

HP NonStop S-Series Hardware Installation and FastPath Guide

Abstract

This guide is written for anyone qualified to install an HP NonStop™ S-series server.

This guide describes how to install and start a NonStop S-series server for the first time. It includes information about installing server hardware, cabling system enclosures, installing and starting NonStop system consoles, installing external system devices, starting the server, and configuring the server after startup. This guide also provides overview information about the I/O adapter module (IOAM) enclosure. A quick reference to installing and configuring a two-processor or four-processor NonStop S-series server in the Tetra 8 topology is included.

Product Version

N.A.

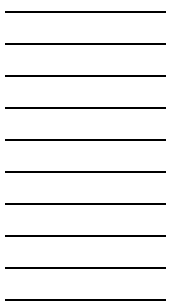
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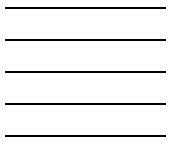
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What's New in This Guide

Manual Information

Abstract

This guide is written for anyone qualified to install an HP NonStop™ S-series server.

This guide describes how to install and start a NonStop S-series server for the first time. It includes information about installing server hardware, cabling system enclosures, installing and starting NonStop system consoles, installing external system devices, starting the server, and configuring the server after startup. This guide also provides overview information about the I/O adapter module (IOAM) enclosure. A quick reference to installing and configuring a two-processor or four-processor NonStop S-series server in the Tetra 8 topology is included.

Product Version

N.A.

Supported Release Version Updates (RVUs)

This publication supports G06.28 and all subsequent G-series RVUs until otherwise indicated by its replacement publication.

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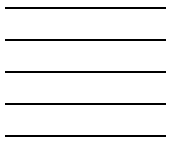
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New and Changed Information

This publication has been updated to include information about:

- Disk-drive enclosures (also known as Fibre Channel disk modules (FCDMs)). Disk-drive enclosures are connected to Fibre Channel ServerNet adapters (FCSAs) installed in IOAM enclosures.
- The M8520 mid-range tape library. M8520 tape libraries requires N1522A tape drives.

Section	Title	Changes
Manual-wide		Editorial corrections.
7	Installing External System Devices	Added a new subsection for Installing Fibre Channel Tape Devices Using an IOAM Enclosure on page 7-15.
	Safety and Compliance	Updated for G06.28 RVU.
	Glossary	The glossary has been moved to NTL and is titled <i>NonStop System Glossary</i> .



About This Guide

This guide describes how to install and bring up a NonStop S-series server for the first time. It includes information about installing the server hardware, cabling system enclosures, installing and starting system consoles, installing external system devices, and starting the server. This guide is written for anyone who is qualified to install a NonStop S-series server.

This guide assumes that you are using the HP NonStop Open System Management (OSM) or Compaq TSM software to perform the OSM or TSM tasks described in this guide.

Note. Throughout this guide, the term Sxx000 stands for NonStop S70000, S72000, S74000, S76000, S78000, S86000, S88000 servers.

Information in this guide also applies to NonStop S7x00 servers of model S7400 and higher.

Who Should Use This Guide

This guide is written for anyone who installs system equipment at a customer site. You should be familiar with computers but do not need to be familiar with installing mainframe computer systems. However, those who perform the hardware tasks documented in this guide must have completed training courses on system support for NonStop S-series servers.

Note. NonStop NS-series, NonStop S-series, and NonStop K-series refer to hardware systems; H-series, G-series, and D-series refer to system software.

- H-series software runs on NonStop NS-series servers.
 - G-series software runs on NonStop S-series servers.
 - D-series software runs on NonStop K-series servers.
-

What's in This Guide

Section	Title	Contents (page 1 of 3)
1	Introduction	This section summarizes the installation process and gives an overview of the NonStop S-series system.
2	Installing Enclosures	This section describes how to unpack new equipment and install NonStop system enclosures.
3	Cabling Enclosures	This section explains how to cable enclosures in NonStop S-series systems with power-on, emergency power-off (EPO), and ServerNet cables.

Section	Title	Contents (page 2 of 3)
<u>4</u>	<u>Installing Service-Side Doors</u>	This section describes how to install optional service-side doors on NonStop S-series system enclosures that are already installed and cabled. (New NonStop S-series system enclosures are shipped with service-side doors installed.)
<u>5</u>	<u>Installing, Starting, and Testing a System Console</u>	This section describes how to unpack, assemble, start, and test a system console.
<u>6</u>	<u>Connecting a System Console</u>	This section describes how to connect a primary system console to the installed server and dedicated service LAN by using Ethernet cables and an Ethernet switch or Ethernet hub.
<u>7</u>	<u>Installing External System Devices</u>	This section describes how to install selected peripheral devices such as tape subsystems.
<u>8</u>	<u>Powering On and Starting the System</u>	This section describes how to power on NonStop S-series system enclosures, how to power on external devices, and how to start the system.
<u>9</u>	<u>Performing Post-Startup Tasks</u>	This section describes the tasks that you must perform after the NonStop S-series server has been powered up and started.
<u>10</u>	<u>Configuring the System</u>	This section describes how to configure system consoles and NonStop S-series servers in several ways.
<u>11</u>	<u>Offline Configuration Tasks</u>	This section describes offline configuration tasks, which change software or hardware configurations and require the system to be shut down.
<u>12</u>	<u>Online Configuration Tasks</u>	This section describes how to configure your system online using the Subsystem Control Facility (SCF), Kernel-Managed Swap Facility (KMSF), OSM, and TSM, and how to create an alternate \$SYSTEM disk.
<u>13</u>	<u>Creating Startup and Shutdown Files</u>	This section describes command files that automatically start and shut down a NonStop S-series server.
<u>14</u>	<u>Case Study: Installing and Configuring a System</u>	This section documents the installation and configuration of a NonStop S7000 system for a fictitious company.
<u>A</u>	<u>Part Numbers</u>	Part numbers have been moved to the Support and Service Library.
<u>B</u>	<u>ServerNet Cabling</u>	This appendix contains ServerNet cabling diagrams and tables for maximum Tetra 8 and Tetra 16 configurations. It also contains diagrams and tables for selected smaller configurations.
<u>C</u>	<u>Power-On Cabling</u>	This section provides power-on cabling diagrams for selected large and smaller ServerNet configurations.

Section	Title	Contents (page 3 of 3)
D	Troubleshooting	This appendix explains basic recovery tasks for the system and system console.
E	FastPath Tasks: Required	This appendix contains all the tasks required to install, start, and configure a two-processor or four-processor NonStop S-series server in the Tetra 8 topology.
F	FastPath Tasks: Optional	This appendix contains all optional configuration tasks for a two-processor or four-processor NonStop S-series server in the Tetra 8 topology.
	Glossary	The Glossary has been moved to the NonStop Technical Library (NTL).

Where to Get More Information

Documentation

Manuals, Hotstuff messages, and other kinds of documentation are available in the NonStop Technical Library (NTL) at <http://techlibrary.cac.cpqcorp.net.ntl/>.

For abstracts of the NonStop S-series manuals, see the *NonStop S-Series Planning and Configuration Guide*.

Support and Service Library

These NTL Support and Service library categories provide procedures, part numbers, troubleshooting tips, and tools for servicing NonStop S-series and Integrity NonStop NS-series systems:

- Hardware Service and Maintenance Publications
- Service Information
- Service Procedures
- Tools and Download Files
- Troubleshooting Tips

Within these categories, where applicable, content might be further categorized according to server or enclosure type.

Authorized service providers can also order the NTL Support and Service Library CD:

- Channel Partners and Authorized Service Providers: Order the CD from the SDRC at <https://scout.nonstop.compaq.com/SDRC/ce.htm>.
- HP employees: Subscribe at World on a Workbench (WOW). Subscribers automatically receive CD updates. Access the WOW order form at <http://hps.knowledgemanagement.hp.com/wow/order.asp>.

OSM Guided Replacement Procedures

Some of the procedures in this guide refer to the OSM guided replacement procedures. These automated tools are integrated into the OSM Service Connection. They guide you step-by-step through replacing many customer-replaceable units (CRUs).

To launch OSM guided replacement procedures:

1. Log on to the OSM Service Connection.
2. In the tree pane, locate and select the CRU/FRU you want to replace.
3. Select **Actions**.
4. In the Actions dialog box, from the Available Actions list, select **Replace**.
5. Click **Perform Action** to launch the guided procedure.

TSM Guided Replacement Procedures

TSM guided replacements procedures are launched by the Windows Start menu (rather than integrated into the application).

Note. TSM does not support IOAM or Fibre Channel disk-drive enclosures. OSM should be used to manage systems that include these components.

To access the TSM guided replacement procedures:

Start > Programs > Compaq TSM > Guided Replacement Tools

These guided replacement procedures are currently available:

- Replace IOMF
- Replace PMF
- Replace Power Supply
- Replace SEB or MSEB
- Replace SNDA
- Replace Switch Component
- Guided Replacement Toolkit (GRT)

Note. The GRT is used to replace an IOMF, PMF, power supply, or 6760 ServerNet device adapter (ServerNet/DA) in a system running TSM server T7945AAW (shipped with the G06.12 RVU) or earlier.

Notation Conventions

Hypertext Links

Blue underline is used to indicate a hypertext link within text. By clicking a passage of text with a blue underline, you are taken to the location described. For example:

This requirement is described under [Backup DAM Volumes and Physical Disk Drives](#) on page 3-2.

General Syntax Notation

This list summarizes the notation conventions for syntax presentation in this manual.

UPPERCASE LETTERS. Uppercase letters indicate keywords and reserved words; enter these items exactly as shown. Items not enclosed in brackets are required. For example:

MAXATTACH

lowercase italic letters. Lowercase italic letters indicate variable items that you supply. Items not enclosed in brackets are required. For example:

file-name

computer type. Computer type letters within text indicate C and Open System Services (OSS) keywords and reserved words; enter these items exactly as shown. Items not enclosed in brackets are required. For example:

myfile.c

italic computer type. *Italic computer type* letters within text indicate C and Open System Services (OSS) variable items that you supply. Items not enclosed in brackets are required. For example:

pathname

Punctuation. Parentheses, commas, semicolons, and other symbols not previously described must be entered as shown. For example:

error := NEXTFILENAME (*file-name*) ;

LISTOPENS SU \$*process-name*.#*su-name*

Quotation marks around a symbol such as a bracket or brace indicate the symbol is a required character that you must enter as shown. For example:

"[*repetition-constant-list* "]"

Item Spacing. Spaces shown between items are required unless one of the items is a punctuation symbol such as a parenthesis or a comma. For example:

CALL STEPMOM (*process-id*) ;

If there is no space between two items, spaces are not permitted. In this example, there are no spaces permitted between the period and any other items:

\$process-name.#su-name

Line Spacing. If the syntax of a command is too long to fit on a single line, each continuation line is indented three spaces and is separated from the preceding line by a blank line. This spacing distinguishes items in a continuation line from items in a vertical list of selections. For example:

```
ALTER [ / OUT file-spec / ] LINE  
      [ , attribute-spec ]...
```

Notation for Messages

This list summarizes the notation conventions for the presentation of displayed messages in this manual.

Nonitalic text. Nonitalic letters, numbers, and punctuation indicate text that is displayed or returned exactly as shown. For example:

Backup Up.

lowercase italic letters. Lowercase italic letters indicate variable items whose values are displayed or returned. For example:

p-register
process-name

Change Bar Notation

Change bars are used to indicate substantive differences between this edition of the manual and the preceding edition. Change bars are vertical rules placed in the right margin of changed portions of text, figures, tables, examples, and so on. Change bars highlight new or revised information. For example:

The message types specified in the REPORT clause are different in the COBOL environment and the Common Run-Time Environment (CRE).

The CRE has many new message types and some new message type codes for old message types. In the CRE, the message type SYSTEM includes all messages except LOGICAL-CLOSE and LOGICAL-OPEN.

1 Introduction

This section summarizes the installation process and gives an overview of the NonStop S-series system.

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Installation Overview

Step Documentation

1. Decide which installation process to use.

This guide

[Appendix E, FastPath Tasks: Required](#)

[Appendix F, FastPath Tasks: Optional](#)

2. Plan the installation of the server, system console, local area network (LAN) subsystem, and wide area network (WAN) subsystem.

[Section 2, Installing Enclosures](#)

NonStop S-Series Planning and Configuration Guide

G06.nn Release Version Update Compendium

LAN Configuration and Management Manual

TSM Configuration Guide

OSM Migration Guide

WAN Subsystem Configuration and Management Manual

3. Install the server.

[Section 2, Installing Enclosures](#)

[Section 3, Cabling Enclosures](#)

[Section 4, Installing Service-Side Doors](#)

4. Install an I/O adapter module (IOAM) enclosure.

Caution: IOAM enclosures must be installed by service providers trained by HP. Your service provider should refer to the *Modular I/O Installation and Configuration Guide* which is located in the NTL Hardware Service and Maintenance collection in the Support and Service Library.

5. Install the primary system console.

Notes (page 1 of 2)

Use if you are:

- Installing a NonStop S-series server for the first time

OR

- Installing a Tetra 16 system

Use if you are BOTH:

- Familiar with installing NonStop S-series servers

AND

- Installing a Tetra 8 system

Each server is shipped with a customized version of the operating system image already installed. This operating system image comes preconfigured with ServerNet adapters and essential system devices such as disk and tape subsystems.

For connection to other storage options, you can install IOAM enclosures. Each IOAM enclosure is mounted into a standard 19-inch rack and connects to the MSEB of S76000 and later NonStop S-series systems. Each IOAM enclosure provides space for up to 10 specially designed ServerNet adapters.

Step Documentation

[Section 5, Installing, Starting, and Testing a System Console](#)

[Section 6, Connecting a System Console](#)

Notes (page 1 of 2)

The primary system console has a modem and is configured as a dial-out point. You must install and configure this system console before you can view manuals, start and test the system, configure the OSM or TSM environment, or use the OSM or TSM software.

Do not install the backup system console until you have started and tested the server.

6. Install external system devices such as 517x and 519x tape subsystems:

[Section 7, Installing External System Devices](#)

7. Power on and start the server with the factory-default configuration.

[Section 8, Powering On and Starting the System](#)

8. Perform post-startup tasks such as testing system components and configuring the OSM or TSM environment.

[Section 9, Performing Post-Startup Tasks](#)

You might also need:

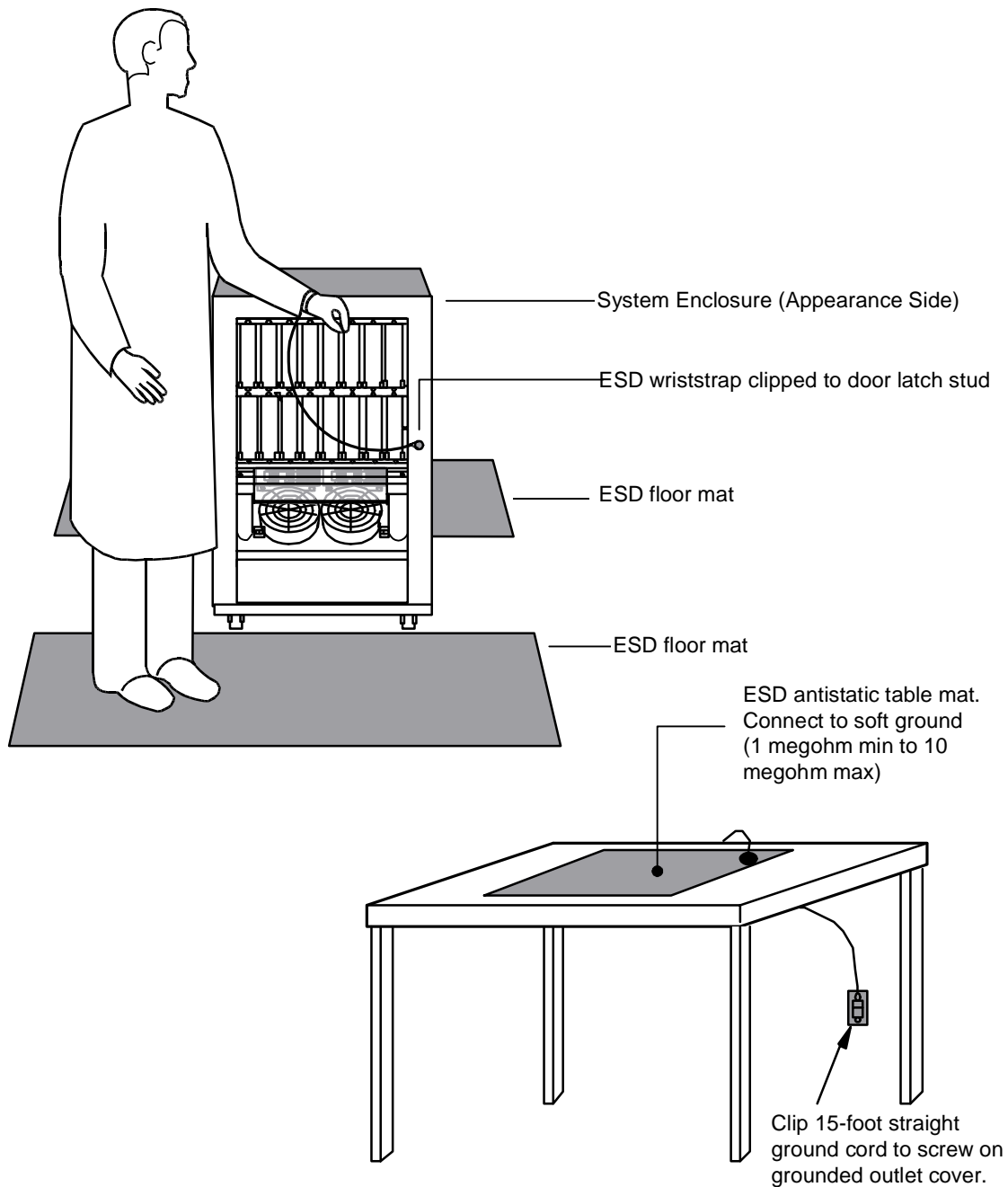
- *SCF Reference Manual for the Storage Subsystem*
- *OSM User's Guide*
- *TSM Configuration Guide*
- *TSM Online User Guide*

Standard Operating Practices

When you handle a customer-replaceable unit (CRU), follow standard operating practices to minimize any potential damage to the equipment:

- When handling CRUs, work in an environment protected from electrostatic discharge (ESD). See [Using ESD Protection](#) on page 1-6.
- Obtain an ESD protection kit and follow the directions that come with the kit. You can purchase ESD kits from HP using the part number given in the NTL Support and Service Library. See [Support and Service Library](#) on page xxiv.
- Make sure any ESD wriststrap has a built-in series resistor and includes an antistatic table mat.
- Before unpacking CRUs, place the packing container on an antistatic table mat.
- CRUs that require ESD protection are shipped in ESD protective bags. When opening packing containers for these CRUs, do not cut the ESD protective bag.
- Before moving a CRU from an antistatic table mat, attach the grounding clip from your ESD wriststrap to any exposed unpainted metal surface on the CRU frame.
- Before you bring the CRU in contact with the system enclosure, attach the grounding clip to any exposed unpainted metal surface on the enclosure frame.
- When removing a CRU from an enclosure, once you have pulled the CRU partway out of the slot, attach the grounding clip from your ESD wriststrap to any exposed unpainted metal surface on the CRU frame.
- Before setting a CRU on an antistatic table mat, attach the grounding clip from your ESD wriststrap to the antistatic table mat.
- Store CRUs that require ESD protection in ESD protective bags.
- Install or upgrade only hardware components that are designated customer-replaceable units (CRUs) and for which this guide includes installation procedures.
- Before any installation procedure, inspect the CRU. Check connectors for bent or broken pins and look for any other obvious damage.
- When installing a CRU that is located on the appearance side of the enclosure, work quickly to minimize the amount of time that the enclosure door is left open.
- Before working with electrical equipment, remove all metal accessories, such as rings, watches, and necklaces, that can damage the equipment.
- Before working with electromechanical equipment, restrain items such as long hair and sleeves that can get caught in the equipment.

Using ESD Protection



VST693.vsd

Tools

The tools you might need when installing server components include:

Component	Tool	Purpose
System enclosure	ESD protection kit	Protect components against electrostatic discharge
	Heavy-freight-handling equipment	Move shipping pallets to installation area
	Safety glasses	Prevent eye injury from flying particles
	Scissors or cutters	Clip cable ties and cut banding straps
	Flashlight	For lighting dark areas
	Labels	Label cables
	Pens or pencils	
	3/4-inch (19-mm) or 9/16-inch (15-mm) open-end wrench	Lower system enclosure leveling pads (might have 3/4-inch nuts or 9/16-inch nuts)
	Phillips screwdriver	Loosen and tighten Phillips screws, including groundstrap screws
Tape subsystem	Stubby Phillips screwdriver	Loosen and tighten AC power cord retainer screws on some processor and I/O enclosures without power shelves
	4-mm diagonal wrench (provided with server)	Unlock enclosure door
	15/16-inch (24-mm) or adjustable, open-end wrench	Lower leveling pads on 5175 or 519x tape subsystem enclosures
	Slotted screwdriver	Loosen and tighten slotted-head screws, including those on 5175 tape subsystem shipping restraints

Installation Checklist

Task	See...
Prepare to install new equipment. Unpack the enclosures. Connect the groundstraps. Inventory the enclosures. Inspect the CRUs.	Section 2, Installing Enclosures
Connect the power-on cables. Connect the emergency power-off (EPO) cables. Connect the ServerNet cables.	Section 3, Cabling Enclosures
Install service-side doors on system enclosures (optional).	Section 4, Installing Service-Side Doors
Unpack and assemble the system console. Start and test the system console.	Section 5, Installing, Starting, and Testing a System Console
Connect the system console to the system.	Section 6, Connecting a System Console
Install external system devices.	Section 7, Installing External System Devices
Prepare for system startup. Power on external system devices. Power on the system. Start the system.	Section 8, Powering On and Starting the System
Test the system. Complete final installation tasks. Prepare for daily operations. Configure the OSM or TSM environment.	Section 9, Performing Post-Startup Tasks
Create the operating configuration.	Section 10, Configuring the System

Shipping Packages

Each enclosure or stack of enclosures is shipped in a shipping package.

Note. For information about shipping packages for IOAM enclosures, including package specifications and unpacking instructions, contact your HP trained service provider who can refer to the *Modular I/O Installation and Configuration Guide* located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

About Shipping Packages

The shipping package consists of protective cardboard panels on the top and sides of the enclosure, secured with nylon banding straps that are 1.5 inches (3.75 mm) wide.

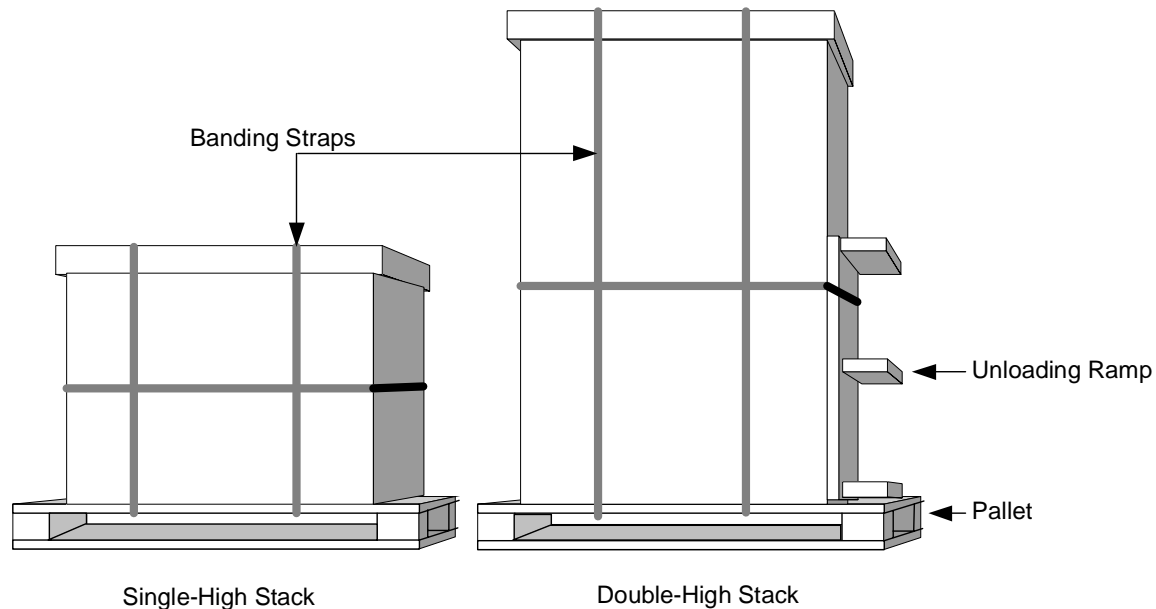
Equipment is included in your shipment so that you can unload the shipping packages as follows:

- Wooden pallets

Each shipping package comes equipped with a wooden pallet as shown in [Figure 1-1, The Shipping Package](#). This pallet includes skids spaced for forklift handling.

- The unloading ramp

- The ramp allows you to unload the enclosure from the pallet without a forklift.
- Only one unloading ramp is included in the shipment, regardless of the number of enclosures shipped.
- The ramp is attached to one shipping package with banding straps as shown in [Figure 1-1, The Shipping Package](#).

Figure 1-1. The Shipping Package

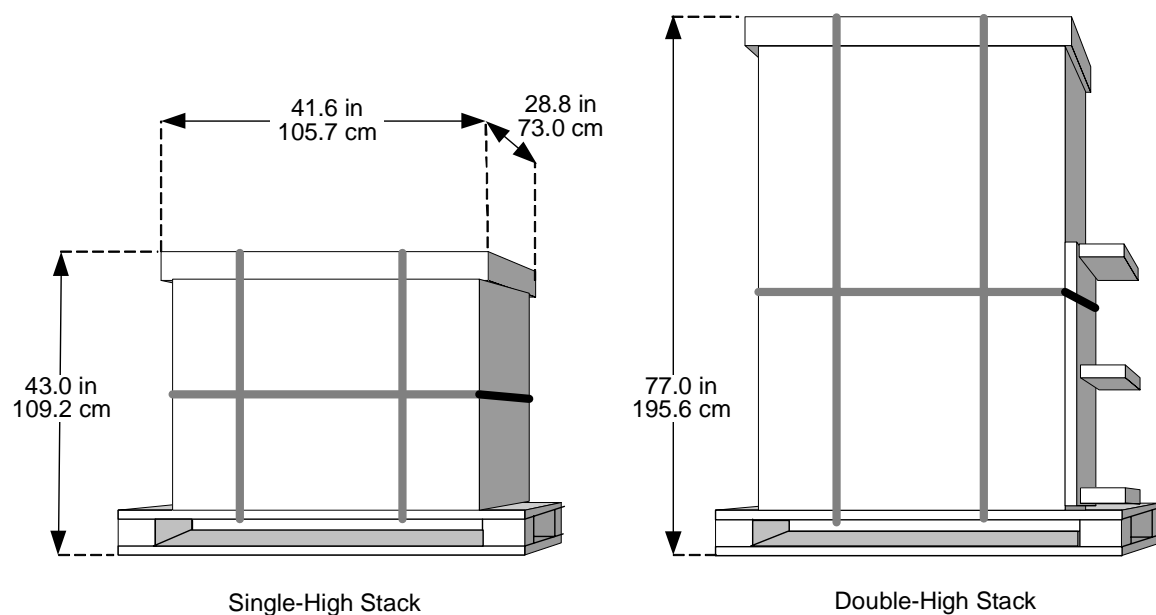
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Shipping Package Specifications

Table 1-1. Weights for Enclosure Shipping Packages

NonStop S-Series Enclosure Type	Single-High Stack		Double-High Stack	
	Pounds	Kilograms	Pounds	Kilograms
S7000 processor enclosure without power shelf	290	132	580	264
S7x00 and Sxx000 processor enclosure with power shelf	367	167	734	337
I/O enclosure without power shelf	290	132	580	264
I/O enclosure with power shelf	367	167	734	334

Note. For information about shipping package specifications for IOAM enclosures, contact your HP trained service provider who can refer to the *Modular I/O Installation and Configuration Guide* located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

Figure 1-2. Shipping Package Dimensions

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Enclosure Types

Enclosures can be described by their contents, how they are combined, their positioning, how they have been modified, and how they are mounted.

Enclosure Contents

Term	Definition
System enclosure	An enclosure for system components. Processor enclosures and I/O enclosures are both system enclosures.
Processor enclosure	A system enclosure that contains, among other units, two processor multifunction (PMF) customer-replaceable units (CRUs).
I/O enclosure	A system enclosure that contains, among other units, two I/O multifunction (IOMF) CRUs. I/O enclosures connect to a SEB or MSEB in the processor enclosure. I/O enclosures can also be attached to a processor switch of an Integrity NonStop NS-series system. For more information and for cabling procedures, your service provider should refer to the <i>NonStop NS-Series Hardware Installation Manual</i> .
I/O adapter module (IOAM) enclosure	An enclosure that contains up to 10 specially designed ServerNet adapters. Unlike self-contained system enclosures, IOAM enclosures reside in standard 19-inch racks. IOAM enclosures connect to an MSEB in the processor enclosure. I/O enclosures and IOAM enclosures can coexist in the same system. For information about what group numbers support IOAM enclosures, see Table 1-2 .

△ **Caution.** IOAM enclosures must be installed by service providers trained by HP.

Enclosure Combinations

Term	Definition
Block	A grouping of one or more system enclosures that a NonStop S-series system recognizes and supports as one unit. A block can be: <ul style="list-style-type: none"> ● One processor enclosure ● One I/O enclosure ● One processor enclosure attached to one or more I/O or IOAM enclosures. Note that IOAM enclosures are not standalone enclosures; they are mounted into standard 19-inch racks.

For more about blocks, see the *NonStop S-Series System Expansion and Reduction Guide*.

Enclosure Positions

System enclosures can be arranged in single-high stacks (one enclosure) or double-high stacks (two enclosures, one on top of the other):

Term	Definition
Base enclosure	A system enclosure that can be placed on the floor with another enclosure on top of it.
Stackable enclosure	A system enclosure that can rest on top of another system enclosure.

If you will reduce your system at any point in the future, place enclosures that you might remove from your system on the top of the stack.

Modified I/O Enclosures

I/O enclosures shipped with the G06.13 RVU or earlier require removal of a pin from their backplanes to ensure system fault tolerance. If you do not know when your I/O enclosure was manufactured, contact your service provider.

For information about the removal procedure and the possibilities for later use of a modified enclosure, see the *NonStop S-Series Planning and Configuration Guide*.

IOAM Enclosures

An IOAM enclosure provides you with access to additional disk storage and Ethernet connectivity. An IOAM enclosure is mounted into a modular cabinet and connects to the MSEB of S76000 and later NonStop S-series systems. Up to three IOAM enclosures, one maintenance switch, two PDUs, and one UPS can be installed into one cabinet. IOAM enclosures can be installed in any standard 19-inch rack, but the number of enclosures depends on the height of the rack.

△ Caution. IOAM enclosures must be installed by service providers trained by HP. Your service provider should refer to the *Modular I/O Installation and Configuration Guide* which is located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

Note. Ensure that the correct firmware is installed on the processor and IOAM enclosures. Minimum firmware is required to allow IOAM enclosures to be connected to processor enclosures in the outer tetrahedron. For correct firmware requirements, your service provider can refer to the *Modular I/O Installation and Configuration Guide*.

IOAM Enclosure Components

An IOAM enclosure (chassis) contains two midplanes:

- I/O midplane for routing ServerNet signals
- Power midplane for routing power and signals for the power-supply controls

These components are installed in an IOAM enclosure:

- Two ServerNet switch boards for routing ServerNet packages from the MSEB to the ServerNet adapters. The ServerNet switch board enables communication between a NonStop S-series system and an IOAM.
- Up to 10 ServerNet adapters. These adapters include:
 - Fibre Channel ServerNet adapters (FCSA). FCSAs provide access to:
 - Fibre Channel storage devices, such as the Fibre Channel disk module (FCDM)
 - Enterprise Storage System (ESS).
 - Gigabit Ethernet 4-port ServerNet adapters (G4SA). G4SAs provide increased Ethernet capacity. An IOAM enclosure that has 10 G4SAs provides up to 40 ports of Ethernet connections.
- Four fans for cooling components inside an IOAM enclosure
- Four power supplies with universal AC input to provide power to the components in an IOAM enclosure
- One bezel
- Two cable-management systems for managing the fiber-optic cables at the module level and at the modular cabinet level when it is installed on the modular cabinet

Note. For FCSA information, your service provider can refer to the *Fibre Channel ServerNet Adapter (FCSA) Installation and Support Guide*.

For G4SA information, your service provider can refer to the *Gigabit Ethernet 4-Port Adapter Installation and Support Guide*.

For FCDM or ESS information, refer to the *NonStop S-Series Planning and Configuration Guide* or your service provider can refer to the *Modular I/O Installation and Configuration Guide*.

Related Components

These components are used in conjunction with IOAM enclosures:

- Maintenance switch

The maintenance switch connects the OSM console to the Maintenance Entity in the ServerNet switch board and provides the communication between the IOAM

enclosure and the OSM console. The maintenance switch can be mounted in a standard 19-inch rack.

- Modular cabinet

A modular cabinet is a 19", 42 U high, industry standard rack and is used for mounting modular components. It houses the IOAM enclosure, uninterruptible power supplies (UPS), Extended Run-Time Modules, and maintenance switches. The modular cabinet comes equipped with doors, power distribution units (PDUs), and side panels as needed.

- Power distribution unit (PDU)

The PDU supports additional power outlets for the components in the rack. The PDU is installed onto a rack extender frame attached to the modular cabinet. See [Figure 1-9](#). For an IOAM enclosure, each IOAM power supply plugs into a different PDU.

- Uninterruptible power supply (UPS)

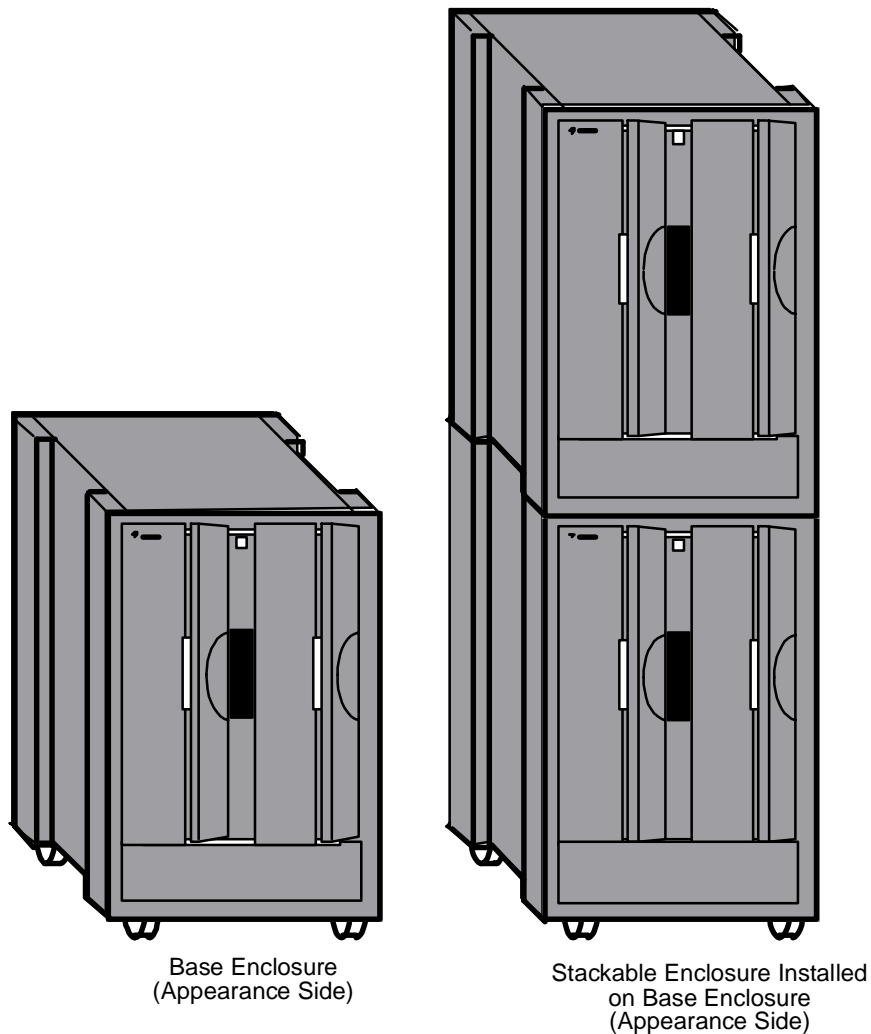
For IOAM enclosures, a UPS is optional but recommended where a site UPS is not available. You can choose to use any UPS that meets the IOAM enclosure power requirements for all enclosures being powered on from the UPS. One UPS option to support the IOAM enclosure is the HP R5500 UPS. You can also choose to have the UPS pre-installed inside the Modular Cabinet. See [Figure 1-9](#).

