all route entries defined for the entered index are removed
	<return>	Return to REQ prompt
RTNO	0-511	Route number associated with index; precede with an X to delete an existing route
	<return>	Return to REQ prompt

Step 7
Gather BARS translation data. (LD 90) (Part 1 of 9)

Prompt	Response	Description
REQ	NEW CHG OUT	Create, change, or remove data
CUST	xx	Customer number, where xx = 0-99
FEAT	NET	Feature = Network translation tables
TRAN	aaa	Translator, where aaa can be: AC1 = Access Code 1 SUM = Summary of Network Translators
TYPE	a...a	Type of data block, where a...a can be: HNPA = Home NPA translation code (to be used on DPNSS1) NPA = Numbering plan area translation code (should NOT be used on DPNSS1) NXX = Central Office code translation SPN = Special code translation NSCL = Network Speed Call List
	<return>	Return to REQ

Step 7
Gather BARS translation data. (LD 90) (Part 2 of 9)

Prompt	Response	Description
The following prompt appears if TYPE is HNPA:		
HNPA		Home Numbering Plan Area code
	xxx	Response for Home Numbering Plan Area code, where xxx = 200-999. A leading zero is not allowed.
	1xxx	Response for Home Numbering Plan Area code using 1+ dialing, where xxx = 200-999. Note that the xxx entry must be preceded with the character “1”.
The following prompts appear if TYPE is NPA:		
NPA		Numbering Plan Area code translation
	xxx	NPA code translation, where xxx = 3 digits. A leading zero is not allowed.
	xxx y..y z..z	Extended NPA code translation. An extended NPA code can be from 4 to 10 digits, where xxx = 3 digits, y..y = 1-3 digits and z..z = 1-4 digits. Separate xxx, y..y and z..z entries with a space.
	1xxx	NPA code translation using 1+ dialing, where xxx = 3 digits. Note that the xxx entry must be preceded with the character “1”.
	1xxx y..y z..z	Extended NPA code translation using 1+ dialing. An extended NPA code using 1+ dialing can be from 5 to 11 digits, where xxx = 3 digits, y..y = 1-3 digits and z..z = 1-4 digits. Separate xxx, y..y and z..z entries with a space. Note that the xxx entry must be preceded with the character “1”.
RLI	0-127	Route list index

Step 7
Gather BARS translation data. (LD 90) (Part 3 of 9)

Prompt	Response	Description
SDRR	a..a	Type of supplemental restriction or recognition, where a..a can be: ALOW = Allowed codes ARRN = Alternate Routing Remote Number DDD = Recognized remote Direct Distance Dial codes DENY = Restricted codes DID = Recognized remote Direct Inward Dial codes ITED = Incoming Trunk group Exclusion Digits LDDD = Recognized Local Direct Distance Dial codes LDID = Recognized Local Direct Inward Dial codes STRK = ADM/MDM trunk groups
SDRR	aaa	Type of supplemental restriction or recognition. See prompt above for response options.
DMI	1-255	Digit manipulation table index
DENY	x...x	Number to be denied within the NPA or SDRR. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- LDID	x...x	Local DID number recognized within the NPA. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.

Step 7
Gather BARS translation data. (LD 90) (Part 4 of 9)

Prompt	Response	Description
- LDDD	x...x	Local DDD number recognized within the NPA. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DID	x...x	Remote DID number recognized within the NPA. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DDD	x...x	Remote DDD number recognized within the NPA. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- ITED	x...x	Incoming trunk group exclusion codes for NPA. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- ITEI	(0)-127	Incoming trunk group exclusion index

Step 7
Gather BARS translation data. (LD 90) (Part 5 of 9)

Prompt	Response	Description
The following prompts appear if TYPE is NXX		
NXX	xxx	Numbering Plan Exchange (Central Office) code translation, where: xxx = 3 digits. A leading zero is not allowed.
	1xxx	NXX code translation using 1+ dialing, where: xxx = 3 digits. The xxx entry must be preceded with the character “1”.
	xxx y..y	Extended NXX code, where xxx = 3 digits and y..y = 1-4 digits. Separate the NXX code (xxx) and the extended code (y...y) with a space.
	1xxx y..y	Extended NXX code using 1+ dialing, where xxx = 3 digits and y..y = 1-4 digits. Separate the NXX code (xxx) and the extended code (y..y) with a space. The xxx entry must be preceded with the character “1”.
RLI	0-127	Route List Index
SDRR	a..a	Type of supplemental restriction or recognition, where a..a can be: ALOW = Allowed codes ARRN = Alternate Routing Remote Number DDD = Recognized remote Direct Distance Dial codes DENY = Restricted codes DID = Recognized remote Direct Inward Dial codes ITED = Incoming Trunk group Exclusion Digits LDDD = Recognized Local Direct Distance Dial codes LDID = Recognized Local Direct Inward Dial codes STRK = ADM/MDM trunk groups
DMI	1-255	Digit Manipulation table Index
DENY	x...x	Number to be denied within the NXX or SDRR. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.

Step 7
Gather BARS translation data. (LD 90) (Part 6 of 9)

Prompt	Response	Description
- LDID	x...x	Local DID number recognized within the NXX. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- LDDD	x...x	Local DDD number recognized within the NXX. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DID	x...x	Remote DID number recognized within the NXX. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DDD	x...x	Remote DDD number recognized within the NXX. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.

