Meridian 1

Option 11C Mini

Expansion using Fiber Optic and IP Connectivity guide

Document Number: 553-3021-208
Document Release: Standard 2.00
Date: December 2000

Printed in Canada

Revision history

December 2000

Standard 2.00. This is a global document and is issued for X11 Release 25.3x

April 2000

Standard 1.00. This is a global document and is issued for X11 Release 25.0x.

Contents

About this guide

Who should read this guide

The *11C Mini Expansion using Fiber Optic and IP connectivity Guide* contains information for persons responsible for expanding an Option 11C Mini system.

How this guide is organized

The information in this guide is organized in the following order:

- "Chapter 1—Overview" on page 9: provides an overview of the available fiber-optic and IP connectivity expansion options for Option 11C Mini system.
- "Chapter 2—Hardware required for fiber expansion and IP expansion" on page 25: describes the main components required for expanding a Option 11C Mini system using Option 11C Mini chassis and fiber-optic connectivity.
- "Chapter 3—Add Expansion cabinets/chassis using fiber-optic connectivity" on page 39: describes how to connect Option 11C Mini Expansion chassis to an Option 11C Mini Main Chassis using fiber-optic cables.
- "Chapter 4—Add IP Expansion chassis using IP connectivity" on page 63: describes how to connect Option 11C Mini IP Expansion chassis to an Option 11C Mini Main Chassis using IP cables.
- "Chapter 5—Install Software" on page 89: This chapter describes installing, modifying, or upgrading system software on a Mini Small System Controller card.

Related documents

Refer to the following documents for additional information:

- *Option 11C Planning and Installation Guide (553-3021-210)*
- *Option 11C Mini Planning and Installation Guide (553-3201-209)*
- *Option 11C and 11C Mini Upgrade Procedures Guide (553-3021-250)*
- *Option 11C and 11C Mini Technical Reference Guide (553-3011-100)*
- *Option 11C and 11C Mini Fault Clearing Guide (553-3011-500)*
- *Option 11C and 11C Mini Customer Configuration Backup and Restore (553-3011-330)*

Chapter 1—Overview

This chapter provides an overview of the available fiber-optic and IP expansion options for the Option 11C Mini system. Included in this chapter is a mix-and-match expansion scenario connecting both the Option 11C and Option 11C Mini system.

Option 11C and Option 11C Mini expansion

Both the Option 11C and Option 11C Mini systems support fiber-optic and IP expansion. To expand your system using fiber-optic, you require the following three basic components in addition to other hardware:

- Small System Controller (SSC) card
- Fiber Expansion daughterboard
- Fiber Receiver card in the Expansion cabinets/chassis.

Note: For a complete list of required hardware, refer to “Chapter 2—Hardware required for fiber expansion and IP expansion” on page 25.

To expand your system using IP expansion, you require the following three basic components in addition to other hardware:

- Small System Controller (SSC) card
- IP Expansion daughterboards (minimum two)
- Small System Controller card in the Expansion cabinets/chassis.

Note: For a complete list of required hardware, refer to “Chapter 2—Hardware required for fiber expansion and IP expansion” on page 25.

Small System Controller card

For fiber-optic expansion, you must install an SSC card, containing Fiber Expansion daughterboards, in slot 0 of the Option 11C Main cabinet or the Option 11C Mini Main Chassis.

For IP expansion, you must install an SSC card, containing IP Expansion daughterboards, in slot 0 of the Option 11C Main cabinet or the Option 11C Mini Main Chassis. You must also install an SSC card, containing one IP Expansion daughterboard in slot 0 of the Expansion cabinet/chassis.

> ***Note:*** The SSC card vintage NTDK20EA or later is required for the Option 11C Main Cabinet, Option 11C Mini Main Chassis and IP Expansion Chassis. The SSC card vintage NTDK20CA or later is required for Option 11C Expansion Cabinets.

Fiber Expansion and IP Expansion daughterboards

You must install Fiber Expansion or IP Expansion daughterboards on the SSC card. The SSC card supports both Fiber Expansion daughterboards and IP Expansion daughterboards. The daughterboard configurations supported are as follows:

- two single-port daughterboards
- two dual-port daughterboards

Each single-port daughterboard supports one Expansion cabinet/chassis. Each dual-port daughterboard supports up to two Expansion cabinets/chassis.

Fiber Expansion daughterboard

The Fiber Expansion daughterboards support the following fiber-optic cable solutions between Expansion cabinets/chassis:

- 10-meter solution
- 3-kilometer single-mode glass fiber solution
- 3 -kilometer multi-mode glass fiber solution.

IP Expansion daughterboard

The IP Expansion daughterboards support the following IP cable solutions between Expansion cabinets/chassis:

- 100-meter solution

- 2-kilometer solution
- Customer Local Area Network (LAN) solution

Fiber Receiver card

You must install a Fiber Receiver card in slot 0 of each Option 11C Expansion cabinet or Option 11C Mini Expansion chassis. Match the correct Fiber Receiver card with the Fiber Expansion daughterboards installed on the SSC card in the Option 11C Main cabinet or the Option 11C Mini Main chassis.

Like the Fiber Expansion daughterboards, the Fiber Receiver cards support the following fiber-optic cable solutions:

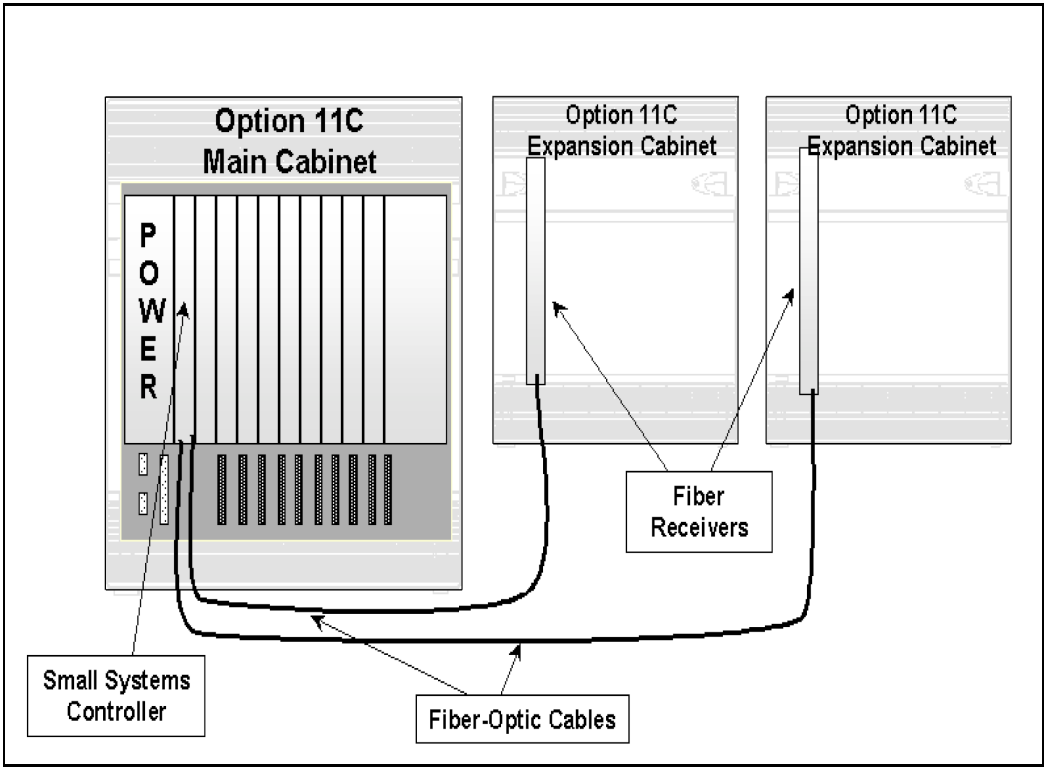
- 10-meter solution
- 3-kilometer single-mode glass fiber solution
- 3 -kilometer multi-mode glass fiber solution

Option 11C expansion

The Option 11C system can be expanded using fiber-optic connectivity. Figure 1 shows an Option 11C Main cabinet connected to an Option 11C Expansion cabinet. Up to five Option 11C cabinets (one Main cabinet and four Expansion cabinets) can be interconnected in this type of configuration.

Note: In Figure 1, the new vintages of the Small System Controller card and the new vintages of Fiber Receiver boards support this fiber-optic configuration. Slots 1 to 10 are available in the Main cabinet. Slots 11 to 20 and 21 to 30 are available in the Expansion cabinets.

Figure 1
Option 11C Main cabinet connected to an Option 11C Expansion cabinet with fiber-optic cable

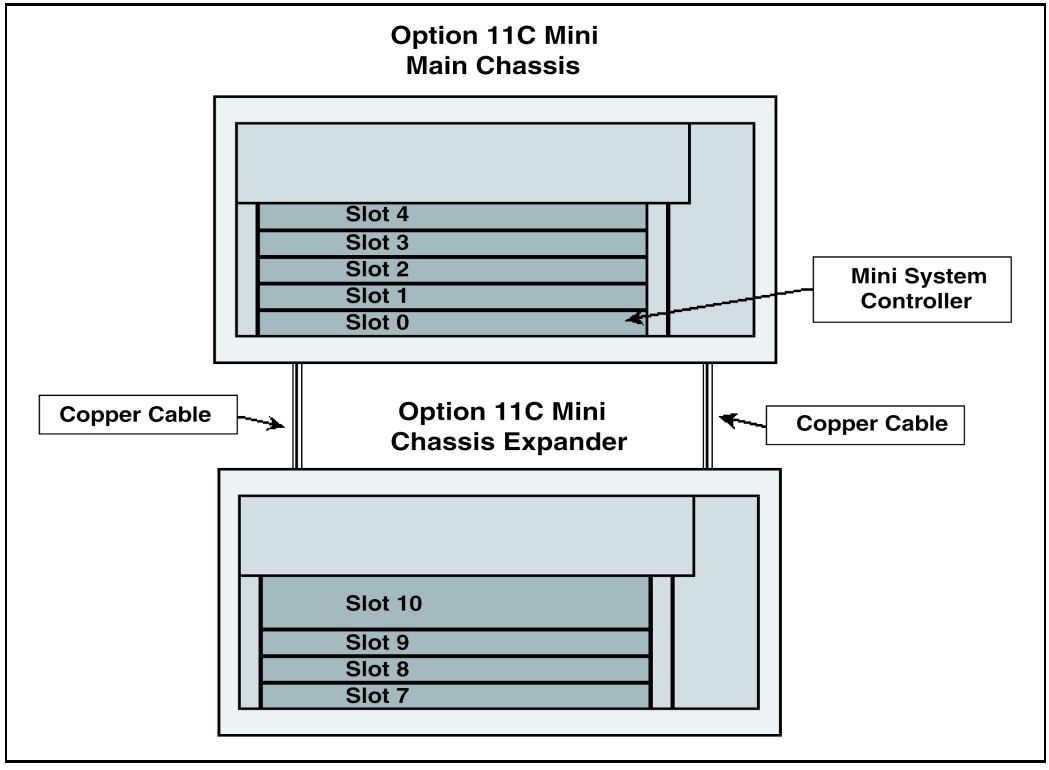


Option 11C Mini Expansion

The Option 11C Mini system can be expanded using a Chassis Expander. Figure 2 shows an Option 11C Mini Main Chassis connected to an Option 11C Mini Chassis Expander with two copper cables. The Chassis Expander expands the number of slots that are available in the Option 11C Mini system. All vintages of the MSC card and the SSC card vintages NTDK20CA or later support the Chassis Expander off of the Main Chassis.

Note: In Figure 2, slots 0 to 4 are available in the Main Chassis. Slot 4 is designed to contain the NTDK16 48-port Digital Line card. This card is equivalent to three NT8D02 Digital Line Cards (slots 4 to 6). Slots 7 to 10 are available in the Chassis Expander.

Figure 2
Option 11C Mini Main Chassis connected to a Chassis Expander



Option 11C Mini Expansion using fiber

The Option 11C Mini system can be expanded using fiber-optic connectivity. Figure 3 shows an Option 11C Mini Main Chassis connected to an Option 11C Mini Expansion Chassis. The SSC card (NTDK20BA or later) is required for fiber-optic connectivity for up to two Expansion Chassis. The SSC card (NTDK20CA or later) is required for up to four Expansion Chassis.

Note 1: The addition of a Chassis Expander off of the Main Chassis if a Fiber Optic configuration requires a NTDK20EA or later SSC card.

Note 2: The addition of a Chassis Expander off the Expansion Chassis requires Fiber Receiver card: NTDK23BA, NTDK25BB, NTDK80BA or later versions.

Note 3: In Figure 3, slots 0 to 4 are available in the Main Chassis. Slots 4 and 14 contain the NTDK16 48-port Digital Line card. Slots 11 to 14 are available in the Expansion chassis. Slot 0 in the Expansion chassis contains the Fiber Receiver card.

Figure 3
Option 11C Mini Main cabinet connected to an Option 11C Mini Expansion chassis

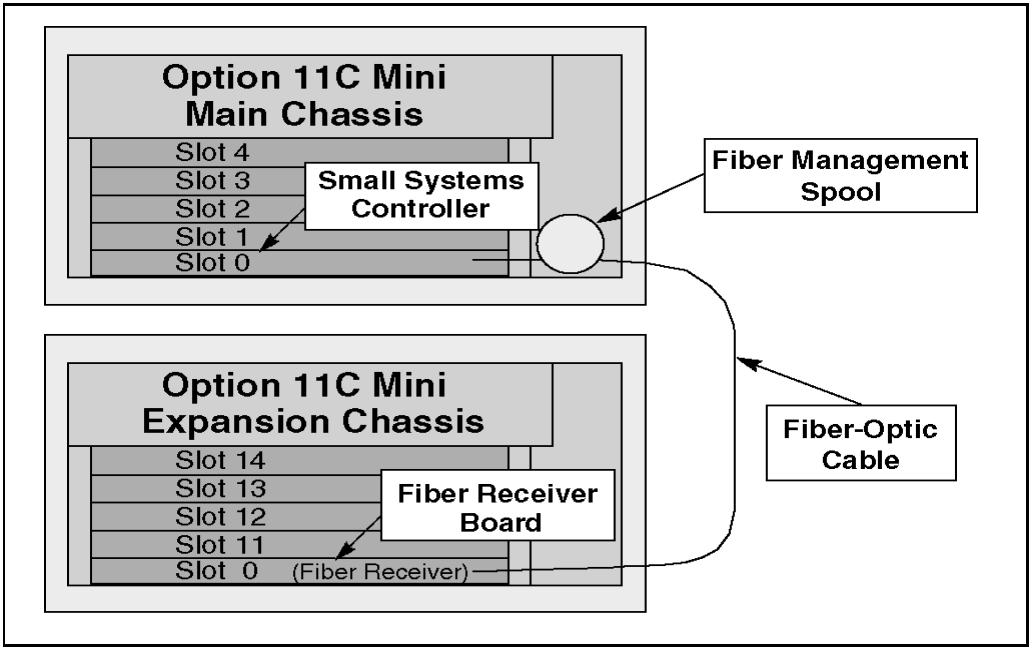


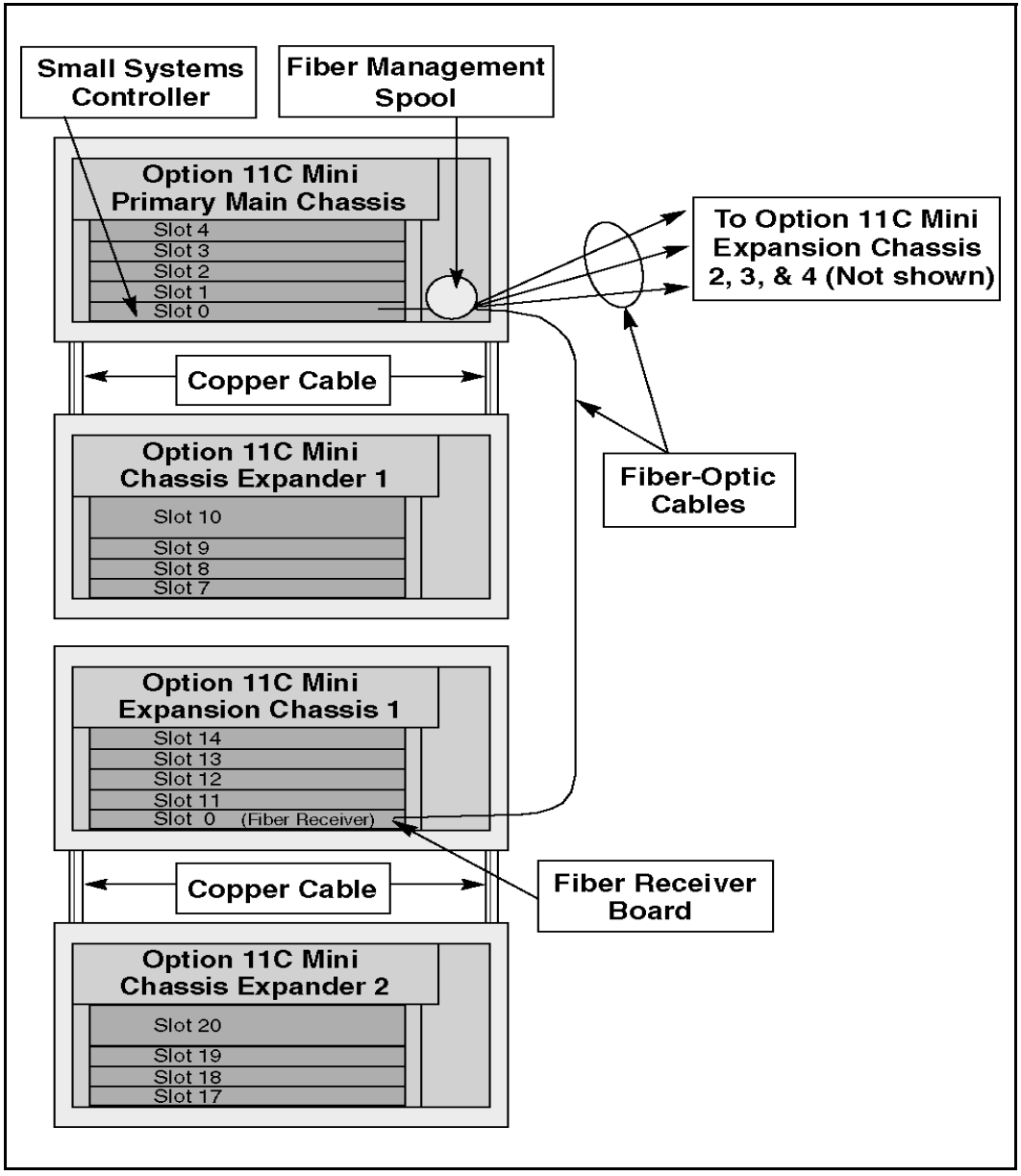
Figure 4 on page 16 shows an Option 11C Mini configuration in which the Main Chassis is connected to the Expansion Chassis with fiber-optic cable. The Main Chassis in this configuration is equipped with a Chassis Expander 1. Therefore, the SSC card (NTDK20EA or later) is required to support the Chassis Expander connected to the Main Chassis.

Expansion Chassis 1 in this configuration is also equipped with a Chassis Expander 2. Therefore, the Fiber Receiver card must be one of the following:

- NTDK23BA or later
- NTDK25BB or later
- NTDK80BA or later

Note: In Figure 4, slots 0 to 4 are available in the Main Chassis. Slot 4 contains the NTDK16 48-port Digital Line card. Slots 7 to 10 are available in the Chassis Expander 1. Slots 11 to 14 are available in Expansion chassis 1. Slot 0 in Expansion chassis 1 contains the Fiber Receiver card and slot 14 contains the NTDK16 48-port Digital Line card. Slots 17 to 20 are available in the Chassis Expander 2.