The standard configuration for cabinets that have an R5500 XR UPS includes one Extended Runtime Module (ERM). Each Extended Runtime Module is a rack-mountable battery module that extends your overall battery runtime.

For power and environmental requirements for the R5500 UPS, and all planning, installation, and emergency power-off (EPO) instructions, refer to the documentation shipped with the UPS.

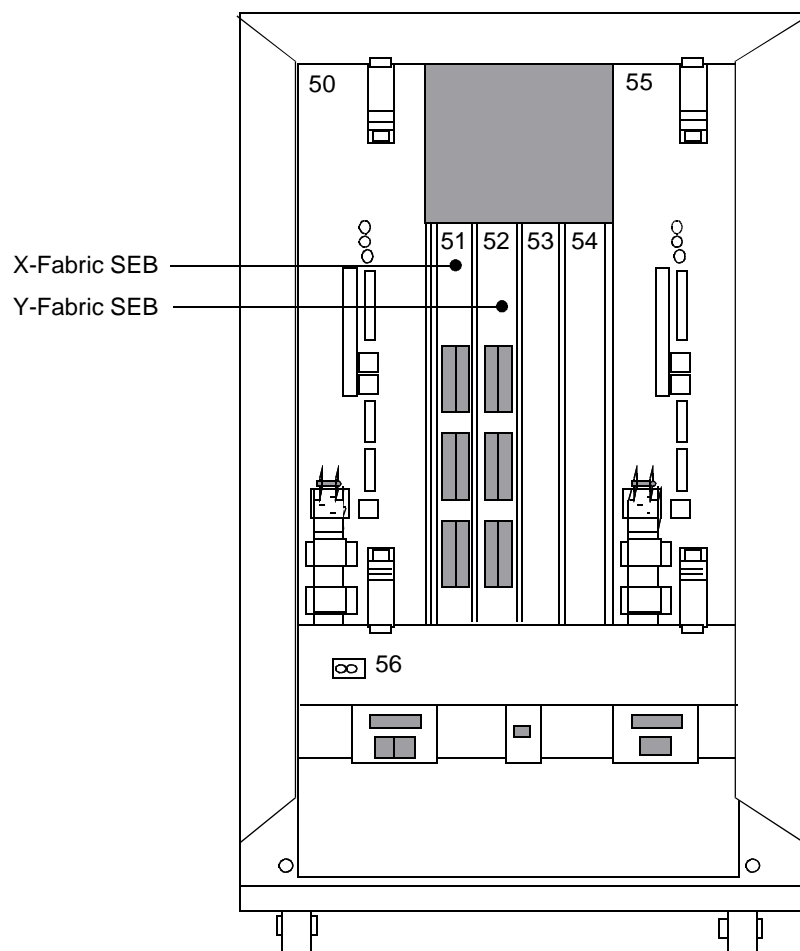
Enclosure Illustrations

Figure 1-3. Base and Stackable Enclosures



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-
- ▲ **WARNING.** Do not attempt to lift a stackable enclosure onto the top of a base enclosure by yourself. A trained service provider and at least four assistants must perform this procedure.
-

Figure 1-4. SEBs in a Processor Enclosure Without a Power Shelf

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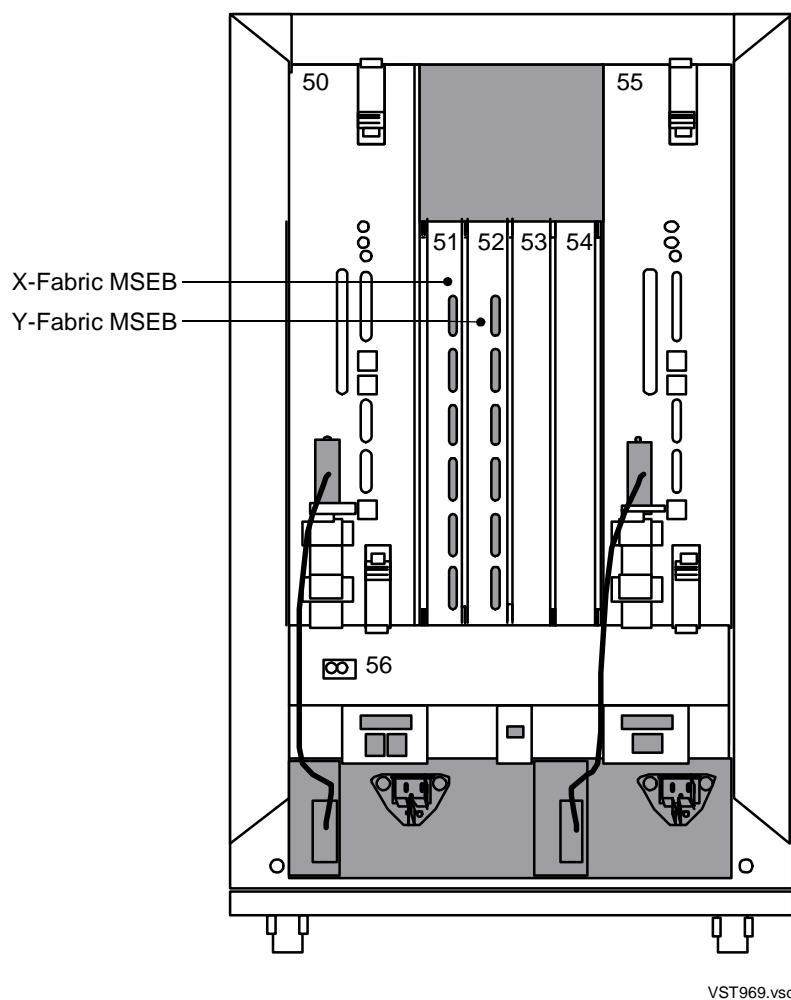
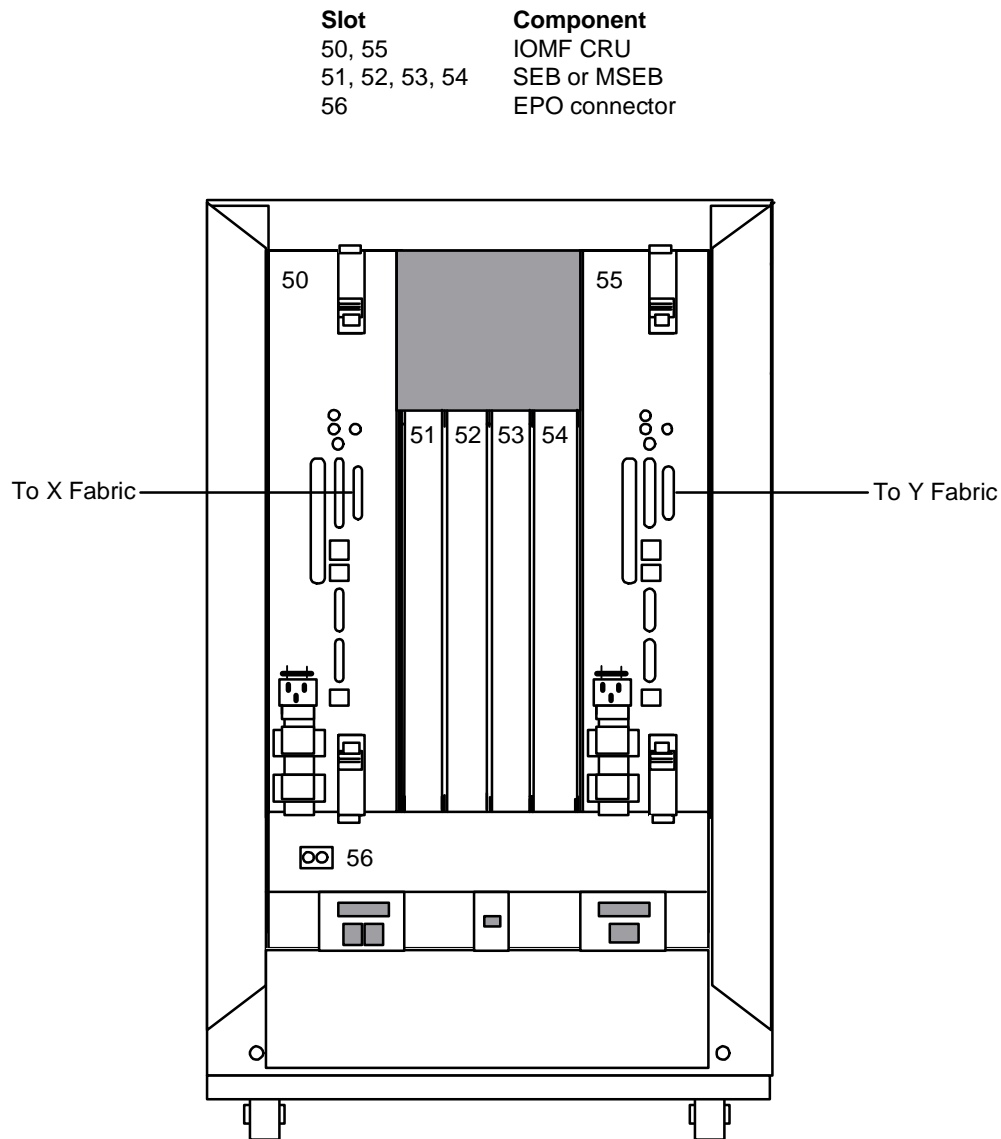
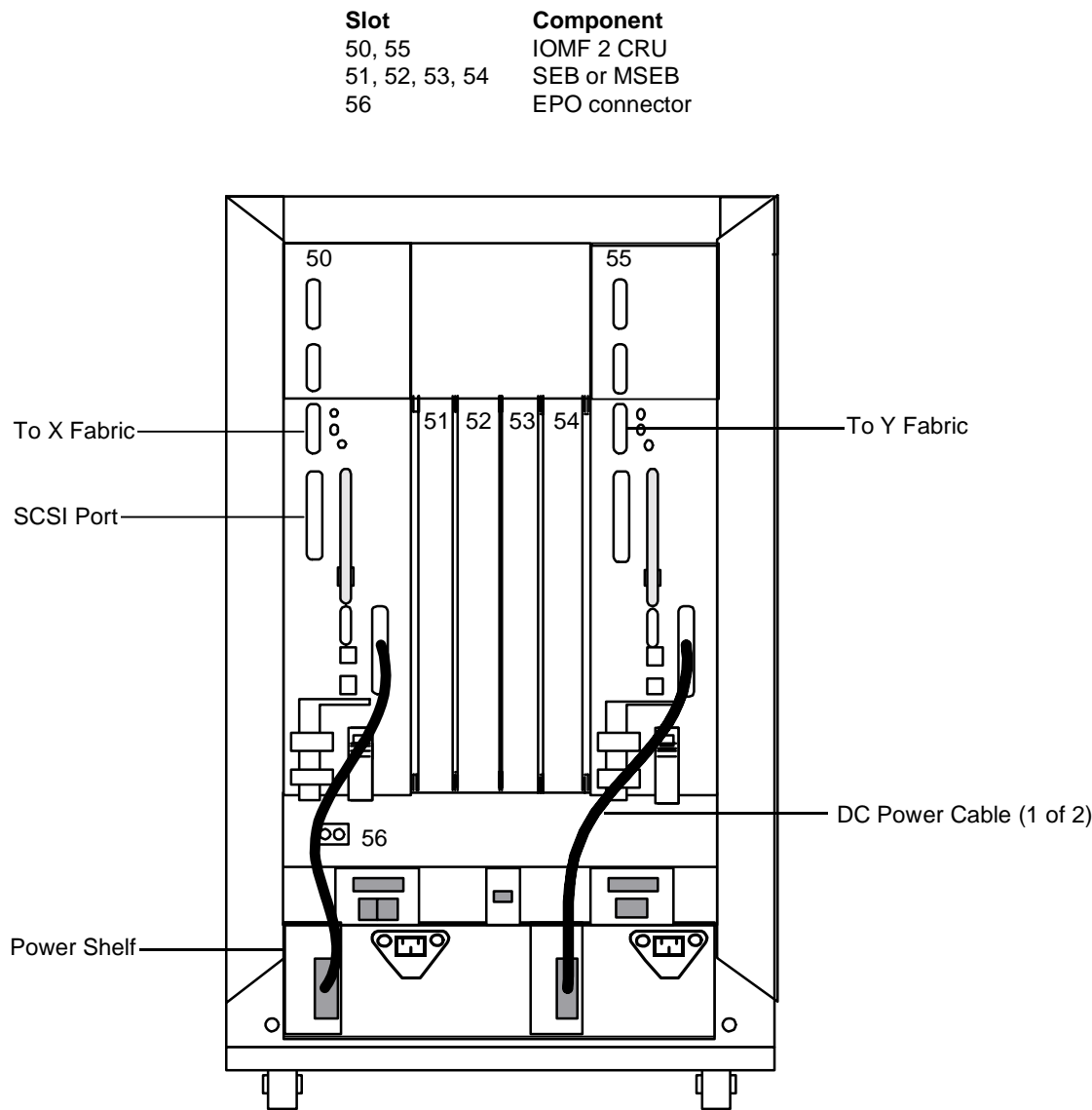
Figure 1-5. MSEBs in a Processor Enclosure With a Power Shelf

Figure 1-6. Service Side of I/O Enclosure Without Power Shelf

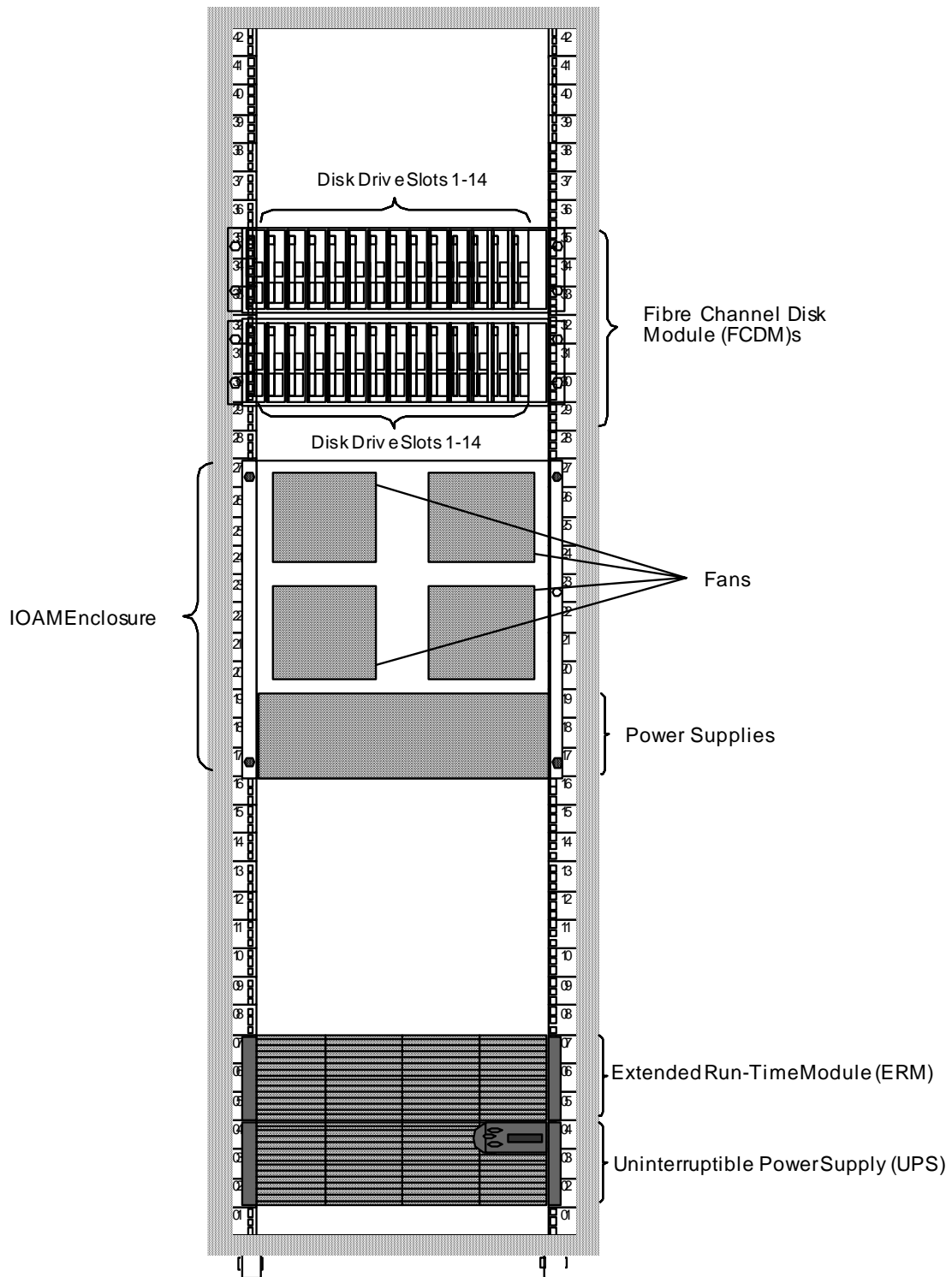
[Figure 1-7](#) illustrates the service side of an I/O enclosure that has a power shelf. The power shelf has two DC power supplies that furnish power to the IOMF 2 CRUs in slots 50 and 55.

The IOMF 2 CRU offers more connectivity options than the IOMF CRU. On the IOMF 2 CRU, the external SCSI port accepts the SCSI SAC used on PMF 2 and ServerNet/DAs for connecting tape devices. The ServerNet port accepts serial-copper and single-mode fiber-optic cables in addition to ECL cables.

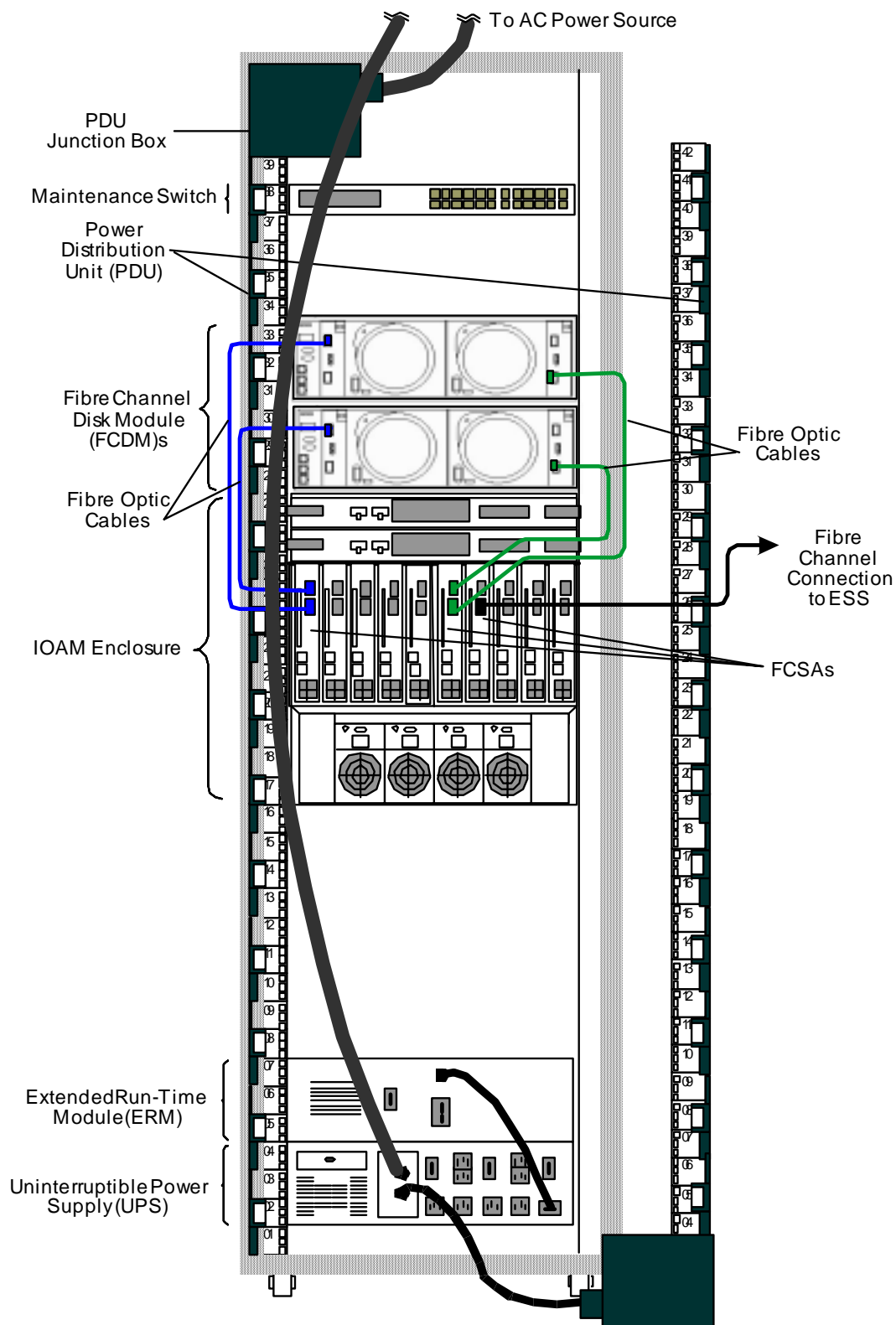
Figure 1-7. Service Side of I/O Enclosure With Power Shelf



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Figure 1-8. Rack with IOAM Enclosure (Front Side)

VST010.vsd

Figure 1-9. Rack With IOAM Enclosure (Rear Side)

VST197.vsd

Groundstraps

What Groundstraps Do

Groundstraps:

- Maintain the ground potential between NonStop S-series system enclosures
- Protect the system from harmful electrical transients

Note. For grounding information for IOAM enclosures, your service provider can refer to the *Modular I/O Installation and Configuration Guide* located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

Number of Groundstraps

For any system, the number of groundstraps required is equal to the number of NonStop S-series enclosures minus one. For example, if a system contains six enclosures, five groundstraps are required.

Where to Install Groundstraps

Groundstraps are installed between two enclosures, either in a stack or between adjacent stacks. Groundstraps are not required between separate rows. For examples of groundstrap locations for a variety of enclosure arrangements, see [Figure 2-11](#) on page 2-14 and [Figure 2-12](#) on page 2-15.

A groundstrap connecting two system enclosures in a double-high stack might be installed at the factory on a new system or an add-on enclosure. However, if you have three or more enclosures, you must install the groundstraps that link the base enclosures.

More About Groundstraps and Power Requirements

- Groundstraps are installed on systems that have more than one enclosure.
- Groundstraps are 14.8 inches (37.5 centimeters) long.

Power-On Cables

For Information About

When to use specific cable lengths
Where to install the power-on cables

See

NonStop S-Series Planning and Configuration Guide

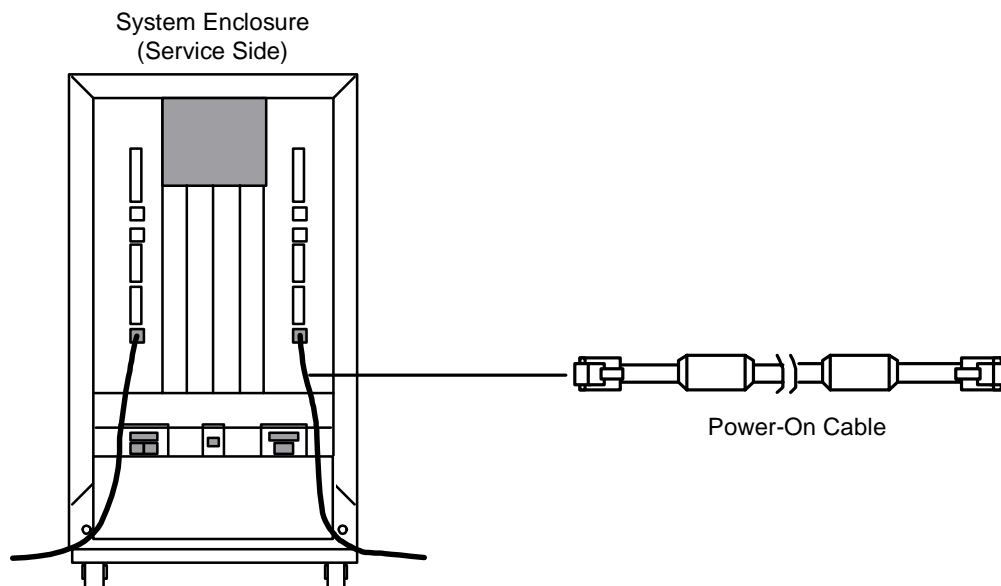
- Your Installation Document Checklist
- [Appendix C, Power-On Cabling](#)

Power-on cables carry the power-on signal from one PMF CRU or IOMF CRU to another, allowing you to power on all system enclosures in a system from one push button.

Note. IOAM enclosures do not require power-on cables. For more information, your service provider can refer to the *Modular I/O Installation and Configuration Guide* located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

- Power-on cables have an RJ-11 connector at each end as illustrated in [Figure 1-10](#).
- One power-on cable is required for each system enclosure.
- Power-on cables can be 8.2 feet (2.5 meters) or 23.0 feet (7.0 meters) long.
- The cables and enclosures must form a continuous ring so that each enclosure can deliver the power-on signal to the next enclosure.

Figure 1-10. Power-On Cable Connectors



VST703.vsd

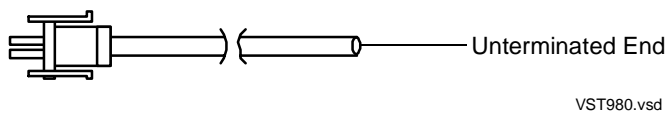
Emergency Power-Off Cables

Emergency power-off (EPO) cables automatically disconnect electrical power to connected equipment if an electrical emergency occurs.

Note. For EPO information for IOAM enclosures, contact your service provider who can refer to the *Modular I/O Installation and Configuration Guide* located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

About EPO Cables

Figure 1-11. EPO Cable



- EPO cables usually connect to a junction box of the computer room EPO system. (The EPO system must provide contact closure during an emergency.)
- One EPO cable for each enclosure is shipped with your system.
- The EPO cable is equipped with a two-pin Mate-N-Lock style plug at one end. This plug attaches to the EPO connector socket in slot 56.
- The other end of the EPO cable is unterminated, to attach to the EPO system.

EPO Cable Requirements

Within the United States

An EPO disconnect is required in a system if the system is installed in a computer or data processing room that is designed to comply with the construction and fire-protection provisions of:

- NFPA-75, Protection of Electronic Computer/Data Processor Equipment
- Article 645 of NFPA-70, the National Electric Code

Outside the United States

EPO disconnects are usually not required unless specified by local authorities.

If a System Requires EPO Capability

If a system requires EPO capability, the customer is responsible for connecting an EPO cable to the EPO connector in slot 56 on the service side of all system enclosures.

If a System Does Not Require EPO Capability

If a system does not require EPO capability, go to [ServerNet Cabling](#) on page 1-35.

System Organization

This subsection describes the organization, group numbering, and labeling in a NonStop S-series system. For IOAM enclosure organization, see [Group, Module, and Slot Hierarchy for IOAM Enclosures](#) on page 1-28.

A system consists of the hardware and the software that runs on it. To perform hardware operations using the OSM or TSM package, you must be familiar with the organization and naming conventions and know how to identify individual components within the server.

OSM has a naming convention similar to, but more abbreviated than, the naming convention for system resource locations in TSM. For example, TSM displays the location of a fan CRU in this form:

```
FAN.GRP-1.MOD-1.SLOT-26
```

OSM displays the location of the same fan CRU in this form:

```
FAN (1.1.26)
```

Group, Module, and Slot Hierarchy for System Enclosures

Hardware in a server is organized according to a system, group, module, and slot hierarchy, as follows:

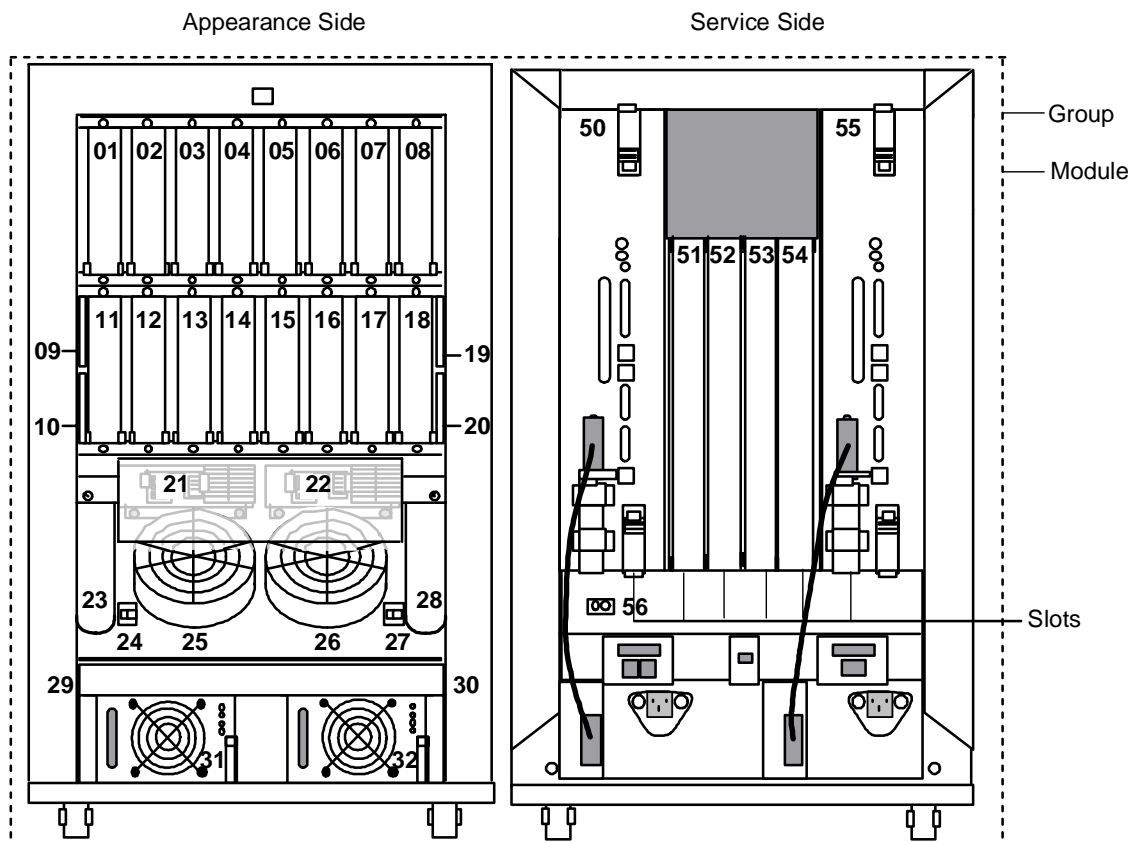
Term	Definition
System	A set of groups and external hardware components.
Group	A set of components accessible to a pair of service processors (SPs) in a system enclosure. In a NonStop S-series server, an enclosure contains one group.
Module	A set of slots sharing a common hardware interconnect (such as a backplane).
Slot	A labeled physical space in an enclosure in which a component can be installed.

A system enclosure can be serviced from two sides:

Term	Definition
Appearance side	Contains fans, disk customer-replaceable units (CRUs), group ID switches, and power monitor and control unit (PMCU) CRUs.
Service side	Provides access to the PMF CRUs or IOMF CRUs as well as to the ServerNet expansion boards (SEBs), modular SEBs (MSEBs), and ServerNet adapters. Cables are also accessed from the service side.