Step 7
Gather BARS translation data. (LD 90) (Part 7 of 9)

Prompt	Response	Description
- ITED	x...x	Incoming trunk group exclusion codes for NXX. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- ITEI	(0)-255	Incoming trunk group exclusion index
The following prompts appear if TYPE is SPN:		
SPN	x...x x...x	Special Number translation. Enter SPN in groups of 3 or 4 digits, separated by a space (e.g., xxxx xxx xxxx). The SPN can be up to 19 digits long. The maximum length no longer depends on whether or not the first digit of the SPN is a “1”. That restriction has been removed. The maximum number of groups allowed is 5.
RLI	0-127	Route list index
SDRR	a..a	Type of supplemental restriction or recognition, where a..a can be: ALOW = Allowed codes ARRN = Alternate Routing Remote Number DDD = Recognized remote Direct Distance Dial codes DENY = Restricted codes DID = Recognized remote Direct Inward Dial codes ITED = Incoming Trunk group Exclusion Digits LDDD = Recognized Local Direct Distance Dial codes LDID = Recognized Local Direct Inward Dial codes STRK = ADM/MDM trunk groups
DMI	1-255	Digit manipulation table index
DENY	x...x	Number to be denied within the SPN or SDRR

Step 7
Gather BARS translation data. (LD 90) (Part 8 of 9)

Prompt	Response	Description
- LDID	x...x	Local DID number recognized within the SPN. The maximum number of digits to be entered must be the lesser of 10 or 19-m, where m = number of digits entered for SPN. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- LDDD	x...x	Local DDD number recognized within the SPN. The maximum number of digits to be entered must be the lesser of 10 or 19-m, where m = number of digits entered for SPN. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DID	x...x	Remote DID number recognized within the SPN. The maximum number of digits to be entered must be the lesser of 10 or 19-m, where m = number of digits entered for SPN. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DDD	x...x	Remote DDD number recognized within the SPN. The maximum number of digits to be entered must be the lesser of 10 or 19-m, where m = number of digits entered for SPN. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.

Step 7
Gather BARS translation data. (LD 90) (Part 9 of 9)

Prompt	Response	Description
- ITED	x...x	Incoming trunk group exclusion codes for SPN. The maximum number of digits to be entered must be the lesser of 10 or 19-m, where m = number of digits entered for SPN. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- ITEI	(0)-255	Incoming trunk group exclusion index
The following prompts appear if TYPE is NSCL:		
NSCC	xxx	One- to three-digit network speed call access code
SSCL	0-4095	System speed call list number

Step 8
Gather data to configure a Conventional Main for Off-Net Number Recognition. (LD 16)

Prompt	Response	Description
REQ	NEW CHG	Add or change a route
TYPE	RDB	Route data block
CUST	xx	Customer number, where xx = 0-99
ROUTE	0-511	Route number
TKTP	TIE	TIE trunk
CNVT	(NO) YES	Route to Conventional switch
- DDMI	(0)-127	Digit manipulation index. DDMI is prompted if CNVT = YES.
- ATDN	xxxx	Attendant DN of Conventional Main. ATDN is prompted if CVNT = YES. If the DN expansion package is equipped, the attendant DN can have up to 7 digits.; otherwise, only 4 digits can be entered.

Step 9
Gather data to assign a Network Class of Service group number to a list of items

Step 9 requires you to access several overlay programs. In all cases, the prompt is NCOS, the range is 0-99 (0-7 prior to X11 Release 13), and the default is 0.

- 500/2500 telephones (LD 10)
- Meridian Modular telephones, SL-1 telephones, M1000 series telephones, M2000 series digital telephones, M3000 Touchphones (LD 11)
- Attendant consoles (LD 12)
- Trunks (LD 14)
- Direct Inward System Access Directory Number or DISA DN (LD 24)
- System Speed Call (LD 18)
- Authorization Code (LD 88)

Step 10
Enter data into the database

The final step in configuring Basic Alternate Route Selection is to enter the data gathered into the database.

1 Log in.

2 Load the appropriate program.

3 Enter data requested by prompts until REQ prompt returns.

4 More data to be added/removed? Yes = go to Step 2; No = perform datadump

Note: A datadump takes approximately 3 minutes to complete. If large amounts of data are being added, perform a datadump periodically. This ensures that entered data is not lost should a system reload occur.

5 Print data (respond with PRT to prompt REQ) and verify against data forms.

6 Corrections required? Yes = go to Step 2; No = perform applicable tests.

Network Alternate Route Selection (NARS) implementation

This section provides the procedures necessary to configure Network Alternate Route Selection (NARS). Only the service change information for NARS is shown here. For a complete discussion of prompts and responses, refer to the *X11 Administration* (553-3001-311). The following procedure shows the steps that must be performed to correctly implement your NARS system.