Figure 4
Option 11C Mini fiber-optic expansion configuration including Chassis Expander.

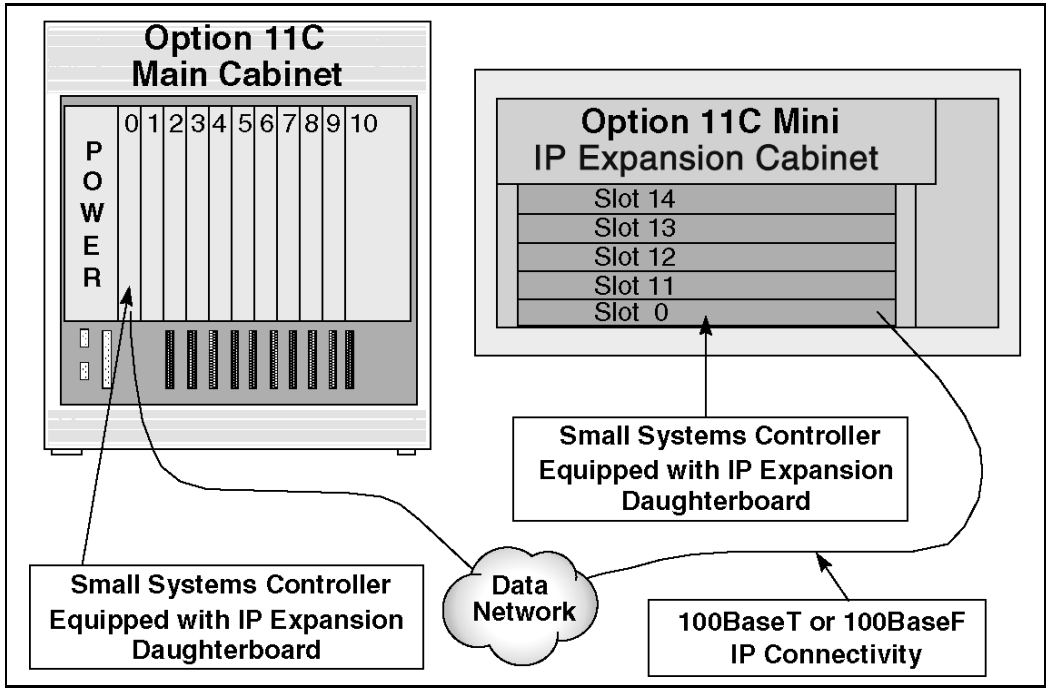


Option 11C and Option 11C Mini IP expansion

Figure 5 on page 17 shows a IP configuration in which an Option 11C Main cabinet is connected to Option 11C Mini Expansion chassis using IP connectivity. The SSC card used in the Option 11C Main Cabinet is vintage NTDK20EA or later. The SSC (NTDK20EA and later) card is required in slot 0 of the Option 11C Mini IP Expansion chassis.

Note: In Figure 5, slots 0 to 10 are available in the Main cabinet and slots 11 to 14 are available in the Mini Expansion chassis. Slot 14 of the Mini Expansion chassis contains the NTDK16 48-port Digital Line Card.

Figure 5
Option 11C and Option 11C Mini IP expansion configuration



Option 11C and Option 11C Mini mix-and-match expansion

In a mix-and-match scenario, a Option 11C Mini Main chassis can be connected to a Option 11C IP Expansion cabinet(s). Similarly, a Option 11C Main cabinet can be connected to a Option 11C Mini IP Expansion Chassis. The main differences between the Option 11C and Option 11C Mini include:

- the SSC card vintages, the SSC card NTDK20EA or later is required for the Option 11C Main Cabinet, Option 11C Mini Main Chassis and IP Expansion Chassis. The SSC card vintage NTDK20CA or later is required for Option 11C Expansion Cabinets.
- The Option 11C cabinets must support the faceplate cabling that is used on all IP Expansion daughterboards. If the current cabinets do not support cable routing through the faceplate, they must be upgraded to the NTDK18AA cabinet kit.
- The grounding clips are situated differently. The Option 11C grounding clip is mounted on the front of the stiffener rail, refer to Figure 6 on page 18. The Option 11C Mini is mounted on the fan baffle on the lower right hand side of the Mini Main chassis, refer to Figure 7 on page 19.

Figure 6
Option 11C EMC grounding clip

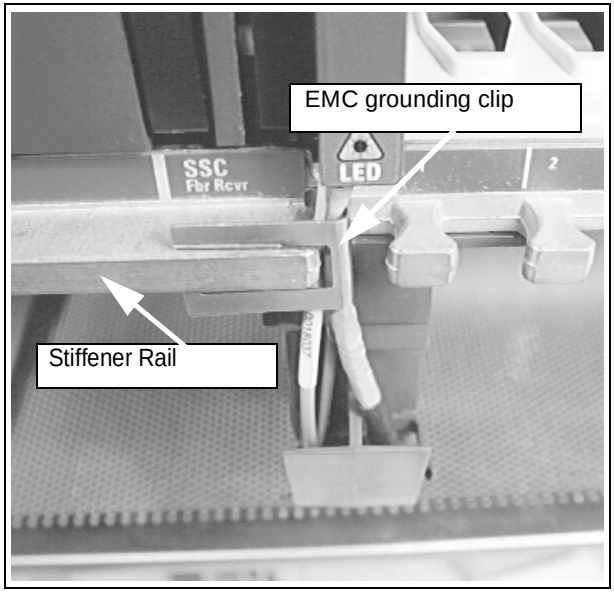


Figure 7
Option 11C Mini EMC grounding clip location

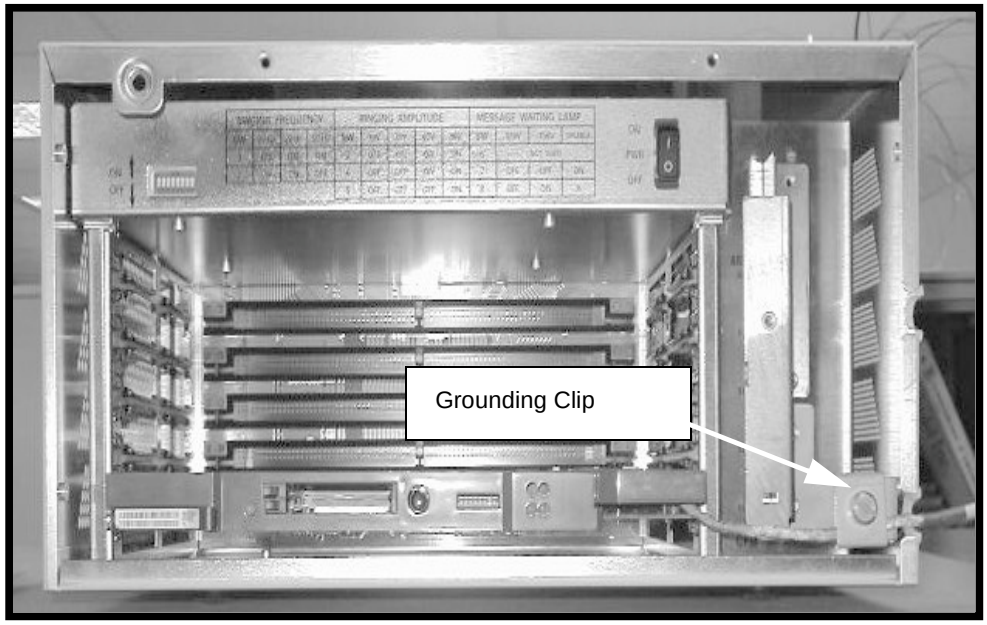


Figure 8 on page 21 shows an example “mix-and-match” configuration in which an Option 11C Main cabinet uses both fiber and IP cabling to connect two Option 11C Expansion cabinets and one Option 11C Mini Expansion chassis.

> ***Note:*** Figure 8 on page 21 is only an example of one of many possible configurations using Option 11C cabinets and Option 11C Mini chassis.

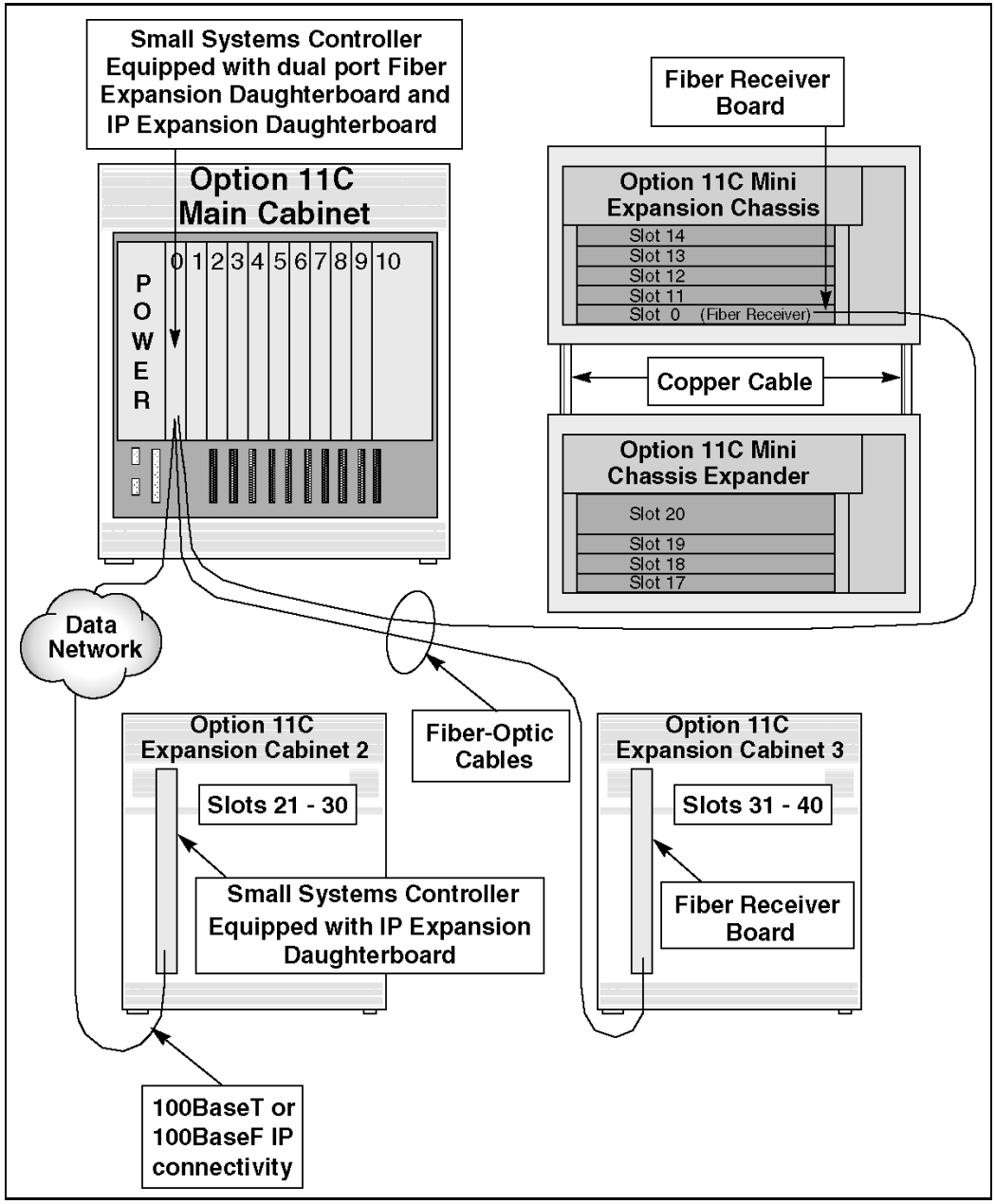
The SSC card in the Option 11C Main cabinet has one dual-port Fiber daughterboard installed in the top connector and one single-port IP daughterboard installed in the bottom connector. The dual-port Fiber daughterboard in the top connector provides card slots 11-20 and 31 to 40. The single-port IP daughterboard in the bottom connector provides card slots 21-30.

The Option 11C is equipped with a Chassis Expander. The addition of a Chassis Expander to Expansion Chassis requires one of the following Fiber Receiver cards:

- NTDK23BA or later
- NTDK25BB or later
- NTDK80BA or later

Note: In Figure 8, slots 0 to 10 are available in the Main cabinet and slots 11 to 14 are available in the Expansion chassis. Slots 17 to 20 are available in the Chassis expander. Slots 21 to 30 are available in the Option 11C Expansion cabinet 2 via the data network. Slots 31 to 40 are available in the Option 11C Expansion cabinet 3. Slot 0 in the Option 11C Mini Expansion chassis contains the Fiber Receiver card and in slot 24 the NTDK16 48-port Digital Line card.

Figure 8
Option 11C and Option 11C Mini mix-and-match expansion configuration



Terminology used in this guide

The following sections describe the various chassis and cabinets that are used in a fiber-optic expansion configuration:

Option 11C Mini Main Chassis

The main chassis for the Option 11C Mini System is the NTDK91. In a fiber-optic and IP configuration, this term will be used for the Option 11C Mini Main Chassis.

When the Option 11C Mini Main Chassis is used, it can be connected to an Option 11C Mini Chassis Expander with two NTDK95 copper cables. Figure 2 on page 13 contains a Option 11C Mini Main Chassis.

Note 1: A stand-alone Option 11C Mini system can use an NTDK20CA or later SSC card. When using IP Expansion Chassis, the NTDK20EA or later SSC card is required.

Note 2: The addition of a Chassis Expander off of the Main Chassis requires a NTDK20EA or later SSC card.

Option 11C Mini Chassis Expander

To increase the line capacity of your system, the Option 11C Mini Main Chassis can be connected to an NTDK92 Option 11C Mini Chassis Expander.

In a fiber-optic expansion configuration, the Chassis Expander does not require an SSC card with fiber daughterboards or a Fiber Receiver card. The slots in the Chassis Expander are for IPE cards. In slot 10, you can also install the double-width Meridian Mail card. Figure 2 on page 13 contains a Option 11C Mini Chassis Expander.

Option 11C Mini Expansion chassis

In a fiber-optic expansion configuration, the NTDK91 Option 11C Mini Main Chassis can function as an Expansion chassis. You must install a Fiber Receiver card in slot 0 of the Expansion chassis. Fiber-optic cable connects the Fiber Receiver card to the SSC card in the Main Chassis. Figure 3 on page 14 contains a Option 11C Mini Expansion chassis.

Option 11C Mini IP Expansion chassis

In a IP expansion configuration, the NTDK91 Option 11C Mini Main Chassis can function as an IP Expansion chassis. You must install a SSC vintage NTDK20EA or later card in slot 0 of the Expansion chassis. The SSC card in the IP Expansion chassis connects to the SSC card in the Main Chassis directly or via a customers data network. Figure 5 on page 17 contains a Option 11C Mini IP Expansion chassis.

Option 11C Main cabinet

The NTAK11 Option 11C Main cabinet requires an NTDK20EA or later SSC card when using IP Expansion daughterboards. Fiber daughterboards are supported on SSC card vintages NTDK20CA and later. Install the SSC card in slot 0. The NTAK11 cabinet can be used as the Main cabinet when it contains the SSC card. The NTAK11 can also be used as an Expansion cabinet. Figure 1 on page 12 contains a Option 11C Main Cabinet.

Option 11C Expansion cabinet

In a fiber-optic expansion configuration, the NTAK11 Option 11C cabinet can function as an Expansion cabinet. You must install a Fiber Receiver card in slot 0 of the Expansion cabinet. Fiber-optic cable connects the Fiber Receiver card to the SSC card in the Option 11C Main cabinet. Figure 1 on page 12 contains a Option 11C Expansion cabinet.

Option 11C IP Expansion cabinet

In a IP expansion configuration, the NTAK11 Option 11C cabinet must be upgraded to a NTDK18AA cabinet to support faceplate cabling. You must install a SSC card in slot 0 of the IP Expansion cabinet. 100BaseT or 100BaseF cable connects the SSC in the IP Expansion cabinet to the SSC card in the Main Cabinet. The SSC card vintage NTDK20CA or later is required for Option 11C IP Expansion Cabinets.

Chapter 2—Hardware required for fiber expansion and IP expansion

This chapter describes the main components required for expanding an Option 11C Mini system using fiber-optic connectivity or IP connectivity.

The main components required for expanding an Option 11C Mini system are contained in the following tables:

- Table 1 on page 26 summarizes the hardware required to expand your system using Option 11C Mini chassis and fiber-optic connectivity.
- Table 2 on page 29 summarizes the hardware required to expand your system using Option 11C Mini chassis and IP connectivity in a point-to-point configuration.
- Table 3 on page 30 summarizes the hardware required to expand your system using Option 11C Mini chassis and IP connectivity in a data network configuration.

For information about Option 11C Mini equipment not described in this guide, refer to the *Option 11C Mini Planning and Installation Guide (553-3021-209)*. For information about Option 11C equipment not described in this chapter, refer to the *Option 11C Planning and Installation Guide (553-3021-210).*

Table 1
Hardware required for expanding your system using Option 11C Mini chassis and fiber-optic connectivity

Code	Item	Description
NTDK20EA (A0789511)	Small System Controller (SSC) card	NTDK20EA is the minimum version of SSC card required for Option 11C Mini fiber expansion. See Note 1 on page 28.
A0632902	10 m plastic fiber-optic cable (multi-mode)	This cable connects the Main and Expansion chassis by interfacing with an expansion daughterboard and a Fiber Receiver card. Length: 10 m (33 ft)
	Glass fiber-optic cable (multi-mode or single-mode)	This cable connects the Main and Expansion chassis by interfacing with an expansion daughterboard and a Fiber Receiver card. See Note 3 on page 28. Length: up to 3 km (1.8 mi)
NTDK22AA	10 m single-port Fiber Expansion Daughterboard	Install this daughterboard on the SSC card to connect one Expansion chassis. The SSC card will support two NTDK22AA daughterboards. Use this daughterboard with the A0632902 multi-mode fiber-cable and the NTDK23 Fiber Receiver card.
NTDK24AB	3 km single-port Fiber Expansion Daughterboard (multi-mode)	When you install this daughterboard on the SSC card, it supports one Expansion cabinet/chassis.The SSC card will support two NTDK24AB daughterboards. This daughterboard is used with multi-mode, glass fiber-optic cable and the NTDK25 Fiber Receiver card.

Table 1
Hardware required for expanding your system using Option 11C Mini chassis and fiber-optic connectivity (Continued)

Code	Item	Description
NTDK79AA	3 km single-port Fiber Expansion Daughterboard (single-mode)	When you install this daughterboard on the SSC card, it supports one Expansion chassis. The SSC card will support two NTDK79AA daughterboards. This daughterboard is used with single-mode, glass fiber-optic cable and the NTDK25 Fiber Receiver card.
NTDK84AA	10 m dual-port Fiber Expansion Daughterboard	When you install this daughterboard on the SSC card, it supports up to two Expansion chassis. The SSC card will support two NTDK84AA daughterboards. This daughterboard is used with the A0632902 multi-mode fiber-optic cable and the NTDK23 Fiber Receiver card.
NTDK85AA	3 km dual-port Fiber Expansion Daughterboard	When you install this daughterboard on the SSC card, it supports up to two Expansion chassis. The SSC card will support two NTDK85AA daughterboards. This daughterboard is used with multi-mode, glass fiber-optic cable and the NTDK25 Fiber Receiver card.
NTDK23BA	10 m Fiber Receiver card	This Fiber Receiver card supports 10 m (33 ft) plastic fiber-optic cable. See Note 2 on page 28.
NTDK25BB	3 km multi-mode Fiber Receiver card	This Fiber Receiver card supports 3 km (1.8 mi) multi-mode glass fiber-optic cable. See Notes 2 and 3 on page 28.
NTDK80BA	3 km single-mode Fiber Receiver card	This Fiber Receiver card supports 3 km (1.8 mi) single-mode fiber-optic cable. See Notes 2 and 3 on page 28.
NTTK24	Option 11C Mini Fiber Management Guide	This routing guide supports cables for up to four Expansion chassis.