Group, Module, and Slot Hierarchy Illustration

This figure illustrates the service side and the appearance side of a processor enclosure:



VST721.vsd

Group, Module, and Slot Hierarchy for IOAM Enclosures

Hardware in an IOAM enclosure is organized according to a group, module, and slot hierarchy:

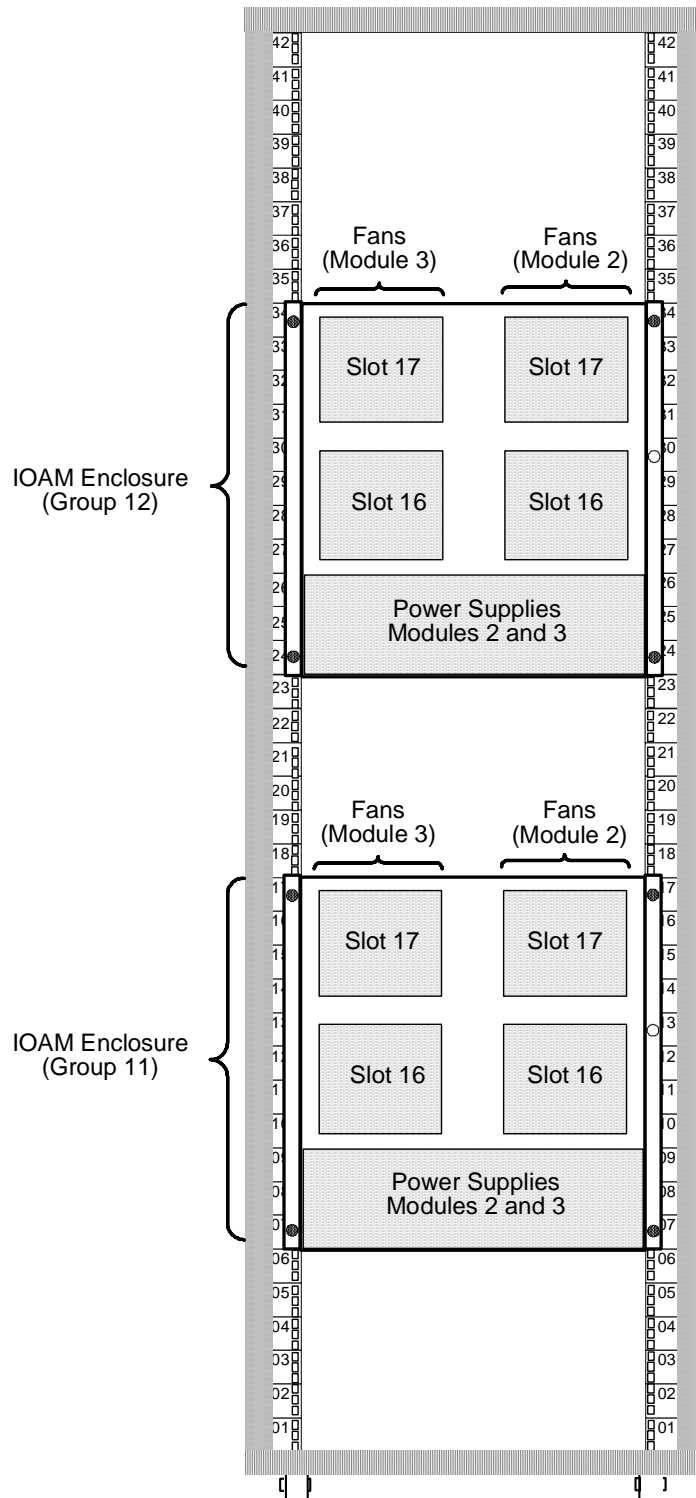
Term	Definition										
Group	The IOAM enclosure and all the components within it. IOAM enclosures are numbered in the same way as I/O enclosures.										
Module	One I/O adapter module (IOAM). There are two IOAMs in an IOAM enclosure, numbered 2 and 3. Each IOAM contains: <ul style="list-style-type: none">● One ServerNet switch board connected to a fabric. The ServerNet switch board in module 2 is connected to the X fabric, and the ServerNet switch board in module 3 is connected to the Y fabric.● Two power supplies● Two fans● Up to five ServerNet adapters										
Slot	A physical space in the IOAM module in which a component can be installed. Slot numbers are assigned for each module: <table><tr><th>Slot Number</th><th>Component</th></tr><tr><td>1, 2, 3, 4, 5</td><td>ServerNet adapter</td></tr><tr><td>14</td><td>ServerNet switch board</td></tr><tr><td>15 and 18</td><td>Power supplies</td></tr><tr><td>16 and 17</td><td>Fans</td></tr></table>	Slot Number	Component	1, 2, 3, 4, 5	ServerNet adapter	14	ServerNet switch board	15 and 18	Power supplies	16 and 17	Fans
Slot Number	Component										
1, 2, 3, 4, 5	ServerNet adapter										
14	ServerNet switch board										
15 and 18	Power supplies										
16 and 17	Fans										

To perform hardware operations on an IOAM enclosure, you must use OSM. TSM does not support IOAM enclosures. To identify individual components within the IOAM enclosure using OSM, you must be familiar with the organization and naming conventions. For example, OSM displays the location of a fan in group 11, module 3, slot 17 in this form:

```
Fan(11.3.17)
```

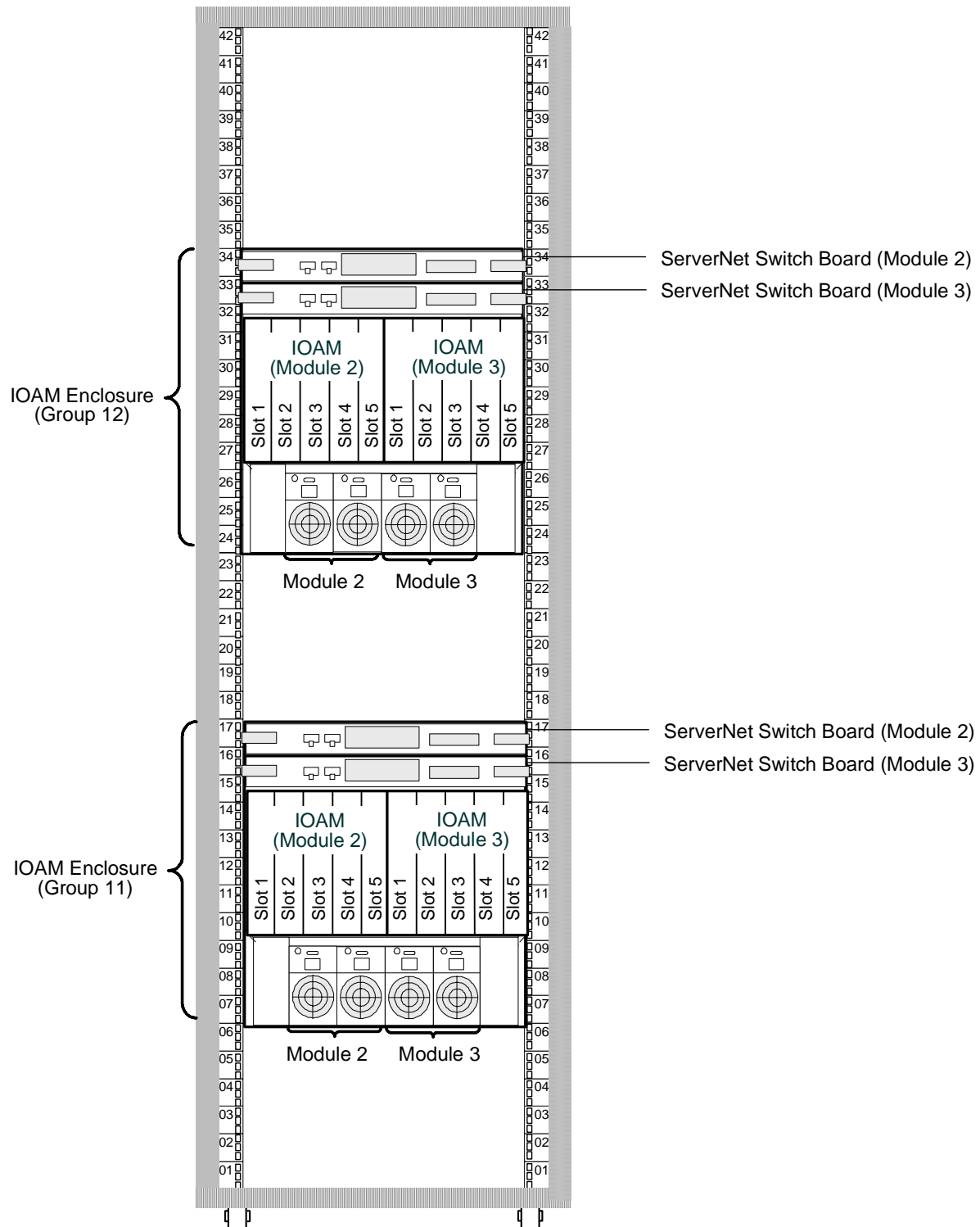
Group, Module, and Slot Hierarchy Illustrations of an IOAM Enclosure

This figure shows the front of an IOAM enclosure:



VST052.vsd

This figure shows the rear of an IOAM enclosure:



VST050.vsd

Server Numbering and Labeling

For Information About	See
Processor and I/O enclosure connections	<ul style="list-style-type: none"> ● <i>NonStop S-Series Planning and Configuration Guide</i> ● Section 3, Cabling Enclosures
Processor and IOAM enclosure connections	<ul style="list-style-type: none"> ● Your service provider, who can refer to the <i>Modular I/O Installation and Configuration Guide</i> located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library

A NonStop server can contain up to 44 system enclosures (8 processor enclosures and 36 I/O enclosures) with a total of 16 processors. IOAM enclosures can replace any or all I/O enclosures.

The type of NonStop server, the configuration, and the RVU all affect the number of I/O or IOAM enclosures supported. [Table 1-2](#) shows the processors that reside in each processor enclosure, plus the maximum number of I/O enclosures or IOAM enclosures that each processor enclosure connects to. Groups 11 through 89 are I/O or IOAM enclosures.

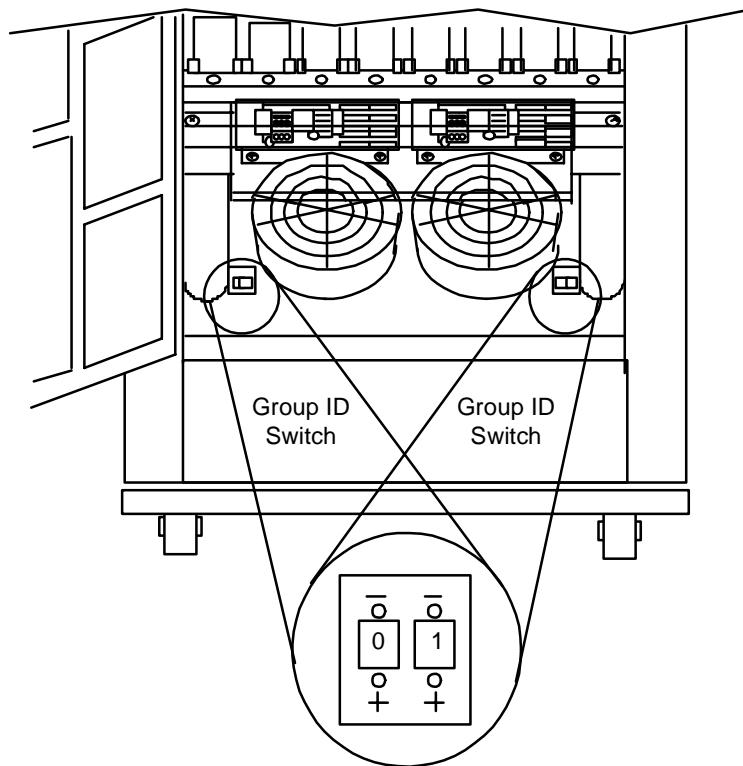
Note. Ensure that the correct firmware is installed on the processor and IOAM enclosures. Minimum firmware is required to allow IOAM enclosures to be connected to processor enclosures in the outer tetrahedron. For correct firmware requirements, your service provider can refer to the *Modular I/O Installation and Configuration Guide*.

Table 1-2. Maximum Processor and I/O or IOAM Enclosure Connections

Processor Enclosure (Group)	Contains Processors	Connects to I/O or IOAM Enclosures (Groups)
01	0 and 1	11, 12, 13, 14, 15
02	2 and 3	21, 22, 23, 24, 25
03	4 and 5	31, 32, 33, 34, 35
04	6 and 7	41, 42, 43, 44, 45
05	8 and 9	51, 52, 53, 54
06	10 and 11	61, 62, 63, 64
07	12 and 13	71, 72, 73, 74
08	14 and 15	81, 82, 83, 84

Group ID Switches

Set group identification with the two-digit ID switches, located on the inside of system enclosures near the fans. Each enclosure has two sets of switches. Both the switches must display the same value. The service processors (SPs) read the switches at power on. This figure shows the group ID switches:

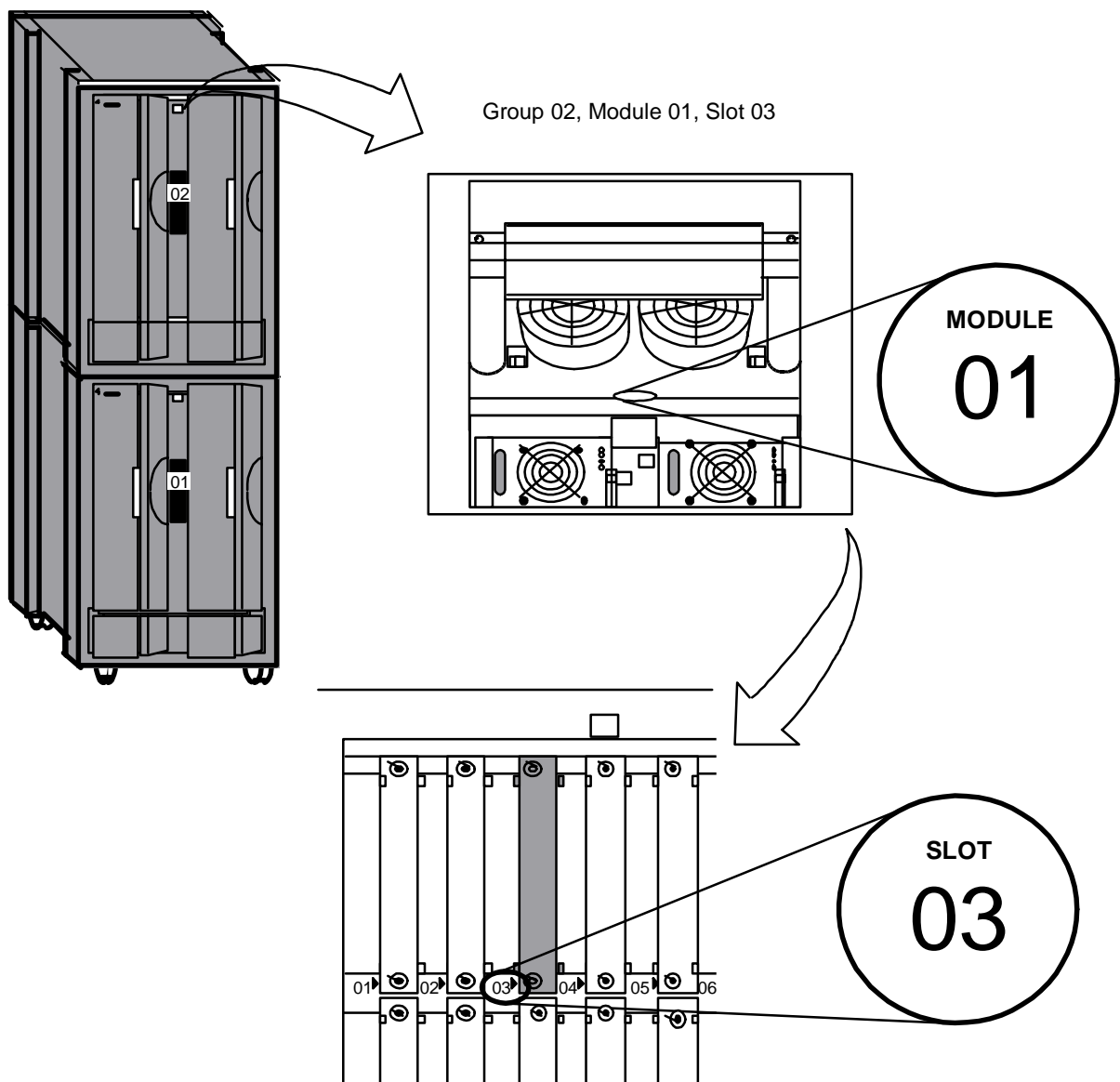


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Identification Labels

Label	Location	Notes
Group ID	Placed in holders on service and appearance sides of enclosure before shipping	These labels help you find CRUs that need service. The numbers shown by the group ID label and group ID switches must match.
Module ID	Service and appearance sides of enclosure	Because there is only one module in each group, this number is always 01.
Slot	Attached to frame below each slot	These labels help you find CRUs that need service.

Identification labels on the appearance side of an enclosure



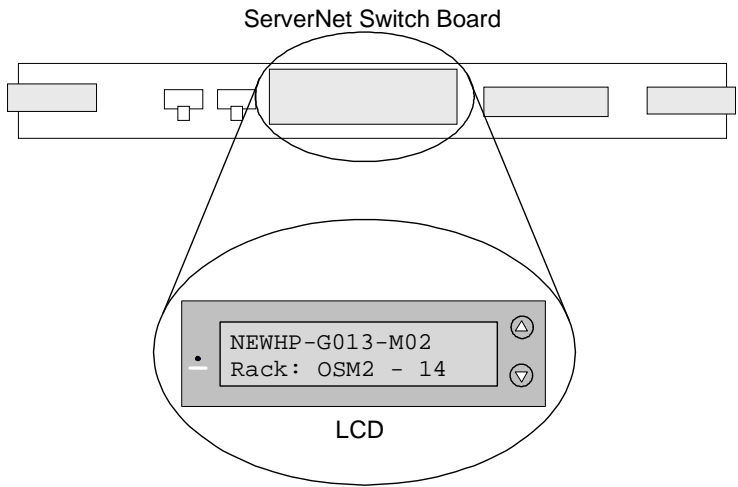
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IOAM Enclosure ServerNet Switch Board LCD

Each ServerNet switch board in an IOAM enclosure contains an LCD that reports information about the enclosure:

Information Displayed	Description	Example
IP Address	The IP address of the module. Each module has a separate IP address.	IP: 16.107.134.54
System, Group, and Module	The system name, the group number of the IOAM enclosure, and the module number of the IOAM.	STAR1-G013-M02
Rack Name and Offset	<p>Name of the rack and the rack offset of the IOAM enclosure. The offset is the physical location of the enclosure within the rack with offset being the lowest number on the rack that the enclosure occupies.</p> <p>The Rack Name and Rack Offset are assigned using OSM and are also displayed as enclosure attributes in OSM. Rack Name and Rack Offset are arbitrary and can be up to eight characters long.</p> <p>Using OSM, you can further identify the location of an IOAM by using the Set Locator action. You can enter up to 64 characters of identification text which is displayed in OSM by the Locator attribute for an IOAM.</p>	Rack: OSM2 -14
Maintenance Entity Firmware	The version of the firmware image saved on the Maintenance Entity of the ServerNet switch board.	T2805A01_18Jun2004_ 13APR2004_SD1-FW
Maintenance Entity FPGA	The version of the field-programmable gate array (FPGA) image saved on the Maintenance Entity of the ServerNet switch board.	T0437A01_18JUN2004_ 25NOV2003AAA-FW

This figure shows the LCD of a ServerNet switch board. Two lines are displayed at a time. You can use the scroll buttons to move up and down through the display.



VST053.vsd

ServerNet Cabling

For More Information About **See**
Any of this information *NonStop S-Series Planning and Configuration Guide*

This subsection describes ServerNet configurations, cables, connections, and routing. Review this information before connecting ServerNet cables.

System Size

Table 1-3. Maximum Numbers of Enclosures for G06.03 and Later RVUs			
Topology	NonStop S700 Server	NonStop S7x00 Server	NonStop Sxx000 Server
Tetra 8	1 processor enclosure	4 processor enclosures	4 processor enclosures
	2 I/O enclosures	8 I/O enclosures	8 I/O or IOAM enclosures
Tetra 16	N.A.	8 processor enclosures	8 processor enclosures
		16 I/O enclosures	36 I/O or IOAM enclosures

Topologies

Systems can be configured in two topologies, the Tetra 8 and Tetra 16 topologies.

Enclosures are cabled to each other in patterns that depend upon the system topology. This cabling remains the same regardless of how the enclosures are physically arranged.

For example, connector 1 on the ServerNet Expansion Board (SEB) in slot 51 of enclosure 01 connects only to the SEB connector 1 of enclosure 02. Similarly, all I/O enclosures connect to a unique SEB port although the ports might differ between Tetra 8 and Tetra 16 configurations.

Therefore, the cabling patterns remain the same whether the enclosures are adjacent, separated by other enclosures, or located in separate rows.

Fabrics and Slots

The relationships among components, slots, and fabrics are:

Enclosure	One of These Components	Fits in This Slot	And Connects to This Fabric
System	● IOMF CRU	50	X
	● IOMF 2 CRU	55	Y
	● PMF CRU		
	● SEB	51	X
	● MSEB	52	Y
	● Other adapters	53	X
		54	Y
IOAM	● IOAM ServerNet switch board (module 2)	14	X
	● IOAM ServerNet switch board (module 3)	14	Y
	● FCSA or G4SA	1 - 5 (modules 2 and 3)	Connects to both X and Y fabrics (dual-ported)

Note. For information about whether SEBs or MSEBs are required for your system, see the *NonStop S-Series Planning and Configuration Guide*.

ServerNet cables connect SEBs or MSEBs in a processor enclosure to any of:

- SEBs or MSEBs in another processor enclosure
- IOMF CRUs in an I/O enclosure
- ServerNet switch boards in an IOAM enclosure (MSEB connection only)

In systems with more than one enclosure, all processor enclosures contain SEBs or MSEBs. These components are installed in slots 51 and 52.

Other components, such as ServerNet/FX adapters and ServerNet/DAs, can be installed in slots 51 and 52. However, installing components besides SEBs or MSEBs in these slots prevents the attaching of I/O enclosures to the processor enclosure.

In Tetra 16 topologies, slots 53 and 54 contain SEBs or MSEBs if both the following are true:

- These slots belong to groups 01 through 04.
- I/O enclosures are attached to these groups.

IOAM Enclosure Cabling

An IOAM enclosure is mounted in a standard 19-inch rack and connects to the MSEB of S76000 and later NonStop S-series systems using multimode LC-SC fiber-optic cables up to a maximum length of 125 meters. The LC connector connects to the ServerNet switch board, and the SC connector connects to the MSEB.

△ **Caution.** If IOAM enclosures are installed in the field, they must be installed by service providers trained by HP. All cabling connections, including connections to FCDMs and ESSs, must be performed by your service provider. Your service provider can refer to the *Modular I/O Installation and Configuration Guide* located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

ServerNet Cables

ServerNet cables connect SEBs, MSEBs, IOMF CRUs, IOMF 2 CRUs, and IOAM enclosures. These connections form the ServerNet system area network (ServerNet SAN), which allows enclosures and other devices to communicate.

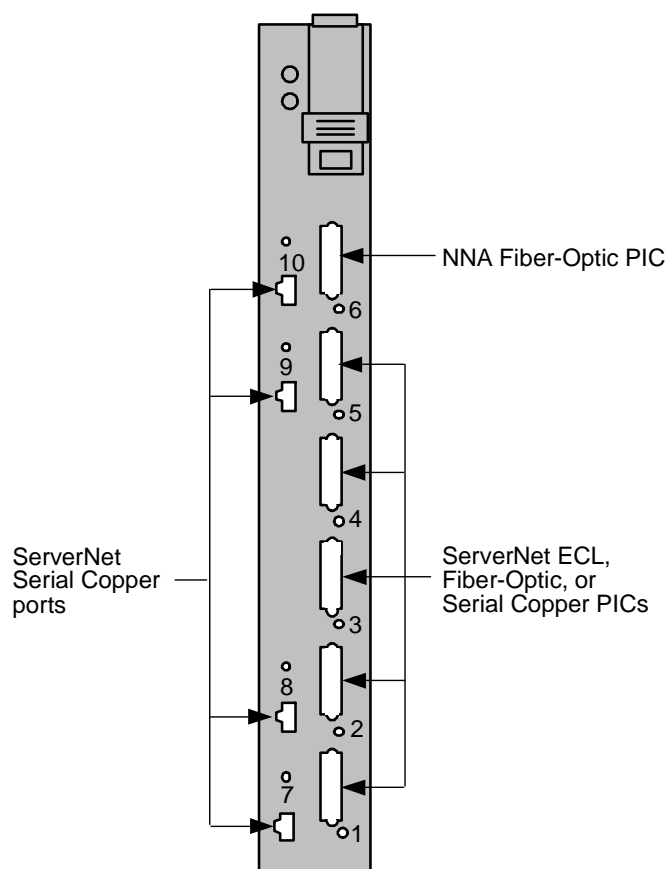
Cable Compatibilities

Different ServerNet cables connect to different components. When more than one type of cable can connect to a component, the choice of cable depends on the type of plug-in card (PIC) connector installed on the component.

Table 1-4. ServerNet Cable Compatibilities With Components

Cable	Connects to	Port Number	Port Type
ECL	IOMF CRU	N.A.	N.A.
	IOMF 2 CRU (with ECL PIC installed)	N.A.	N.A.
	SEB	1-6	N.A.
	MSEB	1-5	Variable
Fiber-Optic	IOMF 2 CRU	N.A.	Variable
	ServerNet switch board (IOAM)	1-4	Fiber-optic
	MSEB	1-5	Variable
		6	Node-numbering agent (NNA)
Serial-copper	IOMF 2 CRU	N.A.	Variable
	MSEB	1-5	Variable
		7-10	Fixed

Note. For information about cable compatibilities for an IOAM enclosure, your service provider can refer to the *Modular I/O Installation and Configuration Guide* located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

Figure 1-12. Port Numbers and Cable Connections on an MSEB

VST099.vsd

Types of ServerNet Cables

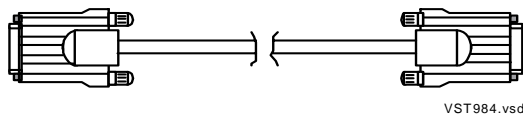
NonStop S-series systems support three kinds of ServerNet cables: emitter-coupled logic (ECL), fiber-optic, and serial-copper.

ECL Cables

ECL cables have two types of connectors. These different types of connectors allow the cables to connect SEBs to SEBs, MSEBs to MSEBs, or SEBs to MSEBs.

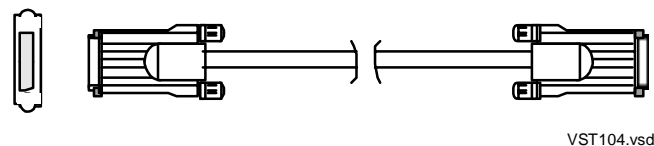
SEB-to-SEB ECL cables are terminated at each end by a large 50-pin connector.

Figure 1-13. SEB-to-SEB ECL Cable



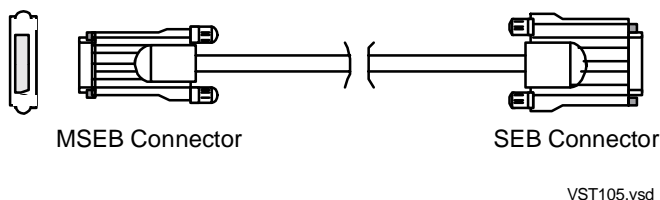
The MSEB-to-MSEB ECL is terminated at each end by a small 50-pin connector.

Figure 1-14. MSEB-to-MSEB ECL Cable



To connect a SEB to an MSEB, use a SEB-to-MSEB ECL cable.

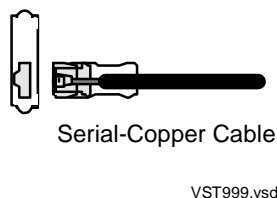
Figure 1-15. SEB-to-MSEB ECL Cable



Serial-Copper Cables

Serial-copper cables are lighter than ECL cables.

Figure 1-16. Serial-Copper Cable

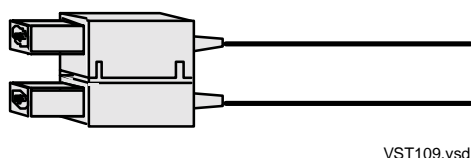


-
- △ **Caution.** You can bend or break two small retainer pins inside the associated PIC receptacle. When you disconnect a serial-copper cable connector from a serial-copper PIC, fully and firmly depress the tab on the cable connector before pulling out the cable connector.
-

Fiber-Optic Cables

The NonStop S-series servers support two types of fiber-optic cables: multimode fiber (MMF) and single-mode fiber (SMF).

Figure 1-17. Fiber-Optic Cable



Which cables you use depends on the fiber-optic plug-in cards (F-PICs) installed in the ports to which the cables connect.

Do not interchange SMF and MMF cables even though their connectors are similar. SMF cables operate correctly only with SMF PICs, and MMF cables operate correctly only with MMF PICs. MMF cables are often orange, and SMF cables are often yellow. You can distinguish the cables by the part numbers printed on them.

For most systems that use fiber-optic cables, MMF cables are recommended. SMF cables are used primarily with the ServerNet Cluster product to connect MSEBs to ServerNet cluster switches. For the ServerNet Cluster application, you must install NNA PICs in connector 6 of each MSEB you plan to use.

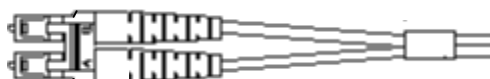
Fiber-optic cables allow enclosures to be placed further apart than ECL or serial-copper cables.

Fiber-Optic Cables With LC-SC Connectors

For the ServerNet Cluster product and the IOAM enclosures, LC-SC fiber-optic cables are used to connect to the MSEBs.

The duplex Lucent connectors (LC) are used to connect to the transceivers on a 6780 switch in the ServerNet cluster product and to the ServerNet switch boards in an IOAM enclosure. [Figure 1-18](#) shows a fiber-optic cable terminated by an LC connector.

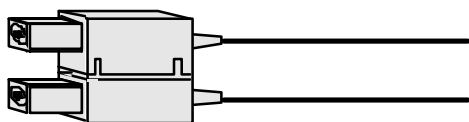
Figure 1-18. LC Connector for the 6780 Switch or ServerNet Switch Board



VST107.vsd

The duplex subscriber connector (SC) connects to a port on the MSEB. For the ServerNet cluster product, you must install NNA PICs in connector 6 of each MSEB you plan to use. [Figure 1-19](#) shows a fiber-optic cable with an SC connector.

Figure 1-19. SC Connector for MSEB



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Cable Lengths

The ServerNet cable lengths for your system depend on how your system enclosures will be arranged.

Although two enclosure arrangements might be logically equivalent, the cable lengths required might vary greatly: various enclosure arrangements are possible for the same configuration. Configurations might be laid out in a single row or multiple rows, and enclosures might be stacked in different combinations.

You can determine cable lengths for your system in two ways:

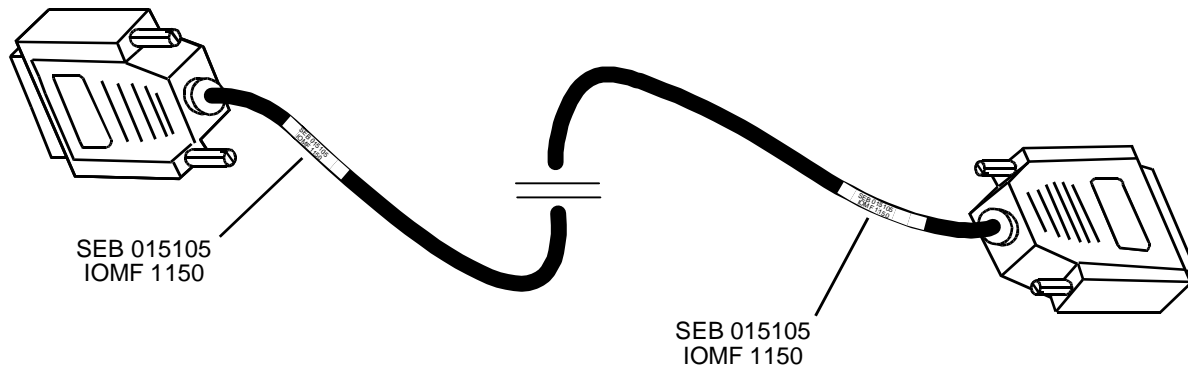
- See the System Enclosure Arrangement Form for your system.
- See the instructions for determining cable length in the *NonStop S-Series Planning and Configuration Guide*.

Cable Labels

Label both ends of each cable. [Figure 1-20](#) shows a cable that connects port 5 of an SEB in slot 51 of the group 01 enclosure to the ServerNet port on the IOMF CRU in slot 50 of the group 11 enclosure.

For more information about labeling, see the *NonStop S-Series Planning and Configuration Guide*.

Figure 1-20. ServerNet Cable Labeling

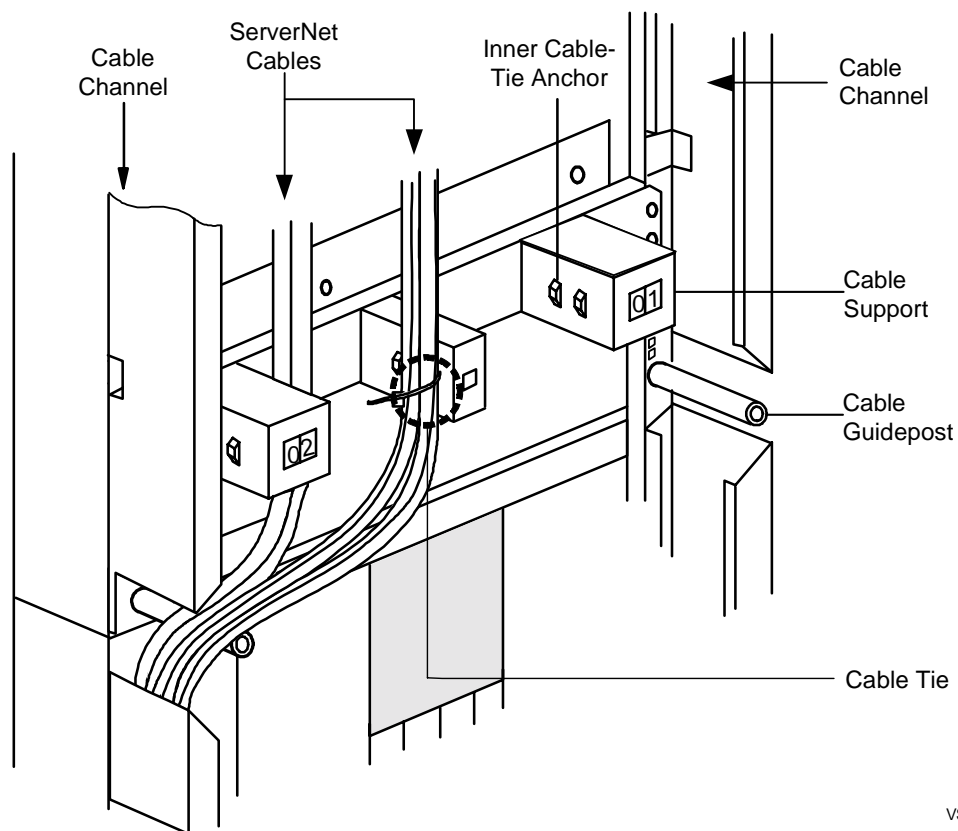


Cable Routing

To route ServerNet cables across enclosures:

1. Route them straight down.
 2. Secure them to a cable support.
 3. Direct them into cable channels.
- Secure a cable to the cable support below the CRU to which the cable connects. Secure the cable so that if you remove that CRU, you do not disrupt other cables.
 - Secure cables to the anchors on the cable supports. Secure ServerNet cables to the outer cable support, and Ethernet or power-on cables to the inner one.
 - In a double-high stack, use only the base enclosure cable channels.
 - Guideposts guide cables from a stackable enclosure into the cable channels of a base enclosure.
 - Guideposts on base enclosures are not often used, but you can route cables underneath these guideposts to use up extra cable length.

△ **Caution.** Do not pass cables or cords through the handles of CRUs or FRUs. The cables or cords might become accidentally unplugged during later procedures. See [Figure 1-21](#) for proper cabling.

Figure 1-21. Cable-Management Hardware

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The System Console

This subsection describes the system console, and introduces terms and concepts you must understand to install it.

Topic	Page
System Consoles	1-45
The OSM Product	1-46
Primary and Backup System Consoles	1-47
Primary and Backup System Consoles	1-47
Modems	1-48
Preloaded and Supported Hardware and Software	1-49
Software Connections	1-54

System Consoles

A system console is an HP-approved personal computer used to run maintenance and diagnostic software for NonStop S-series servers. New system consoles are preconfigured with the required HP and third-party software. When upgrading to the latest RVU, software upgrades can be installed from the HP NonStop System Console Installer CD.

System consoles communicate with NonStop S-series servers over a dedicated service local area network (LAN) or a secure operations LAN. For more information about LAN connections, see [The Dedicated Service LAN](#) on page 6-2.

Using a system console, you can:

- Monitor operations on servers using the OSM or TSM package
- View manuals
- Run HP Tandem Advanced Command Language (TACL) sessions using terminal-emulation software
- Install and manage system software using the Distributed Systems Management/Software Configuration Manager (DSM/SCM)
- Make remote requests to and receive responses from a server using remote operation software

The OSM Product

For the G06.22 RVU, the HP Open System Management (OSM) product replaces TSM as the system management tool of choice for NonStop S-series systems. While TSM is still supported, OSM offers a browser-based interface that improves scalability, performance, and other limitations that exist in TSM. OSM is required for support of new functionality released at the G06.22 RVU and beyond, such as IOAM or Fibre Channel disk-drive enclosures.

To access the OSM guided replacement procedures, see [OSM Guided Replacement Procedures](#) on page xxiv.

For more information about OSM, and detailed comparisons of OSM and TSM functions, see the *OSM Migration Guide* and the *OSM User's Guide*.

The TSM Package

The TSM package is a collection of software products that provide troubleshooting, maintenance, and service tools. The TSM package consists of TSM server software and TSM client software.

Note. TSM does not support IOAM or Fibre Channel disk-drive enclosures. OSM should be used to manage systems that include these components.