Procedure 2
Implementing NARS

1 Gather data for each NCOS group. (LD 87)

2 Gather data to define NARS feature parameters. (LD 86)

3 Gather data for each Digit Manipulation Index (DMI). (LD 86)

4 Gather data for each Free Calling Area Screening (FCAS). (LD 87)

5 Gather data for each Route List associated with ADGT. (LD 86)

6 Gather data for each Incoming Trunk Group Exclusion Index (ITGE). (LD 86)

7 Gather NARS translation data. (LD 90)

8 Gather data to configure Conventional Main for Off-Net Number Recognition. (LD 16)

9 Gather data to assign a Network Class of Service group number to a list of items

10 Enter data into the database

Step 1
Gather data for each NCOS group. (LD 87)

Prompt	Response	Description
REQ	NEW, CHG, OUT	Create, change, or remove data
CUST	0-99	Customer number
FEAT	NCTL	Feature = Network control
NCOS	0-99	NCOS group to be added, changed, or removed
FRL	(0)-7	Facility restriction level. Your entry determines the entries in a Route List Index (RLI) to which it has access. 0 is the most restrictive, 7 is the least restrictive and can access more entries. FRL is assigned to each NCOS.
RWTA	(NO) YES	Expensive route warning tone

Step 2
Gather data to define NARS feature parameters. (LD 86)

Prompt	Response	Description
REQ	NEW, CHG, OUT	Create, change, or remove data
CUST	0-99	Customer number
FEAT	ESN	Feature = Electronic Switched Network
MXLC	0-999	Maximum number of supplemental digit restriction blocks
MXSD	0-512	Maximum number of incoming trunk group exclusion tables that can be defined
MXIX	0-255	Maximum number of incoming trunk group exclusion tables
MXDM	0-256	Maximum number of digit manipulation tables, where xxxx = 0-256 if FNP package 160 is not equipped; 0-1000 if FNP package 160 is equipped
MXRL	0-256	Maximum number of route lists
MXFC	0-255	Maximum number of free calling area screening tables
AC1	xx	One or two digit NARS/BARS access code one
AC2	xx	One or two digit NARS access code two
DLTN	(YES) NO	NARS/BARS dial tone after dialing AC1 or AC2
ERWT	(YES) NO	Expensive route warning tone is not (is) provided. Note that ERWT is not supported on TIE trunks.
ERDT	0-(6)-10	Time in seconds that a user has to accept or reject an expensive route after ERWT is given; default is 6 s; range is in 2-second intervals
TODS	x hh mm hh mm	Start and end time-of-day schedules. Where: x = schedule number for NARS = 0-7, hh = hour, mm = minutes
TGAR	(NO) YES	Check for Trunk Group Access Restrictions, where: YES = examine TGAR/TARG when call is placed NO = ignore TGAR/TARG when call is placed

Step 3
Gather data for each Digit Manipulation Index (DMI). (LD 86)

Prompt	Response	Description
REQ	NEW, CHG, OUT	Create, change, or remove data
CUST	0-99	Customer number
FEAT	DGT	Feature = Digit Manipulation Index
DMI	1-255	Digit manipulation table index, xxxx = 0-255 if FNP package 160 is not equipped; 0-1000 if FNP package 160 is equipped. The maximum number of Digit manipulation tables is defined by prompt MXDM.
DEL	(0)-19	Number of leading digits to be deleted from the dialed number; default is 0
INST	x...x	Up to 31 leading digits to be inserted

Step 4
Gather data for each Free Calling Area Screening (FCAS). (LD 87) (Part 1 of 2)

Prompt	Response	Description
REQ	NEW, CHG, PRT	Action request
CUST	0-99	Customer number
FEAT	FCAS	Feature = Free Calling Area Screening
FCI	1-255	Free calling area screening table index number
NPA		Numbering Plan Area code translation. NARS allows up to 15 NPA codes per table with a maximum of 800 NXX codes each.
	xxx	NPA code translation, where xxx = 200-999. The first digit must be 2-9; the second and third digits can be 0-9. Omit the “1” if using1+NPA format.
	xxx y..y z..z	Extended NPA code translation, where xxx = 3 digits, y..y = 1-3 digits and z..z = 1-4 digits. Separate xxx, y..y and z..z entries with a space. Omit the “1” if using1+NPA format.
NXX	ALOW, DENY	Allow or Deny NXX codes for NPA

Step 4
Gather data for each Free Calling Area Screening (FCAS). (LD 87) (Part 2 of 2)

Prompt	Response	Description
DENY	xxx xxx	NXX code or range of codes to be denied
ALOW	xxxx xxxx	NXX code or range of codes to be allowed

Step 5
Gather data for each Route List associated with ADGT. (LD 86)

Prompt	Response	Description
REQ	NEW, CHG, OUT	Create, change, or remove data
CUST	0-99	Customer number
FEAT	RLB	Feature = Route list data block
RLI	0-255	Route list index number. The range is 0-999 with Flexible Numbering Plan.
ENTR	0-63	Route list entry number
ROUT	0-511	Route number associated with the index
TDET	(NO) YES	Tone Detector is (is not) used
TYPE	aaa	Type of tone detector application, where aaa can be: (CC1) = Tone detector for Special Common Carrier Type 1 TIE = Tone detector for on-net calls CC2 = Tone detector for Special Common Carrier Type 2
TONE	a..a	Type of tone expected from Special Common Carrier, where a..a can be: DIAL = normal dial tone (SCC) = SCC dial tone
TOD	0-7	Time-of-Day schedule associated with the entry. Precede entry with X to remove.
EXP	(NO) YES	Entry is (is not) classed as expensive

Step 5
Gather data for each Route List associated with ADGT. (LD 86)

Prompt	Response	Description
FRL	(0)-7	Facility restriction level. Your entry determines the entries in a Route List Index (RLI) to which it has access. 0 is the most restrictive, 7 is the least restrictive and can access more entries. FRL is assigned to each NCOS.
DMI	1-xxxx	Digit manipulation table index, xxxx = 0-255 if FNP package 160 is not equipped; 0-1000 if FNP package 160 is equipped. The maximum number of Digit manipulation tables is defined by prompt MXDM.
FCI	(0)-255	Free calling area screening table index number (FCAS) (0) = no FCAS required
OHQ	(NO) YES	Off Hook Queuing is (is not) allowed on the entry
CBQ	(NO) YES	Call Back Queuing is (is not) allowed on the entry
ISET	(0)-64	Number of entries in the initial route set
MFRL	(MIN), 0-7	Minimum Facility Restriction Level, where: 0-7 = the minimum FRL used to determine autocode prompting; (MIN) = default minimum FRL value.