Table 1
Hardware required for expanding your system using Option 11C Mini chassis and fiber-optic connectivity (Continued)

Code	Item	Description
P0888475	Option 11C Cable Routing Guide	This routing guide supports up to four Expansion cabinets.
P0816832	Option 11C Fiber Management Guide	This routing guide supports up to two Expansion cabinets.

Note 1: If you use an earlier version of the SSC card (NTDK20DA or earlier) in the Option 11C Mini Main Chassis), the Chassis Expander does not function. This NTDK20EA version of the SSC card is not required in the Option 11C Main cabinet.

Note 2: If you use an earlier version of the Fiber Receiver card in the Option 11C Mini Expansion Chassis, the Chassis Expander does not function.

Note 3: Glass fiber-optic cable must be supplied by a local facilities provider.

Table 2
Hardware required for expanding your system using Option 11C Mini chassis and IP connectivity in a point-to-point configuration

Code	Item	Description
NTDK20EA or later	Small System Controller (SSC) card	NTDK20EA is the minimum version of SSC card required for Option 11C Mini Main and IP Expansion chassis.
A0817052	5 m fiber-optic cable with MT-RJ to ST connectors	This cable connects the Main and IP Expansion chassis using the 100BaseF IP daughterboards and an A0346816 ST fiber coupler.
A0346816	ST fiber coupler	This coupler enables two MT-RJ to ST cables to connect in a point-to-point configuration.
NTTK8305	2 m STP CAT 5 extension cable	This cable connects the Main and IP Expansion chassis using the 100BaseT IP daughterboards and an NTTK34AA crossover cable.
NTTK34AA	2 m UTP CAT 5 RJ45 crossover cable	
NTDK57DA	Remote Security dongle	The NTDK20EA or later SSC card installed in the IP Expansion chassis requires this security dongle
NTTK13AA	Software Daughterboard	Preprogrammed software daughterboard required in both the Main and IP Expansion chassis
NTTK43AA	Grounding Clip	The Grounding Clip is required for all 100BaseT IP Expansion Chassis
NTTK01, NTTK02, NTDK83 or NTDK99	IP Expansion Daughterboard	An IP Expansion Daughterboard is required in both the Main and IP Expansion chassis. Refer to “IP Expansion Daughterboards” on page 33 for a description of the IP Expansion daughterboards.

Table 3
Hardware required for expanding your system using Option 11C Mini chassis and IP connectivity in a data network configuration

Code	Item	Description
NTDK20EA or later	Small System Controller (SSC) card	NTDK20EA is the minimum version of SSC card required for Option 11C Mini IP expansion.
A0817052	5 m fiber-optic cable with MT-RJ to ST connectors	This cable connects the Main and IP Expansion chassis using the 100BaseF IP daughterboards. The two A0817052 cables are usually connected directly to the customers LAN.
NTTK8305	2 m STP CAT 5 extension cable	This cable connects the Main and IP Expansion chassis using 100BaseT IP daughterboards. A customer supplied straight through cable is used in place of the NTTK34AA 2 m crossover cable.
NTDK57DA	Remote Security dongle	The NTDK20EA or later SSC card installed in the IP Expansion chassis requires this security dongle
NTTK13AA	Software Daughterboard	Preprogrammed software daughterboard required in both the Main and IP Expansion chassis
NTTK43AA	Grounding Clip	The Grounding Clip is required for all 100BaseT IP Expansion chassis
NTTK01, NTTK02, NTDK83 or NTDK99	IP Expansion Daughterboard	An IP Expansion Daughterboard is required in both the Main and IP Expansion chassis. Refer to “IP Expansion Daughterboards” on page 33 for a description of the IP Expansion daughterboards.

Small System Controller card

To expand your Option 11C Mini system using fiber-optic connectivity, you require an NTDK20 Small System Controller (SSC) card in slot 0 of the Main Chassis/cabinet.

To expand your Option 11C Mini chassis using IP connectivity, you require an NTDK20 Small System Controller (SSC) card in slot 0 of the Main Chassis and IP Expansion Chassis.

> ***Note 1:*** The Option 11C Mini Main Chassis and Mini IP Expansion chassis require the NTDK20EA or later SSC card.

The SSC card handles call processing for the system. It includes an Ethernet controller, storage for system and customer data, and system memory. The SSC card also provides the following features and functions:

- MC68040 main processor
- Software Daughterboard interface
- two connectors for fiber or IP daughterboards
- Security Device socket
- two PCMCIA interface slots
- three SDI ports
- conferencing
- Digitone Receiver, tone generation, and tone detection functions

Software Daughterboard

You must install the Software Daughterboard in its assigned connector on the SSC card. The system and customer data is stored on the Software Daughterboard. The Software Daughterboard is also used as a software delivery card for new installations. Additional memory on the SSC card temporarily stores and processes automated routines and user-programmed commands. The SSC card also retains a copy of customer files, in the event of data loss, in the Backup flash drive.

For Option 11C Mini fiber expansion, you must use an NTTK13 Software Daughterboard with Release 24.24 or later software. The NTTK13 provides 48 Mb of memory.

For Option 11C Mini IP expansion, you must use an NTTK13 Software Daughterboard with Release 25.3x or later software.

Security Device

The NTDK20 SSC card has a socket where you install the Security Device. A Security Device is shipped with each new system.

> ***Note:*** You can use the Security Device that was on the Mini System Controller (MSC) card. A security device is also required for each IP Expansion cabinet/chassis.

Fiber Expansion Daughterboards

You can connect the Option 11C Mini Main Chassis to the following:

- up to two expansion cabinets/chassis using single-port Fiber Expansion Daughterboards
- up to four expansion chassis using dual-port Fiber Expansion Daughterboards
- one dual-port daughterboard in the top connector and one single-port in the bottom connector.

You install the Fiber Expansion Daughterboards on the SSC card. Each port on the daughterboard provides an additional 16 channels of conferencing capabilities and ten additional card slots. There are two types of Fiber Expansion Daughterboards: single-port and dual-port.

Single-port Fiber Expansion Daughterboards

Each Single-port Fiber Expansion Daughterboard can interface with one expansion cabinet/chassis. Each daughterboard port provides ten additional card slots. The daughterboard port in connector one on the SSC card provides card slots 11 to 20. The daughterboard port in connector two on the SSC card provides slots 21 to 30. You must match each type of daughterboard with the appropriate Fiber Receiver card. For information on Fiber Receiver cards, refer to “Fiber Receiver cards” on page 36. The following are three types of Single-port Fiber Expansion Daughterboards:

- **NTDK22 single-port Fiber Expansion Daughterboard:** used with the A0632902 fiber-optic cable (multi-mode) and the NTDK23 Fiber Receiver card

- **NTDK24 single-port Fiber Expansion Daughterboard:** used with glass fiber-optic cable (multi-mode) up to 3 km (1.8 mi) in length and the NTDK25 Fiber Receiver card
- **NTDK79 single-port Fiber Expansion Daughterboard:** has the same capabilities as the NTDK24 except that it interfaces with single-mode fiber-optic cable. It is used with the NTDK80 Fiber Receiver card.

Dual-port Fiber Expansion Daughterboards

Each dual-port Fiber Expansion Daughterboards can interface with up to two expansion chassis. Each daughterboard port provides ten additional card slots. The daughterboard ports in connector one on the SSC card provides card slots 11 to 20, port two provides card slots 31 to 40. The daughterboard ports in connector two on the SSC card provides slots 21 to 30, port 2 provides card slots 41 to 50. You must match each type of daughterboard with the appropriate Fiber Receiver card. Refer to “Fiber Receiver cards” on page 36 for information about Fiber Receiver cards. The following are two types of Dual-port Fiber Expansion Daughterboards:

- **NTDK84 dual-port Fiber Expansion Daughterboard:** used with the A0632902 fiber-optic multi-mode cable and the NTDK23 Fiber Receiver card
- **NTDK85 dual-port Fiber Expansion Daughterboard:** used with glass fiber-optic cable (multi-mode) up to 3 km (1.8 mi) in length and the NTDK25 Fiber Receiver card

Note: Glass fiber-optic cable (multi-mode or single-mode) must be supplied by a local facilities provider.

IP Expansion Daughterboards

You can connect the Option 11C Mini Main Chassis to the following:

- up to two expansion cabinets/chassis using single-port IP Expansion Daughterboards
- up to four expansion cabinets/chassis using dual-port IP Expansion Daughterboards

IP Expansion Daughterboards provide increased digital trunking capacity for the Option 11C Mini system. Digital trunks can now be supported in any IP Mini Expansion chassis, when connected via 100BaseT or 100BaseF. A total of 15 digital trunks are supported per Mini system.

Note: Digital trunks are not supported on the Mini chassis expander.

The following CE cards can now be supported in IP expansion chassis.

- 1.5MB DTI/PRI (NTAK09 with NTAK20, NTAK93 & NTBK51)
- 1.5MB TMDI (NTRB21 with NTAK20)
- 2.0MB DTI (NTAK10 with NTAK20)
- 2.0MB PRI (NTAK79 & NTAK50 with NTAK20, NTAK93 & NTBK51)
- SDI DCH (NTAK02) (Only DCH is supported in the IP Expansion cabinet/chassis. ESDI, AML, TTY are not supported in the Expansion cabinet/chassis.)

IP expansion daughterboards also provides increased SDI/D-channel capacity. Three SDI ports are provided with each IP Expansion chassis and D-channel capacity has been increased, such that a total of 80 D-channels are now supported per system.

Single-port IP Expansion Daughterboards

Each Single-port IP Expansion Daughterboard can interface with one expansion cabinet/chassis. The following are two types of Single-port IP Expansion Daughterboards:

- **NTTK01 single-port 100BaseF IP Daughterboard:** single-port 100BaseF glass multi-mode interface
- **NTDK99 single-port 100BaseT IP Daughterboard:** single-port 100BaseT twisted pair copper interface

Dual-port IP Expansion Daughterboards

Each dual-port IP Expansion Daughterboards can interface with up to two expansion cabinet/chassis. The following are two types of Dual-port IP Expansion Daughterboards:

- **NTTK02 dual-port 100BaseF IP Daughterboard:** dual-port 100BaseF multi-mode fiber interface
- **NTDK83 dual-port 100BaseT IP Daughterboard:** dual-port 100BaseT multi-mode copper interface

Serial Data Interface ports

The SSC card has three Serial Data Interface (SDI) ports used to connect on-site terminals or remote terminals through a modem. The SDI ports are available using the NTBK48BA three-port cable. Table 4 lists the default settings on the ports.

Note: IP connectivity increases the number of SDI ports to three for each Expansion cabinet/chassis.

Table 4
SDI port default settings

TTY Port	Baud rate	Data bits	Stop bits	Parity
0	Set by a DIP switch	8	1	None
1	1200 (See Note below)	8	1	None
2	1200 (See Note below)	8	1	None
Note: The baud rate shown for ports 1 and 2 is the default rate. You can configure ports 1 and 2 in software to a maximum baud rate of 19200 bps.				

IP Expansion 10BaseT port

The 10BaseT Ethernet port available on the SSC of an IP Expansion cabinet is functional. However, the Ethernet port on the IP Expansion cabinet does not have a default IP configuration. This means that the IP port configuration must be performed before it can be used.

It is not recommended to use the remote 10BaseT port in normal mode as maintenance or alarm management are not available. In survival mode it assumes the system level configuration of the main cabinet port.

Conferencing

The SSC card provides 30 conference channels. When you add Fiber Expansion daughterboards to the SSC card, conference capability increases. Each port on the Fiber Expansion daughterboard increases the total number of conference channels by 16.

Digitone Receiver, tone generation, tone detection functions

The SSC card provides the following Digitone and other tone-related functions:

- 30 channels of Tone and Digit Switch (TDS) and a combination of eight Digitone Receivers (DTR) or Dial Tone Detectors (XTD)
- Tone service ports which can be configured as either four units of MFC/MFE/MFK5/MFK6/MFR or eight DTR/XTD units

You can install an NTAK03 card in the Main cabinet/chassis if additional tone and receiver transmission resources are required.

Fiber Receiver cards

Multi-cabinet/chassis Option 11C Mini systems require a Fiber Receiver card in each Expansion cabinet/chassis. The following are the three types of Fiber Receiver card:

- **NTDK23 Fiber Receiver card:** supports a 10 m (33 ft) plastic fiber-optic cable
- **NTDK25 Multi-mode Fiber Receiver card:** supports a glass fiber-optic cable up to 3 km (1.8 mi) in length
- **NTDK80 Single-mode Fiber Receiver card:** supports a glass fiber-optic cable up to 3 km (1.8 mi) in length

Each Fiber Receiver card has one Serial Data Interface (SDI) port. The SDI port is used to connect an on-site terminal or remote terminal through a modem. The SDI ports is available using the NTAK1118 cable. Table 5 lists the default settings of the port.

Table 5
SDI port default setting

TTY Port	Baud rate	Data bits	Stop bits	Parity
0	Set by a DIP switch	8	1	None

Routing guides

Each cabinet/chassis in a expanded system requires a routing guide to manage the fiber-optic cable. The following routing guides are used:

- **NTTK24 Fiber Management Guide:** installed on the inside front panel of the Option 11C Mini Main chassis. This routing guide supports cabling for up to four Expansion chassis.
- **P0888475 Cable Routing Guide:** installed in the Option 11C Main cabinet. This routing guide supports cabling for up to four Expansion cabinets/chassis. The P0888475 is automatically supplied with new systems. This routing guide is required in an IP Expansion cabinet.
- **P0816832 Fiber Management Guide:** installed in the Option 11C Main cabinet. This routing guide supports up to two Expansion cabinets/chassis. The P0816832 can also be installed in Expansion cabinets.

Chapter 3—Add Expansion cabinets/chassis using fiber-optic connectivity

This chapter describes how to connect Option 11C Mini Expansion chassis to an Option 11C Mini Main Chassis or an Option 11C Main cabinet using fiber-optic cables. This chapter also includes Equipment layout plan information.

For information on connecting Option 11C Expansion cabinets to an Option 11C Main cabinet using fiber-optic cables, refer to the *Option 11C Planning and Installation Guide (553-3021-210)*.

Equipment Layout plan

Develop a layout plan for the equipment to determine where you will position each system component. Give consideration to the lengths of different cables, so that you make the best use of space.

If you are expanding using Option 11C Mini Chassis only, refer to the *Option 11C Planning and Installation Guide (553-3021-209)* for information on creating a equipment layout plan.

If you are expanding using Option 11C cabinet only, refer to the *Option 11C Planning and Installation Guide (553-3021-210)* for information on creating a equipment layout plan.

If you are combining Option 11C and Option 11C Mini systems, the following minimum standards must be followed:

- A horizontal installation of Option 11C Mini chassis requires 10 inches of free space on either side of the chassis.

- A vertical installation of Option 11C Mini chassis requires 12 inches of free space on the card side and 6 inches of free space on the cable side of the chassis.

Procedure outline

This chapter contains the following procedures:

- Procedure 1: “Prepare the Option 11C Main Cabinet or the Option 11C Mini Main Chassis to support fiber-optic connectivity” on page 41.
- Procedure 2: “Connect the Main Cabinet/Chassis to the Expansion Cabinets/Chassis” on page 50.
- Procedure 3: “Start-up procedures for a first-time system installation of the Option 11C Mini, using the SSC card” on page 59.
- Procedure 4: “Start-up procedure for a Option 11C Mini system upgraded from an MSC card to an SSC card” on page 61.

Fiber Expansion procedures

Procedure 1
Prepare the Option 11C Main Cabinet or the Option 11C Mini Main Chassis to support fiber-optic connectivity

1 **Do one of the following:**

— If you are using an Option 11C cabinet as the Main Cabinet, refer to the *Option 11C Planning and Installation Guide (553-3021-210)* for information on installation and fiber-optic connectivity.

— If you are using an Option 11C Mini chassis as the Main Chassis, go to Step 2 on page 41.

2 **Install the Option 11C Mini chassis, as described in the *Option 11C Mini Planning and Installation Guide (553-3021-209)*.**

a Install the Main Chassis and Chassis Expander (if a Chassis Expander is to be used).

Note 1: Connect the Main Chassis and Chassis Expander with two NTDK95 copper cables.

b Install the system ground.

c If required, install an Uninterruptible Power Supply (UPS).

3 **Do one of the following:**

— If you are installing a new system with a SSC card, go to Step 10.

— If you have a MSC card in your existing system, you must upgrade to the SSC card. Go to Step 4.

4 **Log onto the Option 11C Mini System and perform a data dump in LD 43.**

5 **Backup customer data from the MSC to a PCMCIA card or with the Customer Configuration and Backup Restore feature. Refer to the *Customer Configuration and Backup Guide (553-3001-330)*.**

Note: You will use the customer data file created with the *Customer Configuration and Backup Guide (553-3001-330)* to restore the original system data to the SSC card.

6 Attach an antistatic wrist strap to your wrist.

CAUTION

Static electricity can damage circuit cards. Wear an antistatic wrist strap when handling circuit cards or any of their components. When handling the cards, be careful not to damage any of their components.

7 Log off of the system and unseat the MSC card.

8 Remove the security device from the MSC card.

Note 1: Your security device can be used on the SSC card.

9 Proceed to Step 10 and prepare the SSC card for installation.

10 Take an NTDK20EA or later SSC card and place it on a clean, flat surface.

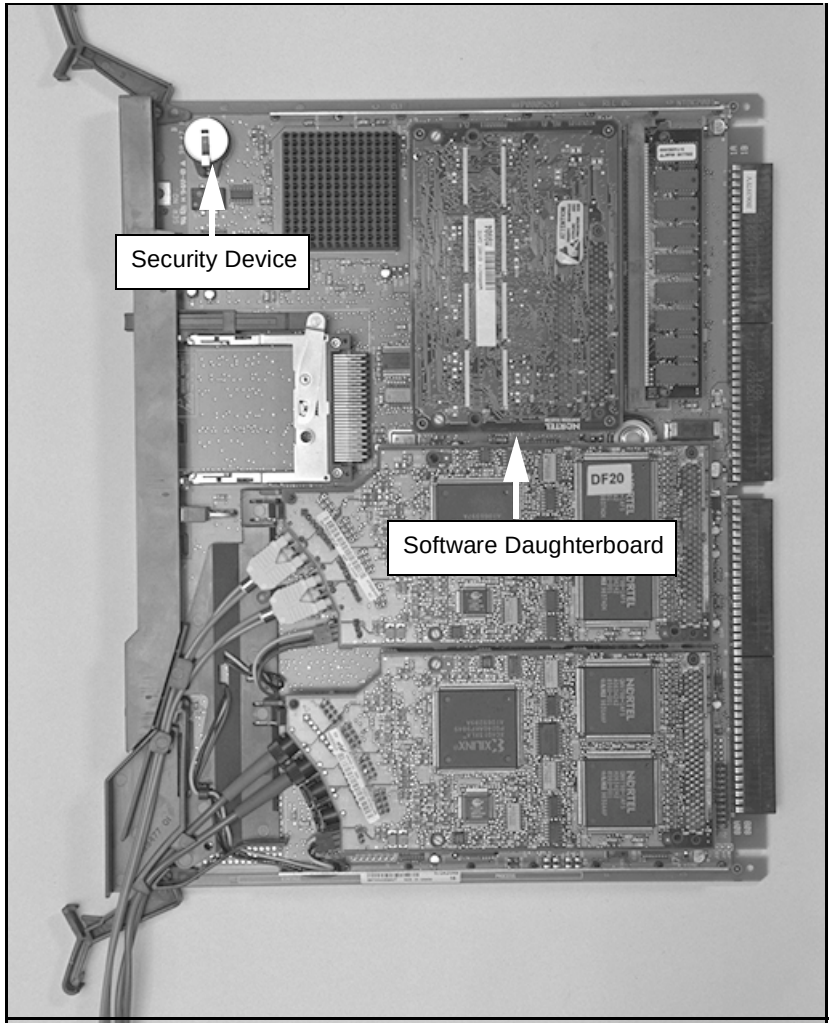
Note: For fiber-optic connectivity, you must install an SSC card in the Main chassis.