TSM server software is the portion of the TSM package that resides on the server. TSM client software is the portion of the TSM package installed on a system console.

For more information about the TSM package or for information about operating or configuring TSM software:

- *TSM Online User Guide*
- *TSM Configuration Guide*
- TSM Low-Level Link online help
- TSM Notification Director online help
- TSM Event Viewer online help

Primary and Backup System Consoles

System consoles equipped with modems and configured as primary or backup dial-out points are referred to as the primary and backup system consoles, respectively.

A primary or backup system console can receive incident reports from the server and notify a remote service provider of pending hardware or software problems. At least one system console (the primary system console) is required for the system. Having a second (or backup) system console is strongly recommended.

System consoles must be connected to the dedicated service LAN. For more information about dedicated service LAN connections, see [The Dedicated Service LAN](#) on page 6-2.

A server must be connected through an Ethernet LAN to at least one system console. Primary system consoles and other system consoles compare as follows:

Primary and Backup System Consoles	Other System Consoles
<ul style="list-style-type: none"> ● Must be connected to the dedicated service LAN. ● Can use all OSM and TSM client applications, including the Low-Level Link and Notification Director. ● Receive incident reports. 	<ul style="list-style-type: none"> ● Can be connected to the dedicated service LAN or to a secure operations LAN. ● Can use the OSM and TSM Low-Level Link and Notification Director only if connected to the dedicated service LAN. ● Cannot receive incident reports.
<p>Only two system consoles can be configured to receive and forward (or dial out) incident reports for each system. These primary and backup dial-out points are referred to as the primary and backup system consoles for a particular system.</p>	

For information about dial-in and dial-out capabilities of system consoles, see the OSM Notification Director online help or the TSM Notification Director online help.

Modems

Modems modulate or demodulate digital information so that it can be transmitted or received over a telephone line. It is recommended that you equip primary and backup system consoles with modems connected to dedicated phone lines. This allows system consoles to dial out for remote notification of system problems. Dial in for remote access by your service provider can also be configured.

Note. Dial-out and dial-in are not available in countries where the provided modem is not certified. In these countries, you cannot dial out incident reports to, or accept dial-in communications from, your service provider.

Note. The NonStop system console and OSM Notification Director support using HP Instant Support Enterprise Edition (ISEE) as a web-based alternative to modem dial-out functionality. For more information on ISEE:

- See the *ISEE for NonStop* topic in the Service Information section of the NTL Support and Service Library to learn about ISEE prerequisites and NonStop-specific details that you will need before downloading and configuring the ISEE client from the HP Hardware Support Services Web. Authorized service providers can see *ISEE for NonStop- HP Internal* on the NTL employee site.
 - Contact your HP representative.
-

Dial-Outs

Dial-out capability lets the OSM or TSM Notification Director notify a remote service provider of pending hardware and software problems. Either of two system consoles, defined as the primary and backup dial-out points, can be used for dial-outs. In this guide, these are the primary and backup system consoles. If your system has only one system console, it is defined as the primary dial-out point.

While both OSM and TSM software can be installed on your system console, you should use only one of the Notification Director applications to avoid creating duplicate incident reports and dial-outs for the same problem.

In a dial-out situation, incident reports are forwarded by the server to the primary dial-out point. If the primary dial-out point does not respond, the reports are forwarded to the backup dial-out point. Either dial-out point uses the modem to send these reports to your service provider. Because your service provider has no access to the server, dial-outs are completely secure.

Configure dial-out capacity with the OSM or TSM Notification Director. If a LAN contains multiple servers, the primary and backup system consoles should be configured to receive incident reports from no more than 10 servers on the LAN.

For information about dial-out situations, see the *OSM User's Guide* or the *TSM Configuration Guide*.

Dial-Ins

Dial-in capability lets a remote service provider access information about your server to diagnose hardware or software problems. For dial-in, your service provider uses a system console to dial in to a workstation on the same LAN as your server. The workstation uses remote operations software, such as Carbon Copy or Microsoft Windows NetMeeting, to route requests and responses between your server and your service provider.

All system consoles provided by HP include the software for dial-in capability. Security mechanisms are available to ensure that dial-ins do not jeopardize your operational security. For information about dial-in user names, passwords, configuration, and security, see the *TSM Configuration Guide*, the *OSM User's Guide*, and the online help and documentation provided with your remote operations software.

Preloaded and Supported Hardware and Software

Personal computers (PCs) provided for use as system consoles come preloaded with the hardware and software to run OSM software. Additional software, including TSM software, HP Systems Insight Manager, and ISEE, is supported and can also be installed on the system console.

Only PCs provided by HP for this purpose are supported as system consoles.

△ **Caution.** To preserve the integrity of applications running on system consoles, do not install any software applications on your system consoles other than those listed in [Table 1-5](#). Compromising the software on the system console might leave you unable to communicate with your server.

Note. System consoles are initially configured by HP manufacturing with OSM enabled and TSM disabled. This includes disabling the power scrub test and processor alarm functionality in TSM. If you want to use TSM instead of OSM, follow the instructions described under Fallback Issues in the *OSM Migration Guide*.

Table 1-5. Preloaded and Supported HP NonStop System Console Software

Software	Function	For more information
OSM Application suite, which contains these OSM components:	Lets you service and maintain the server.	<i>OSM Migration Guide</i> <i>OSM User's Guide</i>
<ul style="list-style-type: none"> ● OSM Low-Level Link ● OSM Notification Director ● OSM Console Tools 	<p>Down-system support</p> <p>Remote services (dial-in, dial-out)</p> <p>Start menu shortcuts and default home pages for easy access to the OSM Service Connection and OSM Event Viewer (browser-based OSM applications that are not installed on the system console).</p>	
Optional but can be installed:	Lets you service and maintain the server.	<i>TSM Online User Guide</i> <i>TSM Configuration Guide</i>
TSM Low-Level Link (now replaced by OSM Low-Level Link)		TSM Low-Level Link online help
TSM Service Application		TSM Service Application online help
TSM Notification Director		TSM Notification Director online help
TSM Event Viewer		TSM Event Viewer online help
OutsideView terminal emulator software	Runs a TACL session.	Online help included with the software
Distributed Systems Management/Software Configuration Manager (DSM/SCM)	Beginning with the G06.19 RVU, DSM/SCM client software is no longer available on the HP NonStop Server System Console Installer. You must download DSM/SCM client software from the SUT.	<i>DSM/SCM User's Guide</i> To install and download the DSM/SCM client: <i>G06.nn Software Installation and Upgrade Guide</i>
Optional but can be installed:	Lets a service provider dial in to and operate a system console from a remote site using a modem.	Documentation and online help included with the software
Carbon Copy remote operations software		

Table 1-5. Preloaded and Supported HP NonStop System Console

Software	Function	For more information
WAN Wizard Pro	A graphical user interface (GUI) that guides you step-by-step through the configuration of wide area network (WAN) and local area network (LAN) software and hardware.	Access the WAN Wizard Pro on page F-9 See applicable online help in the Help menu
SP Tool	Allows you to diagnose SP problems	Verifying Topology and System Components , Step 9, page 8-16 See applicable online help in the Help menu
Internet Explorer 6.0	Allows you access to the World Wide Web	
Adobe Reader	Lets you open and read documents created in Adobe Portable Document Format (PDF)	See applicable online help in the Help menu
Optional but can be installed: HP Systems Insight Manager	Provides hardware-level management	Contact your HP Support Representative
Optional but can be installed: HP Instant Support Enterprise Edition (ISEE)	A web-based alternative to using a modem for dial-out of incident reports.	Contact your HP Support Representative

Preconfigured IP Addresses

New systems are shipped with preconfigured system IP addresses for system maintenance that OSM and TSM applications use to communicate with the system.

Note. Many components in the IOAM enclosure need IP addresses. These addresses can be assigned as static or dynamic. For more information and procedures for assigning IP addresses, your service provider should refer to the *Modular I/O Installation and Configuration Guide* which is located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

Table 1-6. Preconfigured IP Addresses for a NonStop S-Series Server

Component	IP Address	Notes
Primary system console	192.231.36.1	<ul style="list-style-type: none"> ● All system consoles provided by HP are preconfigured with IP address 192.231.36.1. ● Two system consoles on the same LAN cannot use the same IP address. ● If the primary system console uses IP address 192.231.36.1, you must change the IP address on all other new system consoles before connecting them to the LAN. ● The recommended IP address for a backup system console is 192.231.36.4.
MSP0	192.231.36.2	<ul style="list-style-type: none"> ● Access is through the Ethernet port on the PMF CRU in group 01, module 01, slot 50. ● This IP address allows you to establish a low-level link.
MSP1	192.231.36.3	<ul style="list-style-type: none"> ● Accessed through the Ethernet port on the PMF CRU in group 01, module 01, slot 55. ● This IP address allows you to establish a low-level link.
NonStop operating system access using \$ZTCP0	192.231.36.10	<ul style="list-style-type: none"> ● Access is through the Ethernet port on the PMF CRU in group 01, module 01, slot 50. ● This IP address allows you to establish a service connection.
NonStop operating system access using \$ZTCP1	192.231.36.11	<ul style="list-style-type: none"> ● Access is through the Ethernet port on the PMF CRU in group 01, module 01, slot 55. ● This IP address allows you to establish a service connection.

Table 1-6. Preconfigured IP Addresses for a NonStop S-Series Server (continued)

Component	IP Address	Notes
Primary system console	192.231.36.1	<ul style="list-style-type: none"> ● All system consoles provided by HP are preconfigured with IP address 192.231.36.1. ● Two system consoles on the same LAN cannot use the same IP address. ● If the primary system console uses IP address 192.231.36.1, you must change the IP address on all other new system consoles before connecting them to the LAN. ● The recommended IP address for a backup system console is 192.231.36.4.
MSP0	192.231.36.2	<ul style="list-style-type: none"> ● Access is through the Ethernet port on the PMF CRU in group 01, module 01, slot 50. ● This IP address allows you to establish a low-level link.
Subnet	192.231.36.0	
Subnet mask	255.255.255.0	
Gateway	192.231.36.9	

MSP IP addresses communicate with the master service processors (MSPs). NonStop operating system IP addresses communicate with the operating system for the specified processor. For more information about how these IP addresses are used, see the *NonStop S-Series Planning and Configuration Guide*.

To provide security and to make NonStop S-series equipment compatible with your existing LAN, change these IP addresses before exiting the OSM or TSM Low-Level Link.

To change the system console, MSP, and operating system access IP addresses, use the OSM or TSM Low-Level Link. See the documentation appropriate to the software you are using:

- OSM Low-Level Link online help
- *OSM User's Guide*
- TSM Low-Level Link online help
- *TSM Configuration Guide*

Software Connections

A system console can communicate with a server using two types of software connections: a service connection and a low-level link. Both connections support NonStop user names, but low-level links support up to 18 MSP user names.

A service connection:

- Is a connection between the OSM or TSM software on a system console and the OSM or TSM software on the server.
- Lets you service and maintain a server when the NonStop operating system is running.
- Gives you comprehensive information about the server. You can examine the state of all supported devices as seen by the operating system and OSM or TSM server software.
- Is established by the OSM Service Connection or TSM Service Application.

A low-level link:

- Is a connection between the OSM or TSM software running on a system console and the master service processors (MSPs) on the server.
- Allows communication over a low-level link whether or not the NonStop operating system is running.
- Gives you access to critical information and functions.
- Is established by the OSM or TSM Low-Level Link.

System Startup

Startup and Shutdown Files

Startup and shutdown files automate starting and stopping all processes on the system. There are two types of startup files: the CIIN file, which can be executed automatically during system load, and all other startup files, which can be invoked by an operator or by another startup file.

Automating system shutdown aids the operator in bringing the system to an orderly halt. You can implement the system shutdown sequence with a collection of shutdown files, each with a specific purpose. The shutdown file sequence reverses the order of commands in the startup file sequence: applications are shut down first, followed by the print spooler and other system software.

Create the startup and shutdown files now if you just installed a new system and previously had no other system to create these files. To create and modify startup and shutdown files, see the *NonStop S-Series Planning and Configuration Guide*.

System Load Paths

Each system in a standard configuration ships with these startup characteristics:

- \$SYSTEM disks are located in the system enclosures containing processors 0 and 1.
- System load paths are configured.
- The CIIN function is enabled.

If the automatic system load is not successful using one load path, the system load task attempts to use another path and keeps trying until all possible paths have been used or the system load is successful. Eight paths are available for loading. [Table 1-7](#) describes each load path in order of use.

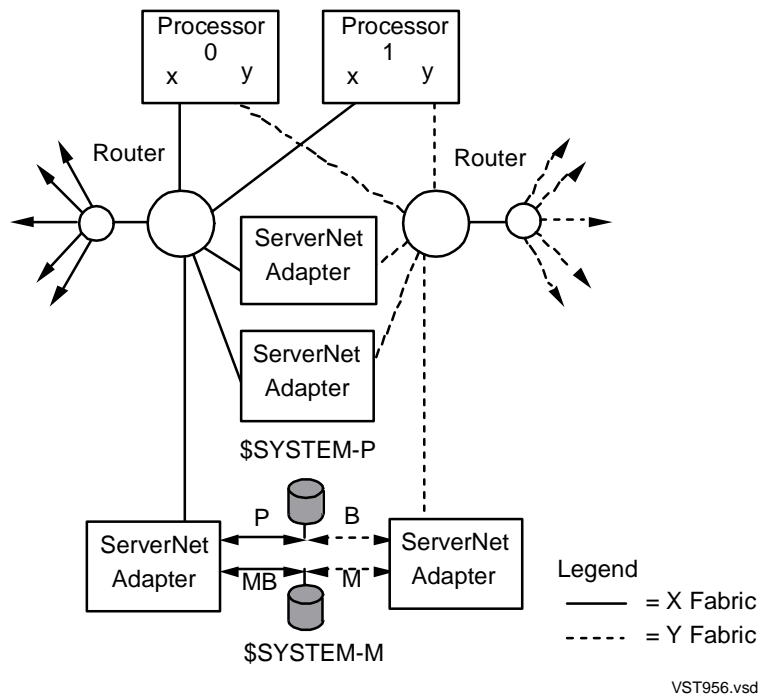
Table 1-7. System Load Paths in Order of Use

Load Path	Description	Data Travels		
		From	To Processor	Over ServerNet Fabric
1	Primary	\$SYSTEM-P	0	X
2	Backup	\$SYSTEM-P	0	Y
3	Mirror	\$SYSTEM-M	0	Y
4	Mirror backup	\$SYSTEM-M	0	X
5	Primary	\$SYSTEM-P	1	X
6	Backup	\$SYSTEM-P	1	Y
7	Mirror	\$SYSTEM-M	1	Y
8	Mirror backup	\$SYSTEM-M	1	X

The command interpreter input (CIIN) file is automatically invoked after the first processor is loaded. The CIIN file shipped with new systems contains the TACL RELOAD * command, which loads the remaining processors.

Figure 1-22 shows possible system load paths.

Figure 1-22. System Load Paths



PMF CRU and IOMF CRU Power-On Self-Tests

When the system is powered on or when a PMF CRU or IOMF CRU is initially connected to the backplane, a series of automatic power-on self-tests (POSTs) are run on the CRU. These POSTs take several minutes to finish. The three types of tests are:

- CPU memory test (PMF CRU only)
- System load path test (PMF CRU only)
- Multifunction I/O board (MFIOB) test

At completion of certain self-tests, the service processor (SP) generates events in the EMS log. Look for the SpEvCruTestComplete event for details about the POST operations. To view these details, use the OSM or TSM Event Viewer.

Note. For IOAM enclosure, G4SA, and FCSA power-on self-tests, contact your service provider trained by HP.

CPU Memory Test

The CPU memory test checks the system main memory. If the CPU memory test finishes successfully, the boot millicode starts the system load path test. If the test fails, the service processor (SP) lights the amber fault LED on the PMF CRU.

Generally, the CPU memory test fails because of a correctable memory error (CME) or a hardware error freeze.

To troubleshoot a failed CPU memory test, see [Appendix D, Troubleshooting](#).

System Load Path Test

The system load path test checks the system load paths. If the system load path test finishes successfully, firmware for the intelligent SCSI processor (ISP) is loaded, the SCSI buses are scanned, the processor is reset, and the boot millicode starts the multifunction I/O board (MFIOB) test.

To troubleshoot a failed system load path test, see [Appendix D, Troubleshooting](#).

Multifunction I/O Board (MFIOB) Test

The multifunction I/O board (MFIOB) test checks the MFIOB. If the MFIOB test finishes successfully, the service processor (SP) extinguishes the amber service LED on the PMF CRU or IOMF CRU and generates an event, completing the POST. If the MFIOB test fails, the MFIOB is either partially operational or not operational.

To troubleshoot a failed MFIOB test, see [Appendix D, Troubleshooting](#).

2

Installing Enclosures

This section describes how to unpack new equipment and install NonStop system enclosures.

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The procedures in this section apply to all types of NonStop S-series processor enclosures and I/O enclosures.

For information about dimensions, weights, or other specifications of NonStop S-series enclosures, see [Section 1, Introduction](#).

Notes. If you are adding a processor or I/O enclosure to a previously installed system, see the *NonStop S-Series System Expansion and Reduction Guide*.

△ **Caution.** A new IOAM enclosure or an additional IOAM enclosure must always be installed by a service provider trained by HP. Your service provider should refer to the *Modular I/O Installation and Configuration Guide* which is located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

Prepare to Install New Equipment

Complete the steps in this section when your equipment arrives.

1. Review the Documentation

Typically, documentation is provided by the system planner. The system planner gives you the information you need to perform the installation: what the system configuration is and the steps to complete.

Has the system planner completed the Installation Document Checklist?

- **If yes:**

1. Review all forms, diagrams, and lists in the Installation Document Checklist.

For an example of completed forms, see the *NonStop S-Series Planning and Configuration Guide*.

For blank forms, see:

- *NonStop S-Series Planning and Configuration Guide*
- *LAN Configuration and Management Manual*
- *SWAN Concentrator Installation and Support Guide*
- *TSM Configuration Guide*
- ServerNet adapter manuals

2. Ensure that you have everything listed in the checklist.
3. Ensure that you understand the documentation.

If the documentation is unclear or if you have questions about how to complete an installation procedure, contact the system planner or your service provider.

- **If no:**

Ensure that you have all necessary information about:

- The installation site
- Power outlets
- Communications lines
- System configuration
- Equipment you will be installing

See the preceding manuals for blank forms that can help you gather all necessary information.

2. Prepare the Work Space

1. Clear the installation site so that you have room to work.
2. Use the Floor Plan Diagram to find the installation site or sites.
3. Verify that preinstalled I/O device cables, such as Ethernet LAN cables, are installed:
 - For a list of cables, see the Preinstalled I/O Device Cable Checklist.
 - To find the preinstalled cables, use the Floor Plan Diagram.
4. Report any missing cables to the system planner.
5. Ensure that the installation site provides adequate electrical connections.

Connections include:

- Two properly grounded outlets for each system enclosure to be installed
- One branch circuit breaker for each outlet
- Emergency power-off (EPO) disconnect wiring

This requirement applies only to computer room installations in the United States or installations governed by local regulations that stipulate EPO capability.

For more information about EPO requirements, see the *NonStop S-Series Planning and Configuration Guide*.

- One single-source distribution, uninterruptible power supply (UPS))

Connect the entire system to the UPS. For more information about UPS requirements, see the *NonStop S-Series Planning and Configuration Guide*.

6. Ensure the AC power cords for the enclosures to be installed are correct for the outlets at the installation site:
 - For a list of supported AC power cords by country, plug type, part number, and length for system enclosures, see the *Part Numbers* topic of the Service Information section of the NTL Support and Service Library. See [Support and Service Library](#) on page xxiv.
 - For power planning information, see the *NonStop S-Series Planning and Configuration Guide*.

3. Organize the Equipment

- Sort the shipping cartons into two groups:

Height	Contents
Tall (at least 40 inches or 102 cm)	<ul style="list-style-type: none"> ● System enclosures ● Tape subsystems
Short (shorter than 40 inches or 102 cm)	<ul style="list-style-type: none"> ● System console ● ServerNet cables ● System accessories ● Service-side door add-on package (optional)

Note. Shipping cartons containing IOAM enclosures and their related components must be unpacked by your service provider. Information is available to your service provider in the *Modular I/O Installation and Configuration Guide*.

- Move all the short cartons to the installation site.

Do not unpack the tall cartons yet.

- Verify that the OPEN FIRST box contents are complete as follows:

Item	Description	Allows you to ...
Invoice	Order information	Inventory equipment.
Box Inventory List	A list of part numbers, part descriptions, and quantities	
Site update tape (SUT)	Cartridge or open-reel tapes.	Use these tapes as backup.
System image tape (SIT)	These are already installed on your system disk. Do not use these tapes when installing or starting the system.	
Envelope	Documentation about your system as it was ordered	Review the initial system configuration.
CONFTEXT configuration file printout	A list of system attributes that define the HP NonStop operating system image for all processors in the system	<ul style="list-style-type: none"> ● Review the initial system configuration. ● Plan your customized system configuration.
SCF configuration file printout, \$SYSTEM.ZSYSCONF.SCF0000	A list of system attributes and other information that defines the system configuration	
Ethernet switch	Equipment	Connect the system console to the server.
Ethernet cables	Type depends on your location	
Modem	Equipment	Enable the system to receive dial-ins.
Modem cable	Type depends on type of modem	
4-mm hexagonal wrench	Tool	Unlock appearance-side enclosure doors.

Item	Description	Allows you to ...
<i>Getting Started</i>	Documentation	Use the materials correctly.

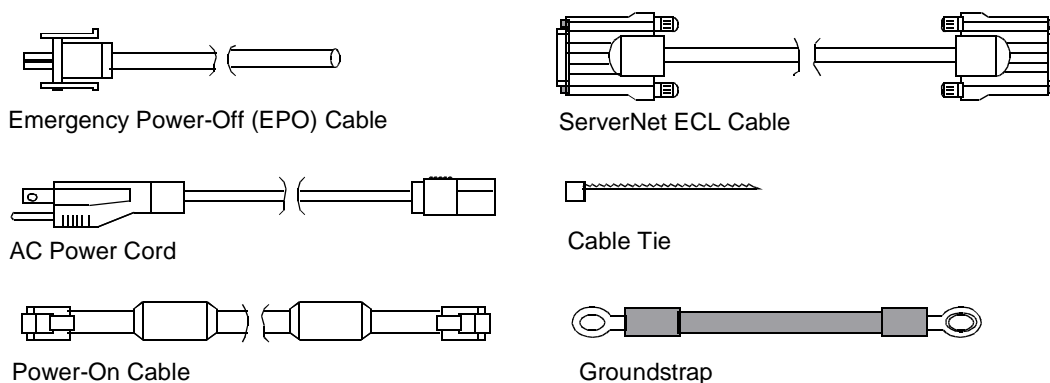
- Find the System Image Tape (SIT) and Site Update Tape (SUT).

These tapes contain the same files as on your system disk. Because the files are present on the system disk, do not use the tapes to install or start the system.

- Verify that the format of the SIT and SUT tapes matches your tape subsystem. If the formats do not match your tape subsystem, contact your service provider.
- Store the SIT and SUT tapes in a safe place.
- Verify that the other short cartons contain:

Item	Quantity
EPO cable	One per enclosure
AC power cords	Two per each system enclosure that has no power shelf
Power-on cable	One per enclosure
ServerNet cables	Quantity varies depending on the number of enclosures. 0 for one processor enclosure with no I/O enclosures.
Cable ties	12 per enclosure
Groundstrap	Number of enclosures minus one

Figure 2-1. Cords, Cables, and Other Contents of Short Cartons



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- Verify that all equipment has arrived and that cables are the correct lengths.

Did the system planner provide a System Equipment Inventory Form?

- If yes:** Compare this form to the equipment received.

ServerNet adapters and disk drives are shipped installed in the enclosures. You can check off this equipment when you unpack and install the enclosures.

- If no:** Compare the Product List or Box Inventory List to equipment received.

9. Report any missing or damaged items to your service provider.
10. Verify that you have all necessary tools. For a list of tools, see [Tools](#) on page 1-7.

Unpack the Enclosures

For weights and dimensions of shipping packages and enclosures, see [Shipping Packages](#) on page 1-9.

-
- △ **Caution.** Shipping packages for IOAM enclosures must be unpacked by a service provider trained by HP. Your service provider should refer to the *Modular I/O Installation and Configuration Guide* which is located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.
-

Tools

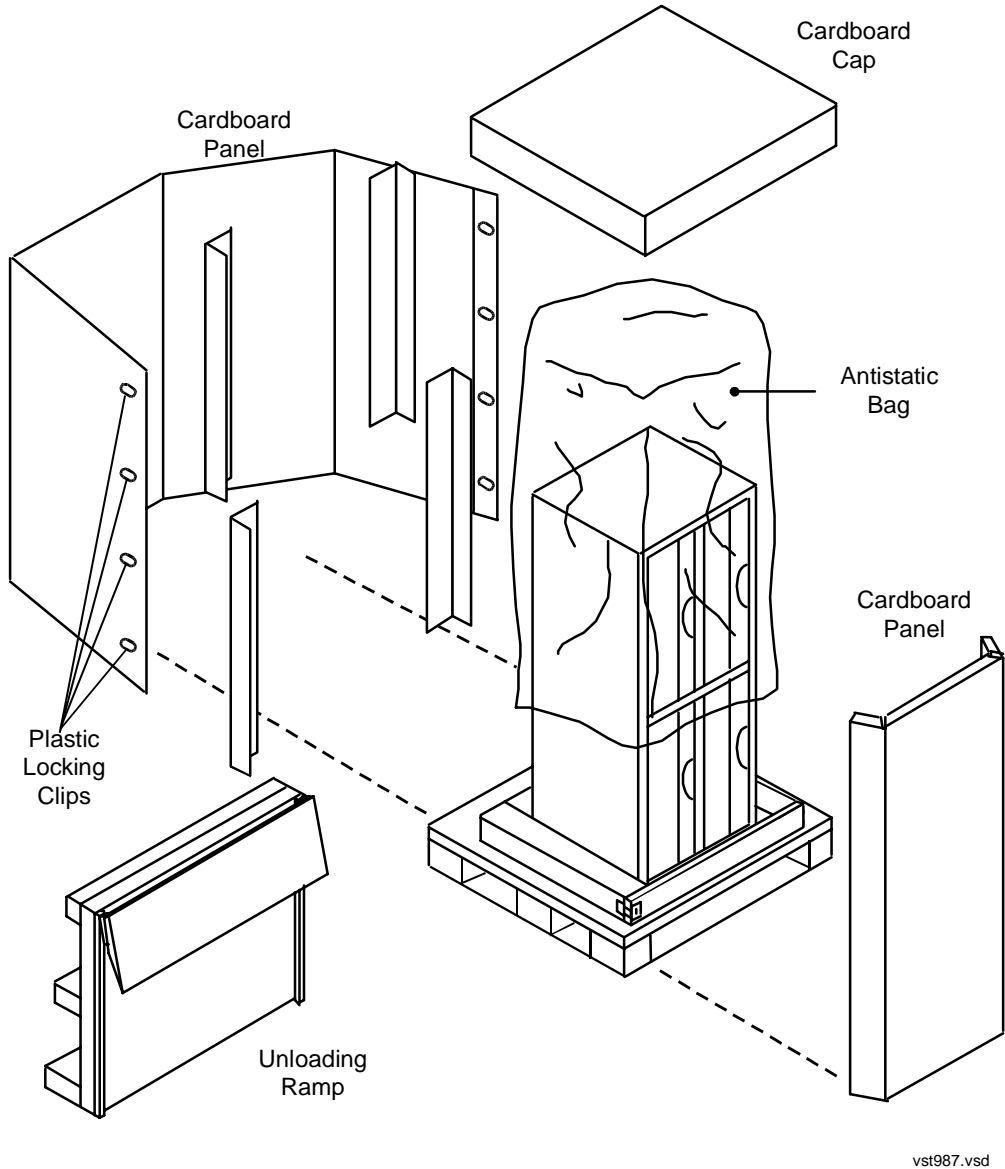
To unpack the enclosures, you need:

Tool	Purpose
Heavy-freight-handling equipment such as a forklift or pallet jack	To transport the pallet from the receiving area to the installation area
Scissors or cutters	To remove the banding straps
Eye protection	To ensure safety when removing the banding straps

Unpack the Enclosures

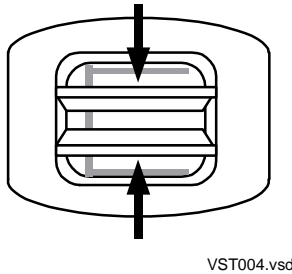
1. With heavy-freight-handling equipment, move all pallets and enclosures to the installation area. Move enclosures with their protective coverings in place.
2. If the system was shipped in cold weather, allow it to warm up to room temperature.
3. Cut the straps, set the ramp aside, and lift the cardboard cap off the package:

-
- ▲ **WARNING.** Wear safety glasses or other eye protection when cutting the banding straps. The ends of the straps might snap back when cut and cause an eye injury.
-

Figure 2-2. Unpacking the Enclosures

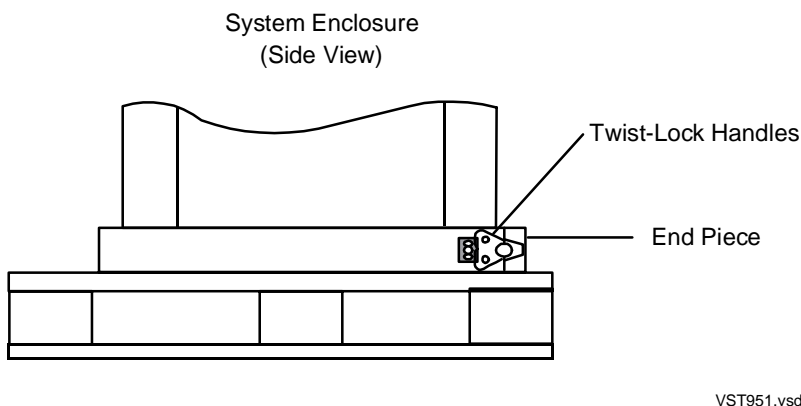
4. Open the plastic locking clips that hold the shipping package together:
 - a. Pinch the tabs on the clip together to unlock it.
 - b. Pull the tabs to remove the clip.

Figure 2-3. Tabs on Plastic Locking Clip of Shipping Package

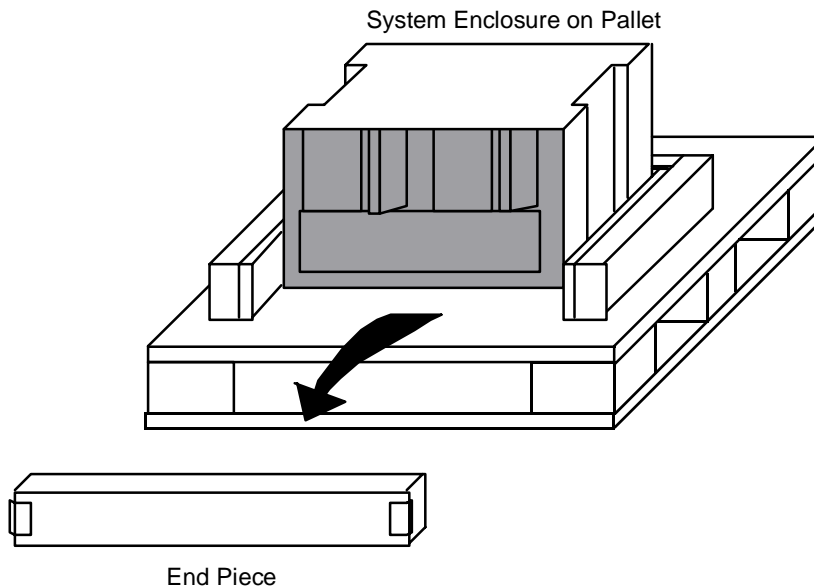


5. Pull the clips completely out of the shipping package and set them aside.
6. Remove the cardboard panels, the padded shipping insert, and the antistatic bag covering the system enclosure. Set these materials aside.
7. Position the ramp against the pallet.
8. Flip open the twist-lock handles on the pallet end piece.
9. Loosen the end piece by turning the twist-lock handles counterclockwise as far as they can go:

Figure 2-4. Loosen End Piece of Pallet by Turning Twist-Lock Handles



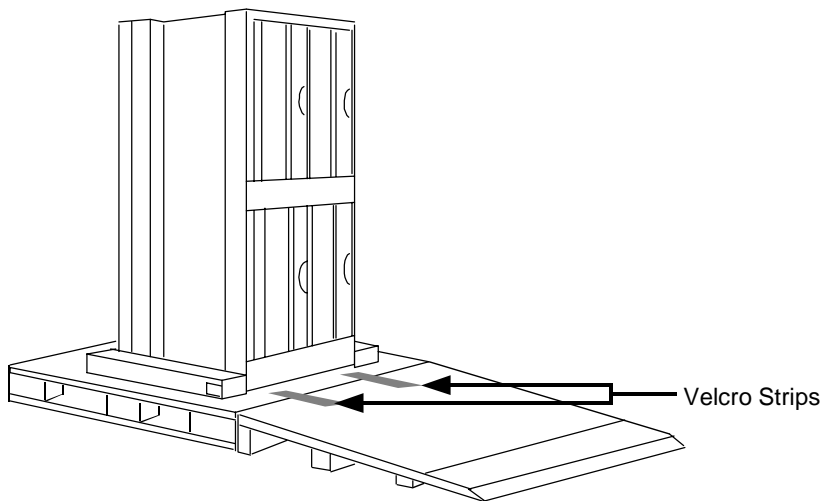
10. Remove the end piece and set it aside.

Figure 2-5. Removing End Piece of Pallet

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11. Position the unloading ramp against the on the side from which you removed the end piece. Position the Velcro strips on either side of the ramp.

Ensure that the Velcro strips hold the ramp firmly against the pallet.

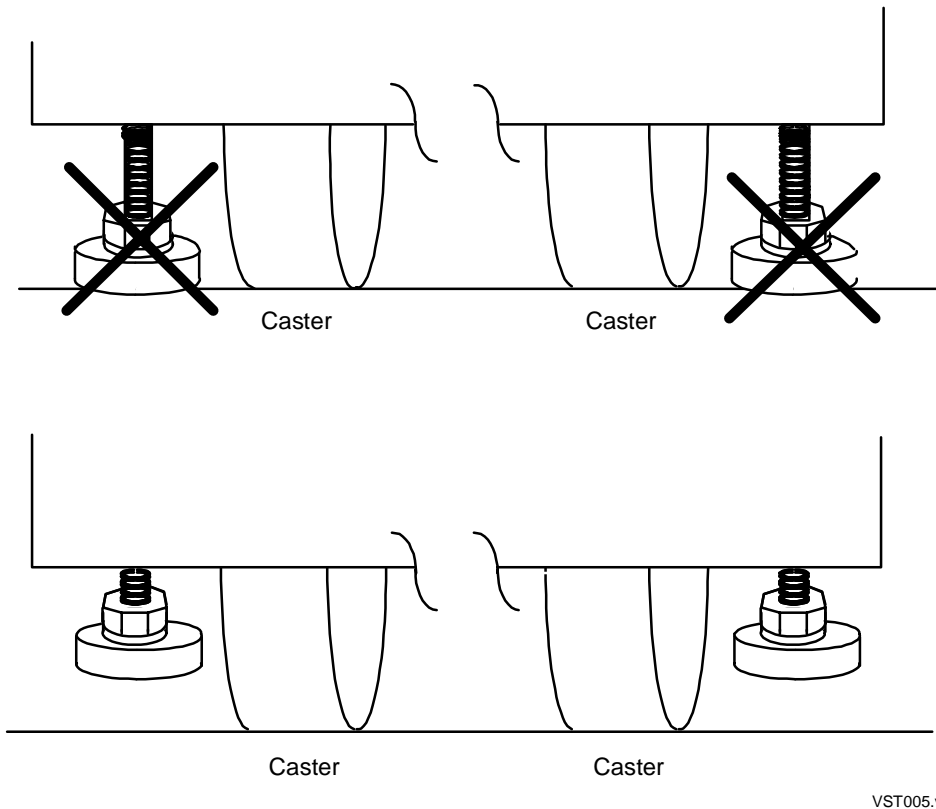
Figure 2-6. Velcro Strips on Loading Pallet

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12. To prevent snagging hazards as you move the enclosure stack off the pallet, check that the leveling pads on the base enclosure are fully raised as shown:

If you need to raise the leveling pads, see the instructions later in this procedure.