Step 6
Gather data for each Incoming Trunk Group Exclusion Index (ITGE). (LD 86)

Prompt	Response	Description
REQ	NEW, CHG, OUT	Create, change, or remove data
CUST	0-99	Customer number
FEAT	ITGE	Feature = Incoming trunk group exclusion
ITEI	1-127	Incoming trunk group exclusion index number; if REQ was “OUT” all route entries defined for the entered index are removed
RTNO	0-511	Route number associated with index; precede entry with X to delete an existing route

Step 7
Gather NARS translation data. (LD 90) (Part 1 of 9)

Prompt	Response	Description
REQ	NEW, CHG, OUT	Create, change, or remove data
CUST	0-99	Customer number
FEAT	NET	Network translation tables
TRAN	aaa	Translator, where aaa can be: AC1 = Access Code 1 AC2 = Access Code 2 SUM = Summary of Network Translators
TYPE	a...a	Type of data block, where a...a can be: LOC = Location code HNPA = Home NPA translation code NPA = Number plan area translation code HLOC = Home location code NXX = Central Office translation code SPN = Special Number translation code NSCL = Speed call
	<return>	Return to REQ
The following prompt occurs if TYPE is LOC:		
LOC	xxx y..y	Location code, where xxx = 3 digits and y..y = 1-4 digits. The extended code (y..y) entry is optional. Separate the NXX code (xxx) and the extended code (y...y) with a space.
RLI	0-255	Route list index
ITEI	(0)-255	Incoming trunk group exclusion index
LDN	xx...xx	Listed Directory Number including NPA of up to 10 digits
DID	(NO) YES	This location arranged for DID
MNXX	(NO) YES	Multiple NXX codes and ranges
- SAVE	1-4	Number of trailing digits to be saved in dialed extension number; must be 4 if MNXX = YES
OFFC	xxx	NXX of the DID number; prompted if MNXX = YES
- RNGE	0-9999 0-9999	Range: Upper and lower limit for DID number range. Your response must be the same number of digits as the number of trailing digits to be saved.

Step 7
Gather NARS translation data. (LD 90) (Part 2 of 9)

Prompt	Response	Description
The following prompt occurs if TYPE is HNPA:		
HNPA		Home Numbering Plan Area code
	xxx	Response for Home Numbering Plan Area code, where xxx = 200-999. A leading zero is not allowed.
	1xxx	Response for Home Numbering Plan Area code using 1+ dialing, where xxx = 200-999. Note that the xxx entry must be preceded with the character “1”.
The following prompts occur if TYPE is NPA:		
NPA		Numbering Plan Area code translation
	xxx	NPA code translation, where xxx = 3 digits. A leading zero is not allowed.
	xxx y..y z..z	Extended NPA code translation. An extended NPA code can be from 4 to 10 digits, where xxx = 3 digits, y..y = 1-3 digits and z..z = 1-4 digits. Separate xxx, y..y and z..z entries with a space.
	1xxx	NPA code translation using 1+ dialing, where xxx = 3 digits. Note that the xxx entry must be preceded with the character “1”.
	1xxx y..y z..z	Extended NPA code translation using 1+ dialing. An extended NPA code using 1+ dialing can be from 5 to 11 digits, where xxx = 3 digits, y..y = 1-3 digits and z..z = 1-4 digits. Separate xxx, y..y and z..z entries with a space. Note that the xxx entry must be preceded with the character “1”.
RLI	0-255	Route list index

Step 7
Gather NARS translation data. (LD 90) (Part 3 of 9)

Prompt	Response	Description
SDRR	a..a	Type of supplemental restriction or recognition, where a..a can be: ALOW = Allowed codes ARRN = Alternate Routing Remote Number DDD = Recognized remote Direct Distance Dial codes DENY = Restricted codes DID = Recognized remote Direct Inward Dial codes ITED = Incoming Trunk group Exclusion Digits LDDD = Recognized Local Direct Distance Dial codes LDID = Recognized Local Direct Inward Dial codes STRK = ADM/MDM trunk groups
SDRR	aaa	Type of supplemental restriction or recognition. See prompt above for response options.
DMI	1-255	Digit manipulation table index
DENY	x...x	Number to be denied within the NPA or SDRR. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- LDID	x...x	Local DID number recognized within the NPA. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.