11 Install the Software Daughterboard (NTTK13) in the appropriate connector on the SSC card. See Figure 9.

12 Install the Security Device in the appropriate socket on the SSC card. See Figure 9.

Note: If you have an MSC card, you can use its security device.

Figure 9
Security Device and Software Daughterboard on the SSC card



13 Do one of the following:

— If you are using A0632902 plastic fiber-optic cable to connect the Main chassis to the Expansion chassis, go to Step 14 on page 44.

— If you are using glass fiber-optic cable to connect the Main chassis to the Expansion chassis, go to Step 15 on page 45.

The SSC card in the Main Chassis must contain at least one Fiber Expansion Daughterboard.

Each single-port Fiber Expansion Daughterboard (NTDK22AA, NTDK24AB, and NTDK79AA) supports one Expansion chassis. Each dual-port Fiber Expansion Daughterboard (NTDK84AA and NTDK85AA) supports up to two Expansion chassis.

WARNING

The fiber-optic interface product used in the Option 11C is considered safe. However, as a precaution do not look directly at the optical port or the end of the fiber-optic cable. Under some conditions (such as during cable testing or under light magnification), looking directly at the cable or port can expose the eye beyond the limits of Maximum Permissible Exposure recommended in some jurisdications. Do not remove protective caps or plugs until you are ready to connect the cable.

14 Connect the A0632902 plastic fiber-optic cable to the single-port or dual-port Fiber Expansion daughterboard. See Figure 10 on page 45.

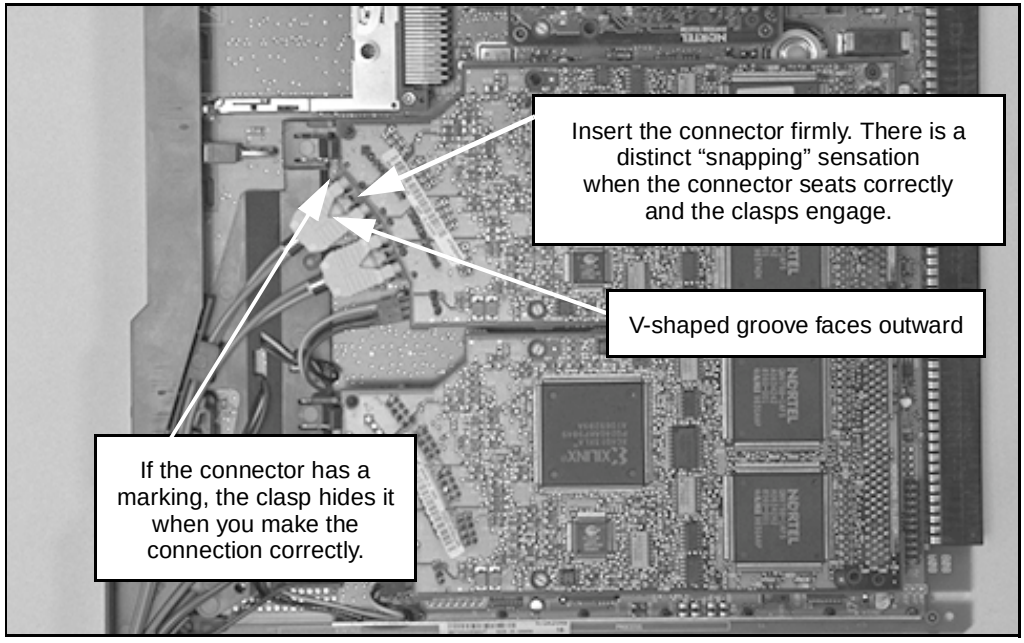
a Remove the protective plugs from the ports on the Fiber Expansion Daughterboard.

b Insert the cable connectors firmly into the ports on the daughterboard.

Make sure that the V-shaped groove on the cable connector faces out and that the connector is inserted completely. When the connector is inserted correctly, the black mark on the connector is not visible.

c Go to Step 16 on page 46.

Figure 10
Plastic fiber-optic cable connection on the SSC card



15 Connect the glass fiber-optic cable to the single-port or dual-port Fiber Expansion daughterboard. See Figure 11.

a Remove the protective plug from one of the ports on the Fiber Expansion Daughterboard.

b Remove the protective cap from the corresponding glass fiber-optic cable connector.

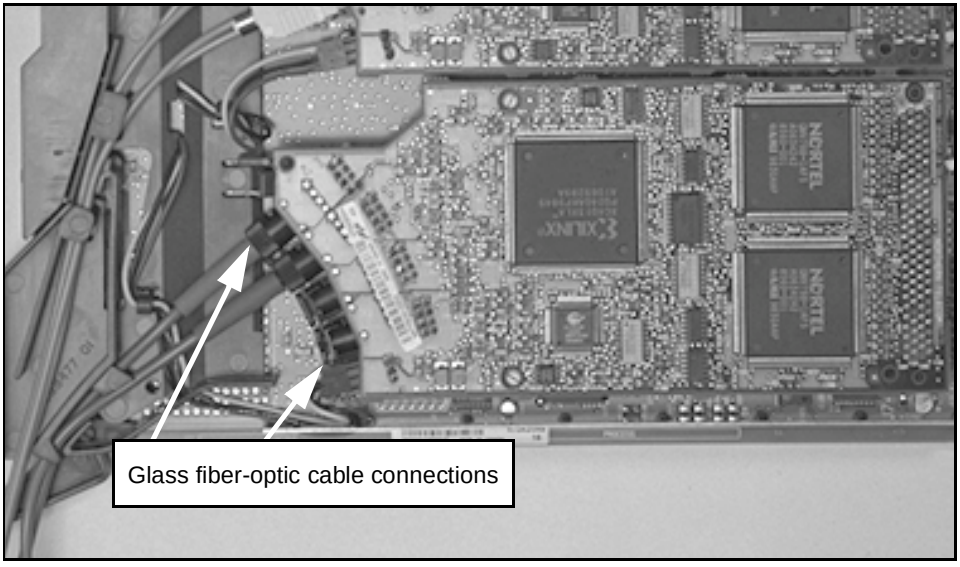
c Insert the cable connector firmly into the port on the Fiber Expansion daughterboard.

d Lock the connector in place by turning it a half turn clockwise.

e Repeat this step (Step 15 on page 45) for the second glass fiber-optic cable connection.

f Go to Step 16 on page 46.

Figure 11
Glass fiber-optic cable connection on the SSC card



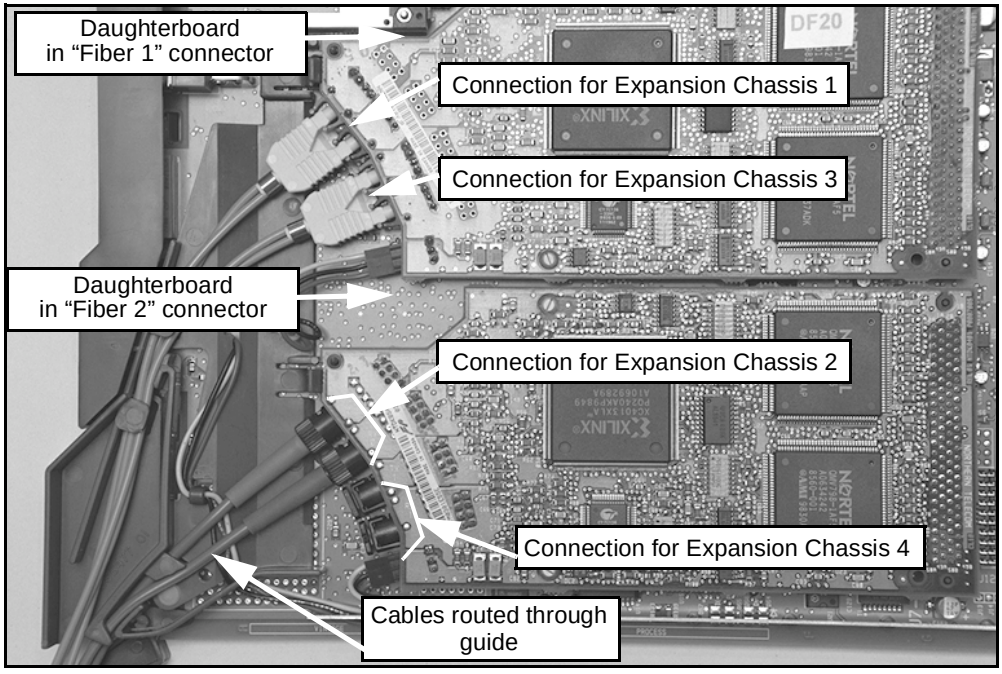
16 **Insert the LED cable on the SSC card into the LED connector on the daughterboard (if the daughterboard is a dual-port daughterboard). If the daughterboard is a single-port daughterboard, do not use the LED cable.**

The LED cable connection provides the second LED on the faceplate.

17 **Install the daughterboard in the appropriate connector on the SSC card.**

Note: The connector labelled “Fiber 1” is for Expansion Chassis 1 (card slots 11 to 20) and 3 (card slots 31-40). The connector labelled “Fiber 2” is for Expansion Chassis 2 (card slots 21-30) and 4 (card slots 41 to 50). Glass and plastic fiber-optic connections can be used in either “Fiber 1” or “Fiber 2”. See Figure 12 on page 47.

Figure 12
Daughterboard connectors on the SSC card



a Locate the plastic alignment pin on the daughterboard connector.

b Insert the plastic alignment pin into the appropriate hole on the daughterboard.

c Press the end of the daughterboard onto the daughterboard connector.

d Press the daughterboard onto the plastic standoffs to fasten the daughterboard securely to the SSC card.

e Route the cables through the guide on the SSC card. See Figure 12.

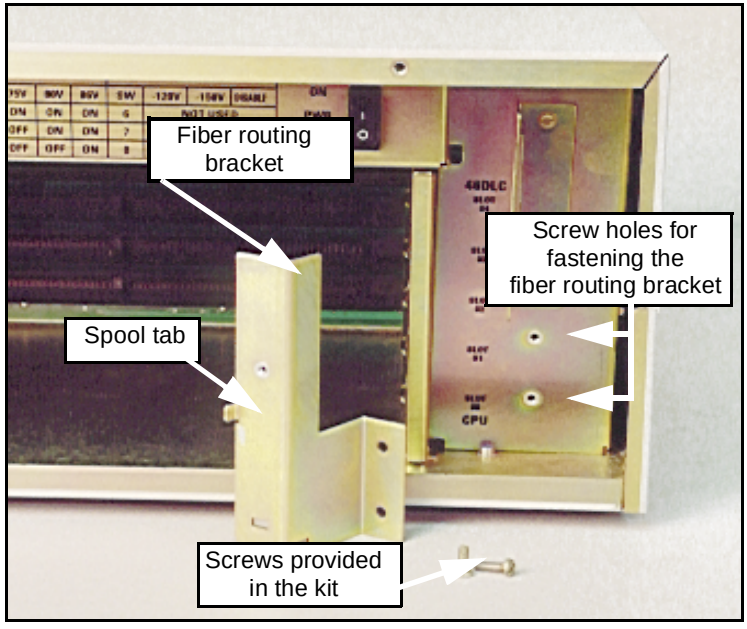
18 **Install the SSC card in slot 0 of the Main Chassis.**

19 **Install additional circuit cards in their assigned slots in the Main Chassis.**

20 **Install an NTTK24AA Fiber Routing Guide in the chassis.**

a Detach the spool portion of the guide assembly from the P0903797 fiber routing bracket (if this is not already done). See Figure 13.

Figure 13
Fiber routing bracket

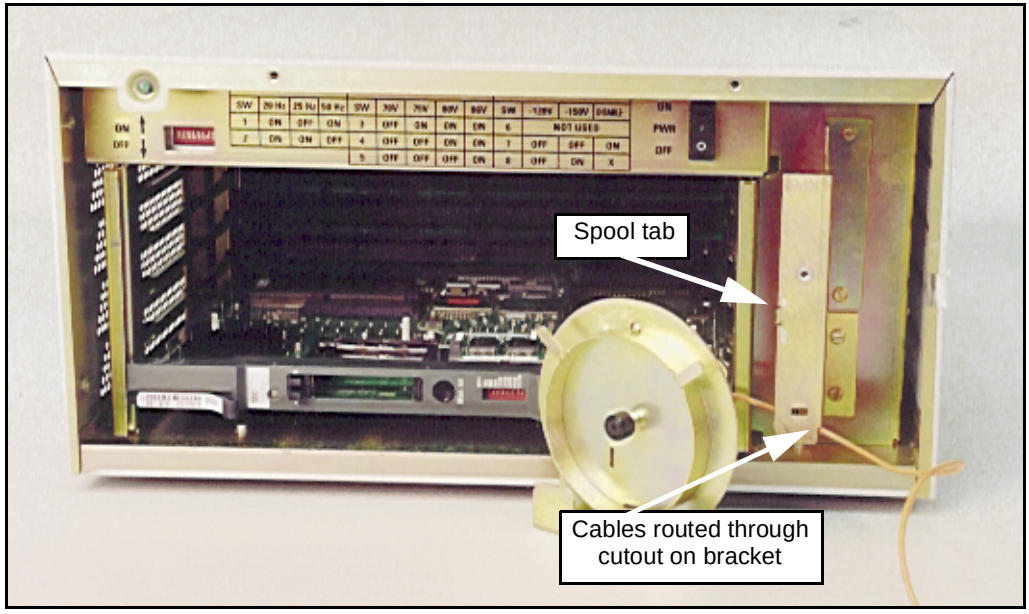


b Install the bracket vertically in the chassis.

Insert the two screws (supplied in the NTTK24AA kit) through the two holes in the bracket. Fasten the bracket to the fan baffle on the chassis. See Figures 13 and 14.

c Route the cables coming from the System Controller card through the cutout on the spool bracket. See Figure 14.

Figure 14
Fiber routing bracket installed on the chassis



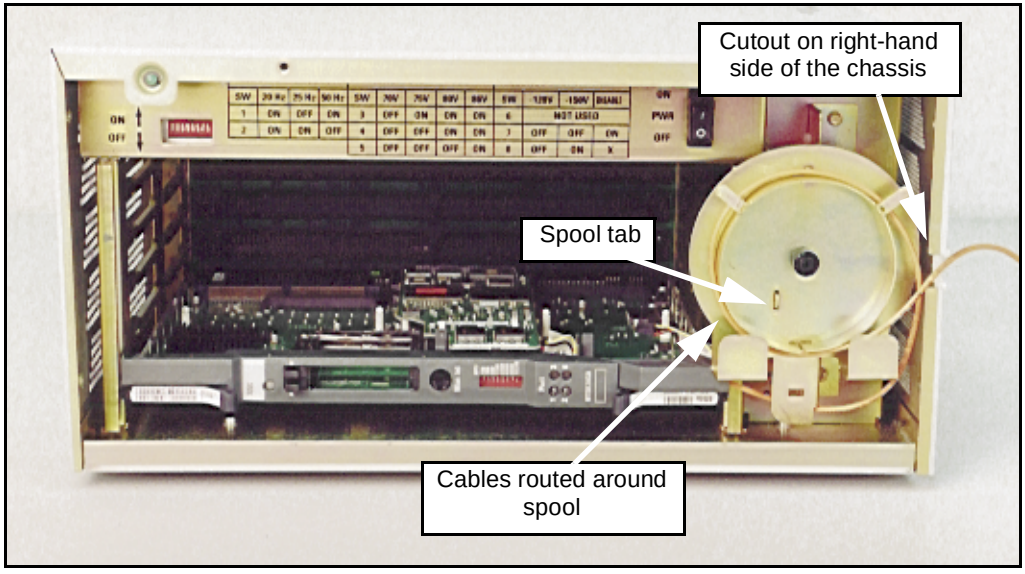
d Install the spool on the bracket. Use the captive fastener on the spool to fasten the spool to the bracket.

Note 1: The captive fastener makes the spool easy to attach and remove to install or replace circuit cards.

Note 2: Use the tab on the bracket to orient the spool. Loop the cables around the spool once. See Figure 15.

e Route the cables through the cutout on the right-hand side of the chassis. See Figure 15.

Figure 15
Fiber routing guide installed in the chassis



21 **Install the rest of the Option 11C Mini system, as described in the *Option 11C Mini Planning and Installation Guide (553-3021-209)*.**

a Go to Procedure 2 for information on how to connect the Main Chassis to the Expansion chassis.

Procedure 2
Connect the Main Cabinet/Chassis to the Expansion Cabinets/Chassis

1 **Do one of the following:**

— If you are using an Option 11C Expansion cabinet, refer to the Option 11C Planning and Installation Guide (553-3021-210) *for installation instructions and instructions on preparing the system for fiber-optic connectivity.*

— If you are using an Option 11C Mini Expansion chassis, go to Step 2 on page 50.

2 Install the Option 11C Mini chassis, as described in the *Option 11C Mini Planning and Installation Guide (553-3021-209)*.

a Install the Expansion chassis, including Chassis Expanders (if Chassis Expanders are to be used).

Note 1: Connect the Main Chassis and Chassis Expander with two NTDK95 copper cables.

b Install the system ground.

c If required, install an Uninterruptible Power Supply (UPS).

3 Attach an antistatic wrist strap to your wrist.

CAUTION

Static electricity can damage circuit cards. Wear an antistatic wrist strap when handling circuit cards or any of their components. When handling the cards, be careful not to damage any of their components.

4 Take a Fiber Receiver card, and place it on a clean, flat surface.

Note: To support fiber-optic connectivity, you must install a Fiber Receiver card in each Expansion chassis. Refer to Table 1 on page 26 to determine the Fiber Receiver card that corresponds to the daughterboards in the Main cabinet/chassis.

5 Do one of the following:

— If you are using A0632902 plastic fiber-optic cable to connect the Main Chassis to the Expansion Chassis, go to Step 6 on page 52.

— If you are using glass fiber-optic cable to connect the Main Chassis to the Expansion Chassis, go to Step 7 on page 55.

WARNING

The fiber-optic interface product used in the Option 11C is considered safe. However, as a precaution do not look directly at the optical port or the end of the fiber-optic cable. Under some conditions (such as during cable testing or under light magnification), looking directly at the cable or port can expose the eye beyond the limits of Maximum Permissible Exposure recommended in some jurisdications. Do not remove protective caps or plugs until you are ready to connect the cable.

6 Connect the Main Chassis to the Expansion Chassis using A0632902 plastic fiber-optic cable. Refer to Figure 16 on page 53.

a Remove the protective plugs from the ports on the Fiber Receiver card.

b Insert the cable connectors from the Main cabinet/chassis into the ports on the Fiber Receiver card.

Make sure that the “V-shaped” groove on the cable connector faces inward and that the connector is completely seated.

The mark on the connector (if present) is not visible when connected correctly.

c Wind the excess fiber-optic cable around the cable storage device located on the component side of the Fiber Receiver card. See Figure 17 on page 54.

d Go to Step 8 on page 56.