Figure 2-7. Leveling Pads Must Be Raised Before Enclosure Is Moved



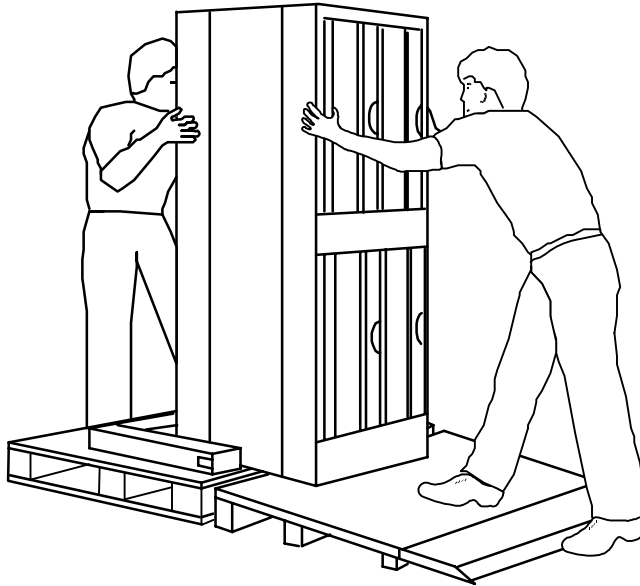
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▲ WARNING. When moving an enclosure stack:

- Always get at least one other person to help you move an enclosure stack. If the floor is uneven, use four people to move the enclosure, or contact your service provider.
- Move each enclosure slowly and gently, avoiding all unnecessary shock.
- Push on the frame of the enclosure stack. Do not push or pull on the plastic enclosure door or the cable channels.
- Casters on the appearance side of the enclosure swivel, but casters on the service side do not swivel. It is easiest to move the enclosure stack over discontinuities in the floor if the swiveling (appearance side) casters go first.
- A double-stacked enclosure tends to be top heavy. Move the enclosure stack off the pallet and down the ramp carefully.
- The enclosure pedestal is equipped with casters so that you can roll the enclosure down the ramp and push it across the floor to its final position. The casters are designed for short-distance moves over a smooth, hard surface or short-pile carpeting.

13. Using at least two people, grasp the enclosure stack frame. Slowly roll the stack off the pallet and down the ramp:

Figure 2-8. Use Two People to Move an Enclosure Stack



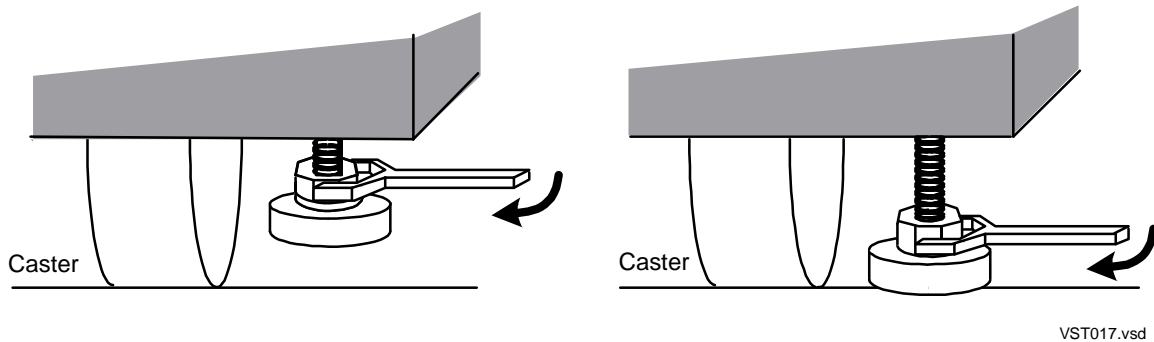
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-
14. Move the enclosure stack to the location shown in the Floor Plan Diagram.
 15. Position the enclosures according to the Enclosure Arrangement Diagram in the Installation Document Checklist designed for your system.

If you might reduce your system at any point, place enclosures that you might remove from your system on the top of the stack. The frames can touch one another. No service space is necessary on the sides of an enclosure.

16. With a 3/4-inch (19-mm) or a 9/16-inch (15-mm) open-end wrench, lower the four legs on the base enclosure:

Figure 2-9. Lowering Legs of Base Enclosure



- a. Start with the enclosure leg raised. Use an open-ended wrench to loosen and lower the leg. The size of the wrench depends on the leveling pads.
 - b. Use the wrench to tighten the leg against the floor.
17. Repeat Step 3 through Step 16 for any additional system enclosures.

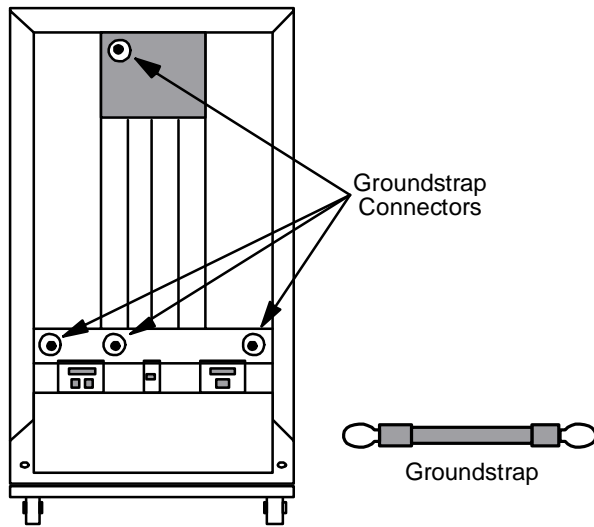
Connect the Groundstraps

Note. If your system has only one enclosure, go to [Inventory the Enclosures](#) on page 2-16.

For information about the purpose and specifications of groundstraps, see [Groundstraps](#) on page 1-23.

1. Find the groundstraps included with your system. The groundstraps are packaged in a plastic bag along with two Phillips-head screws for each groundstrap.
2. Find the four groundstrap connector locations on the service side of a system enclosure. See [Figure 2-10](#). The groundstrap connector locations are the same for all system enclosures.

Figure 2-10. Groundstrap Connector Locations



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3. Connect the groundstraps following the pattern suggested in [Figure 2-11](#) on page 2-14 and [Figure 2-12](#) on page 2-15.
 - a. For each groundstrap, position one end of the groundstrap over the connector hole and install the screw using a Phillips screwdriver.
 - b. Route the groundstrap:
 - To connect two base enclosures, route the groundstrap through the openings in the cable channels. See [Figure 2-11](#). Tuck the excess strap length behind the cable channel.
 - To connect two enclosures in a double-high stack, connect the groundstrap to the base enclosure. Tuck the excess strap length into the top of the base enclosure frame. Route the groundstrap behind the cable support on the stackable enclosure and up to the groundstrap connector.

- c. Install the other end of the groundstrap.
 - d. Repeat Step 3a through Step 3c until all system enclosures are linked by groundstraps.
4. For multiple-row systems, no groundstraps are installed between rows.

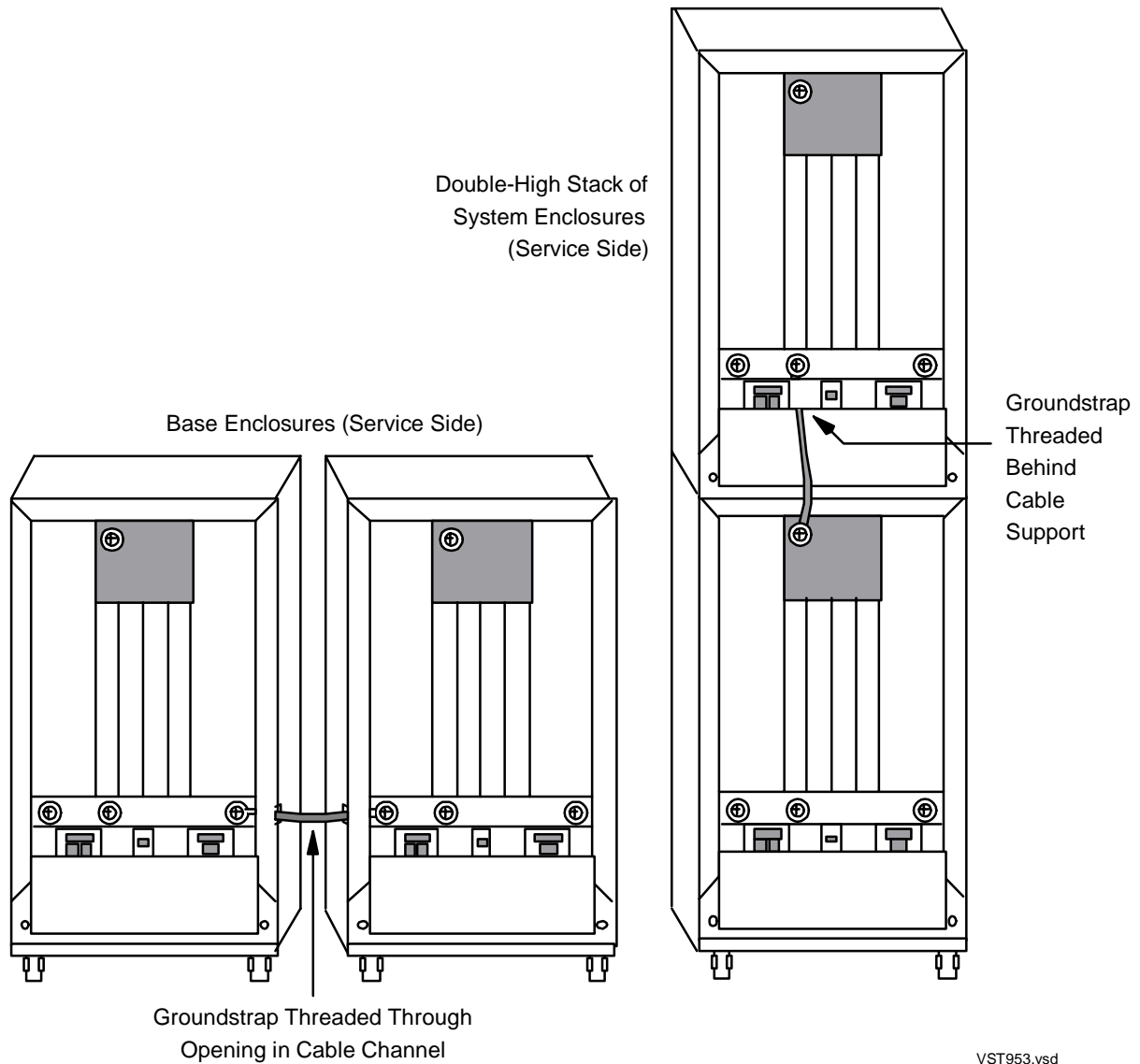
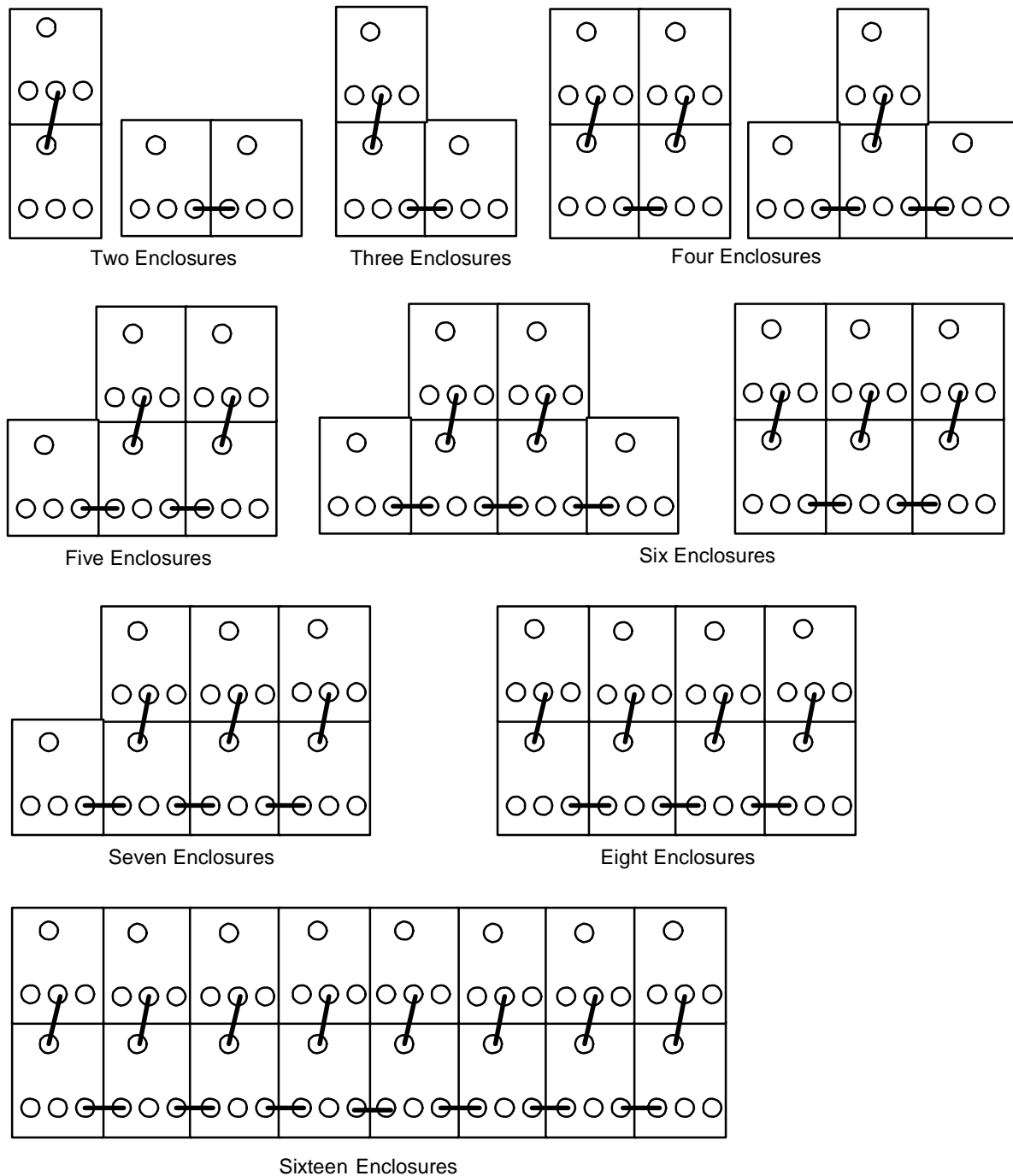
Figure 2-11. Groundstrap Connections Between Enclosures

Figure 2-12. Examples of Groundstrap Locations Between Enclosures

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Inventory the Enclosures

Verify that the delivered system matches the system you ordered.

To make it easier to verify that all components are in the correct slots and your system is equipped as ordered, print or photocopy the following information.

Slot Assignments for NonStop S-Series Enclosures

Note. For information about whether SEBs or MSEBs are required for your system, see the *NonStop S-Series Planning and Configuration Guide*.

Table 2-1. Illustrations of Enclosures Including Slot Numbers

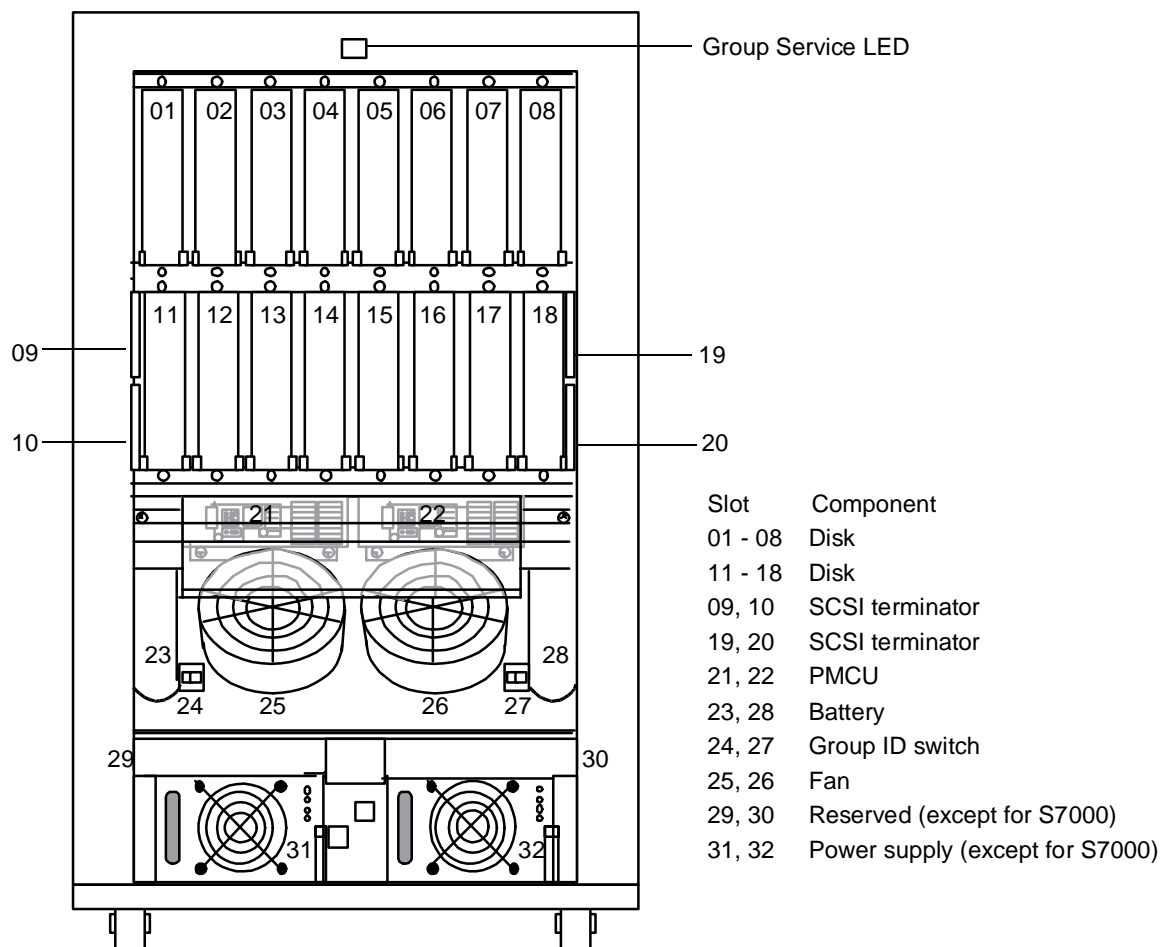
Enclosure Type	Appearance Side	Service Side
NonStop S7000 processor enclosure	Figure 2-13 on page 2-17	Figure 2-14 on page 2-18
NonStop Sxx000 and S7x00 processor enclosures (except S7000)	Figure 2-13 on page 2-17	Figure 2-15 on page 2-19
I/O enclosure without power shelf	None	Figure 2-16 on page 2-20
I/O enclosure with power shelf	None	Figure 2-17 on page 2-21

Table 2-2. Slot Assignments: Tetra 8 Topology

Enclosure	Hardware	Slots	Notes
Processor	SEBs, MSEBs	51, 52	Reserve these slots for SEBs and MSEBs. If ServerNet adapters are in slots 51 and 52, you cannot attach I/O enclosures to the processor enclosure.
	ServerNet adapters	51, 52, 53, 54	The number of slots that support adapters depends on the number of enclosures in the system. If ServerNet adapters are in slots 51 and 52, you cannot attach I/O enclosures to the processor enclosure.
I/O	ServerNet adapters	51, 52, 53, 54	You can attach I/O enclosures to the processor enclosures in the Tetra 8 topology without installing SEBs or MSEBs in slots 53 and 54 of the processor enclosures.

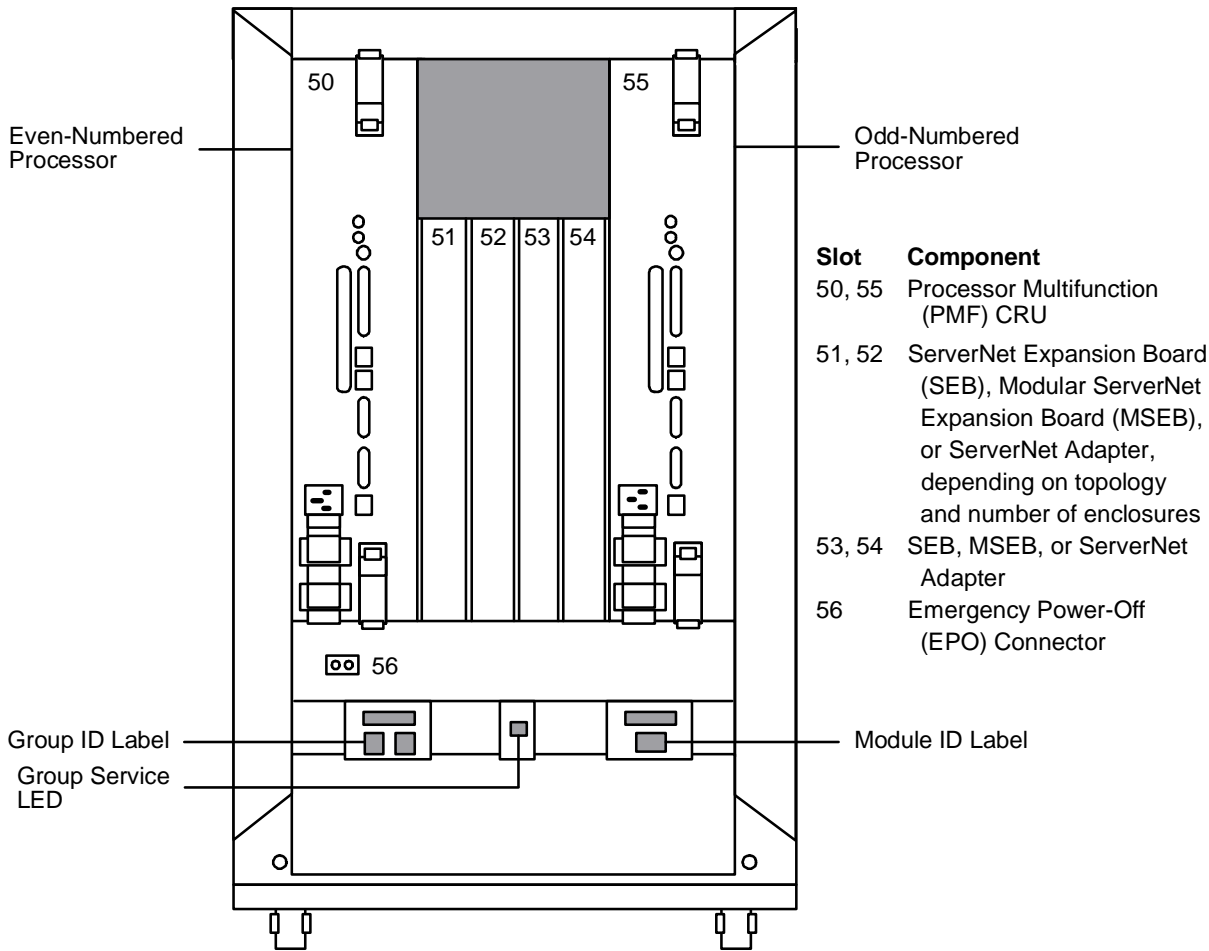
Table 2-3. Slot Assignments: Tetra 16 Topology

Enclosure	Hardware	Slots	Notes
Processor	SEBs and MSEBs	51, 52, 53, 54	To attach I/O enclosures to the processor enclosures in the inner tetrahedron, you must install SEBs or MSEBs in slots 53 and 54 of the processor enclosures. If ServerNet adapters are in slots 51 and 52, you cannot later attach I/O enclosures to the processor enclosure.
	ServerNet adapters	51, 52, 53, 54	The number of slots that support adapters depends on the number of enclosures in the system.
I/O	ServerNet adapters	51, 52, 53, 54	To attach I/O enclosures to the processor enclosures in the inner tetrahedron, you must install SEBs or MSEBs in slots 53 and 54 of the processor enclosures.

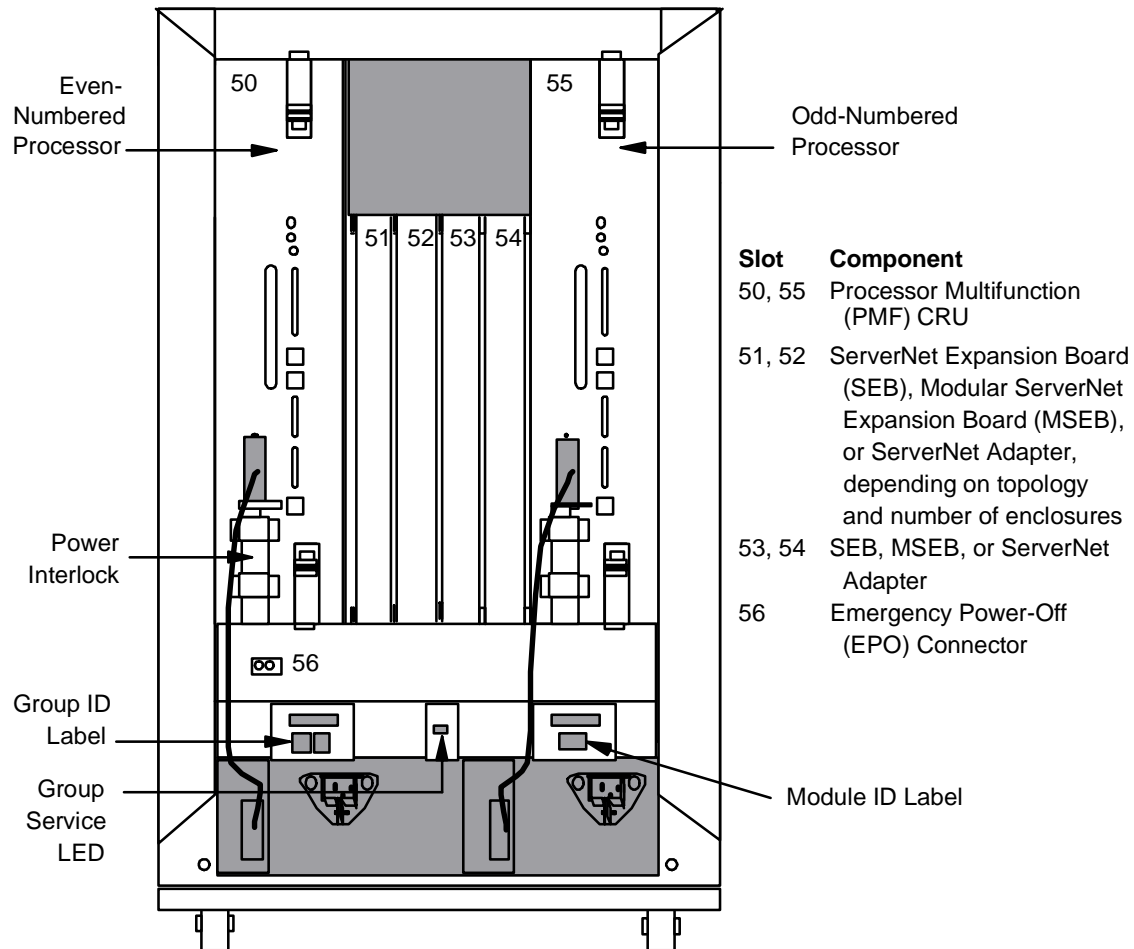
Figure 2-13. Appearance Side, Processor Enclosure

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Figure 2-14. Service Side: Processor Enclosure Without Power Shelf



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Figure 2-15. Service Side: Processor Enclosure With Power Shelf

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Figure 2-16. Service Side: I/O Enclosure Without Power Shelf

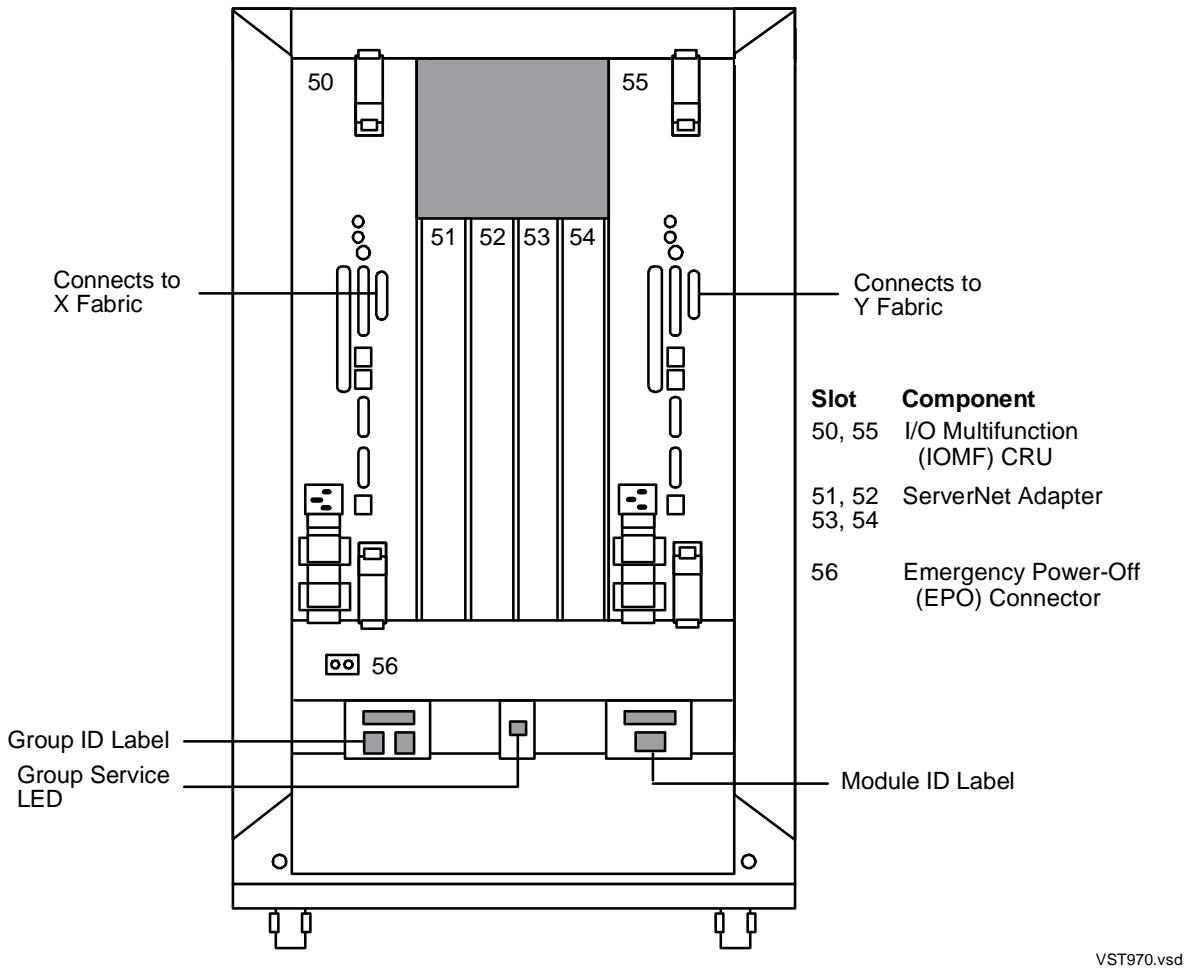
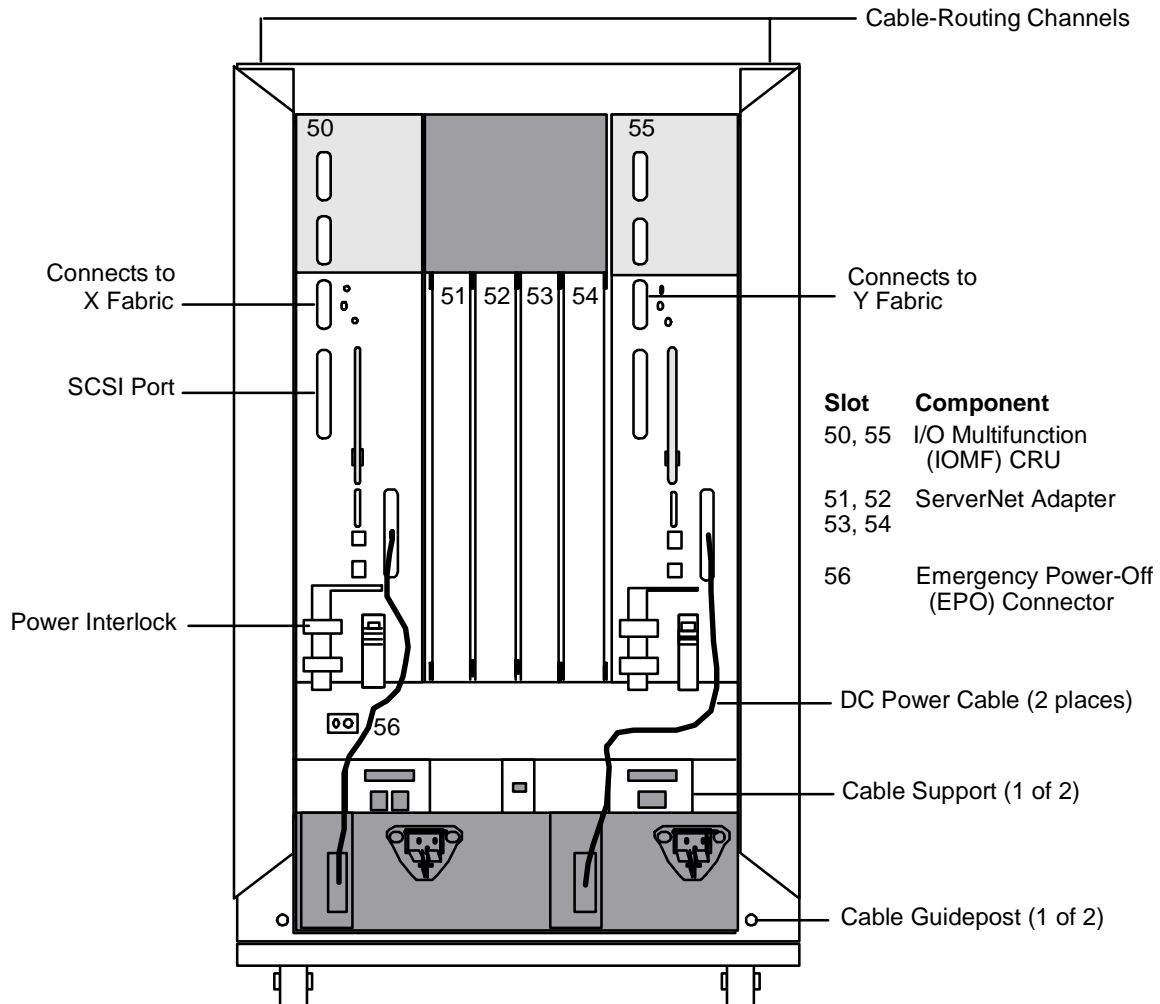
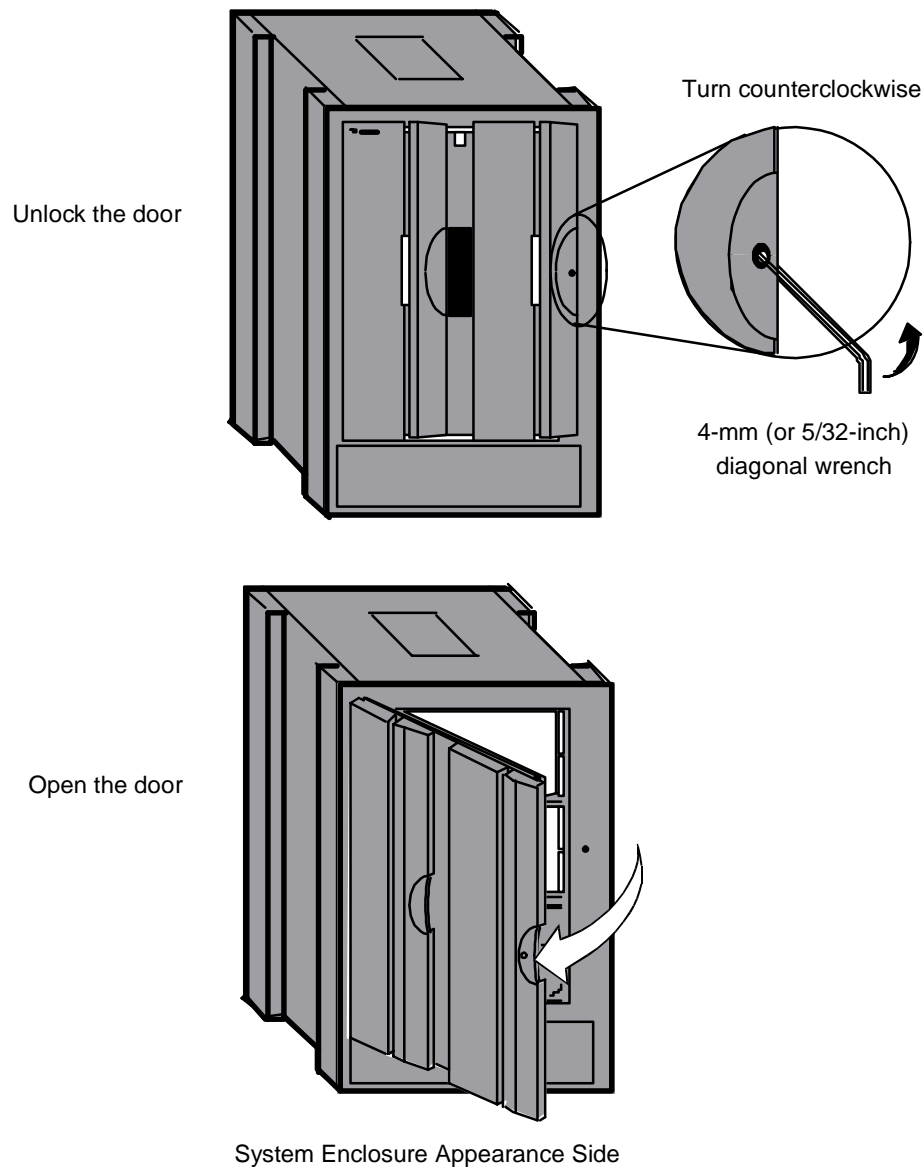


Figure 2-17. Service Side: I/O Enclosure With Power Shelf

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1. Open the appearance-side enclosure door, with a 4 mm (5/32 inch) diagonal wrench as in [Figure 2-18](#) if necessary. The wrench is provided in the OPEN FIRST container or taped to the service side of the enclosure.