Step 7
Gather NARS translation data. (LD 90) (Part 4 of 9)

Prompt	Response	Description
- LDDD	x...x	Local DDD number recognized within the NPA. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DID	x...x	Remote DID number recognized within the NPA. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DDD	x...x	Remote DDD number recognized within the NPA. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- ITED	x...x	Incoming trunk group exclusion codes for NPA. The maximum number of digits to be entered must be the lesser of 10 or 10-m (11-m for 1+dialing), where: m = number of digits entered for NPA. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- ITEI	(0)-127	Incoming trunk group exclusion index

Step 7
Gather NARS translation data. (LD 90) (Part 5 of 9)

Prompt	Response	Description
The following prompts appear if TYPE is NXX		
NXX	xxx	Numbering Plan Exchange (Central Office) code translation, where: xxx = 3 digits. A leading zero is not allowed.
	1xxx	NXX code translation using 1+ dialing, where: xxx = 3 digits. The xxx entry must be preceded with the character “1”.
	xxx y..y	Extended NXX code, where xxx = 3 digits and y..y = 1-4 digits. Separate the NXX code (xxx) and the extended code (y...y) with a space.
	1xxx y..y	Extended NXX code using 1+ dialing, where xxx = 3 digits and y..y = 1-4 digits. Separate the NXX code (xxx) and the extended code (y..y) with a space. The xxx entry must be preceded with the character “1”.
RLI	0-255	Route list index
SDRR	a..a	Type of supplemental restriction or recognition, where a..a can be: ALOW = Allowed codes ARRN = Alternate Routing Remote Number DDD = Recognized remote Direct Distance Dial codes DENY = Restricted codes DID = Recognized remote Direct Inward Dial codes ITED = Incoming Trunk group Exclusion Digits LDDD = Recognized Local Direct Distance Dial codes LDID = Recognized Local Direct Inward Dial codes STRK = ADM/MDM trunk groups
DMI	1-255	Digit Manipulation table Index
DENY	x...x	Number to be denied within the NXX or SDRR. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.

Step 7
Gather NARS translation data. (LD 90) (Part 6 of 9)

Prompt	Response	Description
- LDID	x...x	Local DID number recognized within the NXX. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- LDDD	x...x	Local DDD number recognized within the NXX. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DID	x...x	Remote DID number recognized within the NXX. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DDD	x...x	Remote DDD number recognized within the NXX. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.

Step 7
Gather NARS translation data. (LD 90) (Part 7 of 9)

Prompt	Response	Description
- ITED	x...x	Incoming trunk group exclusion codes for NXX. The maximum number of digits to be entered = 7-m (8-m for 1+dialing), where: m = number of digits entered for NXX. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- ITEI	(0)-255	Incoming trunk group exclusion index
The following prompts appear if TYPE is SPN:		
SPN	x...x x...x	Special Number translation. Enter SPN in groups of 3 or 4 digits, separated by a space (e.g., xxxx xxx xxxx). The SPN can be up to 19 digits long. The maximum length no longer depends on whether or not the first digit of the SPN is a “1”. That restriction has been removed. The maximum number of groups allowed is 5.
RLI	0-127	Route list index
SDRR	a..a	Type of supplemental restriction or recognition, where a..a can be: ALOW = Allowed codes ARRN = Alternate Routing Remote Number DDD = Recognized remote Direct Distance Dial codes DENY = Restricted codes DID = Recognized remote Direct Inward Dial codes ITED = Incoming Trunk group Exclusion Digits LDDD = Recognized Local Direct Distance Dial codes LDID = Recognized Local Direct Inward Dial codes STRK = ADM/MDM trunk groups
DMI	1-255	Digit manipulation table index
DENY	x...x	Number to be denied within the SPN or SDRR

Step 7
Gather NARS translation data. (LD 90) (Part 8 of 9)

Prompt	Response	Description
- LDID	x...x	Local DID number recognized within the SPN. The maximum number of digits to be entered must be the lesser of 10 or 19-m, where m = number of digits entered for SPN. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- LDDD	x...x	Local DDD number recognized within the SPN. The maximum number of digits to be entered must be the lesser of 10 or 19-m, where m = number of digits entered for SPN. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DID	x...x	Remote DID number recognized within the SPN. The maximum number of digits to be entered must be the lesser of 10 or 19-m, where m = number of digits entered for SPN. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- DDD	x...x	Remote DDD number recognized within the SPN. The maximum number of digits to be entered must be the lesser of 10 or 19-m, where m = number of digits entered for SPN. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.

Step 7
Gather NARS translation data. (LD 90) (Part 9 of 9)

Prompt	Response	Description
- ITED	x...x	Incoming trunk group exclusion codes for SPN. The maximum number of digits to be entered must be the lesser of 10 or 19-m, where m = number of digits entered for SPN. This number does not have to be leftwise unique. For non leftwise unique numbers, the longer number takes precedence over the shorter number. However, the exact same numbers (not leftwise unique and the same length) are still blocked.
- ITEI	(0)-255	Incoming trunk group exclusion index
The following prompts appear if TYPE is NSCL:		
NSCC	xxx	One- to three-digit network speed call access code
SSCL	0-4095	System speed call list number

Step 8
Gather data to configure Conventional Main for Off-Net Number Recognition. (LD 16)

Prompt	Response	Description
REQ	NEW CHG	Add or change a route
TYPE	RDB	Route data block
CUST	0-99	Customer number
ROUTE	0-511	Route number
TKTP	TIE	TIE trunk
CNVT	(NO) YES	Route to Conventional switch; CNVT is prompted if TKTP = TIE.
DDMI	(0)-255	Digit manipulation index; DDMI is prompted if CNVT = YES.
ATDN	xxxx	Attendant DN of Conventional Main. ATDN is prompted if CVNT = YES. If the DN expansion package is equipped, the attendant DN can have up to 7 digits.; otherwise, only 4 digits can be entered.