Figure 16
Plastic fiber-optic cable connections on the Fiber Receiver card

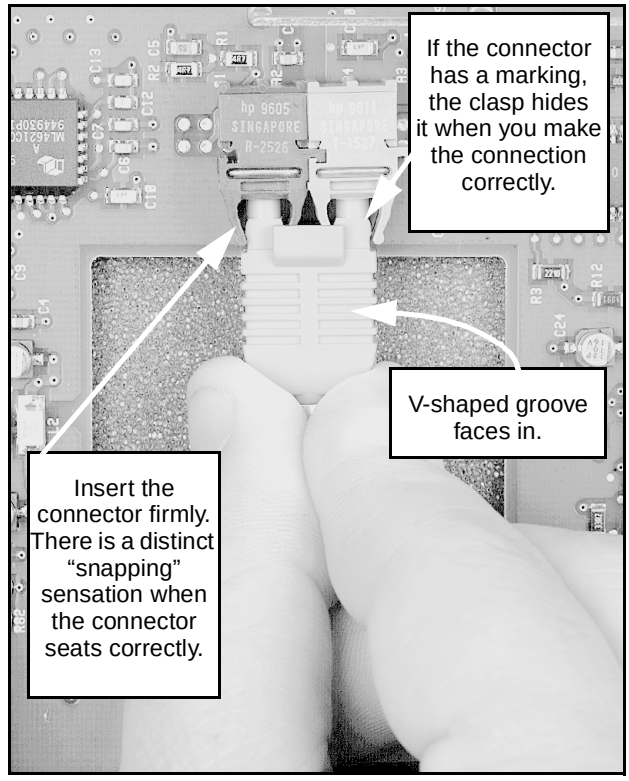
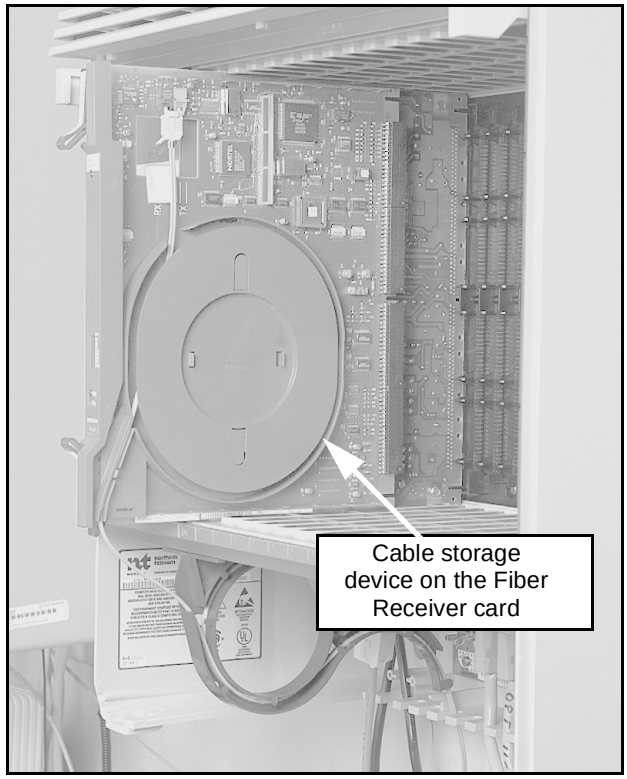


Figure 17
Cable storage device on the Fiber Receiver card in an Option 11C expansion cabinet.

Note: The same Fiber Receiver cards are used in the Option 11C Mini.



7 **Connect the Main Chassis and the Expansion Chassis using glass fiber-optic cable. See Figure 18 on page 56.**

a Remove the protective plug from one of the ports on the Fiber Receiver card.

b Remove the protective cap from the corresponding glass fiber-optic cable connector.

c Insert the cable connector firmly into the port on the Fiber Receiver card.

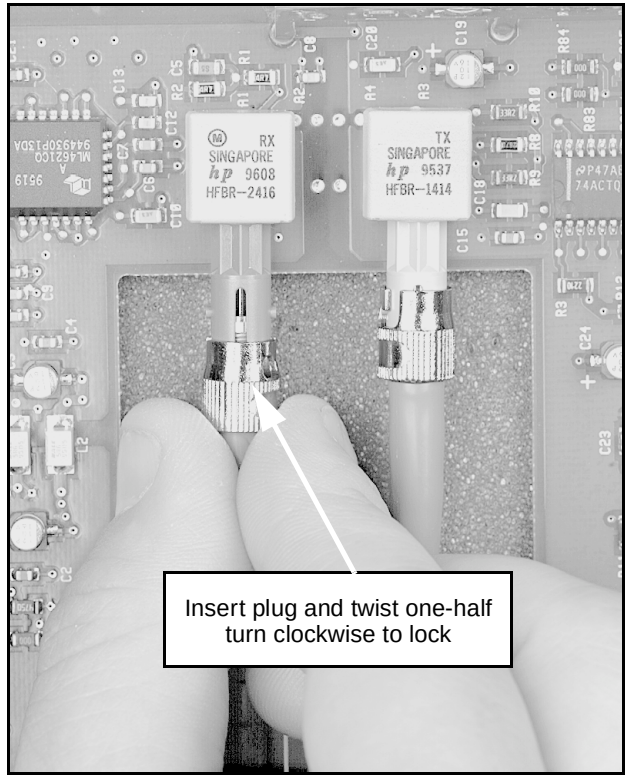
d Lock the connector in place by turning it a half turn clockwise.

e Repeat this step (Step 7 on page 55) for the second glass fiber-optic cable connection.

f Wind the excess fiber-optic cable around the cable storage device located on the component side of the Fiber Receiver card. See Figure 17 on page 54.

g Go to Step 8 on page 56.

Figure 18
Glass fiber-optic cable connections on the Fiber Receiver card

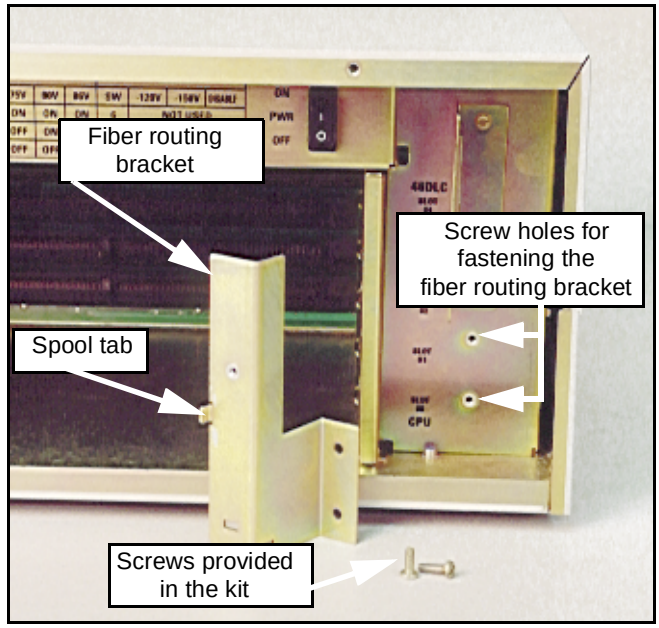


8 **Insert the Fiber Receiver card in slot 0 of the Expansion chassis.**

9 **Install an NTTK24AA Fiber Routing Guide in the chassis.**

a Detach the spool portion of the guide assembly from the P0903797 fiber routing bracket (if this is not already done). See Figure 13.

Figure 19
Fiber routing bracket

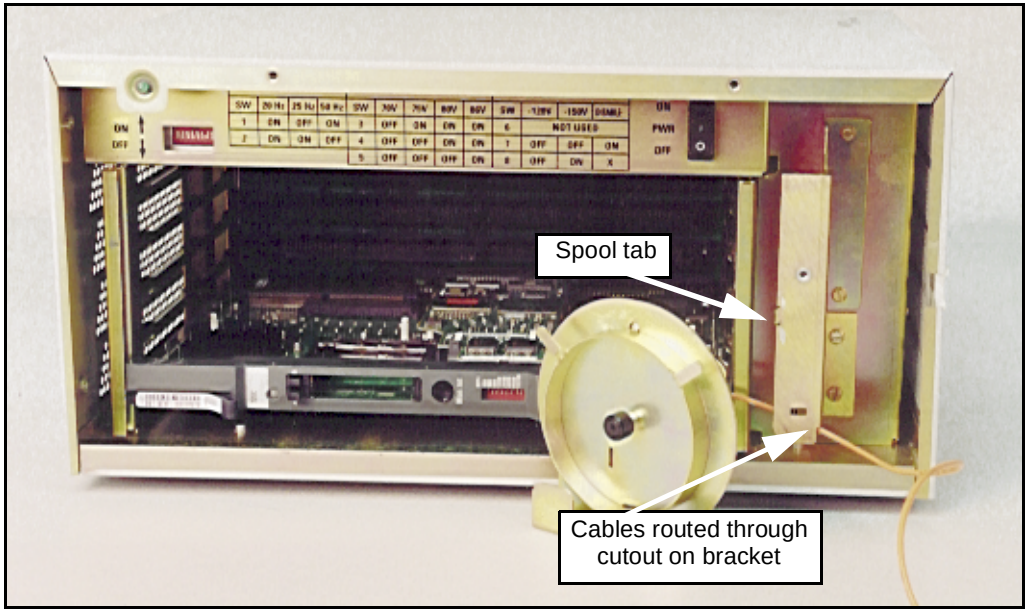


b Install the bracket vertically in the chassis.

Insert the two screws (supplied in the NTTK24AA kit) through the two holes in the bracket. Fasten the bracket to the fan baffle on the chassis. See Figures 13 and 14.

c Route the cables coming from the System Controller card through the cutout on the spool bracket. See Figure 14.

Figure 20
Fiber routing bracket installed in the Main chassis.



d Install the spool on the bracket. Use the captive fastener on the spool to fasten the spool to the bracket.

Note: Use the tab on the bracket to orient the spool. Loop the cables around the spool once. See Figure 15.

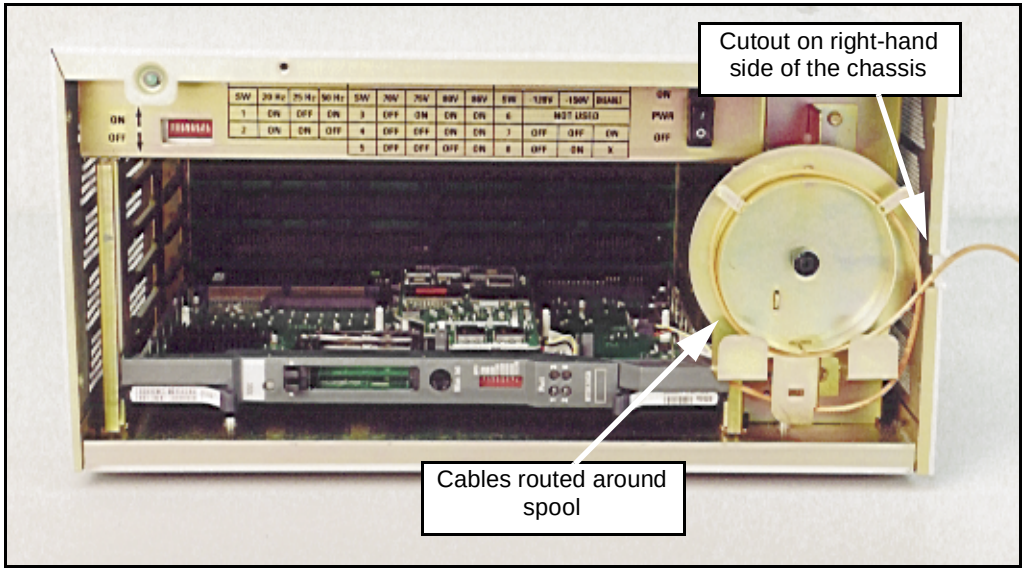
e Route the cables through the cutout on the right-hand side of the chassis. See Figure 15.

10 Do one of the following:

— If you are performing start-up procedures for a first-time system installation using the SSC card go to Procedure 3 on page 59.

— If you are performing start-up procedures for a previously installed Mini system go to Procedure 4 on page 61.

Figure 21
Fiber routing guide installed in the chassis



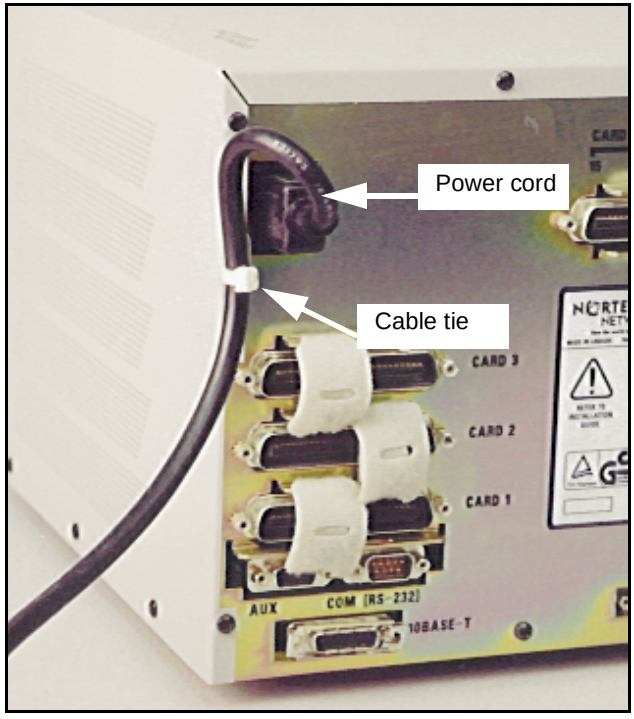
Procedure 3
Start-up procedures for a first-time system installation of the Option 11C Mini, using the SSC card

1 **Test the power outlet.**

Make sure that the correct voltage of power is present before you plug the power cord into the outlet. The source must match the label on the back of the chassis.

2 **Connect the power cord from the power connector on the back of the chassis to an AC power source.** See **Figure 22. Secure the power cable with a cable tie.**

Figure 22
Power connector on the back of the chassis



3 **Connect a TTY to port 0.**

4 **Turn the power switch to "ON".**

5 **Observe the TTY screen.**

After the system is loaded, a menu-driven program called the "Software Installation Program" is automatically started.

6 **Go to "Chapter 5—Install Software" on page 89 to install software.**

———————— ***End of Procedure*** ————————

Procedure 4
Start-up procedure for a Option 11C Mini system upgraded from an MSC card to an SSC card

1 **Test the power outlet.**

Make sure that the correct voltage of power is present before you plug the power cord into the outlet. The source must match the label on the back of the chassis.

2 **Connect the power cord from the power connector on the back of the chassis to an AC power source.** See Figure 22 on page 60. Secure the power cable with a cable tie.

3 **Connect a TTY to port 0.**

4 **Turn the power switch to "ON".**

5 **Observe the TTY screen.**

After the system is loaded, a menu-driven program called the "Software Installation Program" is automatically started.

6 **Install system software using the default customer database. Go to "Chapter 5—Install Software" on page 89**

7 **Restore your customer data depending on the process you used to backup your customer data:**

— If you used a PCMCIA card to backup customer data, use the RES command in LD 43 to restore your customer data.

— If you used the CCBR feature to backup customer data, you must use the CCBR feature to restore your customer data. Refer to the *Option 11C and 11C Mini Customer Configuration Backup and Restore (553-3011-330)* for database restoration steps.

8 **If required, set the system time and date using Overlay 2.**

9 **Perform an EDD using Overlay 43.**

——————————— ***End of Procedure*** ———————————

Chapter 4—Add IP Expansion chassis using IP connectivity

This chapter describes how to connect Option 11C Mini IP Expansion chassis to an Option 11C Mini Main Chassis using 100BaseF or 100BaseT connectivity cables.

Note: The SSC card vintage NTDK20EA or later is required for the Option 11C Mini Main Chassis and IP Expansion Chassis.

Equipment Layout plan

Develop a layout plan for the equipment to determine where you will position each system component. Give consideration to the lengths of different cables, so that you make the best use of space.

If you are expanding using Option 11C Mini Chassis only, refer to the *Option 11C Planning and Installation Guide (553-3021-209)* for information on creating a equipment layout plan.

If you are expanding using Option 11C cabinet only, refer to the *Option 11C Mini Planning and Installation Guide (553-3021-210)* for information on creating a equipment layout plan.

If you are combining Option 11C and Option 11C Mini systems, the following minimum standards must be followed:

- A horizontal installation of Option 11C Mini chassis requires 10 inches of free space on either side of the chassis.
- A vertical installation of Option 11C Mini chassis requires 12 inches of free space on the card side and 6 inches of free space on the cable side of the chassis.

Procedure outline

This chapter contains the following procedures:

- Procedure 5: “Prepare an Option 11C Mini Main chassis to support IP connectivity” on page 67
- Procedure 6: “Prepare an Option 11C Mini Expansion chassis to support IP connectivity” on page 77
- Procedure 7: “Connect the Main and IP Expansion chassis” on page 81
- Procedure 8: “Start-up procedures for a first-time system installation of the Option 11C Mini, using the SSC card” on page 84
- Procedure 9: “Start-up procedure for a Option 11C Mini system upgraded from an MSC card to an SSC card” on page 86

IP Expansion procedures

Summary of items required

The following items are required in your Option 11C Mini system to support IP connectivity:

- NTDK20EA or later SSC card for each Mini Main chassis and Mini IP Expansion chassis
- The following daughterboards, depending on the type of connectivity:
  - NTTK01 single-port 100BaseF IP daughterboard
  - NTTK02 dual-port 100baseF IP daughterboard
  - NTDK99 single-port 100BaseT IP daughterboard
  - NTDK83 dual-port 100BaseT IP daughterboard

  Note: Other than the physical interface and number of ports, all variations of the IP daughterboards have the same functionality.
- The following cables for connecting the Main and IP Expansion cabinets in a point-to-point configuration:
  - A0817052 5-meter fiber cable with MT-RJ to ST connectors for connecting the Main and IP Expansion cabinets using the 100BaseF IP daughterboards and an A0346816 ST fiber coupler. The A0346816 fiber couplers allow two MT-RJ to ST cables to be connected to each other in a point-to-point configuration.
  - NTTK34AA 2-meter UTP CAT 5 RJ45 cross-over cable and NTDK8305 2-meter STP CAT 5 extension cable for connecting the Main and IP Expansion cabinets using the 100BaseT IP daughterboards
- The following cables for connecting the Main and IP Expansion cabinets over a data network:
  - A0817052 5-meter fiber cable with MT-RJ to ST connectors for connecting the Main and IP Expansion cabinets using the 100BaseF IP daughterboards. The two A0817052 fiber cables are usually connected directly to the customer's LAN.

— NTDK8305 2-meter STP CAT 5 extension cable for connecting the Main and IP Expansion cabinets using 100BaseT IP daughterboards. A customer-supplied straight-through cable is used to connect the NTDK8305 cable to the customer Local Area Network (LAN).

- NTTK24 Option 11C Mini cable routing guide
- NTTK13AA or later Software Daughterboard
- Software Delivery card

  Note: For IP connectivity, you must have a Software Delivery card with Release 25.3x or later software.

- Stand offs sent with the IP daughterboards
- NTBK48 3-port SDI cable for each IP Expansion chassis/cabinet
- NTDK57DA IP Expansion cabinet security device for the SSC card in each IP Expansion chassis

  Note: For the SSC card in the Main chassis, you must use the Security Device currently on the Mini System Controller (MSC) card.

Procedure 5
Prepare an Option 11C Mini Main chassis to support IP connectivity

1 **Do one of the following:**

— If you are using an Option 11C cabinet as the Main Cabinet, refer to the “Option 11C and Option 11C Mini mix-and-match expansion” on page 18 for an interworking overview.

— If you are using an Option 11C Mini chassis as the Main Chassis, go to Step 2 on page 67.