If you ordered optional service-side doors, this guide assumes that you install them after you complete the enclosure-cabling tasks in [Section 3, Cabling Enclosures](#). To install these doors now, see [Section 4, Installing Service-Side Doors](#).

Figure 2-18. Unlocking and Opening an Enclosure Door

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-
2. Verify that all components you ordered are present in the system enclosure:
 - If the system planner completed the Installation Document Checklist:
With the System Enclosure Checklist, verify that each component ordered is present.
 - If the system planner did not complete the Installation Document Checklist or if no other documentation is available:
Compare the order information with the contents of the enclosures.
 3. Report any missing or damaged items to your service provider.

Inspect the Components

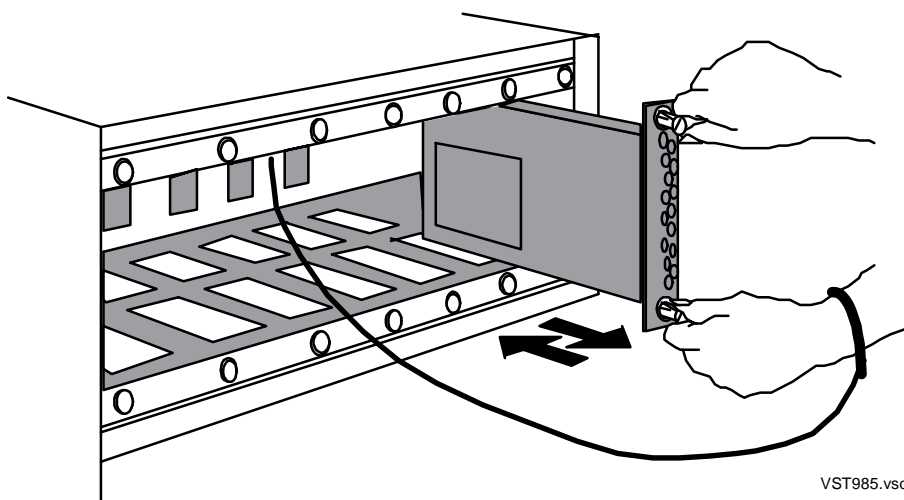
Vibration that occurs during shipping or when you move a system can sometimes dislodge enclosure components or loosen connections to the backplane. Inspect these components, and reseal those that appear to be improperly seated.

- Disk drives
- PMF CRUs
- IOMF CRUs
- SEBs or MSEBs
- ServerNet adapters

Perform these steps for each system enclosure:

1. Inspect all disk drives in the system enclosure:
 - a. Open the enclosure door on the appearance side of the enclosure.
 - b. Verify that both thumbscrews on the faceplate of each disk drive are tight.
 - c. If any thumbscrews are loose and if a disk drive appears to be disengaged from the backplane connector, reseal the disk drive. See Step 2.
2. To reseal each disk drive that has become improperly seated during shipping:
 - a. Put on your ESD wriststrap and attach the grounding clip securely to an exposed, unpainted metal surface inside the disk card cage.
 - b. Simultaneously loosen both thumbscrews on the faceplate of the disk drive until the CRU disengages from the backplane connector. Do not pull the disk drive all the way out of the slot. See [Figure 2-19](#).

Figure 2-19. Resealing a Disk Drive



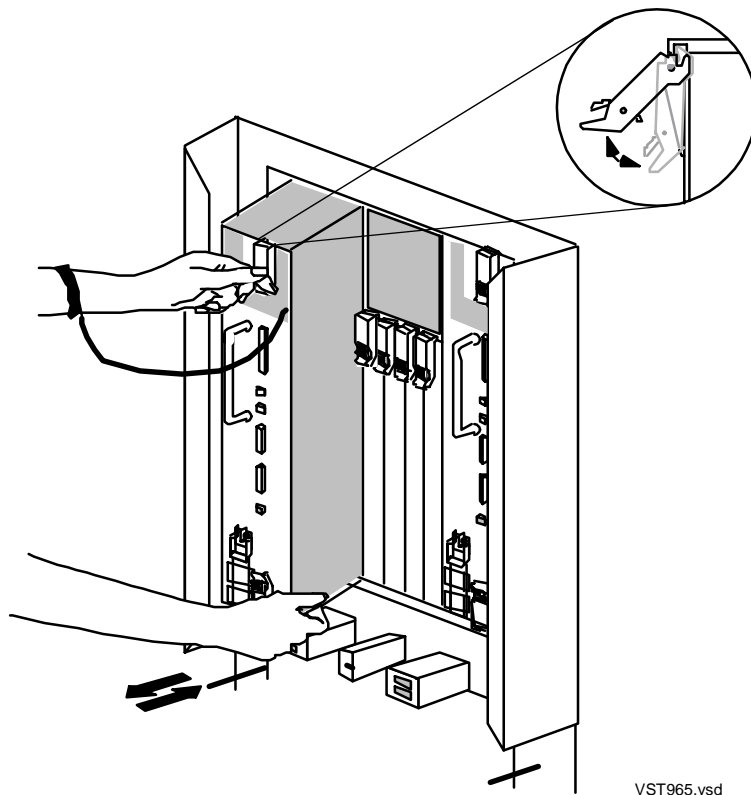
△ **Caution.** In the next step, reinsert the disk drive CRU slowly. Inserting disk drives rapidly might create physical shock to the CRUs or a power malfunction in the enclosure.

- c. Reinsert the disk drive and simultaneously tighten both thumbscrews on the faceplate to secure the drive. Do not overtighten the thumbscrews.
3. Close the enclosure door.
4. Verify that the power interlock of each PMF CRU or IOMF CRU is pushed down to hold the CRU in the slot.

If any power interlocks are loose and if the ejectors on a PMF CRU or IOMF CRU appear unlatched, reseal the CRU. See Step 5.

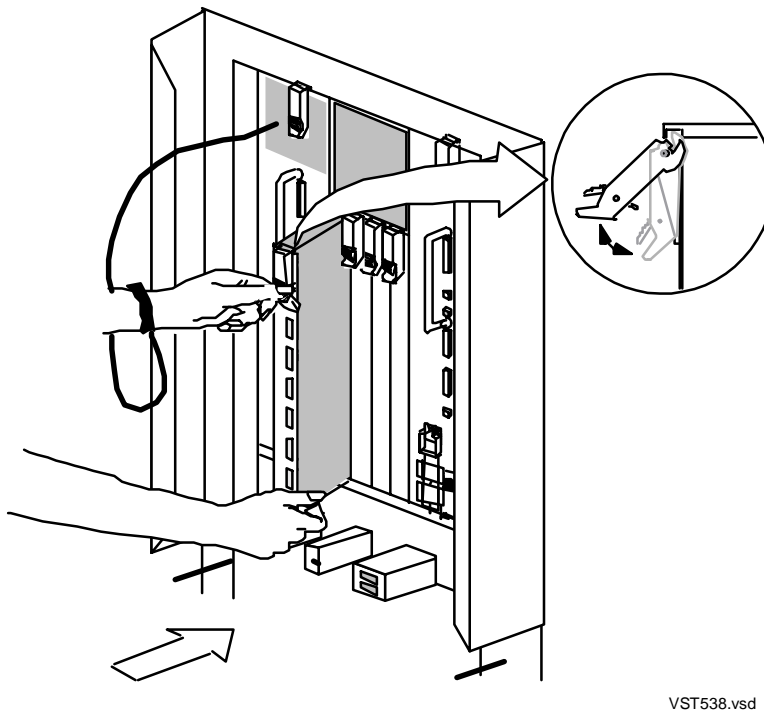
5. To reseal each PMF CRU or IOMF CRU that is improperly seated:
 - a. Put on your ESD wriststrap. Attach the grounding clip to an exposed, unpainted metal surface such as the ventilation holes on the PMF CRU or IOMF CRU.
 - b. Lift the power interlock that holds the PMF CRU or IOMF CRU in the slot.
 - c. Unlatch the two CRU ejectors simultaneously by pressing the blue-green tabs and pulling outward on the ejectors to unseat the CRU. See [Figure 2-20](#).

Figure 2-20. Reseating a PMF CRU or IOMF CRU



- d. Reinsert the PMF CRU or IOMF CRU until the ejectors on the CRU can be engaged into the notches on the enclosure.
 - e. Latch the two ejectors simultaneously by first pressing the blue-green tabs and then closing the ejectors. This seats the CRU against the backplane.
 - f. Push down on the power interlock to secure the CRU in the slot.
6. Inspect all SEBs or MSEBs in the system enclosure:
 - a. Verify that the ejectors on each SEB or MSEB in the enclosure are latched.
 - b. If any ejectors are unlatched, reseal the SEB or MSEB. See Step 7.
 7. To reseal each SEB or MSEB that has become improperly seated during shipping:
 - a. Put on your ESD wriststrap. Attach the grounding clip securely to an exposed, unpainted metal surface such as the connector nuts on the SEB or MSEB.
 - b. Unlatch the ejector by pressing the blue-green tab and pulling outward on the ejector to unseat the SEB or MSEB. See [Figure 2-21](#).

Figure 2-21. Reseating a SEB or MSEB

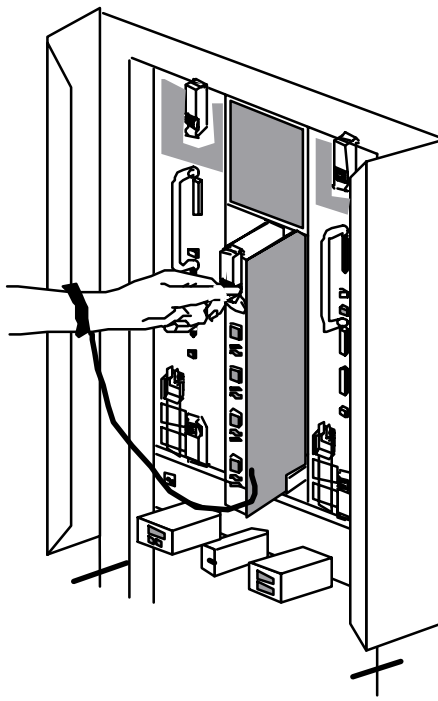


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- c. Reinsert the SEB or MSEB until the ejector on the SEB or MSEB can be engaged into the notch on the enclosure.
 - d. Latch the SEB or MSEB ejector by pressing the blue-green tab and then closing the ejector to seat the SEB or MSEB against the backplane.
8. Inspect all ServerNet adapters in the system enclosure:

- a. Check that the ejectors on each ServerNet adapter in the enclosure are latched.
 - b. If any ejectors are unlatched, reseal the ServerNet adapter as described next.
9. Perform these steps to reseal each ServerNet adapter that has become improperly seated during shipping:
 - a. Put on your ESD wriststrap and attach the grounding clip securely to an exposed, unpainted metal surface, such as the power interlock on a PMF CRU or IOMF CRU.
 - b. Unlatch the ServerNet adapter ejector by pressing the blue-green tab and pulling outward on the ejector to unseat the adapter. See [Figure 2-22](#).

Figure 2-22. Reseating a ServerNet Adapter



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- c. Grasp the ServerNet adapter ejector with one hand and slide the adapter halfway out of the slot.
 - d. Reinsert the ServerNet adapter until the ejector on the adapter can be engaged into the notch on the enclosure.
 - e. Latch the ServerNet adapter ejector by pressing the blue-green tab and then closing the ejector to seat the adapter against the backplane.
10. Repeat Step 1 through Step 9 for all system enclosures.

3 Cabling Enclosures

This section explains how to cable enclosures in NonStop S-series systems with power-on, emergency power-off (EPO), and ServerNet cables.

If you are cabling NonStop S-series enclosures in a ServerNet cluster, see the *ServerNet Cluster Manual* and the *ServerNet Cluster 6780 Planning and Installation Guide*.

- △ **Caution.** Installing and cabling IOAM enclosures, Fibre Channel Disk Module (FCDM)s, and ESSs must be performed by service providers trained by HP. Your service provider should refer to the *Modular I/O Installation and Configuration Guide* which is located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

Topic	Page
1. Connect Power-On Cables	3-1
2. Connect EPO Cables	3-4
3. Connect ServerNet Cables	3-5

1. Connect Power-On Cables

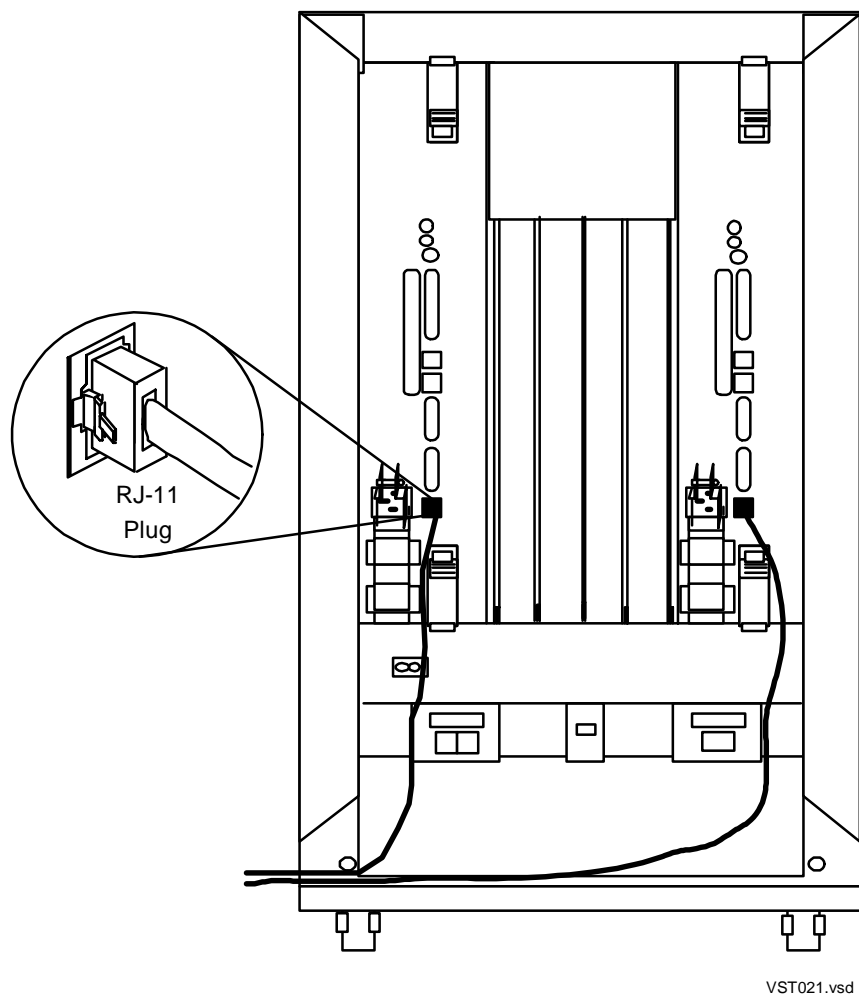
- △ **Caution.** Do not use the handles of CRUs or FRUs for cable management. If you pass cables or cords through the handles of CRUs or FRUs, the cables or cords might become unplugged during later replacement procedures. See [Figure 3-3](#) for proper cabling.

1. Print or photocopy the appropriate power-on diagrams for easy reference.

Figure	Title	Page
Figure C-1	Power-On Cabling: Single-High Stacks	C-2
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Figure C-15	Power-On Cables: Four Processor Enclosures, One I/O Enclosure	C-8
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Figure C-17	Power-On Cables: Four Processor Enclosures, Three I/O Enclosures	C-9
Figure C-18	Power-On Cables: Four Processor Enclosures, Four I/O Enclosures	C-9

2. Insert the RJ-11 plug on one end of a power-on cable into the RJ-11 jack on the PMF CRU or IOMF CRU until the tab on the plug clicks into place. See [Figure 3-1](#).
3. Insert the RJ-11 plug on the other end of the power-on cable into the RJ-11 jack on the PMF CRU or IOMF CRU until the tab on the plug clicks into place.
4. Repeat Step 2 and Step 3 for all power-on cables.
5. With the cable ties, secure the power-on cables for each enclosure to the cable support.

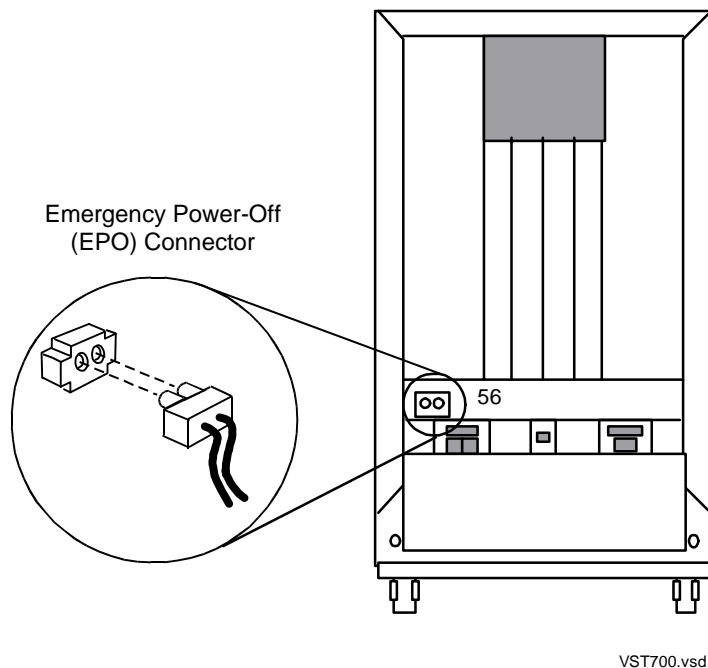
Figure 3-1. Connecting and Securing Power-On Cables

2. Connect EPO Cables

△ **Caution.** If you pass cables or cords through the handles of CRUs or FRUs, the cables or cords might become unplugged during later replacement procedures. Do not use the handles of CRUs or FRUs for cable management. See [Figure 3-3](#) for proper cabling.

1. Connect the unterminated end of an EPO cable to the appropriate junction box or facility wiring.
2. Route the other end of this EPO cable to the service side of the system enclosure.
3. Attach the EPO cable connector to the EPO connector (slot 56) on the enclosure. See [Figure 3-2](#). The connector is designed to be attached only one way.
4. With the cable ties, secure the EPO cables for each enclosure to the cable support.

Figure 3-2. EPO Connector on a System Enclosure



5. Repeat Steps 1, 2, and 3 for all remaining system enclosures.

3. Connect ServerNet Cables

- △ **Caution.** If you pass cables or cords through the handles of CRUs or FRUs, the cables or cords might become unplugged during later replacement procedures. Do not use the handles of CRUs or FRUs for cable management. See [Figure 3-3](#) for proper cabling.

1. Print or photocopy the appropriate cabling tables and diagrams for easy reference.

Keys to Cabling Figures and Tables

Page

[Correlation Between ServerNet Cable Diagram and One Enclosure](#)

[B-2](#)

[Correlation Between ServerNet Cable Diagram and Two Enclosures](#)

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Tetra 8 Topology: Cabling Figures and Tables

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[One Processor Enclosure, No I/O Enclosures](#)

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[One Processor Enclosure, One I/O Enclosure](#)

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[One Processor Enclosure, Two I/O Enclosures](#)

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[Four Processor Enclosures, Three I/O Enclosures](#)

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[Four Processor Enclosures, Four I/O Enclosures](#)

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Tetra 16 Topology: Cabling Figures

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[Maximum Tetra 16 Topology, X Fabric](#)

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[Maximum Tetra 16 Topology, Y Fabric](#)

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[Tetra 16 Cabling: Four Processor Enclosures, X Fabric](#)

[B-26](#)

[Tetra 16 Cabling: Four Processor Enclosures, Y Fabric](#)

[B-27](#)

[Tetra 16 Cabling: Six Processor Enclosures, X Fabric](#)

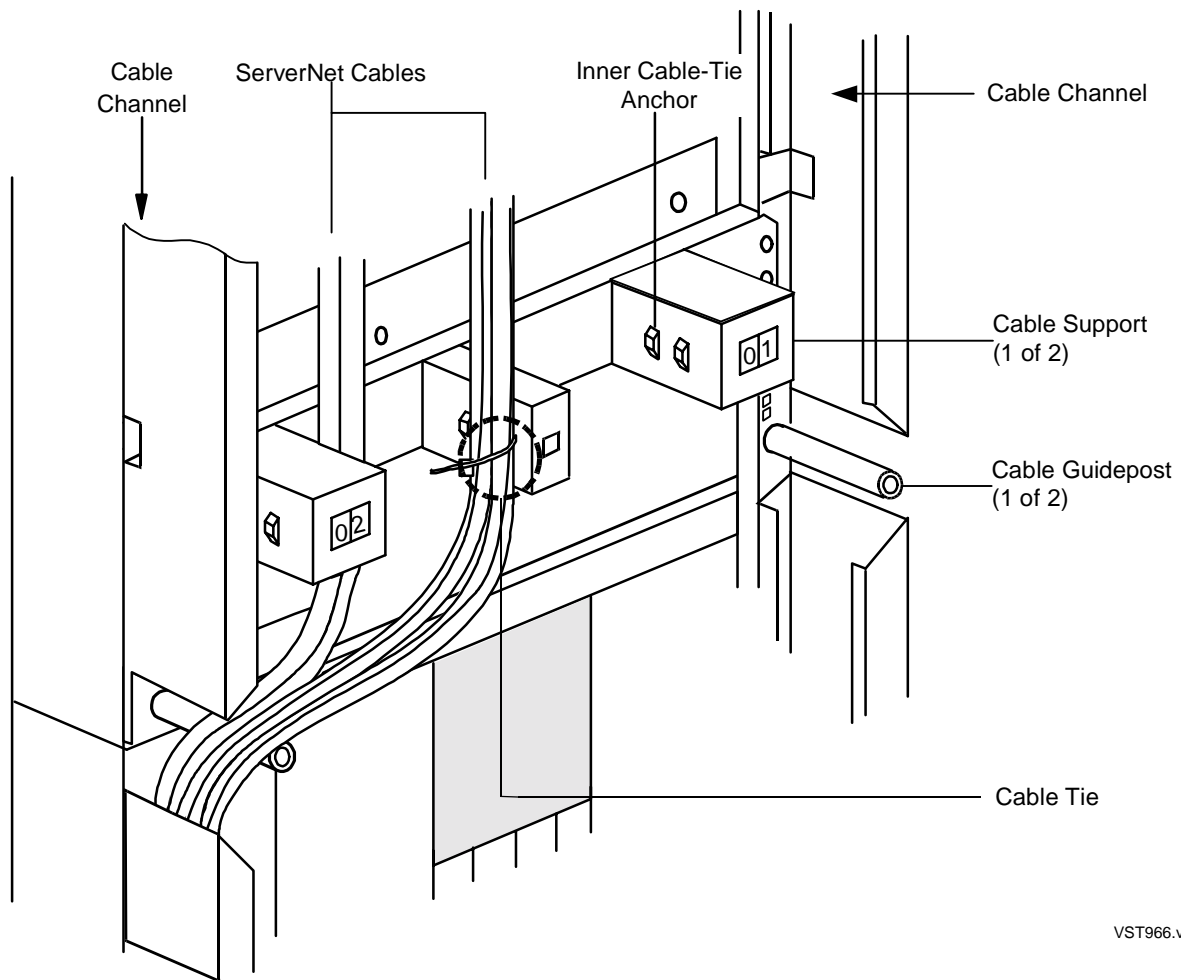
[B-28](#)

[Tetra 16 Cabling: Six Processor Enclosures, Y Fabric](#)

[B-29](#)

2. Connect and route the ServerNet cables between the enclosures and tighten the thumbscrews.
3. Secure the cables to the cable supports using the cable ties, as shown in [Figure 3-3](#). Securing the cables means anchoring them to a cable tie anchor in the cable supports. Cable ties are provided with the cables for the server.

Figure 3-3. Securing ServerNet Cables With Cable Ties



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4

Installing Service-Side Doors

This section describes how to install optional service-side doors on NonStop S-series system enclosures that are already installed and cabled. (New NonStop S-series system enclosures are shipped with service-side doors installed.)

This section does not describe the installation of long doors and side panels. Long doors and side panels are not customer-installable. To install long doors and side panels on existing enclosures, contact your service provider.

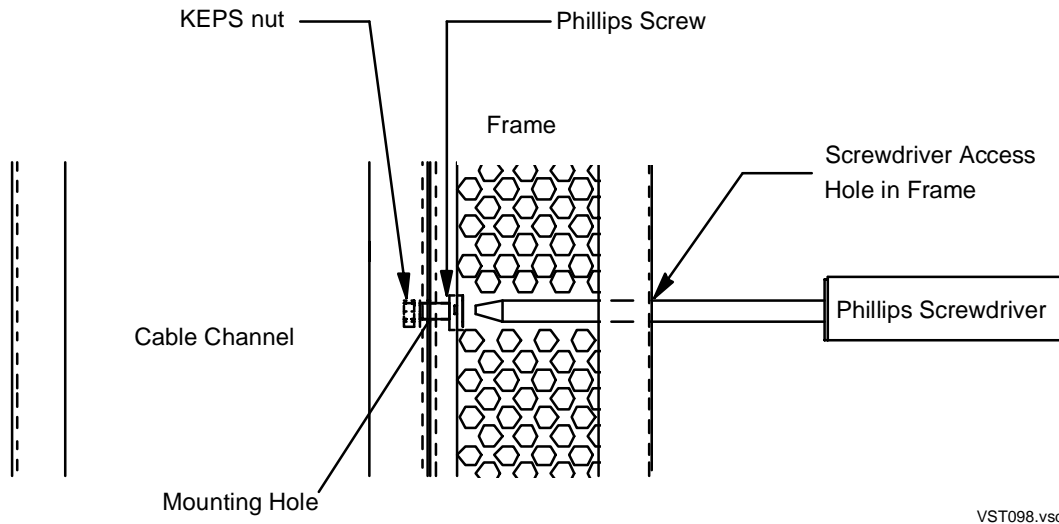
If you have not ordered service-side doors, skip this section and go to [Section 5, Installing, Starting, and Testing a System Console](#). [Figure 4-4](#) on page 4-4 shows a service-side door installed on a system enclosure.

To install a service-side door on a system enclosure, perform these steps (you need a Phillips screwdriver):

1. Obtain a service-side door add-on package (for part numbers, see [Support and Service Library](#) on page xxiv), and verify that it contains these items:
 - Adapter frame
 - Enclosure door, service side (The service-side door is preinstalled on the adapter frame.)
 - 6 M5 Phillips screws
 - 6 M5 KEPS nuts
 - 1 4-mm diagonal wrench for unlocking the door
 - Group ID labels
 - Read Me instructions
2. Remove the door from the adapter frame. Then retrieve the adapter frame, which will be installed first.
3. Align the mounting hooks of the frame with the top, enlarged holes on the cable channels of the enclosure.
4. Push the frame in and down so that the mounting hooks engage. Verify that the frame is supported by and flush against the cable channels.
5. Verify that the four frame and cable channel mounting holes are aligned.

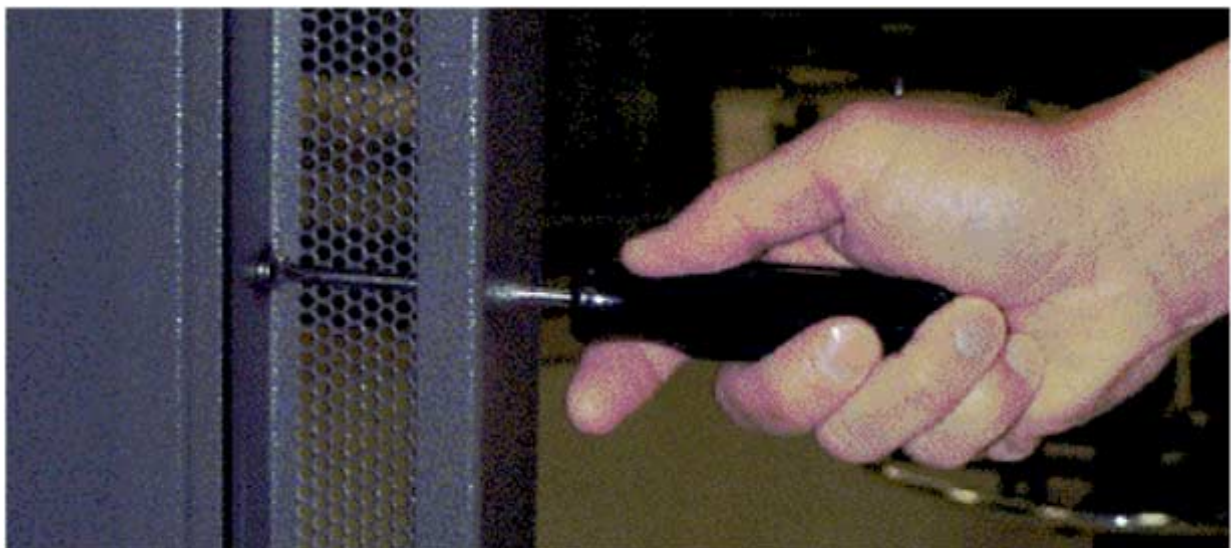
6. Using four M5 Phillips screws and four M5 KEPS nuts, perform these steps for each of the four mounting holes as shown in [Figure 4-1](#).

Figure 4-1. Securing the Frame to the Enclosure Using a Mounting Hole



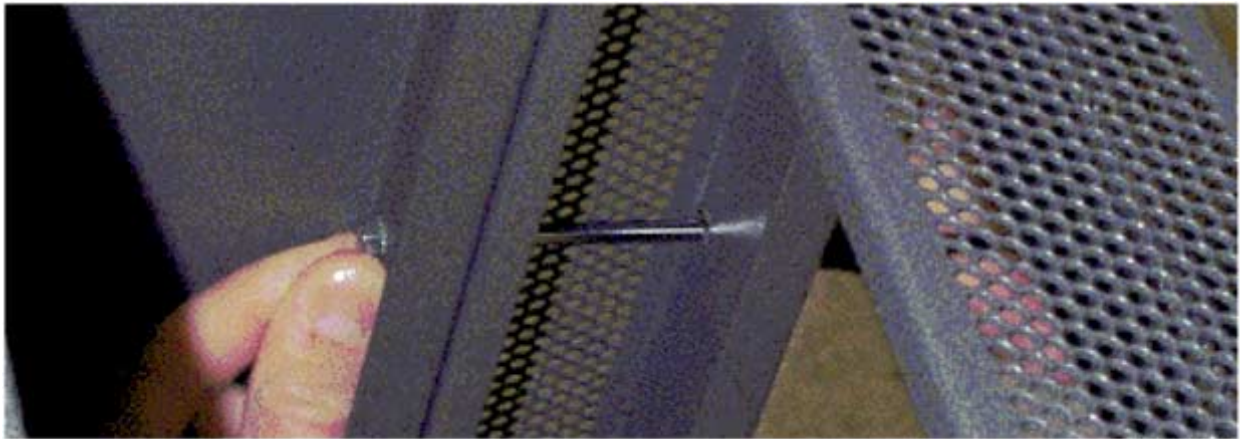
- a. Insert a Phillips screwdriver through the access hole in the frame.
- b. Use the screwdriver to insert a Phillips screw through the mounting hole as shown in [Figure 4-2](#):

Figure 4-2. Inserting a Phillips Screw Into the Mounting Hole



- c. Pull the Phillips screwdriver back out through the access hole in the frame.
- d. Use your fingers to install a KEPS nut on the protruding end of the screw, which is in the cable channel.
- e. Insert the Phillips screwdriver through the access hole in the frame.
- f. Use the screwdriver to tighten the Phillips screw while you hold the KEPS nut in place with your free hand as shown in [Figure 4-3](#).