Step 9
Gather data to assign a Network Class of Service group number to a list of items

Step 9 requires the user to access several overlay programs. In all cases, the prompt is NCOS; the range is 0-99 (or 0-7 with X11 Release 12 and earlier); the default is 0.

Gather data to assign a Network Class of Service group number to each of the following items:

- 500/2500 telephones (LD 10)
- Meridian Modular telephones, SL-1 telephones, M1000 series telephones, M2000 series digital telephones, M3000 Touchphones (LD 11)
- Attendant consoles (LD 12)
- Trunks (LD 14)
- Direct Inward System Access Directory Number or DISA DN (LD 24)
- System Speed Call (LD 18)
- Authorization Code (LD 88)

Step 10
Enter data into the database

The final step in configuring Network Alternate Route Selection is to enter the data gathered into the database:

1 Log in.

2 Load the appropriate program.

3 Enter data requested by prompts until REQ prompt returns.

4 More data to be added/removed? Yes = go to Step 2; No = perform datadump.

Note: A datadump takes approximately 3 minutes to complete. If large amounts of data are being added, perform a datadump periodically. This ensures that entered data is not lost should a system reload occur.

5 Print data (respond with PRT to prompt REQ) and verify against data forms.

6 Corrections required? Yes = go to Step 2; No = Refer to 553-2YY1-230 and perform applicable tests.

1+ Dialing dialing plan implementation for Interchangeable NPA codes

This section provides the procedures necessary to configure new or modify existing dialing plans to use 1+ Dialing with the Interchangeable NPA codes format.

The implementation will show the procedure for implementing the 1+ Dialing dialing plan as recommended by Bellcore for use with the Interchangeable NPA codes.

Interchangeable NPA codes are effective as of July 1, 1995.

Only the service change information is shown here. For a complete discussion of prompts and responses, refer to the *X11 Administration* (553-3001-311).

While the Interchangeable NPA codes does not require a change to the existing dialing plans, some dialing plan modification may avoid future conflicts due to the Interchangeable NPA format.

Uniform 1+ Dialing dialing plan implementation for Interchangeable NPA codes

Table17 shows the uniform 1+ Dialing dialing plan that Procedure 3 implements:

Table 17
Dialing plan using 1+ Dialing

Dialing format	Call type
AC1 + 1 + NXX + NXX + XXXX	11 digit public call (NPA)
AC2 + NXX + XXXX	7 digit public call (NXX)
AC1 + NXX + XXXX	7 digit private call (LOC)

Legend:	
AC1	BARS/NARS Access Code 1 (on-net and long distance calls)
AC2	NARS Access Code 2 (off-net and local calls)
1	Indicates 10 digit Interchangeable NPA code format to follow.
N	Digits 2 to 9.
X	Digits 0 to 9.

Implementation of this dialing plan requires all NPA codes be entered as four digit codes where the first digit is always “1”. In other words the NPA “345” would be entered as “1345” and the user would have to dial “1345” to access NPA “345”.

The following procedure shows the steps that must be performed to correctly implement 1+ Dialing for Interchangeable NPA codes.

Procedure 3
Implementing 1+ Dialing format for Interchangeable NPA codes

This example assumes the following routing is used:

- Route calls with NPA = 202, 303, and 888 over route 1 using AC1.
- Route calls with NXX = 987, 876, and 765 over route 2 using AC2.
- Route calls with LOC = 777, 888, and 999 over route 3 using AC1.

Steps:

1 Configure ESN data block for 1+ Dialing (LD 90)

2 Configure Route List Blocks for 1+Dialing (LD 86)

3 Configure Numbering Plan Area codes for 1+ Dialing (LD 90)

4 Configure Central Office codes for 1+ Dialing (LD 90)

5 Configure Location codes for 1+ Dialing (LD 90)

Step 1
Configure ESN data block for 1+ Dialing (LD 90)

Prompt	Response	Description
REQ	NEW	Request a NEW data block.
CUST	0-99	Customer number
FEAT	ESN	Feature = ESN data block
...		
AC1	6	BARS/NARS Access Code 1 (on-net and long distance calls
AC2	9	NARS Access Code 2 (off-net and local calls)
...		

Step 2
Configure Route List Blocks for 1+Dialing (LD 86)

Prompt	Response	Description
REQ	NEW	Request NEW data block.
CUST	0-99	Customer number
FEAT	RLB	Route List Block data block.
RLI	1	Route List Index 1
ENTR	0	Entry 0 of Route List Index 1
LTER	NO	Local Termination entry
ROUT	1	Route number.
...		

Repeat Step 2 for RLI 2 using route 2 and RLI 3 using route 3.

Step 3
Configure Numbering Plan Area codes for 1+ Dialing (LD 90)

Prompt	Response	Description
REQ	NEW	Request NEW data block.
CUST	0-99	Customer number
FEAT	NET	Network Translator data block.
TRAN	AC1	AC1 Translator data block.
TYPE	NPA	NPA (Number Plan Area code) translation.
NPA	1202	NPA code.
- RLI	1	Route List Index this NPA uses.
- SDDR	<cr>	Supplementary Digit Restriction or Recognition. <cr> indicates the default (NO) is to be used.
NPA	1303	NPA code.
- RLI	1	Route List Index this NPA uses.
- SDDR	<cr>	Supplementary Digit Restriction or Recognition. <cr> indicates the default (NO) is to be used.
NPA	1888	NPA code. If 1+ Dialing were not used, this code would be entered as 888 and conflict with the Location code 888.
- RLI	1	Route List Index this NPA uses.
- SDDR	<cr>	Supplementary Digit Restriction or Recognition. <cr> indicates the default (NO) is to be used.