2 **Install the Option 11C Mini chassis, as described in the *Option 11C Mini Planning and Installation Guide (553-3021-209)*.**

a Install the Main Chassis and Chassis Expander (if a Chassis Expander is to be used).

Note 1: Connect the Main Chassis and Chassis Expander with two NTDK95 copper cables.

b Install the system ground.

c If required, install an Uninterruptible Power Supply (UPS).

3 **Do one of the following:**

— If you are installing a new system with a SSC card (NTDK20EA or later), go to Step 11.

— If you have a MSC card in your existing system, you must upgrade to the SSC card. Go to Step 4.

4 **Log onto the Option 11C Mini System and perform a data dump in LD 43.**

a Load overlay program 43 (LD 43).

b Enter the **EDD** command.

c After the data dump finishes, exit LD 43 by entering “****”.

5 **Backup customer data from the MSC to a PCMCIA card or with the Customer Configuration and Backup Restore feature. Refer to the *Customer Configuration and Backup Guide (553-3001-330)*.**

Note: You will use the customer data file created with the *Customer Configuration and Backup Guide (553-3001-330)* to restore the original system data to the SSC card.

6 **Power down the Mini Main chassis.**

7 Attach an antistatic wrist strap to your wrist.

CAUTION

Static electricity can damage circuit cards. Wear an antistatic wrist strap when handling circuit cards or any of their components. When handling the cards, be careful not to damage any of their components.

8 Log off of the system and unseat the MSC card.

9 Remove the security device from the MSC card.

Note: Your security device must be used on the SSC card.

10 If you are installing a new system with an SSC card (NTDK20EA or later), do the following:

— ensure the power is set to off on the main chassis

— Attach your anti-static wrist strap before proceeding

11 Take an NTDK20EA or later SSC card and place it on a clean, flat surface.

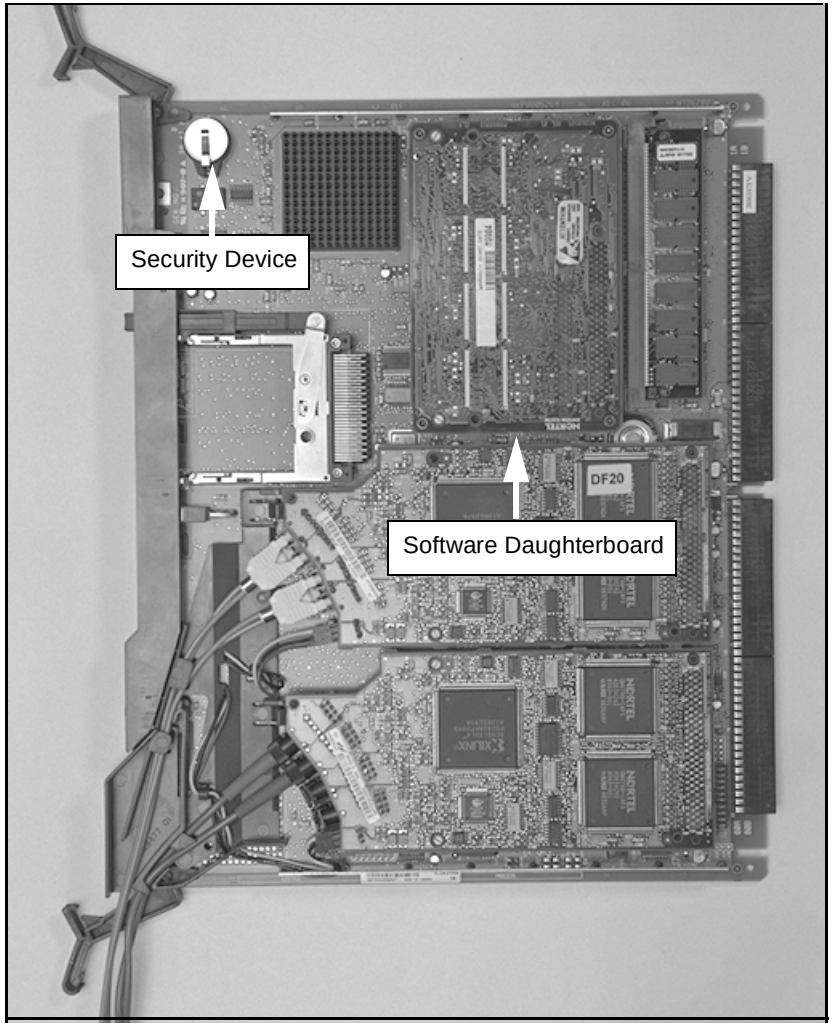
Note: For IP connectivity, you must install an SSC card in the Main chassis.

12 Install the blank Software Daughterboard (NTTK13) in the appropriate connector on the SSC card. See Figure 23.

13 Install the Security Device in the appropriate socket on the SSC card. See Figure 23.

Note: If you have an MSC card, you must use its security device.

Figure 23
Security Device and Software Daughterboard on the SSC card



14 **Remove any existing expansion daughterboards from the SSC card.**

15 **Remove the existing plastic standoffs used for fiber daughterboards from the SSC card.**

16 **Install the plastic standoffs that came with the IP expansion daughterboards.**

17 Do one of the following:

— If you are installing 100BaseF daughterboards, go to Step 18.

— If you are installing 100BaseT daughterboards, go to Step 19.

18 Install the NTTK01 single-port 100BaseF IP daughterboard or the NTTK02 dual-port 100BaseF IP daughterboard in the appropriate connectors on the SSC card.

Note: The SSC card supports up to two daughterboards. The IP daughterboards can coexist with any of the existing Option 11C fiber daughterboards.

a Remove the protective plug from the MTRJ port on the daughterboard.

b Remove the protective cap from the A0817052 fiber cable end on the fiber cable.

c Insert the fiber cable end firmly into the MTRJ port on the daughterboard. Carefully pull on the cable to make sure that the cable is inserted completely.

Note: The top connector (Connector #1) on the SSC card is for Expansion cabinets 1 and 3. The bottom connector (Connector #2) on the SSC card is for Expansion cabinets 2 and 4. See Figure 24 on page 71.

When the daughterboard is installed on the SSC card, the upper MTRJ port is port 1, which is for Expansion cabinet 1.

d Insert the LED cable on the SSC card into the LED connector on the IP daughterboard (if the IP daughterboard is a dual-port IP daughterboard). If the IP daughterboard is a single-port daughterboard, do not use the LED cable. See Figure 24 on page 71.

e Locate the plastic alignment pin on the daughterboard connector.

f Insert the plastic alignment pin into the appropriate hole on the daughterboard.

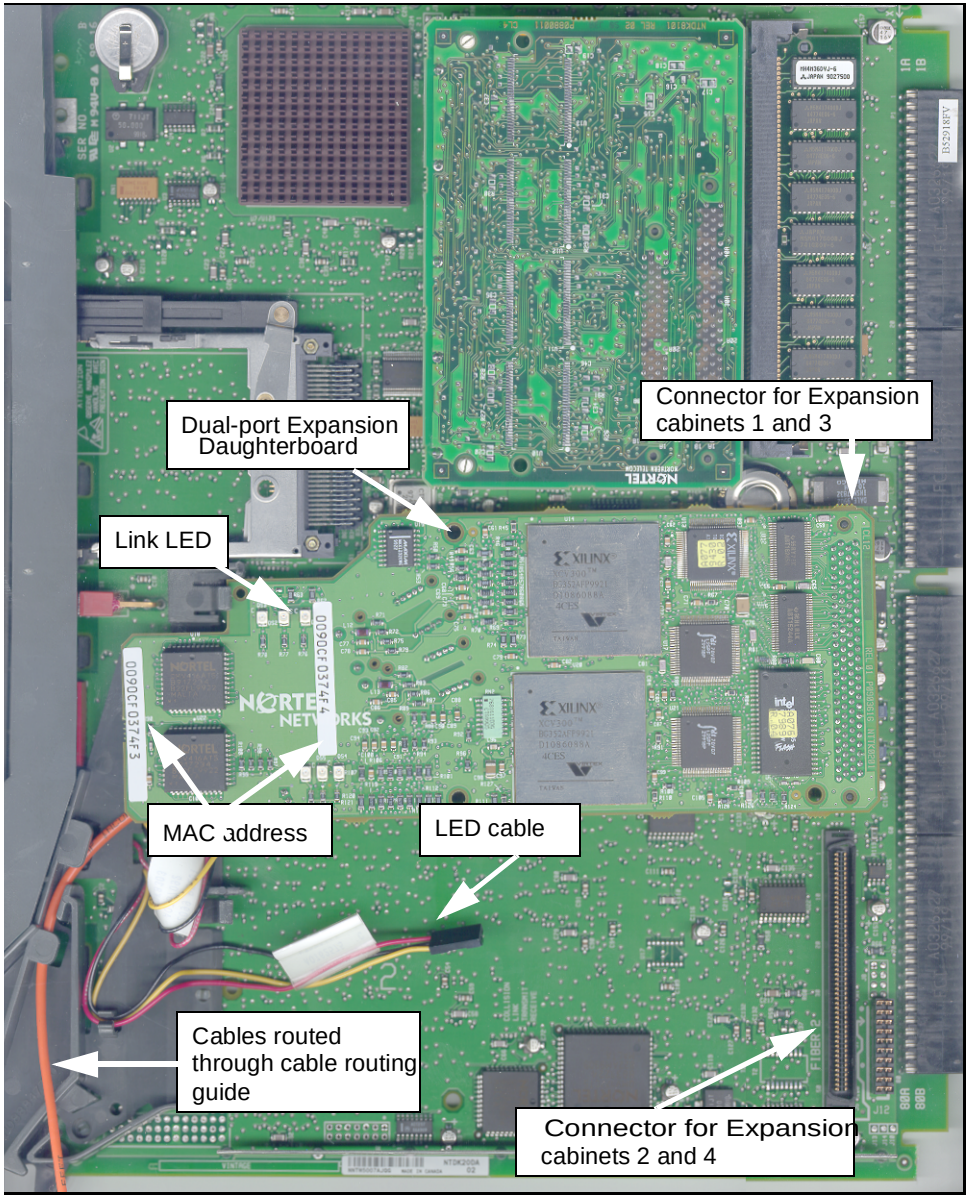
g Press the daughterboard end onto the daughterboard connector.

h Press the daughterboard onto the plastic standoffs to fasten the daughterboard securely to the SSC card.

i Route the fiber cable through the guide on the SSC card. See Figure 24 on page 71.

j Go to Step 20.

Figure 24
SSC card for the Main chassis



19 Install the NTDK99 single-port 100BaseT IP daughterboard or the NTDK83 dual-port 100BaseT IP daughterboard in the appropriate connectors on the SSC card.

Note: The SSC card supports up to two daughterboards. The IP daughterboards can coexist with any of the existing Option 11C fiber daughterboards.

a Insert the NTDK8305 extension cable end firmly into the RJ-45 port on the daughterboard. Make sure that the cable end is inserted completely.

Note: The top RJ-45 connector on the SSC card is for Expansion chassis 1 and 3. The bottom connector on the SSC card is for Expansion chassis 2 and 4.

When the daughterboard is installed on the SSC card, the upper MTRJ port is port 1, which is for Expansion chassis 1.

b Insert the LED cable on the SSC card into the LED connector on the IP daughterboard (if the IP daughterboard is a dual-port IP daughterboard). If the IP daughterboard is a single-port daughterboard, do not use the LED cable. Refer to Figure 24 on page 71.

The LED cable connection provides the second LED on the faceplate.

Note: If the IP daughterboard is a single-port daughterboard, do not use the LED cable.

c Locate the plastic alignment pin on the SSC card.

d Insert the plastic alignment pin into the appropriate hole on the daughterboard.

e Press the end of the daughterboard onto the daughterboard connector.

f Press the daughterboard onto the plastic standoffs to fasten the daughterboard securely to the SSC card.

g Route the extension cable through the guide on the SSC card. See Figure 24 on page 71.

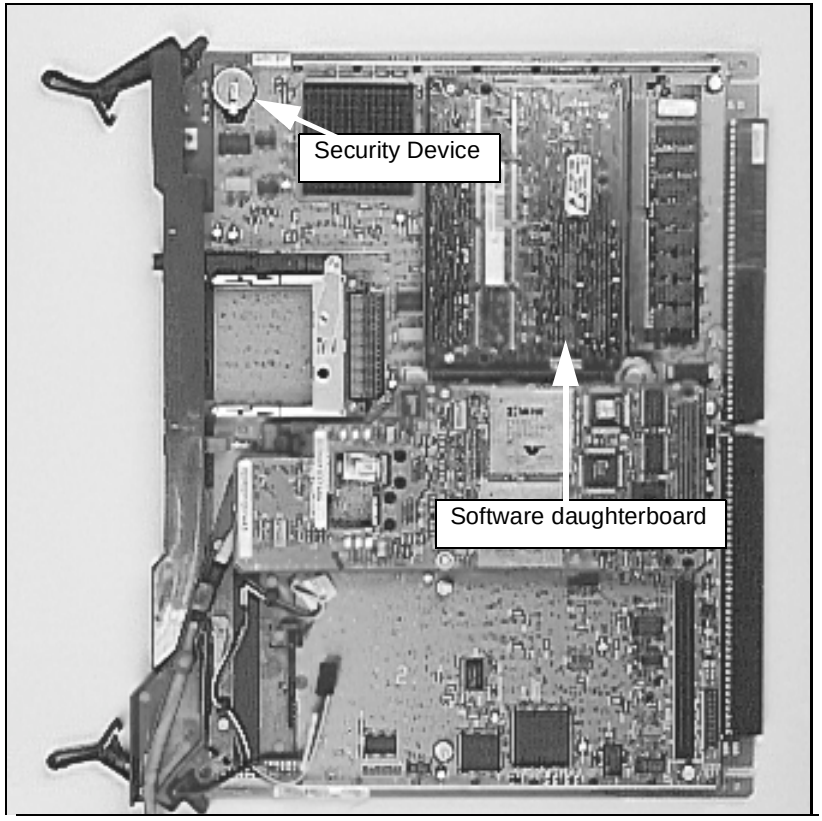
h Go to Step 20.

20 If you have not already done so, install the NTTK13 software daughterboard in the appropriate connector on the SSC card. See Figure 25 on page 73.

21 **If you have not already done so, install the Security Device in the appropriate socket on the SSC card. See Figure 25.**

Note: For the Main chassis, you must use the existing Security Device on the Mini System Controller (MSC) card.

Figure 25
Software daughterboard on the SSC card



22 **Install the SSC card in slot 0 of the chassis.**

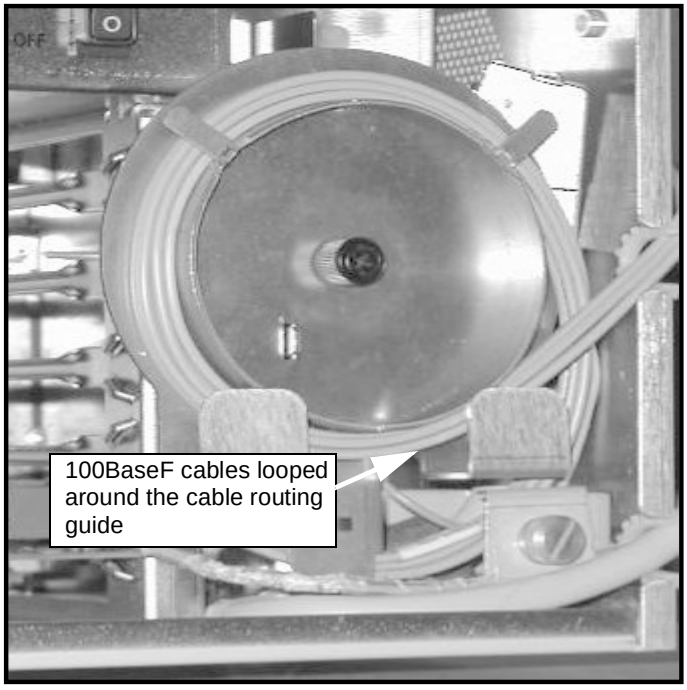
23 **Do one of the following:**

— For 100BaseF connections, install the chassis cable routing guide on the front of the chassis. Go to Step 24.

— For 100BaseT connections, install the EMC grounding clip on the front of the chassis. Go to Step 25.

24 **For 100BaseF connections, loop the fiber cables coming from the SSC card around the cable routing guide on the front of the chassis. A minimum of one complete fiber cable loop is required around the cable routing guide. See Figure 26.**

Figure 26
100BaseF cables looped around the cable routing guide on the front of the chassis



25 For 100BaseT connections,the clip is mounted on the fan baffle on the lower right hand side of the Mini Main chassis. See Figure 27 on page 75.

Two #8-32 screws are used to attach the grounding clip to the fan baffle. The 100BaseT cable is then fed through and secured in the clip. See Figure 28 on page 76.

CAUTION

You must secure the 100BaseT extension cables to the EMC grounding clip on the front of the chassis to ensure electrical contact between the shield and the metal frame.

Figure 27
EMC grounding clip location

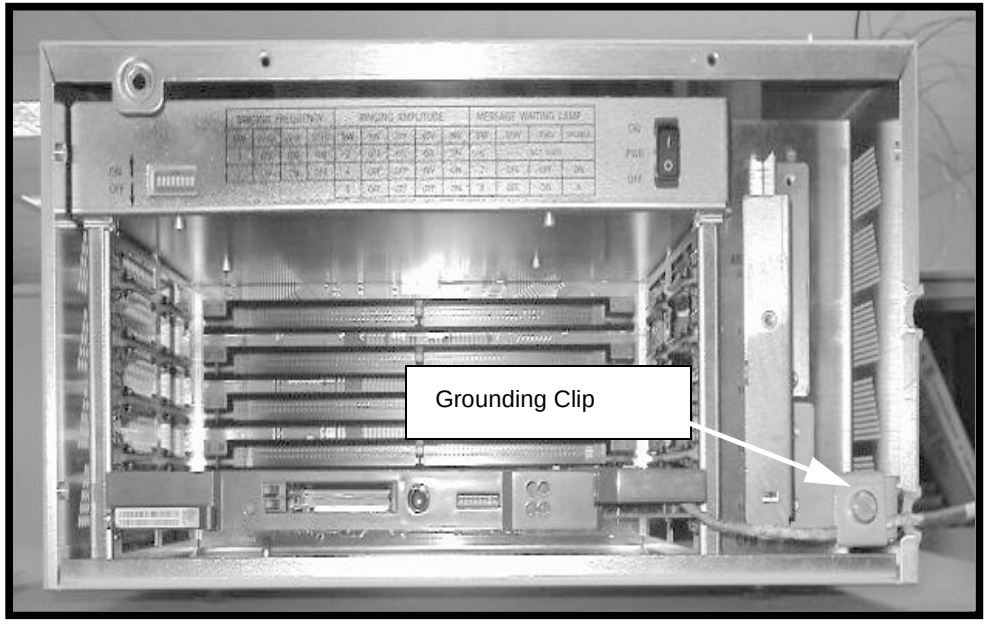
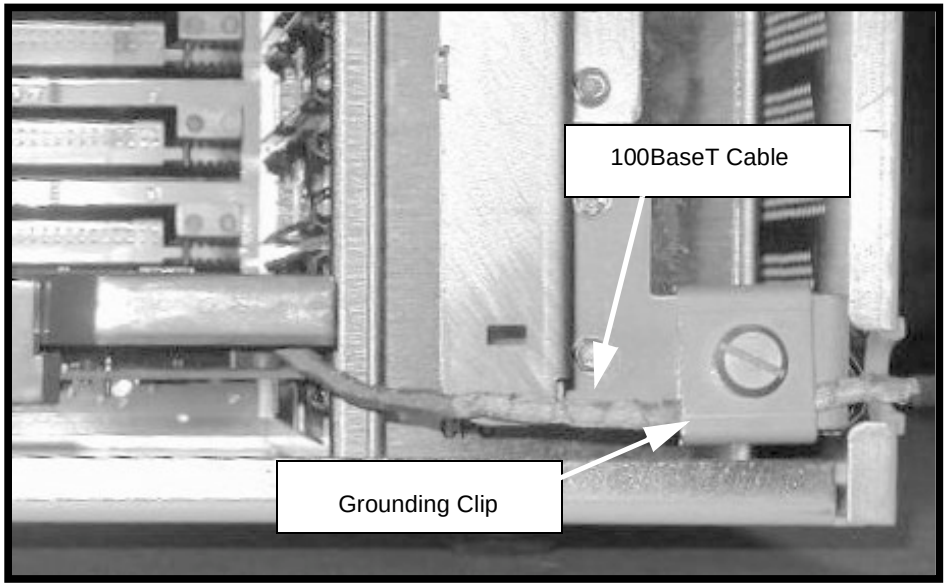


Figure 28
EMC grounding clip and 100BaseT cable connection



26 **Go to Procedure 6 on page 77 to upgrade the Option 11C Mini IP Expansion chassis.**

27 **Go to Procedure 7 on page 81 to connect the Option 11C Mini Main chassis to the Option 11C Mini IP Expansion chassis.**

28 **Restore power to the Main and IP Expansion chassis.**

Set the power switch on the inside front panel to ON.