Figure 4-3. Tightening a Phillips Screw in a Mounting Hole

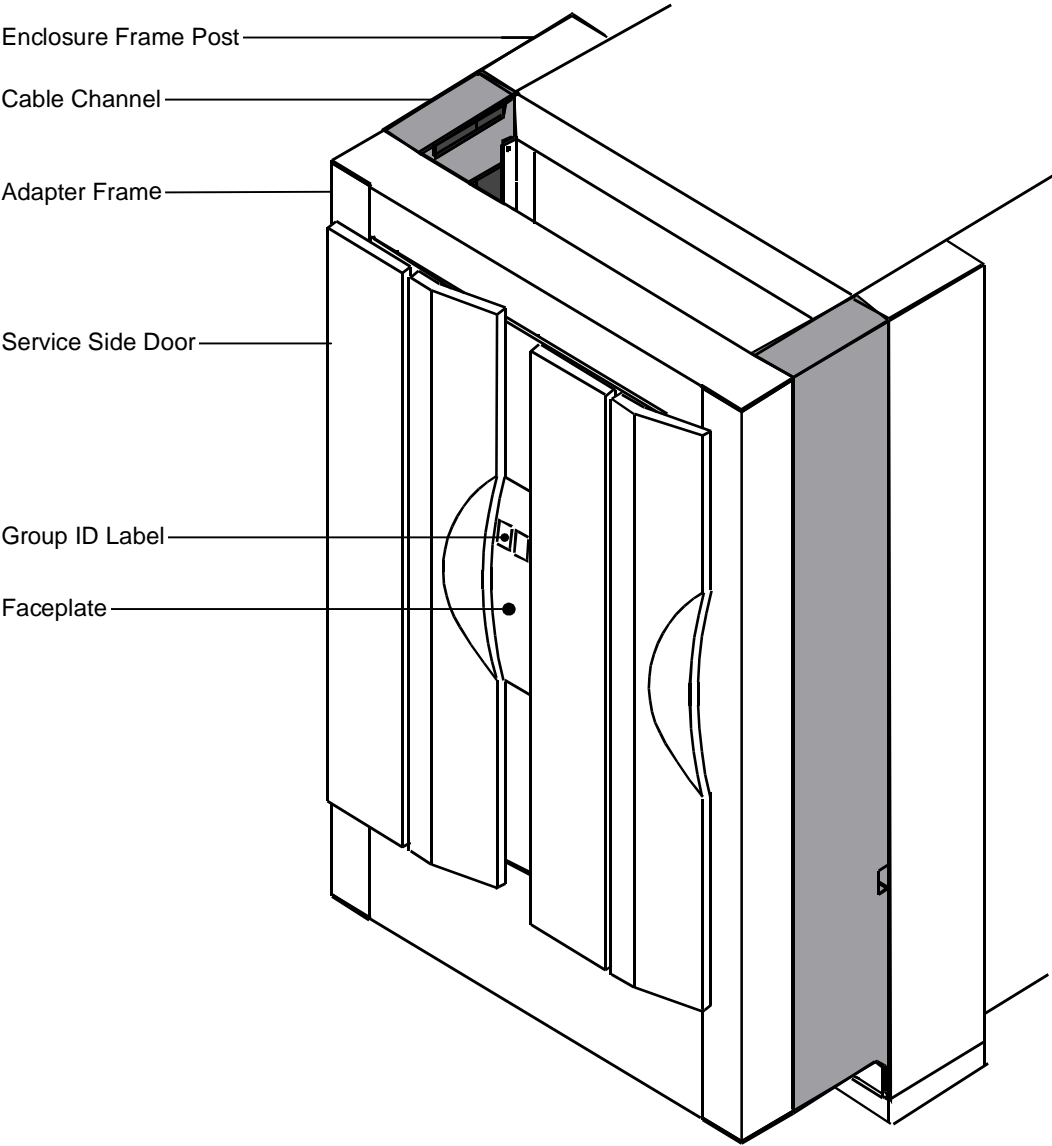


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- 7. Install the service-side door, including the faceplate and group ID label:
 - a. Align the top, elongated mounting pin of the door with the top hinge of the frame.
 - b. Insert that mounting pin partway into that hinge.
 - c. Verify that the bottom mounting pin of the door is aligned with the bottom hinge of the frame.
 - d. Lower the door to seat both mounting pins and secure the door to the enclosure.
 - e. Remove the faceplate from the door.
 - f. Retrieve the group ID label for the enclosure from the set of labels included with the service-side door add-on package.
 - g. Insert the group ID label in the faceplate.
 - h. Reinstall the faceplate on the door.

[Figure 4-4](#) shows a system enclosure with a service-side door installed.

Figure 4-4. Service-Side Door Installed on a System Enclosure



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Installing, Starting, and Testing a System Console

This section describes how to unpack, assemble, start, and test a system console.

Topic	Page
Unpacking and Assembling a System Console	5-2
Installation Quick Reference	5-2
Finding the Quick Setup Reference Card	5-2
Unpacking the System Console	5-2
Assembling the System Console	5-6
Starting and Testing a System Console	5-8
Powering On a System Console	5-8
Verifying Readiness	5-9
Final Setup Steps	5-9
Operational Considerations for OSM and TSM	5-10
Connecting Multiple System Consoles	5-11
System Console Function Keys	5-12
System Console Function Keys	5-12

To install a new system with multiple system consoles, begin with the setup configuration described in [Connecting Multiple System Consoles](#) on page 5-11 and [Setup Configuration](#) on page 10-2.

After the system console has been started and tested and initial OSM or TSM configuration has been performed, you can connect and configure a backup system console.

Your new system console is shipped with the Microsoft Windows XP Professional operating system already installed. To migrate an existing system console from the Windows 2000 Professional operating system to the Windows XP Professional operating system, see the *NonStop System Console Guide for Migrating to Microsoft Windows XP Professional*.

Unpacking and Assembling a System Console

This subsection describes how to unpack and assemble system console components. The instructions direct you to unpack all equipment before connecting components.

Topic	Page
Installation Quick Reference	5-2
Finding Documentation	5-2
Finding the Quick Setup Reference Card	5-2
Unpacking the System Console	5-2
Assembling the System Console	5-6

Installation Quick Reference

If you are already familiar with installing system consoles, use the system console tasks in [Section E, FastPath Tasks: Required](#) as a checklist. If you are not installing a system console in the setup configuration (where one system console manages one system), go to [Section 10, Configuring the System](#), for the appropriate connection procedure.

Finding Documentation

Documentation is available in the NonStop Technical Library (NTL). For the location of NTL, see [Where to Get More Information](#) on page xxiv.

Finding the Quick Setup Reference Card

Look for the quick setup reference card as you unpack the system console hardware and software. This reference card is included in the accessories box and contains an up-to-date illustration of the back panel for your model of the system console. The reference card shows the location of connectors.

Unpacking the System Console

PCs provided by HP to be used as system consoles come preloaded with the client components necessary to use OSM software (TSM client components can be installed), but some assembly of components is required. Hardware and software are delivered in various shipping boxes containing the components listed in [Table 5-1](#) on page 5-3. Some hardware is optional, so your shipment might not contain all items listed.

Save all shipping boxes and packing material so you can repack components for shipment if necessary.

Table 5-1. Contents of the Shipping Box

Box	Contents
System unit box	Accessory box Keyboard box System unit (processor)
Accessory bag (packaged in system unit box)	System unit power cord Mouse with attached cable Quick setup reference card HP Restore CD Microsoft Windows XP Professional CD -- The Certificate of Authenticity for Microsoft Windows XP Professional (In the form of a sticker attached to the PC) Documentation
Keyboard box (packaged in system unit box)	Keyboard with attached cable
PC accessory box	50-foot (15-meter) Ethernet cable System console binder Assorted software media and documentation
Display monitor box	Display monitor with attached interface cable Display monitor power cord Documentation for the display monitor
Ethernet switch box	Documentation for the Ethernet switch The Ethernet switch and 4 cables are included in the OPEN FIRST box.
	Serial Modem
Modem box	(The serial modem itself is included in the OPEN FIRST box) Wall-to-modem telephone cable Modem power converter with integral power cord Documentation for the modem
	USB Modem
	USB modem Wall-to-modem telephone cable USB cable Documentation for the modem

You might also receive a kit to adapt the modem to your local telephone service.

Unpack the System Unit Box

1. Open the system unit box and remove any loose packing material.
2. Locate the accessory box in the system unit box.
3. Unpack the accessory box:
 - a. Open the accessories box and remove any loose packing material.
 - b. Remove all items including documentation packed with the mouse. For a list of items, see [Table 5-1, Contents of the Shipping Box](#), on page 5-3.
4. Retrieve the keyboard box from the system unit box.
5. Unpack the keyboard box:
 - a. Open the keyboard box and remove any loose packing material, being careful to retain the documentation packed with the keyboard.
 - b. Remove the keyboard and attached cable.
6. Carefully remove the system unit and place it on a stable flat surface.

Unpack the PC Accessory Box

1. Open the PC accessory box and remove any loose packing material.
2. Remove the Ethernet cable, but do not connect it at this time.
3. Remove the system console binder.
4. Store the software media for future reference.

System consoles come preloaded with software. Store the backup software packaged with the workstation for emergencies. To restore software on the system console hard disk, use the CD-ROM shipped with the system console. Retain the documentation packed with the accessories for future reference.

Unpack the Display Monitor Box

▲ **WARNING.** Some display monitors are heavy. Use at least two people to lift the display monitor out of the shipping box and set it on a flat surface.

1. Open the display monitor box and remove any loose packing material.
2. Retain the documentation packed with the display monitor for future reference.
3. Remove the display monitor power cord.
4. Carefully remove the display monitor and its attached interface cable and place it on its swivel base on a stable flat surface.

Do not connect the power cord to a power outlet or connect the display monitor interface cable to the system unit at this time.

Unpack the Ethernet Switch Box

If no Ethernet switch is included with your system, the switch and cables are included in the OPEN FIRST box. Go to [Unpack the Modem Box](#).

1. Open the Ethernet switch box and remove any loose packing material.
2. Retain the Ethernet switch documentation for future reference.
3. Do not connect the power cord to a power outlet at this time.

Unpack the Modem Box

Depending on your order, a modem might not be included with your system console:

If no modem is included with your system console or OPEN FIRST box, go to [Final Unpacking Steps](#) on page 5-5.

1. Open the modem box and remove any loose packing material.
2. If the modem is present, remove it.
3. Retain the documentation packed with the modem for future reference.
4. Remove the wall-to-modem telephone cable.
5. Remove the USB modem cable.
6. Remove the modem power converter with integral power cord if it is present.
7. Your modem is a USB modem with these characteristics:
 - Ships with PC workstations
 - Usually connects to the front USB port on the workstation
 - Powered through the USB connection, so it requires no converter

Final Unpacking Steps

When you have unpacked all required items:

1. Verify that all items are removed from the shipping boxes.
2. Store all documentation in a safe place for future reference.
3. Remove the boxes and packing material from the work area. Save boxes and packing material so that you can repack the components for shipment if necessary.
4. Go to [Assembling the System Console](#) on page 5-6.

Assembling the System Console

These procedures describe how to assemble the unpacked components into a system console. To connect other devices such as a printer to your system console, see the documentation provided with the printer or the system console.

Tools

Depending on the PC model shipped as the system console, you might need a small, slotted screwdriver for tightening cable connectors.

Connect the System Console Components

1. Connect the display monitor interface cable to the video port on the back of the system unit.

For the location of the video port, see the quick setup reference card.

2. Connect the keyboard to the back of the system unit:
 - a. To locate the keyboard connector, use the quick setup reference card. On some workstation models, the keyboard attaches to the PC through a Universal Serial Bus (USB) port.
 - b. Align the notch on the keyboard cable connector with the keyway on the system unit.
3. Connect the mouse to the system unit:
 - a. To locate the mouse port, use the quick setup reference card. On some workstation models, the mouse attaches to the PC through a USB port.
 - b. Align the notch on the cable connector with the keyway on the mouse port.

Connect the System Console to a Power Source

To connect system console power cords to power outlets or to a surge suppressor:

△ **Caution.** To prevent data corruption and equipment failure, provide surge suppression or backup power facilities for the system console, modem, and Ethernet switch.

1. Ensure that the voltage selection switch on the back of the system unit is set to the correct voltage.
2. Connect the display monitor power cord to the receptacle at the back of the monitor.
3. Connect the plug of the display monitor power cord to a grounded power outlet.
4. Plug the system unit power cord into the power cord outlet. To locate the system unit power cord outlet, use the quick setup reference card.
5. Connect the other end of the system unit power cord to a grounded power outlet.

Connect the Modem

-
- △ **Caution.** To prevent equipment failure and data corruption, plan for the possibility of power outages. Provide surge suppression or backup power facilities for modems and Ethernet switches.
-

Modems are recommended for primary and backup system consoles.

Note. To use ISEE, a web-based alternative to modem dial-outs, see the *ISEE for NonStop* topic in the Service Information section of the NTL Support and Service Library to learn about ISEE prerequisites and NonStop-specific details that you will need before downloading and configuring the ISEE client from the HP Hardware Support Services Web. Authorized service providers can see *ISEE for NonStop- HP Internal* on the NTL employee site.

1. Use the USB cable to connect the modem to the USB port on the front of the workstation.
2. Connect the modem to the telephone line:
 - a. Plug one end of the wall-to-modem telephone cable into the telephone wall jack.
 - b. Plug the other end of the cable into the LINE connector on the back of the modem.
3. Connect a telephone adapter if necessary.
4. If instructed to do so by the documentation shipped with the modem, verify the installation.

If No Modem Is Included

For system consoles that are not used as primary or backup system consoles, modems are optional. If the system console you are installing does not have a modem, go to [Starting and Testing a System Console](#) on page 5-8.

Starting and Testing a System Console

This subsection describes how to power on a system console and ensure that it is operating properly. You start and test a system console before you start the server, connect the workstation to the dedicated service LAN, and configure the OSM or TSM environment.

Task	Page
Powering On a System Console	5-8
Verifying Readiness	5-9
Final Setup Steps	5-9
Operational Considerations for OSM and TSM	5-10
Connecting Multiple System Consoles	5-11
System Console Function Keys	5-12

If you encounter problems with any of the procedures described in this subsection, see the diagnostic and corrective procedures provided in [Appendix D, Troubleshooting](#).

Powering On a System Console

If you received an Ethernet switch, you do not need to install or power on the switch until you connect the system console to the network. See [Section 10, Configuring the System](#).

Be sure to power on the system console components in the order described here:

1. Power on the modem.

If your system console has a modem, see the documentation included with the modem for instructions on powering on and testing the modem.

2. Power on the display monitor.

Power on the display monitor by pressing the power switch on the display monitor. Within a few seconds, the display should become visible.

3. Power on the system unit.

Power on the system unit by pressing its power switch. To find the power switch, see the documentation included with the system unit.

Verifying Readiness

After you power on a system console, the console executes a set of startup hardware diagnostics. After the OS logo appears:

1. When prompted, press **Ctrl-Alt-Delete** to log on.
2. A logon screen shows the user name/administrator and password blank. Leave the password blank and click **OK** to complete logon.

The desktop appears, listing software applications in the form of icons.

The software on the system console hard disk has been installed to operate this workstation for NonStop servers. This configuration must be maintained in the user environment. Altering this configuration is not supported. Neither is loading and using software not approved for the system console. For a list of approved software, see [Preloaded and Supported Hardware and Software](#) on page 1-49.

If the operating system fails to load properly, see [Appendix D, Troubleshooting](#).

Final Setup Steps

This subsection describes the final setup steps:

Action	Procedure	Page
Ensure the system console can be powered down and restarted in the same condition.	Restart the System Console	5-9
If necessary, create an emergency repair disk or automated system recovery disk.	Create an Emergency Repair Disk (ERD) or Automated System Recovery (ASR) Disk	5-10

Restart the System Console

1. From the Task Bar, click **Start**.
2. Select **Shut Down**.
3. Select **Restart the computer**.
4. Click **Yes**.
5. Observe the startup process again. It should be the same process described under [Verifying Readiness](#) on page 5-9, ending with the display of application icons on the desktop.

Create an Emergency Repair Disk (ERD) or Automated System Recovery (ASR) Disk

The ERD (for Windows 2000) or ASR disk (for Windows XP) saves repair information that you can use to reconstruct your Windows system files, system configuration, and startup environment variables if they are corrupted.

The OSM or TSM Low-Level Link and OSM or TSM Notification Director save important configuration information to the operating system registry. To back up this information, you must create (or update) an ERD or ASR for your workstation.

Use the backup procedure in the Windows 2000 or XP documentation shipped with your system console.

Operational Considerations for OSM and TSM

You now have an operational system console. Under normal circumstances, a system console should be left running, but:

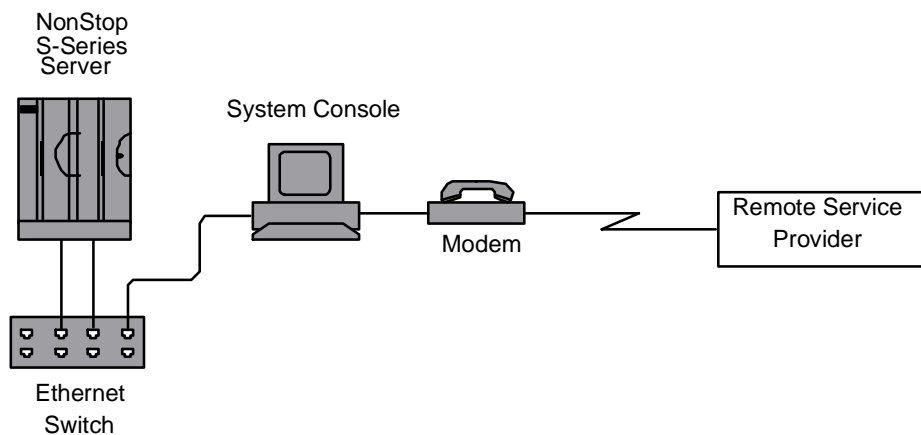
- To prevent unauthorized operations, log off any OSM or TSM software when you are not using the workstation.
- If the display monitor is idle more than 20 minutes, the power save feature is enabled, putting the monitor into standby mode. The monitor screen goes blank, and the monitor power LED turns yellow or amber.
- For TSM, a user has to remain logged on to the system console at all times for the Notification Director application to receive and dial out incident reports. An important enhancement for the OSM Notification Director is that it can be configured to run as a Windows service, so it will start whenever the Windows operating system starts up and will function even without a user being logged on to Windows.

If you obtain results different from those described in the procedures in this section, verify that you have properly performed the procedures in this section and in [Unpacking and Assembling a System Console](#) on page 5-2. If you still have difficulty after this verification, follow the instructions in [Appendix D, Troubleshooting](#).

Connecting Multiple System Consoles

If you are installing a new system with multiple system consoles, you must create the setup configuration before you can add a second system console. The setup configuration is one server connected to one system console. See [Figure 5-1](#).

Figure 5-1. Setup Configuration



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It is recommended that you do not allow the setup configuration to serve as your permanent working configuration because it lacks fault tolerance. After you start and test the system, and perform the initial OSM or TSM configuration, add fault tolerance to the setup configuration by connecting a backup system console and a second Ethernet switch (you can also use an Ethernet hub). This recommended operating configuration is discussed in [Section 10, Configuring the System](#).

System Console Function Keys

The keyboard provided with a system console contains function keys F1 through F12. Some applications that you access using the OutsideView terminal emulator software require function keys F13 through F16 or SF13 through SF16.

The terminal emulator software provides two ways for you to obtain these functions:

- Click one of the icons for F13 through F16 or SF13 through SF16 on the terminal emulator tool bar.
- Use a key combination:

For this function key...	Use this key combination...
F13	Alt + F3
F14	Alt + F4
F15	Alt + F5
F16	Alt + F6
SF13	Shift + Alt + F3
SF14	Shift + Alt + F4
SF15	Shift + Alt + F5
SF16	Shift + Alt + F6

These key combinations are valid only with the OutsideView terminal emulator.

6

Connecting a System Console

This section describes how to connect a primary system console to the installed server and dedicated service LAN by using Ethernet cables and an Ethernet switch or Ethernet hub.

Topic	Page
The Dedicated Service LAN	6-2
Installing Ferrite Cores	6-4
Installing the Ethernet Switch or Hub	6-5
Connect the Ethernet Switch or Hub to the Server	6-5
Connect the System Console to the Ethernet Switch or Hub	6-6

Note. An IOAM enclosure connects to the system console using a managed Ethernet switch that must be configured by your service provider. Information is available to your service provider in the *Modular I/O Installation and Configuration Guide*.

The connection instructions in this section work for both OSM and TSM software. For additional connectivity options to increase performance (reduce response time) for the OSM Service Connection, see the *OSM Migration Guide*.

Because these steps involve communication between the primary system console and the master service processors (MSPs) in the server, you must complete these steps before you power on and start the system.

For Information About	See	Notes
Connecting a system console and system to a secure operations LAN	Secure Operations LAN Configuration on page 10-15	<ul style="list-style-type: none">● This practice provides flexibility in locating system consoles.● An operations LAN cannot be used to connect a primary or backup system console to the server.
Adding a backup system console	Section 10, Configuring the System	Perform this procedure only after you have started the system, tested the system, and performed initial OSM or TSM configuration.

The Dedicated Service LAN

You must connect the system console that is being used as the primary system console to a private, dedicated service LAN. A dedicated service LAN:

- Connects the primary and backup system consoles to the server
- Connects system consoles to the Ethernet ports on the PMF CRUs of a server
- Supports NonStop S-series servers but does not support other types of servers or servers made by other vendors
- Supports system consoles, but does not support other types of workstations or workstations made by other vendors
- Allows access to OSM or TSM applications by a workstation connected to a dedicated service LAN
- Allows access for system consoles connected to a dedicated service LAN to all dial-in and dial-out operations and incident reports generated by the server
- Is constructed of Ethernet switches or hubs

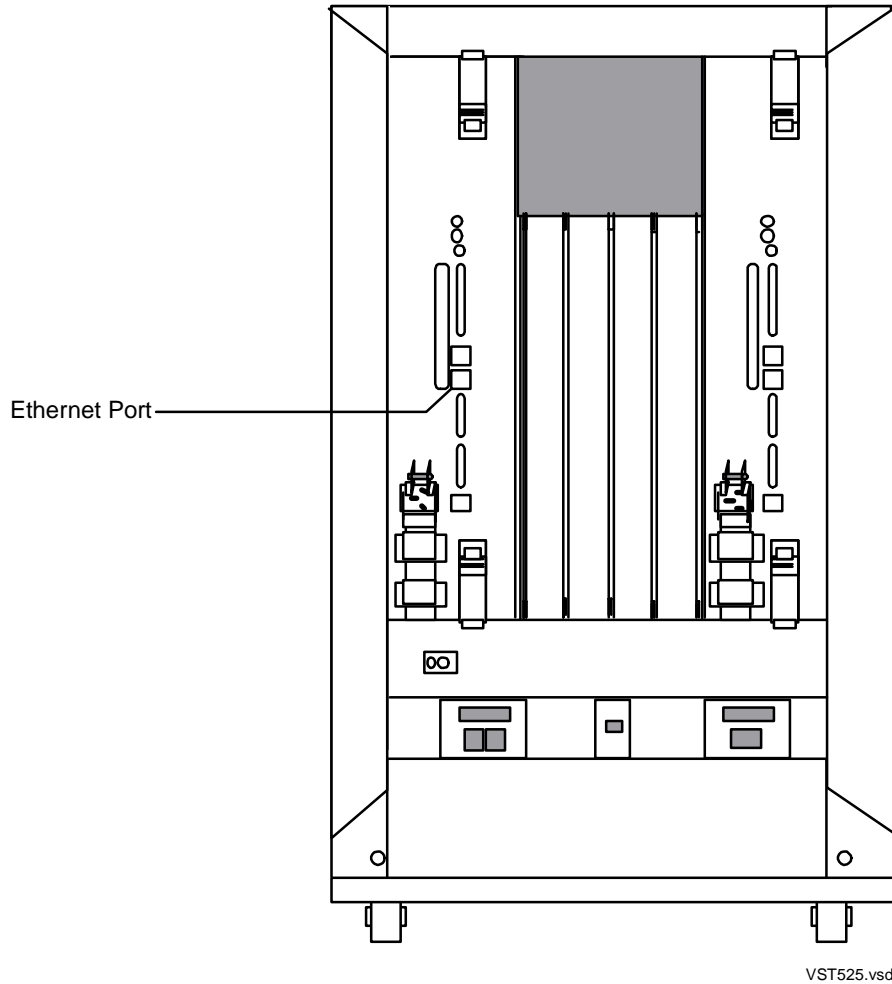
△ **Caution.** If you are using ProCurve 24-port (managed) Ethernet switches for your dedicated OSM or TSM service LAN, you should configure the switch ports that are used for connecting to PMF CRUs—and only those ports—to protect the services processors from possible overload. See [Configuring a ProCurve 24-Port Ethernet Switch](#) on page D-48 for the procedure. This procedure is not needed and does not apply to ProCurve 8-port (unmanaged) switches.

Server Connection to a LAN

NonStop S-series servers offer several Ethernet connections, but the dedicated service LAN must be connected to the Ethernet ports on the PMF CRUs in group 01.

[Figure 6-1](#) shows the service side of a processor enclosure with PMF CRU RJ-45 Ethernet connections.

The PMF CRU Ethernet ports in the group 01 enclosure are used only for the dedicated service LAN. Do not use the Ethernet ports for PMF CRUs or IOMF CRUs in any other processor enclosures. Ethernet connections other than those for the dedicated service LAN must use ServerNet adapters.

Figure 6-1. Processor Enclosure PMF CRU Ethernet Ports

System Console Connection to a Dedicated Service LAN

System consoles communicate with your NonStop servers through a dedicated service LAN. A network interface card (NIC) inside the system console connects the workstation to the dedicated service LAN (connect a port on the NIC to an Ethernet switch or hub).

The quick setup reference card included with the workstation shows the location of this port at the back of the system console.

System Console Connection to a Secure Operations LAN

To take advantage of ISEE functionality, a second NIC (or USB ethernet adapter cable) is used to connect the console to a secure operations LAN. To use ISEE, a web-based alternative to modem dial-outs, see the *ISEE for NonStop* topic in the Service Information section of the NTL Support and Service library to learn about ISEE prerequisites and NonStop-specific details that you will need before downloading and configuring the ISEE client from the HP Hardware Support Services Web. Authorized service providers can see *ISEE for NonStop-HP Internal* on the NTL employee site.

Ethernet Cables

To make Ethernet connections for a dedicated service LAN, use Category 5 unshielded twisted pair (UTP) 10Base-T cables with RJ-45 connectors.

Ethernet Switch Ports

Several procedures in this section involve connecting Ethernet cables to ports on the Ethernet switch or hub. Do not connect an Ethernet cable to the cascade port (sometimes called the uplink port) on the Ethernet switch or hub unless specifically instructed to do so. These ports are used for cabling additional switches. To determine which ports to use, see the documentation provided with the Ethernet switch or hub.

Installing Ferrite Cores

If any ServerNet adapter, PMF CRU, IOMF CRU, or IOM 2 CRU in the system connects to a cable with an RJ-45 connector, you should install two ferrite cores on that cable.

1. Find a place on the cable within 4 or 5 feet of the connection to the adapter or CRU.
2. Attach the ferrite cores at that location:

The ferrite cores are split, and open up into two pieces. To install a ferrite core, pass the RJ-45 cable through the core twice by wrapping the cable around the core and then closing the core jacket around the cable.

Space the cores no more than 12 inches apart from each other on each cable.

If you don't have enough ferrite cores:

1. Count the number of cables terminating in RJ-45 connectors that are connected to every adapter in the system.
2. Multiply that number by 2.
3. Subtract from that number the number of ferrite cores included with the adapters.
4. That number is the quantity of ferrite cores to order.

For the part number for a ferrite core, see the *Part Numbers* topic of the Service Information section of the NTL Support and Service Library.

Installing the Ethernet Switch or Hub

Install the Ethernet switch or hub using the documentation that came with the switch or hub. You can position switches or hubs on a tabletop, under a table, or on a wall.

-
- △ **Caution.** If you are using ProCurve 24-port (managed) Ethernet switches for your dedicated OSM or TSM service LAN, you should configure the switch ports that are used for connecting to PMF CRUs—and only those ports—to protect the services processors from possible overload. See [Configuring a ProCurve 24-Port Ethernet Switch](#) on page D-48 for the procedure. This procedure is not needed and does not apply to ProCurve 8-port (unmanaged) switches.
-

Connect the Ethernet Switch or Hub to the Server

Connect the Ethernet switch or hub to the server, using the setup configuration illustrated in [Figure 5-1](#) on page 5-11:

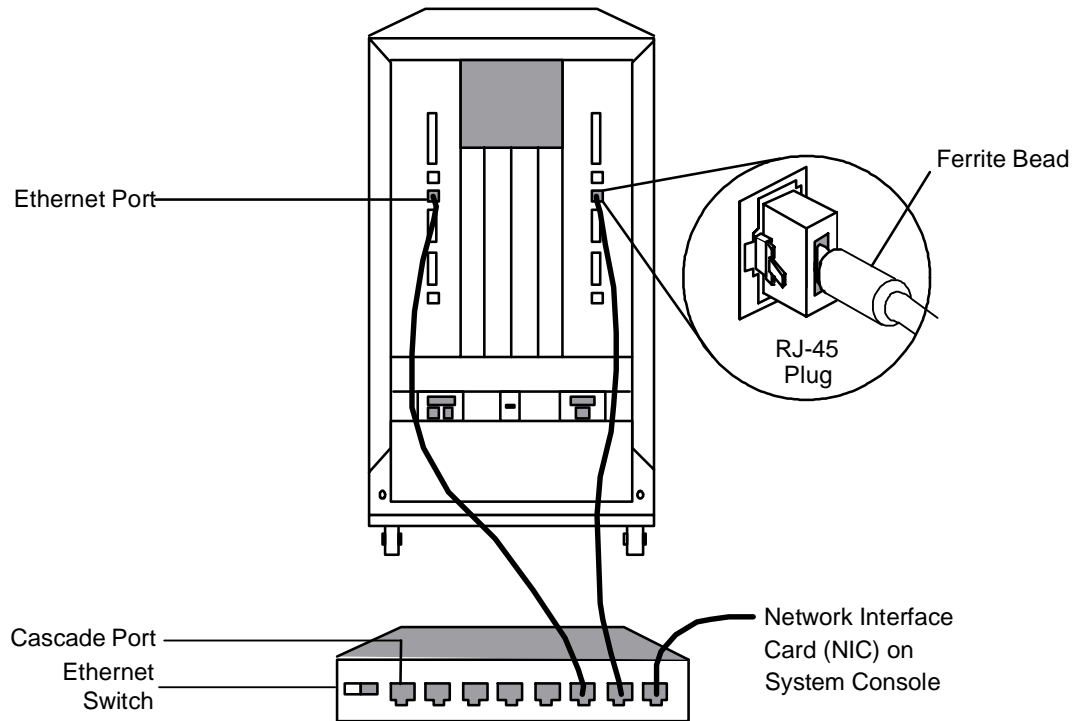
1. Connect one end of an Ethernet cable to the Ethernet port on the PMF CRU in slot 50 of group 01. (The group number appears on both sides of an enclosure.)

Note. To maintain the EMC compliance of all NonStop S-series systems except the S7000, the Ethernet cables must be equipped with a ferrite suppression component (ferrite bead) built into one end of the cables. Install the Ethernet cables that connect PMF CRUs to Ethernet switches or hubs with the ferrite-bead end of the cables connected to the PMF CRUs. See [Figure 6-2](#) on page 6-6.

To make the connection, insert the RJ-45 plug on the cable into the RJ-45 jack on the PMF CRU until the tab on the plug clicks into place. See [Figure 6-2](#) on page 6-6.

2. Connect the other end of this Ethernet cable to a port on the Ethernet switch or hub.

Do not connect this Ethernet cable to the cascade port on the Ethernet switch or hub. These ports are used for cabling additional switches or hubs. To determine which ports to use, see the documentation that came with the switch or hub.
3. Connect one end of another Ethernet cable to the Ethernet port on the PMF CRU in slot 55 of group 01. See Step 1.
4. Connect the other end of this Ethernet cable to another port on the Ethernet switch or hub. See Step 2.

Figure 6-2. Connections for the Setup Configuration

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Connect the System Console to the Ethernet Switch or Hub

1. Connect one end of an Ethernet cable to the 10Base-T connector on the NIC at the back of the system unit. To locate the NIC connector, see the quick setup reference card.
2. Connect the other end of this Ethernet cable to a port on the Ethernet switch or hub. See [Figure 6-2](#). See Step 2 in [Connect the Ethernet Switch or Hub to the Server](#) on page 6-5.
3. Set the medium-dependent interface (MDI) switch on the Ethernet switch or hub to MDI mode. To determine how to set this switch, see the documentation that came with the Ethernet switch or hub.

Installing External System Devices

This section describes how to install selected peripheral devices such as tape subsystems.

Topic	Page
Installing Tape Drives	7-1
Installing a SWAN or SWAN 2 Concentrator	7-16
Installing an AWAN Server	7-17
Installing Printers and Terminals	7-17

Note. IOAM enclosures, Fibre Channel Disk Module (FCDM)s, and Enterprise Storage Systems (ESSs) must be installed by service providers trained by HP. For installation procedures, your service provider should refer to the *Modular I/O Installation and Configuration Guide*, which is located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

Growing numbers of storage, communications, and network options are available for NonStop S-series servers. This section mentions some devices briefly, such as ServerNet wide area network (SWAN) concentrators. For detailed installation information about products not covered in this guide, see the manuals for those products.

Several different adapters are supported. For instructions on installing adapters, see the manual for that adapter. For supported adapters, see the *Part Numbers* topic of the Service Information section of the NTL [Support and Service Library](#).

Installing Tape Drives

Install a tape drive only after you install the system enclosures, connect the ServerNet cables, and connect the primary system console to the system. However, it is recommended that you connect the tape drive before you start the system. With a tape drive connected to a server, you can use the BACKUP and RESTORE utilities to save data to and restore data from tape. With a tape drive connected to the PMF CRU in the group 01 enclosure, you can dump processor memory to tape to diagnose a processor halt.

To install a tape drive, see:

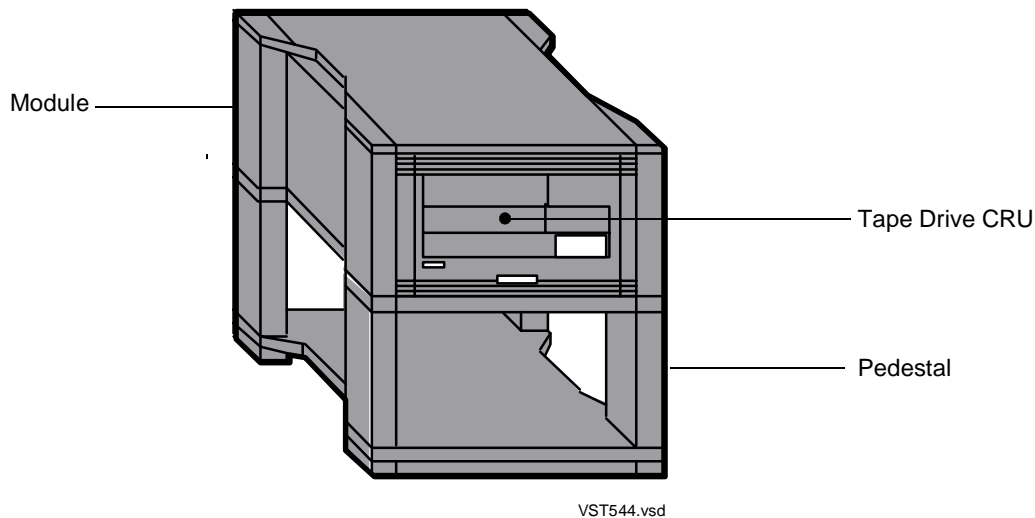
- [Installing a 5175 Open-Reel Tape Subsystem](#) on page 7-2
- [Installing a 519x Cartridge Tape Subsystem](#) on page 7-8
- [Installing Other Tape Devices](#) on page 7-12
- [Installing Fibre Channel Tape Devices Using an IOAM Enclosure](#) on page 7-15

For information about which tape products are supported for this RVU, see the *G06.nn Release Version Update Compendium* or the *NonStop S-Series Planning and Configuration Guide*.