Step 4
Configure Central Office codes for 1+ Dialing (LD 90)

Prompt	Response	Description
REQ	NEW	Request NEW data block.
CUST	0-99	Customer number
FEAT	NET	Network Translator data block.
TRAN	AC2	AC2 Translator data block.
TYPE	NXX	NXX (Central Office code) translation.
NXX	987	NXX code.
- RLI	2	Route List Index this NXX uses.
- SDDR	<cr>	Supplementary Digit Restriction or Recognition. <cr> indicates the default (NO) is to be used.
NXX	876	NXX code.
- RLI	2	Route List Index this NXX uses.
- SDDR	<cr>	Supplementary Digit Restriction or Recognition. <cr> indicates the default (NO) is to be used.
NXX	765	NXX code.
- RLI	2	Route List Index this NXX uses.
- SDDR	<cr>	Supplementary Digit Restriction or Recognition. <cr> indicates the default (NO) is to be used.

Step 5
Configure Location codes for 1+ Dialing (LD 90)

Prompt	Response	Description
REQ	NEW	Request NEW data block.
CUST	0-99	Customer number
FEAT	NET	Network Translator data block.
TRAN	AC1	AC1 Translator data block.
TYPE	LOC	LOC (Location Code) translation.
LOC	777	LOC code.
- RLI	3	Route List Index this LOC uses.
- SDDR	<cr>	Supplementary Digit Restriction or Recognition. <cr> indicates the default (NO) is to be used.
LOC	888	LOC code. If 1+ Dialing had not be used for the 888 NPA code, this Location code would have resulted in a dialing conflict.
- RLI	3	Route List Index this LOC uses.
- SDDR	<cr>	Supplementary Digit Restriction or Recognition. <cr> indicates the default (NO) is to be used.
NXX	999	LOC code.
- RLI	3	Route List Index this LOC uses.
- SDDR	<cr>	Supplementary Digit Restriction or Recognition. <cr> indicates the default (NO) is to be used.

Network implementation of Equal Access

This section provides the procedures necessary to implement Equal Access restrictions and routing. Equal Access is not a BARS or NARS feature and does not require BARS or NARS dialing to function correctly.

The implementation procedures will show how to configure the following in a BARS or NARS environment:

- Equal Access restrictions and
- Equal Access routing

Only the service change information is shown here. For a complete discussion of prompts and responses refer to the *X11 Administration* (553-3001-311).

Equal Access restriction configuration for BARS or NARS

Equal Access toll restriction is intended for use on an outgoing route from a Meridian 1 to a Central Office. This feature is not intended for restriction of calls which terminate on a network node. Therefore, network signaling (ESN3, ESN5, or ETN) is not supported.

Within a network Equal Access toll calls should be restricted at the outgoing node (the node which is directly connected to the Central Office).

The following procedure shows the steps that must be performed to correctly implement Equal Access restrictions for X11 Release 20 and later for BARS or NARS. The following assumptions are used:

- Equal Access is for customer 0,
- all Equal Access routing is performed using route 10, and
- all direct dialed Equal Access toll calls from sets with a Network Class of Service (NCOS) of 4 are to be restricted.

Procedure 4
Implementing Equal Access restrictions for BARS or NARS

1 Configure an NCOS for Equal Access (LD 87)

2 Assign NCOS to a set (LD 10, 11, or 27)

3 Enable Equal Access restrictions on the route (LD 16)

Step 1
Configure an NCOS for Equal Access (LD 87)

Prompt	Response	Description
REQ	CHG	Modify existing data block
CUST	0-99	Customer number
FEAT	NCTL	Network Control data block
...		
NCOS	4	Network Class of Service group
EQA	YES	Equal Access restrictions allowed
...		

Step 2
Assign NCOS to a set (LD 10, 11, or 27)

Prompt	Response	Description
REQ	CHG	Modify existing data block
TYPE	aaa	Specify set type
TN	l s c u	Specify Terminal Number of set to be modified
...		
NCOS	4	Network Class of Service group 4 assigned to set
...		

Step 3
Enable Equal Access restrictions on the route (LD 16)

Prompt	Response	Description
REQ	CHG	Change data block
TYPE	RDB	Route Data Block
CUST	0-99	Customer number
ROUT	XXX	Route number
...		
EQAR	YES	Equal Access Restrictions enabled for this route
NTOL	DENY	North American toll calls are denied
ITOL	<cr>	International toll calls are denied
...		

Configuring BARS or NARS for Equal Access routing

Equal Access routing does not consider a call's origination type when determining restriction status. Therefore, the previous restriction configuration example applies to all allowable types of Equal Access calls (trunk access code, BARS and NARS).

Configuring BARS or NARS to route Equal Access calls is a matter of assigning the Equal Access identifier (the digits 10) as a Special Number (SPN) and routing the calls accordingly.

The following procedure assumes the following:

- Equal Access is for customer 0,
- route 10 is used to route Equal Access calls,
- Route List Index (RLI) 100 will have route 10 as a member,
- Access Code 1 (AC1) is used to route all Equal Access calls, and
- all direct dialed Equal Access toll calls from sets with a Network Class of Service (NCOS) of 4 are to be restricted.