29 **Check the Link LED on the installed daughterboard. See Figure 24 on page 71.**

Note: If slot 1 is equipped with a circuit card, gently remove it so you can verify the LEDs on the daughterboard.

From left to right, the LEDs are for the following:

— Receive LED

— Transmit LED

— Link LED (should be green)

- If the Link LED is green, the Link is established.
- If the Link LED is not lit, check the daughterboard installation. Check all cable connections to ensure that they are connected correctly. Make sure that the cables are not damaged. Refer to the *Option 11C and 11C Mini Fault Clearing Guide (553-3011-500)*.

30 **Go to Procedure 6 on page 77 to Prepare an Option 11C Mini Expansion chassis to support IP connectivity.**

End of Procedure

Procedure 6
Prepare an Option 11C Mini Expansion chassis to support IP connectivity

1 Disconnect the power from the IP Expansion chassis.

Set the power switch on the inside front panel to OFF.

2 **Attach an antistatic wrist strap to your wrist**.

CAUTION
Static electricity can damage circuit cards. Wear an antistatic wrist strap when handling circuit cards or any of their components. When handling the SSC card, be careful not to damage any of its components.

3 **Remove the fiber receiver card from slot 0 of the expansion chassis.**

4 **Place an NTDK20EA or later SSC card on a clean, flat surface.**

5 **Remove the existing plastic standoffs from the SSC card.**

6 **Install the plastic standoffs that came with the IP expansion daughterboards.**

7 **Do one of the following:**

— Install a 100BaseF single-port daughterboard in connector #2 on the SSC card. Refer to Step 18 on page 70 for instructions on how to install this daughterboard on the SSC card.

After you have installed the 100BaseF daughterboard, continue with Step 8 on page 78.

— Install a 100BaseT single-port daughterboard in connector #2 on the SSC card. Refer to Step 19 on page 72 for instructions on how to install this daughterboard on the SSC card.

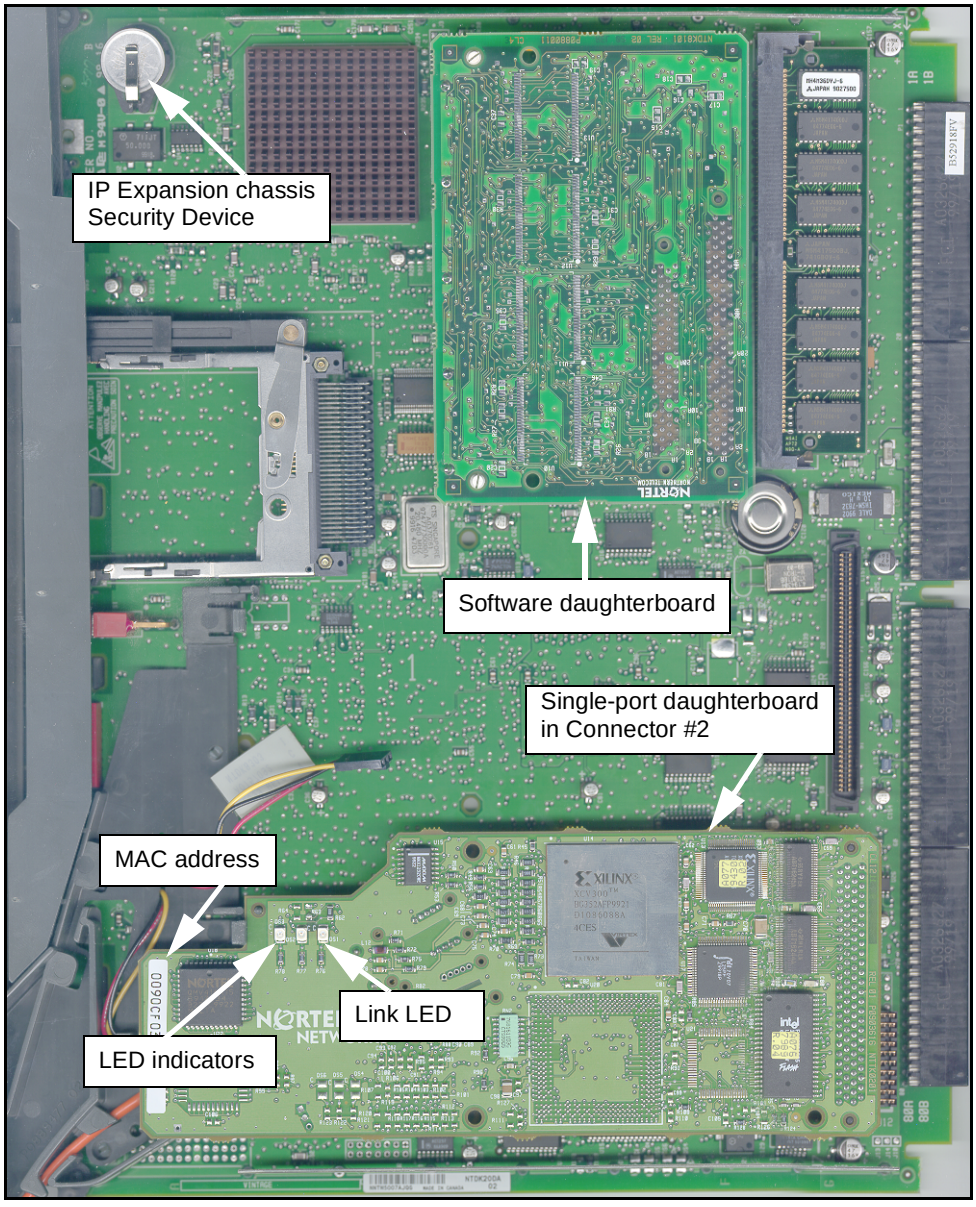
After you have installed the 100BaseT daughterboard, continue with Step 8 on page 78.

Note: For IP Expansion cabinets, you must install the IP Expansion daughterboard in Connector #2 (the lower connector) to ensure clock synchronization.

8 Install the NTDK57DA IP Expansion cabinet security device in its assigned location on the SSC card. See Figure 29 on page 79.

Note: You must install the Security Device on the SSC card in each Expansion cabinet. The security device has NT_REM on it.

Figure 29
SSC card for the Expansion chassis



9 Install the SSC card in slot 0 of the IP Expansion chassis.

10 Do one of the following:

— For 100BaseF connections, install the chassis cable routing guide on the front of the chassis. Go to Step 11.

— For 100BaseT connections, install the EMC grounding clip on the front of the chassis.Go to Step 12 on page 80.

11 Loop the fiber cables from the SSC card around the cable routing guide on the front of the chassis. A minimum of one complete loop is required on the guide.See Figure 26 on page 74.

12 For 100BaseT connections,the clip is mounted on the fan baffle on the lower right hand side of the Mini Main chassis. See Figure 27 on page 75.

Two #8-32 screws are used to attach the grounding clip to the fan baffle. The 100BaseT cable is then fed through and secured in the clip. See Figure 28 on page 76.

CAUTION

You must secure the 100BaseT extension cables to the EMC grounding clip on the front of the chassis to ensure electrical contact between the shield and the metal frame.

13 Go to Procedure 7 on page 81 to connect the Option 11C Mini Main chassis to the Option 11C Mini IP Expansion chassis.

14 Restore power to the Option 11C Mini Main and IP Expansion chassis.

Set the power switch on the inside front panel to ON.

15 Check the Link LED on the installed daughterboard. See Figure 29 on page 79.

From left to right, the LEDs are for the following:

— Receive LED

— Transmit LED

— Link LED (should be green)

- If the Link LED is green, the Link is established.
- If the Link LED is not lit, check the daughterboard installation. Check all cable connections to ensure that they are connected correctly. Make sure that the cables are not damaged. Refer to the *Option 11C and 11C Mini Fault Clearing Guide (553-3011-500)*.

16 Refer to Procedure 7 on page 81 to Connect the Main and IP Expansion chassis.

End of Procedure

Connect the Main and IP Expansion chassis

Procedure 7
Connect the Main and IP Expansion chassis

If you are using a mix-and-match scenario refer to "Option 11C and Option 11C Mini mix-and-match expansion" on page 18 for a description of the main differences between the Option 11C systems.

1 Follow Procedure 5 through Procedure 6 in this chapter for preparing your Option 11C Mini chassis to support IP connectivity. Then, continue with Step 2 below, for instructions on how to connect the Main and IP Expansion chassis.

2 Do one of the following:

— For point-to-point 100BaseF connectivity, go to Step 3.

— For point-to-point 100BaseT connectivity, go to Step 4.

— For 100BaseT or 100BaseF connectivity over a distributed data campus network, go to Step 5.

3 For point-to-point 100BaseF connectivity, connect the Main chassis to the IP Expansion cabinets/chassis using the A0817052 5-meter fiber cable with fiber couplers.

a Use the supplied A034816 ST fiber couplers to connect the ST ends on the A0817052 fiber cables coming from the Main and IP Expansion cabinets/chassis. Use one coupler to connect Tx to Rx and another coupler to connect Rx to Tx. Use a push and twist motion to secure the couplers to the cable ends.

b Connect the fiber cable from the Main chassis to the fiber cable from the IP Expansion cabinet/chassis.

Connect Transmit (Tx) to Receive (Rx) and Receive (Rx) to Transmit (Tx).

Note: The cable end labelled “A” is for Transmit (Tx) and the cable end labelled “B” is for Receive (Rx).

4 For a point-to-point 100BaseT connectivity, connect the Main cabinet/chassis to the IP Expansion chassis using the NTTK34AA 2-meter RJ45 cables and NTDK8305 2-meter extension cable.

Use the supplied NTTK34AA 2-meter UTP CAT 5 RJ45 cross-over cable and NTDK8305 2-meter STP CAT 5 extension cable to connect the Main and IP Expansion cabinets using the 100BaseT IP daughterboards

5 For a distributed data network using 100BaseF or 100BaseT connectivity connect the Main and IP Expansion chassis using the following cables:

— For 100BaseF connectivity, the A0817052 5-meter fiber cable with MT-RJ to ST connectors usually connect from the Fiber IP Daughterboard directly to the customer’s LAN.

— For 100BaseT connectivity, the NTDK8305 2-meter STP CAT 5 extension cable connects the IP Daughterboard to a customer-supplied straight-through cable. The customer supplied straight through cable connects directly to the customers LAN.

For further information, refer to the *Option 11C and 11C Mini Technical Reference Guide* (*553-3011-100)*.

6 Restore power to the Main and IP Expansion chassis.

For Option 11C systems, set the circuit breaker switch on the front of the power supply in the cabinet to ON. If equipped with reserve battery power, set the circuit breaker switch inside the reserve battery power unit to ON.

For Option 11C Mini systems, set the power switch on the inside front panel to ON.

7 Check the Link LED on the installed daughterboard. See Figure 29 on page 79.

From left to right, the LEDs are for the following:

— Receive LED

— Transmit LED

— Link LED (should be green)

- If the Link LED is green, the Link is established.
- If the Link LED is not lit, check the daughterboard installation. Check all cable connections to ensure that they are connected correctly. Make sure that the cables are not damaged. Refer to the *Option 11C and 11C Mini Fault Clearing Guide (553-3011-500)*.

8 Do one of the following:

— If you are performing start-up procedures for a first-time system installation using the SSC card, go to Procedure 8 on page 84.

— If you are performing start-up procedurses for a previsously installed system, go to Procedure 9 on page 86.

———————— ***End of Procedure*** ————————

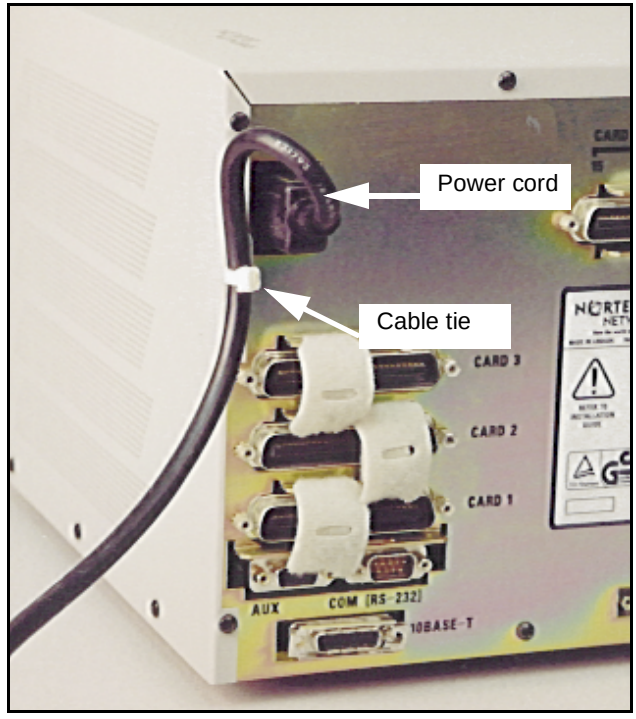
Procedure 8
Start-up procedures for a first-time system installation of the Option 11C Mini, using the SSC card

1 Test the power outlet.

Make sure that the correct voltage of power is present before you plug the power cord into the outlet. The source must match the label on the back of the chassis.

2 Connect the power cord from the power connector on the back of the chassis to an AC power source. S**ee Figure 30. Secure the power cable with a cable tie.**

Figure 30
Power connector on the back of the chassis



3 **Connect a TTY to port 0.**

4 **Turn the power switch to "ON".**

5 **Observe the TTY screen.**

After the system is loaded, a menu-driven program called the "Software Installation Program" is automatically started.

6 **Go to "Chapter 5—Install Software" on page 89 to install software on the Mini Main Chassis and IP Expansion chassis/cabinet.**

———————— *End of Procedure* ————————

Procedure 9
Start-up procedure for a Option 11C Mini system upgraded from an MSC card to an SSC card

1 Test the power outlet.

Make sure that the correct voltage of power is present before you plug the power cord into the outlet. The source must match the label on the back of the chassis.

2 Connect the power cord from the power connector on the back of the chassis to an AC power source. See Figure 30 on page 85. Secure the power cable with a cable tie.

3 Connect a TTY to port 0.

4 Turn the power switch to "ON".

5 Observe the TTY screen.

After the system is loaded, a menu-driven program called the "Software Installation Program" is automatically started.

6 Install system software using the default customer database. Go to "Chapter 5—Install Software" on page 89

7 Restore your customer data depending on the process you used to backup your customer data:

— If you used a PCMCIA card to backup customer data, use the RES command in LD 43 to restore your customer data.

— If you used the CCBR feature to backup customer data, you must use the CCBR feature to restore your customer data. Refer to the *Option 11C and 11C Mini Customer Configuration Backup and Restore (553-3011-330)* for database restoration steps.

8 **If required, set the system time and date using Overlay 2.**

a Load overlay program 2 (LD 2)

b Enter the following command and appropriate numeric parameters:
STAD day month year hour minute second

c After the system time and date is set, exit LD 2 by entering "****".

9 **Perform an EDD using Overlay 43.**

a Load overlay program 43 (LD 43).

b Enter the **EDD** command.

c After the data dump finishes, exit LD 43 by entering "****".

10 **Go to "Chapter 5—Install Software" on page 89.**

End of Procedure

Chapter 5—Install Software

This chapter describes the Software installation program. The Software installation program is the tool used to install, modify, or upgrading system software on a Small System Controller card.

The following procedures describe how to upgrade and install the software using a Software Daughterboard or a Software Delivery (PCMCIA) card.

The procedures provided in sequence in this section include:

- Procedure 10, Verify and/or upgrade the Flash Boot ROM to support the NTTK13AA Software Daughterboard on page 93
- Procedure 11, Upgrade the software using a PCMCIA card on the Mini Main chassis on page 97
- Procedure 12, Software installation for IP expansion, using the preprogrammed software daughterboard

CAUTION

To complete the upgrade, you must have a new Keycode Data Sheet and one of the following:

- Software Delivery (PCMCIA) card
- Software Daughterboard programmed with the new software release.

Refer to the Keycode Data Sheet when you enter the ISM parameters, add packages, or change the AUX ID.

Summary of items required

You need the following items to perform software upgrades:

- Software Delivery (PCMCIA) card containing the new software, or a Software Daughterboard programmed in advance.
- Keycode Data Sheet
- TTY terminal connected to port 0 on the Main Chassis.

Upgrade the software

This section gives a summary of the steps and the upgrade procedures.

Summary of steps

The following list reviews the steps you need to follow to upgrade from one software release to another:

1 Check, and if necessary, update the boot ROM code (see “Reason for updating the boot code” on page 91).

2 Install the Software Delivery card.

3 Call up the Software Installation Program.

4 Make any changes to the feature set.

5 Select a database.

6 Make any changes to the ISM parameters.

7 Validate the keycodes.

8 Load the software.

CAUTION
Please read this important message on upgrades

When you upgrade from one Release to a later Release, you must use the SYSLOAD upgrade method. The UPGRADE method using LD 143 is not supported.

SYSLOAD method
Toggle the power supply to OFF and then to ON. During the reboot, press Ctrl+I to access the Installation Program.

Reason for updating the boot code

The boot code on the existing Option 11C SSC card must be NTDK34FA Release 07 or later to support the NTTK13AA Flash Daughterboard and Release 25 features.

The minimum release of boot code for the Option 11C Mini MSC card is NTDK34FA Release 03. NTDK34FA Release 03 also supports the NTDK21, NTDK81, and NTTK13 Flash Daughterboards on the SSC card.

Note: Nortel Networks recommends that you upgrade the boot code to the latest release when you upgrade the software. The boot code is on the programmed PCMCIA card.

See Table 6 for the required software releases and the minimum releases of boot code.

Table 6
Required software releases and minimum releases of boot code (Part 1 of 2)

Daughterboard/ Controller card	Software release	System	Minimum release of boot code
NTDK21AA	Release 22-23	Option 11C	Any
NTDK81AA	Release 23-24	Option 11C	NTDK34AA Rel 09 or higher (See note)

Table 6
Required software releases and minimum releases of boot code (Part 2 of 2)

Daughterboard/ Controller card	Software release	System	Minimum release of boot code
NTTK13AA	Release 25	Option 11C	NTDK34FA Rel 07 or higher (See note)
NTDK97AA	Release 24 only	Option 11C Mini	NTDK34FA Rel 03
NTDK97AB	Release 24-25 and later	Option 11C Mini	NTDK34FA Rel 07
NTDK34FA also supports the NTDK81AA and the NTTK13AA.			

Note: The NTTK13 daughterboard is backward compatible for use as a replacement for the NTDK81AA daughterboard.

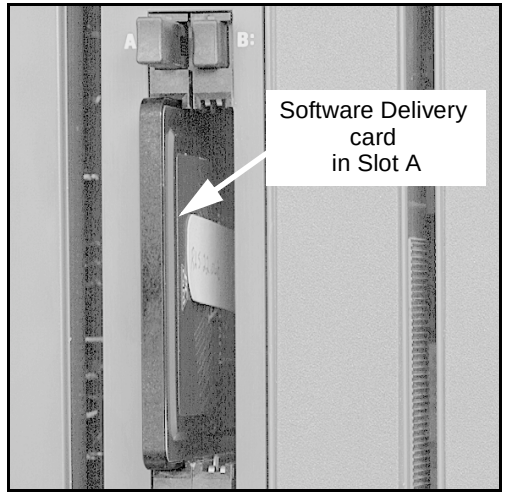
Procedure 10
Verify and/or upgrade the Flash Boot ROM to support the NTTK13AA Software Daughterboard

1 **Insert the Software Delivery card for the required release of software in slot A in the PCMCIA socket located in the NTDK20 SSC faceplate.** See Table 7 on page 96 for the required release of software.

See Figure 31 on page 93 for the correct position.

Note: Carefully press on the PCMCIA card until it seats tightly.

Figure 31
Software Delivery Card



2 **Call up the Software Installation Program using LD 143 and select**

the Utilities (item 3) option.

Issue the UPGRADE command in LD 143. Look for the following message:

```
Main Cabinet Software Installation Main Menu:
1. New Install or Option 11/11E Upgrade - From Software
Daughterboard
2. System Upgrade
3. Utilities
4. New System Installation - From Software Delivery
Card
[q]uit, [p]revious, [m]ain, [h]elp or [?], <cr>-
redisplay
```

Enter Selection: 3

- If the screen displays the message, select item 3 and continue with Step 3.
- If the screen does not display the message, repeat Step 2 (this step) and make sure you enter the correct information.

3 Select the Flash Boot ROM Utilities (item 7) from the Utilities menu.

The Utilities menu options are listed:

```
Utilities Menu:

1. Restore Backed Up Database
2. Archive Database Utilities
3. Install Archived Database
4. Review Upgrade Information
5. Clear Upgrade Information
6. Undo Installation
7. Flash Boot ROM Utilities
8. Current Installation Summary
9. Change 3900 series set languages
10. ECD Utilities
11. IP FPGA Utilities
[q]uit, [p]revious, [m]ain, [h]elp, or [?], <cr>-
redisplay
```

Enter Selection: 7

4 **List Flash Boot ROM (item 1) from the Flash Boot ROM Utilities menu**.

The Flash Boot ROM Utilities menu displays:

```
Flash Boot ROM Utilities Menu:
1. List Flash Boot ROM
2. Upgrade Flash Boot ROM
3. Restore Flash Boot ROM
[q]uit, [p]revious, [m]ain, [h]elp or [?], <cr>-
redisplay
```

Enter Selection: 1

```
Flash Boot ROM Summary:

Active -- NTDK34FA_r07
Backup -- NTDK34AA_r08
```

Note: It is possible that there is nothing in the Backup boot ROM. However, the Software Delivery card shows the version that Table 7 gives or a higher release number. If the release number is lower, you cannot upgrade. Check the Software Delivery card for authenticity.

5 **Verify your Flash Boot ROM code output from Step 4 with the Software you are loading**.

Use Table 7 on page 96 to determine if you have to update your Boot Code. If your Boot Code is current, this procedure is at an end. Continue with Procedure 11 on page 97.

CAUTION

If the release number and boot code version on the Software Delivery card is greater than the active version shown, perform the upgrade.

If the release number and boot code version on the Software Delivery card is less than the active version shown, do not perform the upgrade.

Table 7
Minimum boot code requirements for the Software Release

Software you are loading	Minimum boot code required
Pre-Release 23	Any
Release 23	NTDK34AA Release 09
Release 24	NTDK34FA Release 03
Release 25	NTDK34FA Release 07

Note: All versions of boot code are backwards-compatible.

6 Upgrade the Flash Boot ROM (item 2) and select yes to perform the upgrade.

The Flash Boot ROM Utilities menu displays:

```
Flash Boot ROM Utilities Menu:
1. List Flash Boot ROM
2. Upgrade Flash Boot ROM
3. Restore Flash Boot ROM
[q]uit, [p]revious, [m]ain, [h]elp or [?], <cr>-
redisplay
```

Enter Selection: 2

```
Are you sure you wish to perform the Flash Boot ROM
Upgrade/Restore (y/n/[a]bort): Y

Upgrading Active FLash Boot ROM to NTDK34FA_r07

System Restart required to activate Flash Boot ROM
Upgrade.
```

7 Restart the system to activate the Flash Boot ROM upgrade.

Go to Procedure 11 on page 97 to Upgrade the Software.

Procedure 11
Upgrade the software using a PCMCIA card on the Mini Main chassis

Note: This procedure requires that the NTTK13AA Software Daughterboard is on the SSC card.

1 Insert the Software Delivery card in slot A in the PCMCIA socket. Locate the PCMCIA socket in the faceplate of the Option 11C Mini NTDK20EA SSC card.

See Figure 31 on page 93 for the correct position.

Note: Carefully press on the PCMCIA card until it seats tightly.

2 Select the method of starting the Software Installation Program.

CAUTION
Please read this important message on upgrades

When you upgrade from one Release to a later Release, you must use the SYSLOAD upgrade method. The UPGRADE method using LD 143 is not supported.

SYSLOAD method
Toggle the power supply to OFF and then to ON. During the reboot, press Ctrl+I to access the Installation Program.

There are two methods of starting the Software Installation Program:

- Use the UPGRADE command in LD 143. Continue to the next step.
- Press Ctrl+I when prompted during a SYSLOAD (go to Step 2 on page 93).

3 Log in to the system.

a Type **LOGI** and press <CR>.

PASS? displays.

b Respond to prompt.

Note: The response to PASS? is distinct in each system. The following response is an example only.

```
PASS?
0000 <CR>
LD 143 <CR>
UPGRADE <CR>
```

4 Call up the Software Installation Program during a SYSLOAD.

During SYSLOAD, the following prompt appears:

```
FIVE SECONDS TO ENTER CONTROL-I TO INVOKE SOFTWARE
INSTALLATION PROGRAM
```

Press and hold 'control' key and press 'I'.

Note: Perform this step when starting the Software Installation Program during a **SYSLOAD**. To start the program using LD 143, ignore this step and do Step 3 on page 98 instead.

For Option 11C systems, start a system reload (SYSLOAD) by setting the circuit breaker on the front of the power supply to OFF then to ON.

For Option 11C Mini systems, start a system reload (SYSLOAD) by turning the power switch located on the inside front panel to OFF and then to ON.

Note: A software upgrade can take from 20 to 30 minutes.

5 **Select System Upgrade (item 2) from the Main Cabinet Software Installation Main Menu.**

The Main Cabinet Software Installation Menu options are displayed:

```
Main Cabinet Software Installation Main Menu:
1. New Install or Option 11/11E Upgrade - From Software
Daughterboard
2. System Upgrade
3. Utilities
4. New System Installation - From Software Delivery
Card
[q]uit, [p]revious, [m]ain, [h]elp or [?], <cr> -
redisplay
```

Enter Selection: 2

6 **Select the Option 11C New Software Upgrade (item 2) from the Select type of upgrade to be performed menu.**

The Select type of upgrade to be performed menu is displayed:

```
Select type of upgrade to be performed:
1. Option 11/11E to Option 11C
2. Option 11C New Software Upgrade
3. Option 11C Feature/Parameter Upgrade
```

Enter Selection: 2

```
*** NOTE: The following questions require information
on the Keycode Data Sheet.
Please have it available. ***
```

7 Select a Database.

If you are installing from a Software Delivery (PCMCIA) card go to Step 8 on page 100.

IF you are installing from an software daughterboard, continue here:

Select database to Install:

1. Pre-Configured database - Enhanced Services

2. Basic Configuration

3. CCBR Restore File

4. Option 11/11E Software Cartridge

[q]uit, [p]revious, [m]ain menu, [h]elp or [?], <cr> redisplay

Enter Selection: <cr>

Note: Use Options 1 and 2 when using a pre-configured or basis configuration. Use Options 3 and 4 when upgrading an Option 11/11E to an Option 11C. There is no supported upgrade path from Option 11/11E to Option 11C Mini. Therefore, do not use these options for the Option 11C Mini.

If you selected 1 or 2, go to Step 10 on page 101.

8 Select a Database using the PCMCIA card.

If you are installing from the SSC card, go to Step 7 on page 100.

If you are installing from a Software Delivery (PCMCIA) card continue here:

Select database to Install:

1. Pre-Configured database - Enhanced Services

2. Basic Configuration

3. Archived Database

[q]uit, [p]revious, [m]ain menu, [h]elp or [?], <cr> redisplay

Enter Selection: <cr>

If you selected 3 ‘Archived Database’, go to Step 9. If you selected 1 or 2, go to Step 10 on page 101.

9 Select an Archived Database.

The terminal screen displays the available archived databases. The following are examples only.

Archived Database available:

1. Company ABC

2. XYZ.Offices

3. Green.Packaging

[q]uit, [m]ain menu, [p]revious menu, <cr> - redisplay

10 **Select the Feature Set to Enable.**

Example screen display for Selecting the Feature Set You Wish to Enables as follows:

```
Select Feature Set You Wish to Enable:
1. General Business (ntskxxxx)
2. Enhanced Business (ntskxxxx)
3. Enterprise Business (ntskxxxx)
4. NAS/VNS (ntskxxx)
[q]uit, [p]revious, [m]ain, [h]elp or [?], <cr> -
redisplay
```

Enter Selection: 1

```
Feature Set Selection: Enhanced Business
```

Note: The feature set you select is provided with your keycodes.

11 **Select the packages you want to add, if any.**

Example screen display for adding packages is as follows:

```
Do you wish to add packages? (y/n/[a]bort): Y

Summary of packages
0-2 4-5 7-14 16-21 ...

Enter additional packages: <cr> to continue
100 <cr>

Your feature set is Enhanced Business:
Additional packages selected:
100

Summary of packages:
0-2 4-5 7-14 16-21 100 ...

Is this correct? (y/n/[a]bort): Y
```

12 Review ISM parameters.

The ISM parameters displayed on the terminal screen are the default settings connected with the feature set selection. You can accept these settings without changes, or change them to meet the requirements of the system.

Example screen display for ISM parameters:

```
Current ISM Parameters:

TNS (1000)
ACDN (0300)
AST (0000)
LTID (0100)
RAN_CON (0012)
RAN_RTE (9999)
MUS_CON (0100)
BRAND (0)
ACD AGENTS (1000)
ANALOGUE TELEPHONES (0100)
ATTENDANT TELEPHONES (2500)
BRI DSL (0100)
CLASS TELEPHONES (2500)
DATA PORTS (2500)
DIGITAL TELEPHONES (0100)
INTERNET TELEPHONES ( 0)
PHANTOM PORTS (2500)
WIRELESS TELEPHONES (   0)
ITG ISDN TRUNKS (2500)
TRADITIONAL TRUNKS (2500)
TMDI D-CHANNELS (   0)
SURVIVABILITY (4)

Do you wish to change ISM parameters? (y/n/[a]bort):
```

Do one of the following:

- Enter **n <CR>** (no change) and go to Step 15 on page 104.
- Enter **y <CR>** (change) and continue with the next step, Step 13 on page 102.

13 Select ISM parameters.

Example screen display in which the AST parameter is changed:

```
Enter new ISM parameters, <cr> to leave unchanged:

TNS (1000)
ACDN (0300)
```

```
AST (0000): 100
LTID (0100)
RAN_CON (0012)
RAN_RTE (9999)
MUS_CON (0100)
BRAND (0)
ACD AGENTS (1000)
ANALOGUE TELEPHONES (0100)
ATTENDANT TELEPHONES (2500)
BRI DSL (0100)
CLASS TELEPHONES (2500)
DATA PORTS (2500)
DIGITAL TELEPHONES (0100)
INTERNET TELEPHONES ( 0)
PHANTOM PORTS (2500)
WIRELESS TELEPHONES (   0)
ITG ISDN TRUNKS (2500)
TRADITIONAL TRUNKS (2500)
TMDI D-CHANNELS (   0)
SURVIVABILITY (4)
```

14 Confirm the ISM parameters.

Example screen display of the new ISM parameters:

```
New ISM parameters:

TNS (1000)
ACDN (0300)
AST (0100)
LTID (0100)
RAN_CON (0012)
RAN_RTE (9999)
MUS_CON (0100)
BRAND (0)
ACD AGENTS (1000)
ANALOGUE TELEPHONES (0100)
ATTENDANT TELEPHONES (2500)
BRI DSL (0100)
```

```
CLASS TELEPHONES (2500)
DATA PORTS (2500)
DIGITAL TELEPHONES (0100)
INTERNET TELEPHONES ( 0)
PHANTOM PORTS (2500)
WIRELESS TELEPHONES (   0)
ITG ISDN TRUNKS (2500)
TRADITIONAL TRUNKS (2500)
TMDI D-CHANNELS (   0)
SURVIVABILITY (4)

Is this correct? (y/n/[a]bort): Y
```

Do one of the following:

- Enter **n <CR>** (no) and go to Step 12 on page 102.
- Enter **y <CR>** (yes) and continue with Step 15 on page 104.
- Enter **a <CR>** (abort, return to Main Menu).

15 Define the Auxiliary Identification (AUX ID).

The default AUX ID is either the security ID provided with the Option 11C or Option 11C Mini, or the original Option 11/11E site ID.

Note 1: The AUX ID is on your Keycode Data Sheet. The AUX ID must match either the security ID (Option 11C or Option 11C Mini) or the original site ID (Option 11 or Option 11E).

Note 2: For the Option 11C Mini, the Security ID and the Current AUX ID numbers are always the same.

Example screen display:

```
Security ID: 10000326
Current AUX ID: 10000326
Do you wish to change the AUX ID? (y/n/[a]bort)
```

Do one of the following:

- Enter **y <CR>** (yes) and continue with Step 16 on page 105.
- Enter **n <CR>** (no) and go to Step 17 on page 105.
- Enter **a <CR>** (abort, return to Main Menu).

16 Enter the AUX ID.

Example screen:

```
Enter the Option 11/11E Security ID for the new AUX
ID, <cr> to maintain.

New AUX ID: 12121212

Is this correct?
```

Do one of the following:

- Enter **y <CR>** (yes) and continue with Step 17 on page 105.
- Enter **n <CR>** (no) and go to Step 15 on page 104.
- Enter **a <CR>** (abort, return to Main Menu).

17 Review and confirm the information you entered.

Example screen display:

```
Software Upgrade Summary:
Security ID: 10000326
Aux ID: 12121212
Cabinet Type: MAIN
Feature Set: Enhanced Business
Additional Pkgs: none
Database: Pre-Configured Database - Enhanced Business

S/W Release: 253xx
ISM Parameters:

TNS (1000)
ACDN (0300)
AST (0100)
LTID (0100)
RAN_CON (0012)
RAN_RTE (9999)
MUS_CON (0100)
BRAND (0)
ACD AGENTS (1000)
ANALOGUE TELEPHONES (0100)
ATTENDANT TELEPHONES (2500)
BRI DSL (0100)
```

```
CLASS TELEPHONES (2500)
DATA PORTS (2500)
DIGITAL TELEPHONES (0100)
INTERNET TELEPHONES ( 0)
PHANTOM PORTS (2500)
WIRELESS TELEPHONES (   0)
ITG ISDN TRUNKS (2500)
TRADITIONAL TRUNKS (2500)
TMDI D-CHANNELS (   0)
SURVIVABILITY (4)

Is this correct? (y/n/[a]bort):
```

Do one of the following:

- Enter **y <CR>** (yes) and continue with Step 18 on page 106.
- Enter **n <CR>** (no) and return to the start of this step.
- Enter **a <CR>** (abort, return to Main Menu)

18 Enter the keycodes.

a Enter keycodes instead of **x, y, z** in the following example.

```
Enter new Keycodes:

Key 1:xxxxxxxx <cr>
Key 2:yyyyyyyy <cr>
Key 3:zzzzzzzz <cr>
```

b Look for the keycode validation message.

After you enter the last keycode, the system displays a message indicating whether the keycodes are successful or not. See the following message examples.

- Example of a successful screen message:

```
Keycode validation successful

***WARNING*** A system restart will be invoked as part
of the software installation process".
```

- Example of an unsuccessful screen message:

```
Keycode validation unsuccessful
```

c Do one of the following:

- If the **successful** message appears, continue with the next step, Step 19 on page 107.

- If the **unsuccessful** message appears, repeat step, Step 18 on page 106.

  After three unsuccessful keycode validation attempts, the following message appears:

```
Keycode validation unsuccessful.

Installation aborted...returning to main menu.
```

19 **Complete the software installation.**

Example screen display:

```
Are you sure you wish to perform the installation?
```

Do one of the following:

- Enter **y <CR>** (yes). This procedure is at an end and a system restart is required.
- Enter **n <CR>** (no) and make the necessary changes to your installation.
- Enter **a <CR>** (abort)

20 Proceed to" Software installation for IP expansion, using the preprogrammed software daughterboard on page 108".

Software installation on the IP Expansion Chassis using the Preprogrammed software daughterboard

IMPORTANT

BootP is a broadcast message used for IP Address discovery.

- For Point-to-Point installation, you must select Option 1.
- For Layer 2 LAN installation, the recommended selection is Option 1.
- For Layer 3 LAN installation, you must select Option 2.

Point-to-Point or Layer 2 with bootp configuration

For Point-to-Point or Layer 2 with bootp configuration, you do not need a TTY connected to the IP Expansion Cabinet. Power up the system, and the software installs automatically.

Layer 2 or Layer 3 with manual configuration

Procedure 12
Software installation for IP expansion, using the preprogrammed software daughterboard

Note: This procedure is performed from a TTY connected to the IP Expansion Cabinet.

1 Power up the system, and the menu in Step 2 appears.

2 Select Manual Configuration (item 2) from the IP Expansion Cabinet Configuration Menu.

The IP Configuration Menu is displayed:

```
IP Configuration Menu:
1. Automatically Using BootP
2. Using Manual Configuration
[q]uit, [p]revious, [m]ain menu, [h]elp or [?], <cr>
- redisplay
```

Enter Selection: 2

3 Configure IP Expansion Parameters.

For the following menu, the sample IP parameters will be used:

IP address of the expansion cabinet 100BaseT(F): 47.147.20.101;
Subnet Mask of the expansion cabinet 100BaseT(F): 255.255.255.0;
Gateway address: 47.147.20.1;
IP address of the main cabinet 100BaseT(F): 47.147.10.100.

The IP Parameters menu is displayed:

```
Enter Expansion New IP Parameters:
Expansion IP: 47.147.20.101
Expansion NetMask: 255.255.255.0
Main IP: 47.147.10.100

Expansion Router/Gateway: 47.147.20.1

Is this correct? (t/n/[a]bort): Y
```

Note: 'Expansion Router/Gateway' appears only in a Layer 3 configuration.

4 The software installation is completed automatically without user intervention.

5 Refer to *X11 Software Input/Output Guide Maintenance* (553-3001-511) LD 117 to configure the IP Expansion cabinets IP Address.

End of Procedure

Meridian 1

Option 11C Mini

Expansion using Fiber Optic and IP Connectivity guide

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Publication number: 553-3021-208
Document release: Standard 2.00
Date: December 2000
Printed in Canada

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