Note: This procedure uses 10 as the Equal Access identifier SPN, this indicates that the original format CAC is being used. If the Expanded CAC format is required, define 101 as the Equal Access identifier SPN.

Procedure 5
Configure BARS or NARS for Equal Access routing

1 Configure a RLI to include route 10 as a member (LD 86)

2 Define Equal Access identifier as a SPN (LD 90)

3 Configure a NCOS for Equal Access (LD 87)

4 Assign NCOS to a set (LD 10, 11, or 27)

5 Enable Equal Access restrictions on the route (LD 16)

Step 1
Configure a RLI to include route 10 as a member (LD 86)

Prompt	Response	Description
REQ	NEW	Create new data block
CUST	0-99	Customer number
FEAT	RLB	Route List Block
RLI	100	Route List Index 100
ENTR	0	Entry number in RLB
...		
ROUT	10	Route 10 defined as member
...		

Step 2
Define Equal Access identifier as a SPN (LD 90) (Part 1 of 2)

Prompt	Response	Description
REQ	NEW	Create a new data block
CUST	0-99	Customer number
FEAT	NET	Network Translator

Step 2
Define Equal Access identifier as a SPN (LD 90) (Part 2 of 2)

Prompt	Response	Description
TRAN	AC1	Translator for Access Code 1
TYPE	SPN	Type of number is a Special Number
SPN	10	Equal Access identifier defined as Special Number
RLI	100	Route List Index used to route calls using this number
...		

Step 3
Configure a NCOS for Equal Access (LD 87)

Prompt	Response	Description
REQ	CHG	Change existing data block
CUST	0-99	Customer number
FEAT	NCTL	Network Control data block
...		
NCOS	4	Network Class of Service group
EQA	YES	Equal Access restrictions allowed
...		

Step 4
Assign NCOS to a set (LD 10, 11, or 27)

Prompt	Response	Description
REQ	CHG	Change existing data block
TYPE	aaa	Specify set type
TN	l s c u	Specify Terminal Number of set to be modified
...		
NCOS	4	Network Class of Service group 4 assigned to set
...		

Step 5
Enable Equal Access restrictions on the route (LD 16)

Prompt	Response	Description
REQ	CHG	Change data block
TYPE	RDB	Route Data Block
CUST	0-99	Customer number
ROUT	XXX	Route number
...		
EQAR	YES	Equal Access Restrictions enabled for this route
NTOL	DENY	North American toll calls are denied
ITOL	<cr>	International toll calls are denied
...		

List of terms

AC Access Codes

BARS Basic Alternate Route Selection

Bellcore The organization which oversees and administers the North American Numbering Plan.

CA Call Aggregators — (as defined by FCC Docket 90-313) are persons whom, in the course of their operations, make telephones available to the public or to transient users of its premises for interstate telephone calls using a provider of operator services.

Aggregators, as defined by the FCC, include the following:

- Hotels and motels
- Hospitals
- Universities
- Airports
- Gas Stations
- Pay Telephone Owners

CAC Carrier Access Code, used by Equal Access feature. Code dialed by the user which is made up of the Equal Access identifier and the Carrier Identification Code.

CIC Carrier Identification Code, used by Equal Access feature.

CBQ Call-Back Queuing

CBQCM Call-Back Queuing to Conventional Mains

CCBQ Co-ordinated Call-BackQueuing

CDP Coordinated Dialing Plan

CDR Call Detail Recording

DDD Direct Distance Dialing

DID Direct Inward Dialing

ERWT Expensive Route Warning Tone

ESN Electronic Switched Network

ETN Electronic Tie Network

FCAS Free Calling Area Screening

FCC Federal Communications Commission

FRL Facility Restriction Level

HLOC Home Locaton Code

HNPA Home Number Plan Area

Interchangeable NPAs Interchangeable NPA codes are those NPA codes which comply with the new NXX format as specified by the North American Numbering Plan.

ITGE Incoming Trunk Group Exclusion

LDN Listed Directory Number

NANP North American Numbering Plan

NARS Network Alternate Route Selection

NCOS Network Class of Service

NFCR New Flexible Code Restriction

NPA Numbering Plan Area (code)

NPX North American Numbering Plan NPA format for Pre Interchangeable Numbering Plan Area codes where: N = any digit between two (2) and nine (9), P = digit zero (0) or one (1), and X = any digit between zero (0) and nine (9).

NSC Network Speed Call

NSIG Network Signaling

NTRF Network Traffic

NXFER Network Call Transfer

NXX North American Numbering Plan Local Exchange format and North American Numbering Plan NPA format for Interchangeable Numbering Plan Area codes where: N = any digit between two (2) and nine (9), and X = any digit between zero (0) and nine (9).

OHQ	Off-Hook Queuing
SDR	Supplemental Digit Restriction
SDRR	Supplemental Digit Restriction/Recognition
SIGO	Signaling Arrangement
SPN	Special Number
TCOS	Traveling Class of Service
TGAR	Trunk Group Access Restriction
TLD	Toll Denied
TOD	Time-of-Day
TTTN	Tandem Tie Trunk Network
UDP	Uniform Dialing Plan
XFER	Call Transfer

Meridian 1

Basic and Network Alternate Route Selection

General description

Information is subject to change without notice. Nortel Networks reserves the right to make changes in design or components as progress in engineering and manufacturing may warrant. This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules, and the radio interference regulations of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at this own expense.
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