Installing a 5175 Open-Reel Tape Subsystem

A 5175 tape subsystem is an open-reel tape drive in a module on a modular storage system pedestal as shown in [Figure 7-1](#).

Figure 7-1. 5175 Tape Subsystem



Tape products can be installed by customers when shipped as a self-contained module (or as two modules) on a pedestal. Of the 517x tape subsystems, only the 5175 tape subsystem is customer installable. Other maintenance or changes to an installed 5175 tape subsystem require a trained service provider. Likewise, a trained service provider must install other 517x tape subsystem configurations.

1. To unpack and install a 5175 tape subsystem, you need:
 - Small slotted screwdriver
 - A 15/16-inch (24-mm) or adjustable, open-end wrench

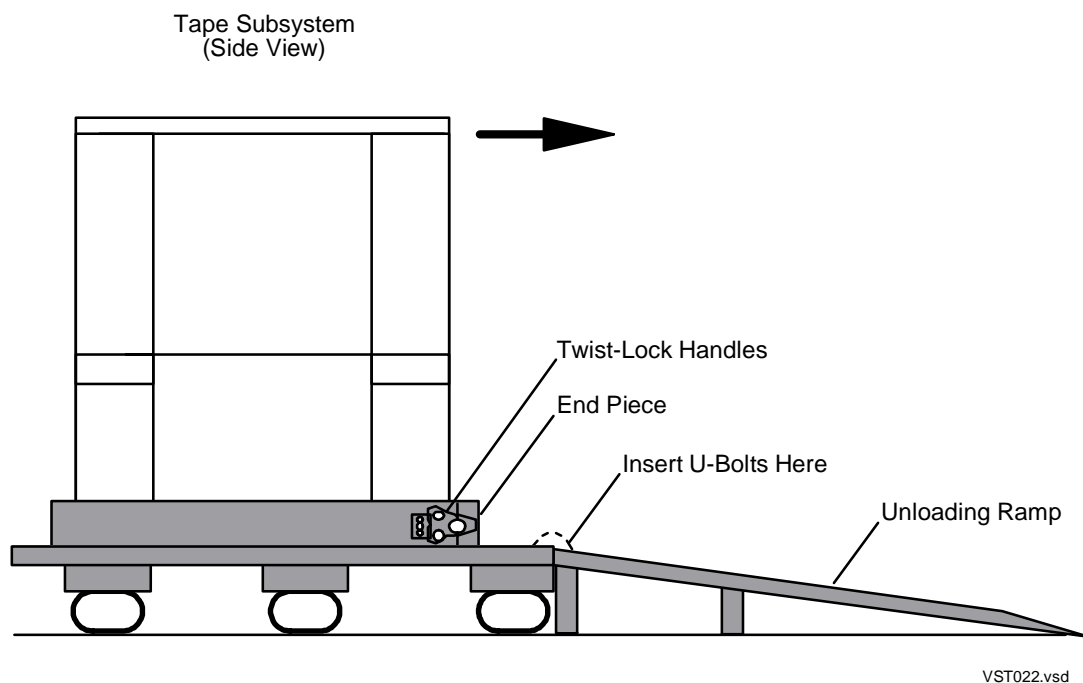
2. If you have a 517x tape subsystem currently connected to another system and you want to connect it to a server, ask your service provider to ensure the tape drive firmware is at the firmware or hardware version levels listed in [Table 7-1](#).

Table 7-1. 517x Firmware Requirements

Component	Firmware or Hardware Version
Display board	6.40
Control board	6.77 or 6.78
Buffer board	6.80
SCSI interface board	6.74 (6.xx firmware)

3. If you are connecting a new 5175 tape subsystem, unpack the subsystem:
 - a. Remove any protective covering or packing material from outside the tape subsystem.
 - b. Flip open the twist-lock handles at the base of the pallet. Turn the twist-lock handles counterclockwise to loosen the pallet end piece as shown in [Figure 7-2](#).
 - c. Remove the pallet end piece and set it aside, but save the U-bolts or Velcro straps. These bolts or straps hold the unloading ramp against the pallet.

Figure 7-2. Unloading a Tape Subsystem



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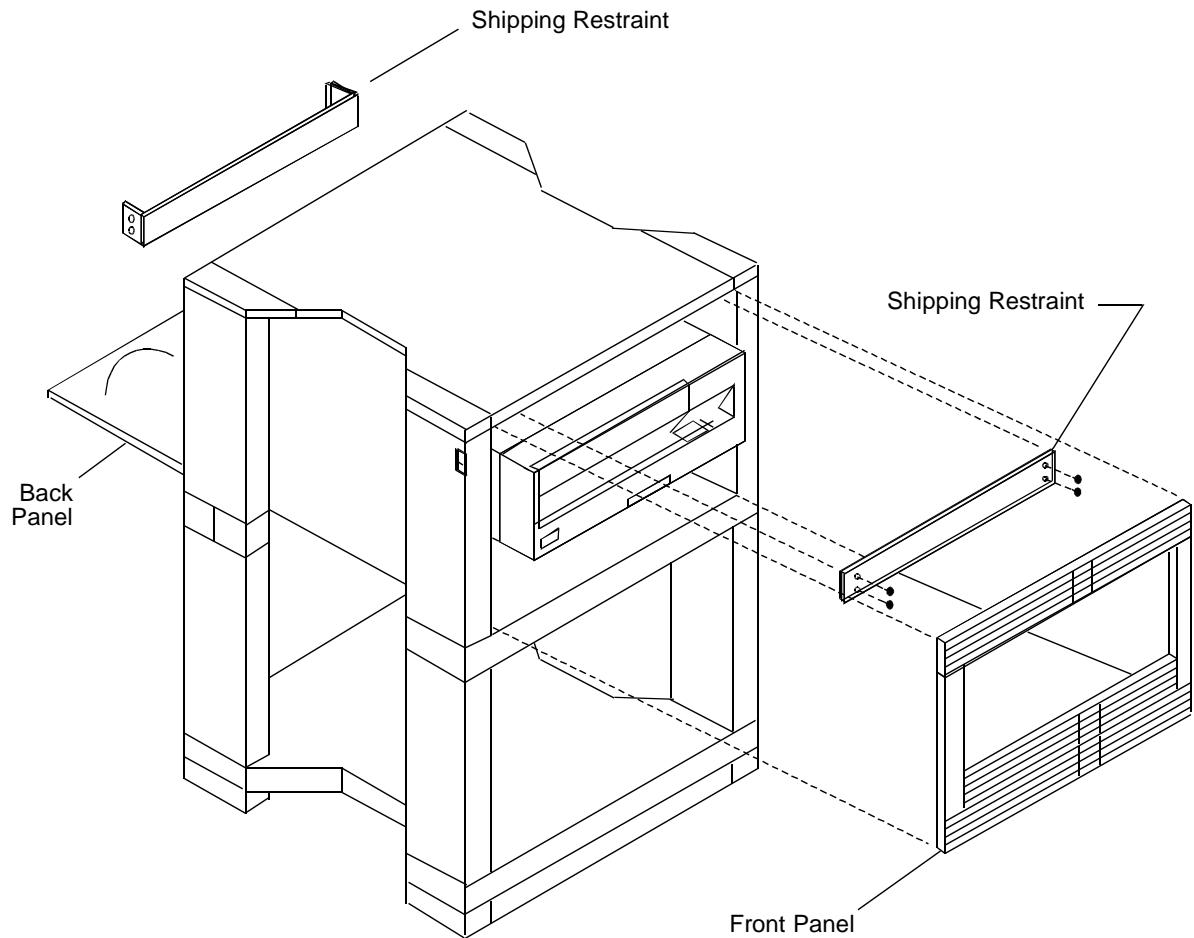
- d. Set the unloading ramp next to the pallet.

- e. If you have Velcro straps, use them to fasten the unloading ramp to the pallet. Otherwise, insert U-bolts in the drilled holes in the pallet and the ramp to secure the ramp against the pallet, forming an incline for rolling the tape subsystem off the pallet.
4. Use two people to carefully roll the tape subsystem off the pallet and down the ramp.

▲ **WARNING.** To avoid strain or injury, always use two people to unload and move the tape subsystem. A 5175 tape module on a pedestal can weigh up to 330 pounds (150 kilograms).

5. Position the subsystem pedestal next to your system. See the Floor Plan Diagram in the Installation Document Checklist. You must position the pedestal:
 - Close enough to the system enclosure to allow the subsystem to be connected to the PMF CRU or IOMF CRU. Cables range from 10 to 75 feet (3 to 23 m) long.
 - Within 15 feet (4.6 m) of the power receptacle for the subsystem. You cannot use a power receptacle already dedicated to a system enclosure.
 - With a service and ventilation clearance of 24 inches (61 cm) at the rear of the subsystem and 36 inches (92 cm) at the front.
6. Remove the shipping restraints from inside the 5175 module as shown in [Figure 7-3](#) on page 7-5.
 - a. Grasp the hand hold at the top of the module back panel and pull the back panel down. The panel is hinged at the bottom.
 - b. Remove the shipping restraint (a metal plate) using the instructions on the plate.
 - c. With a slotted screwdriver, remove the four slide-retaining screws. The screws are located in an oval hole about two inches from the rear of the module.
 - d. Close the back panel, pushing firmly at the top to seat the fasteners.
 - e. Grasp the sides of the module front panel and pull it off.
 - f. Remove the shipping restraint (a metal plate) using the instructions on the plate.
 - g. Replace the front panel. Push firmly at the top and bottom of the panel to seat it.

Figure 7-3. Removing the Shipping Restraints From a 5175 Tape Subsystem

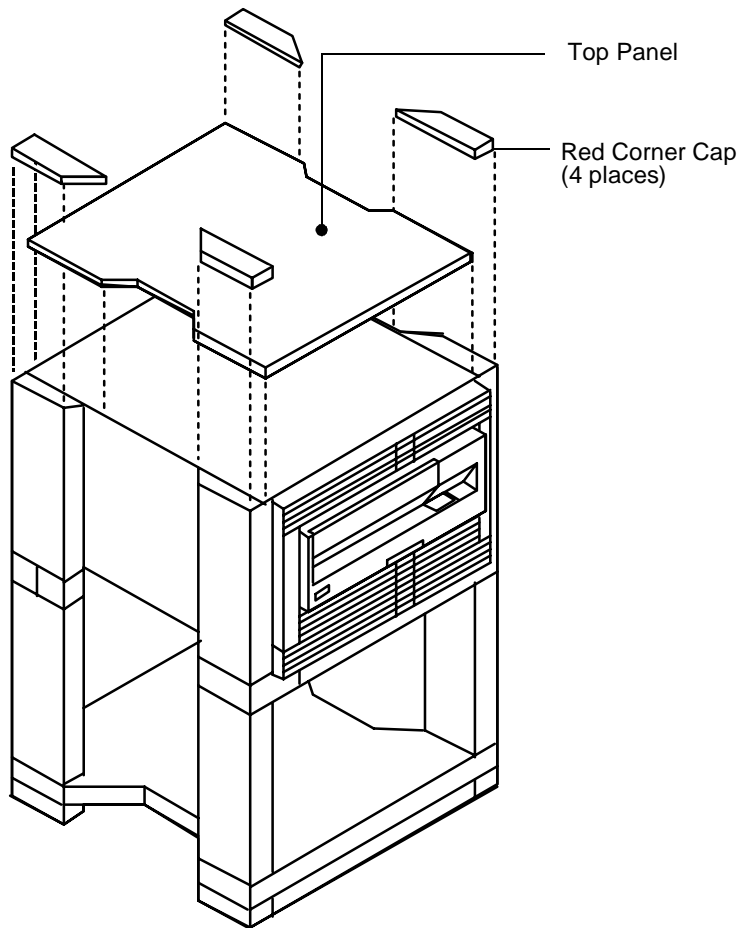


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-
7. On the pedestal, lower the legs, which are located next to each caster:
 - a. Turn each leg counterclockwise with your fingers until it touches the floor.
 - b. With a 15/16 inch (24 mm) wrench, turn the nut until the pad rests firmly on the floor.

8. Install the pedestal top panel and corner caps as shown in [Figure 7-4](#):
 - a. Position the pedestal top panel (packed separately) on top of the 5175 module, aligning the edges.
 - b. Position a red corner cap (packed separately) at each corner of the top panel, aligning the edges with the pedestal frame. Push down firmly to secure each cap. The four caps hold the top panel in place. Each cap fastens to the frame with a push/pull fastener.

Figure 7-4. Installing the Top Panel and Corner Caps on a 5175 Tape Subsystem



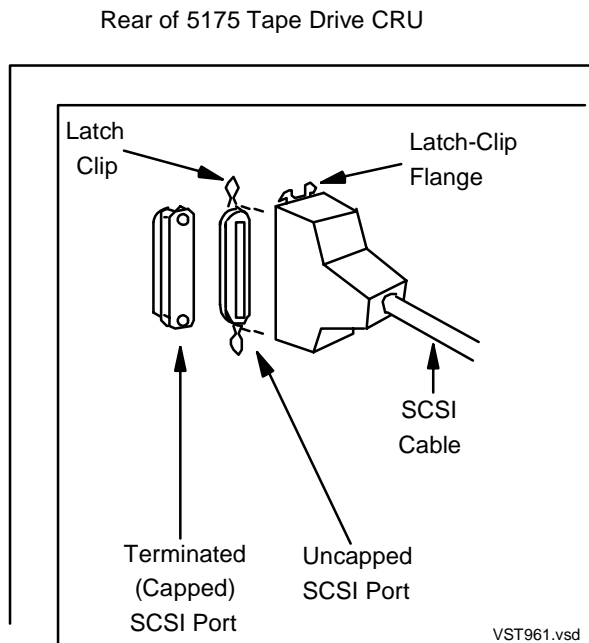
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Locate the tape subsystem SCSI cable, which is packed separately. For cable lengths and their corresponding part numbers, see the *Part Numbers* topic of the Service Information section of the NTL [Support and Service Library](#).

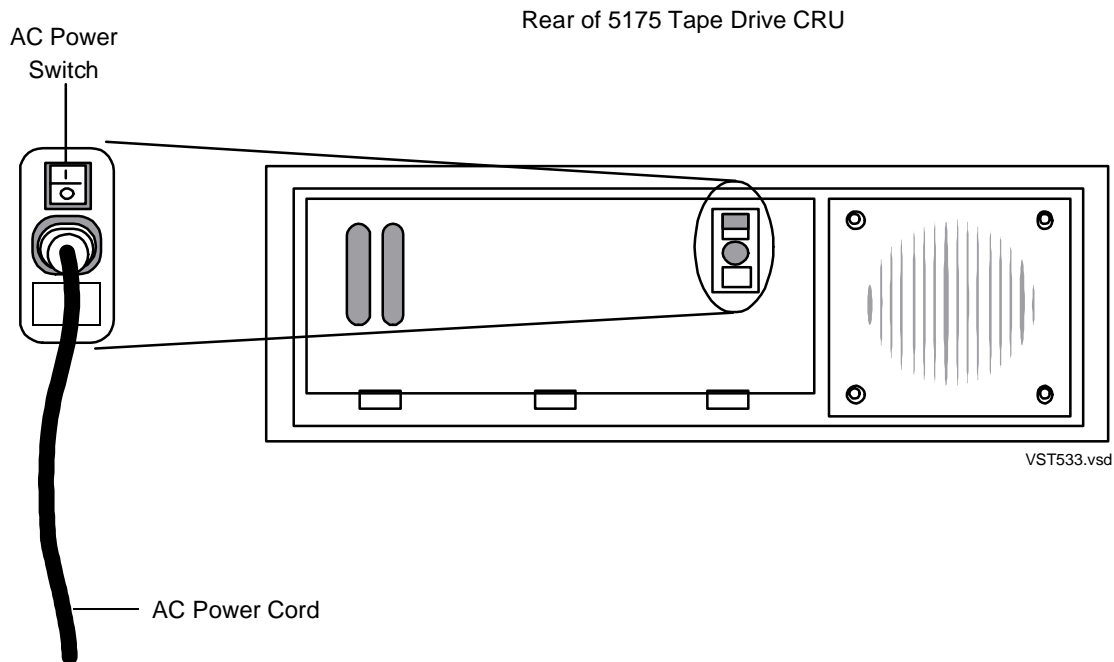
1. Connect the SCSI cable to the tape subsystem:
 - a. Open the back panel of the 5175 module.
 - b. Find the uncapped SCSI port at the rear of the tape drive CRU.

- c. Using the SCSI cable connector with the latch-clip flanges, attach the SCSI cable to the uncapped SCSI port, and latch the clips as shown in [Figure 7-5](#).

Figure 7-5. Connecting a SCSI Cable to a 5175 Tape Subsystem

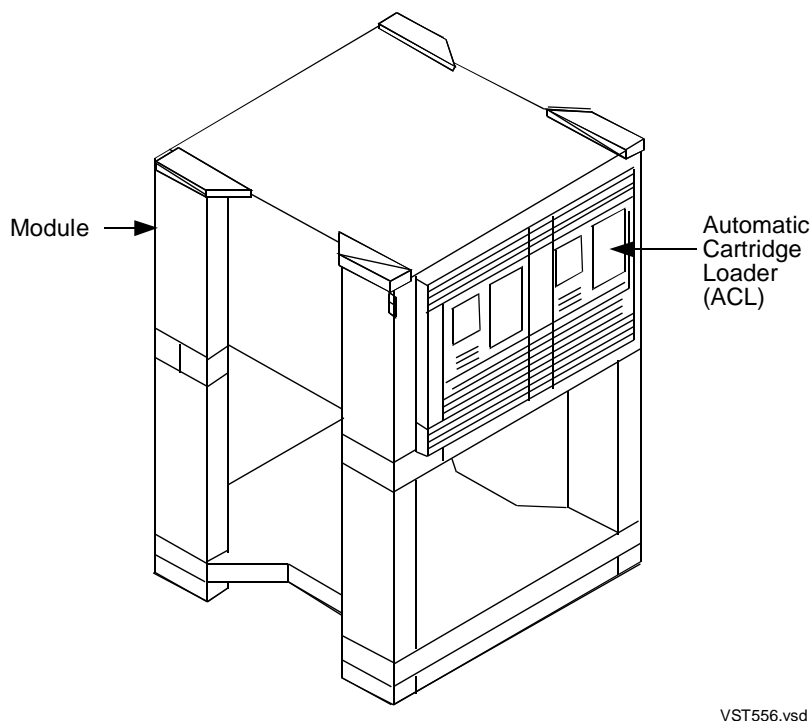


2. Attach the SCSI cable to the NonStop S-series server. See [Attaching a SCSI Tape Drive to the NonStop S-Series Server](#) on page 7-15.
3. Connect the AC power cord:
 - a. Remove the shipping restraint for the AC power cord.
 - b. On the lower left side of the front panel of the tape subsystem, make sure the standby push-button switch is in the OFF position.
 - c. Plug one end of the AC power cord into the AC power receptacle at the rear of the tape drive CRU as shown in [Figure 7-6](#) on page 7-8.
 - d. Plug the other end of the AC power cord into the designated power receptacle.
 - e. Close the back panel of the 5175 module. The panel is hinged at the bottom and held in place at the top with push/pull fasteners.
4. Push the AC power switch as shown in [Figure 7-6](#) on page 7-8.

Figure 7-6. AC Power Switch for 5175 Tape Drive CRU

Installing a 519x Cartridge Tape Subsystem

A 519x cartridge tape subsystem is a cartridge tape drive in a module on a storage pedestal as shown in [Figure 7-7](#).

Figure 7-7. 519x Tape Subsystem

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About Installing a 519X Tape Subsystem

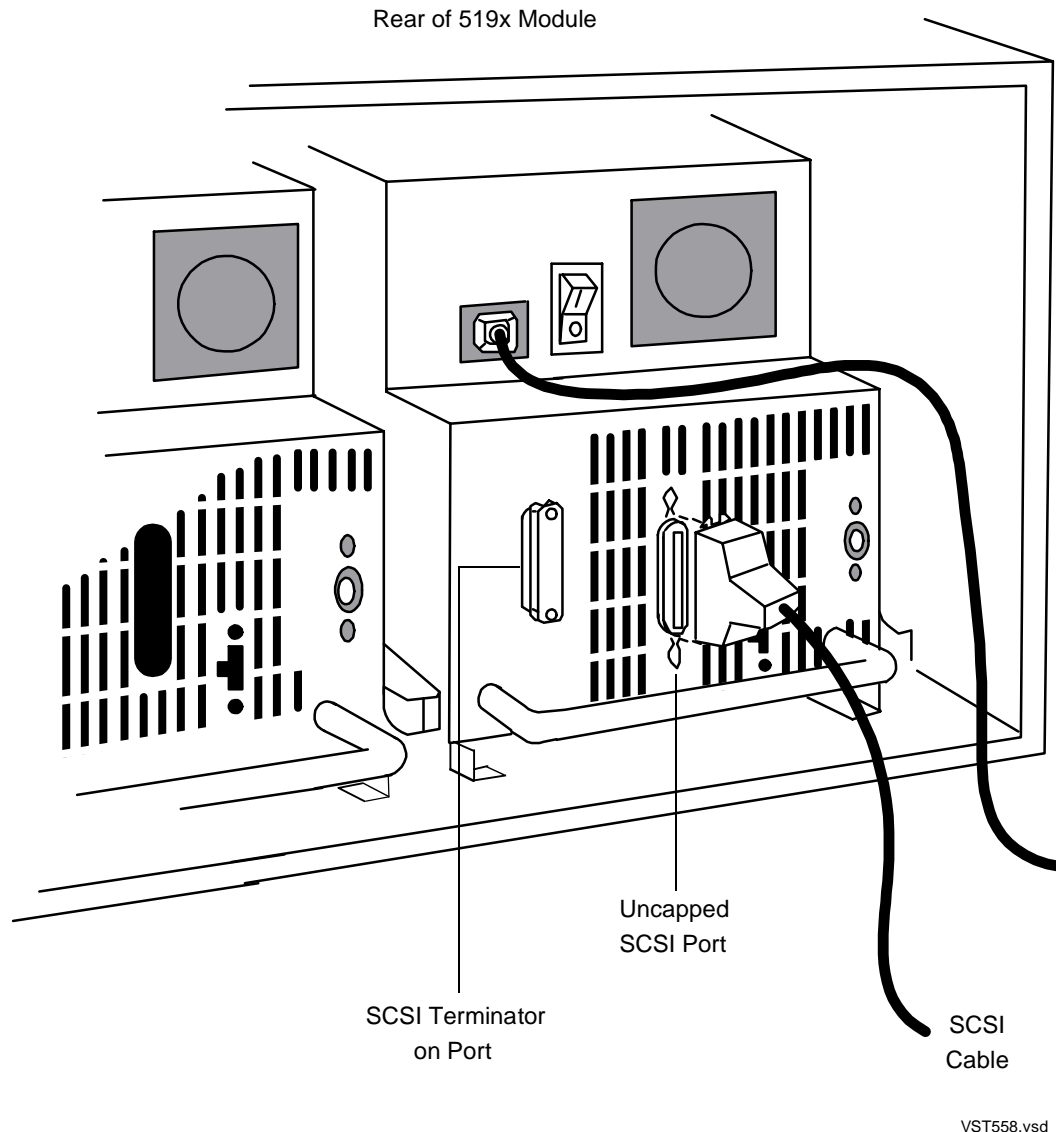
- For information on unpacking and installing the 519x tape drives, see the *5190/5194 Modular Tape Subsystem Manual*.
- A 519x tape subsystem that is shipped with the modular storage system pedestal is customer-installable. However, some maintenance or changes to an installed subsystem require a trained service provider. For more information, see the *5190/5194 Modular Tape Subsystem Manual*.
- To disconnect an installed 519x tape subsystem and reconnect it to another server, ensure that the firmware or hardware in your tape subsystem is at these version levels or higher:

Tape Drive	Firmware or Hardware Version
5190	097673-A05-07
5190ACL	097671-A08-11
5194	113644-A03-03
5194ACL	113643-A05-05

Installing a 519X Tape Subsystem

1. Connect the SCSI cable to the tape subsystem. See [Figure 7-8](#).
 - a. Open the rear bezel door of the tape module:
 1. Pull on the blue-green handle at the top of the door.
 2. Lower the door to a horizontal position.
 3. Pull up on the spring-loaded plungers to release the hinges.
 4. Remove the door from the module.

Figure 7-8. Connecting a SCSI Cable to a 519x Tape Subsystem



Find the tape subsystem SCSI cable. For cable lengths and their corresponding part numbers, see the *Part Numbers* topic of the Service Information section of the NTL [Support and Service Library](#).

- a. Find the uncapped SCSI port at the rear of the tape drive CRU. The uncapped port is the SCSI port that does not have a SCSI terminator installed. See [Figure 7-8](#).
 - b. Using the SCSI cable connector with the latch-clip flanges, attach the SCSI cable to the uncapped SCSI port and latch the clips.
 - c. Route the cable following the instructions in the *5190/5194 Modular Tape Subsystem Manual*.
1. Attach the SCSI cable to the NonStop S-series server. See [Attaching a SCSI Tape Drive to the NonStop S-Series Server](#) on page 7-15.
 2. Connect the AC power cord using instructions in the *5190/5194 Modular Tape Subsystem Manual*.
 3. Push the AC power switch.

Installing Other Tape Devices

Topic	Subsystem	Manuals (page 1 of 3)
4400	Automated cartridge system (ACS) tape library	Documentation is shipped with the tape library. Contact your service provider.
5142	External digital audio tape (DAT) drives	<i>5142-xSE Rackmount Tape Subsystem User Guide</i> <i>Models 5142 and 5142ACL 4mm Tape Drive Subsystems User Guide</i> (available in hardcopy only)
515x	Digital linear tape (DLT) drives	<i>5150/5151 Digital Linear Tape Subsystems Installation and Users Guide Manual</i> in the Third-Party Documentation Directory <i>5157/5157ACL S-Series Digital Linear Tape Subsystems Installation/Users Guide</i> <i>5158ACL S-Series Digital Linear Tape Subsystem Installation/Users Guide</i> <i>9710 (StorageTek) Addendum for NonStop Servers</i>
5159	Cartridge tape drive in L700 tape library	<i>L700 (CTL700) Installation and Operations Guide</i> (located in the Hardware Service and Maintenance Publications Library). Contact your service provider.
5242, 5242ACL	Digital audio tape (DAT) drives	<i>DAT 72 (Models 5242 and 5242ACL) Tape Drive User's Guide</i>
5242-2SE	Digital audio tape (DAT) unit	<i>DAT 72 Model 5242-2SE Rackmount Tape Unit User's Guide</i>
525x	High performance DLT	<i>5257/5257ACL Installation and User's Guide for S-Series Tape Enclosures</i> <i>5258 ACL Installation and User's Guide</i>
5259	High performance DLT drive in L700 tape library	<i>L700 (CTL700) Installation and Operations guide</i> (located in the Hardware Service and Maintenance Publications Library). Contact your service provider.
9310	Tape Library	Documentation is shipped with the tape library. Contact your service provider.
9490	Cartridge tape drives	Documentation is shipped with the tape drive. Contact your service provider.
9710	Tape Library	<i>9710 (StorageTek) Addendum for NonStop Servers</i>

Topic	Subsystem	Manuals (page 2 of 3)
9840 (CT9840-1)	Cartridge tape drive in L700 tape library	<i>L700 (CTL700) Installation and Users Guide</i>
9840 (CT9840-2)	Cartridge tape drive in 9710 tape library	<i>9840 (CT9840-2) Installation Guide for the 9710 ACS</i>
9840 (CT9840-3)	Cartridge tape drive in tape enclosure	<i>9840 (CT9840-3) Installation and Users Guide for NonStop S-Series Tape Enclosures</i>
9840 (CT9840-4)	Cartridge tape drive in 9310 tape library	Documentation is shipped with the tape drive.
9841 (CT9841FC-1)	Fibre channel tape drive in L700 tape library	<i>L700 (CTL700) Installation and Users Guide</i>
9841 (CT9841FC-4)	Fibre channel tape drive in 9310 tape library	Documentation is shipped with the tape drive.
CTL700	Tape Library	<i>L700 (CTL700) Installation and Users Guide</i>
M8520	Tape Library	<i>M8520 Installation and User's Guide</i>
N1522A	SCSI tape drive in M8520 tape library	<i>M8520 Installation and User's Guide</i>
VT5900-A	Virtual tape server	<i>Virtual TapeServer Installation Guide (Tape Labs)</i> (located in the NTL Hardware and Service Maintenance Collection). See your service provider. <i>Virtual TapeServer Operations and Administration Guide (Tape Labs)</i>
VT5900-B	Virtual tape server	<i>Virtual TapeServer Installation Guide (Tape Labs)</i> (located in the NTL Hardware and Service Maintenance Collection). See your service provider. <i>Virtual TapeServer Operations and Administration Guide (Tape Labs)</i>

Topic	Subsystem	Manuals (page 3 of 3)
VT5900-C	Virtual tape server	<i>Virtual TapeServer Installation Guide (Tape Labs)</i> (located in the NTL Hardware and Service Maintenance Collection). See your service provider. <i>Virtual TapeServer Operations and Administration Guide (Tape Labs)</i>
VT5901	Virtual tape server	<i>Virtual TapeServer Installation Guide (Tape Labs)</i> (located in the NTL Hardware and Service Maintenance Collection). See your service provider. <i>Virtual TapeServer Operations and Administration Guide (Tape Labs)</i>
VT5902	Virtual tape server	<i>Virtual TapeServer Installation Guide (Tape Labs)</i> (located in the NTL Hardware and Service Maintenance Collection). See your service provider. <i>Virtual TapeServer Operations and Administration Guide (Tape Labs)</i>
N.A.	Any tape drive attached to a ServerNet/DA	<i>6760 ServerNet/DA Manual</i>

If this documentation collection does not contain the manual for your tape library, contact your service provider.

Installing Fibre Channel Tape Devices Using an IOAM Enclosure

These Fibre Channel tape devices connect directly to the FCSAs in an IOAM enclosure within a NonStop S-series system using fiber-optic cables.

Note. For more information about the IOAM enclosure, the *Modular I/O Installation and Configuration Guide* is available to your service provider in NTL. For more information about FCSAs, the *Fibre Channel ServerNet Adapter Installation and Support Guide* is available for your service provider in NTL.

Product Number	Description	Manual
M8501	HP Ultrium 960 LTO Fibre Channel ACL tape drive, rack-mounted	<i>M8501 and M8502 ACL Installation and User's Guide</i>
M8502	HP Ultrium 960 LTO Fibre Channel ACL tape drive, tabletop	<i>M8501 and M8502 ACL Installation and User's Guide</i>
M8503	800 GB HP Ultrium 3 LTO Fibre Channel tape drive in L700 tape library	<i>L700 (CTL700) Installation and User's Guide</i>
M8504	HP Ultrium Fibre Channel tape drive in SL500 tape library	<i>SL500 (M852x) Tape Library Installation and User's Guide</i>
M8505	HP Ultrium 960 LTO Fibre Channel tabletop tape drive	<i>M8505 Tabletop Installation and User's Guide</i>

Attaching a SCSI Tape Drive to the NonStop S-Series Server

To attach a tape drive to any PMF CRU or IOMF CRU:

1. Determine which PMF CRU or IOMF CRU should be connected to the tape drive.

To Determine the Configuration of ...	See ...
Components that are factory configured	The SCF configuration file (\$SYSTEM.ZSYSCONF.SCF0000) printout shipped with your server
A system that has been started or components that have been installed and configured	<i>SCF Reference Manual for G-Series RVUs</i>

2. Using the SCSI cable connector with the thumbscrews, plug the other end of the SCSI cable into the differential SCSI port on the appropriate PMF CRU, IOMF CRU, or IOMF 2 CRU.

- NonStop S7000, S7400, S70000, and S72000 PMF CRUs and IOMF CRUs are equipped with an external SCSI passthrough terminator. Attach the SCSI cable to this SCSI passthrough terminator, which is factory installed on the differential SCSI port.

△ **Caution.** Never remove the SCSI passthrough terminator from the differential SCSI port. The SCSI passthrough terminator must be in place to connect a tape drive to these PMF CRUs or IOMF CRUs. If it is not present, contact your service provider.

- On some CRUs, the SCSI terminator is inside the CRU. In this case, attach the tape drive cable to the external connector.

The CRUs that contain an internal SCSI terminator include:

- IOMF 2 CRUs
- S7x00 PMF CRUs of model S7600 and higher
- Sxx000 PMF CRUs of model S74000 and higher

3. Tighten the thumbscrews on the cable connector by hand or use a small slotted screwdriver.

To attach tape drives to a 6760 ServerNet device adapter, see the *6760 ServerNet/DA Manual*.

Installing a SWAN or SWAN 2 Concentrator

The ServerNet wide area network (SWAN) concentrator communications device or the SWAN 2 concentrator communications device connects to a server using a pair of Ethernet local area networks (LANs). The SWAN concentrator or the SWAN 2 concentrator provides WAN connections supporting both synchronous and asynchronous data over a variety of electrical interfaces. The SWAN concentrator or the SWAN 2 concentrator can be installed in a 19-inch rack or on a desk or tabletop.

Install the SWAN concentrator or the SWAN 2 concentrator after the system is powered on, tested, and running the operating system. For information about installing or configuring a SWAN concentrator, see the *SWAN Concentrator Installation and Support Guide*. For information about installing or configuring a SWAN 2 concentrator, see the *SWAN 2 Concentrator Installation and Support Guide*.

You can install any SWAN or SWAN 2 concentrator by using the WAN Wizard Pro application. Depending on the RVU, you gain access to the WAN Wizard Pro through the taskbar on your system console by using one of these methods:

- For G06.21 RVU and later RVUs:

Start>Programs>HP WAN Wizard Pro>WAN Wizard Pro

- For G06.20 RVU and earlier RVUs:

Start>Programs>Compaq TSM>Guided Configuration Tools>WAN Wizard

Installing an AWAN Server

The two major types of asynchronous wide area network (AWAN) servers are:

- AWAN 3883/4/5 access server
- AWAN 3886 server (3886-8, 3886-16, and 3886-32)

Both AWAN servers are LAN-based communications devices that provide asynchronous connections to various types of terminals as well as to serial printers and to workstation-based 6530 and VT-series terminal emulators for NonStop S-series servers. AWAN servers support multiple protocols, so you can connect to an AWAN server simultaneously using different types of protocols. All of these AWAN servers can take advantage of networking products and subsystems such as Telserv, the HP NonStop TCP/IP subsystem, the HP NonStop IPX/SPX subsystem, and others.

For information about installing or configuring an AWAN 3886 server, see the *AWAN 3886 Server Installation and Configuration Guide*. For up-to-date information regarding all AWAN servers, see the *Interactive Upgrade Guide*.

Installing Printers and Terminals

You can install printers and terminals through the WAN, SLSA, ATP6100, or TELSERV subsystems, depending on how each device is physically attached to the server.

- Serial-connected printers can be connected to a NonStop S-series server through:
 - A SWAN or SWAN 2 concentrator using WANPRINT printer software
 - An AWAN server using spooler FASTPxxx print process software
- LAN-attached printers can be connected to NonStop S-series servers through an Ethernet LAN and spooler FASTPxxx print process software.

For more information:

Topic	Subsystem	Manuals (page 1 of 2)
Ethernet	WAN	<i>Ethernet Adapter Installation and Support Guide</i>
Local area network (LAN)	SLSA	<i>Fast Ethernet Adapter Installation and Support Guide</i> <i>Gigabit Ethernet Installation and Support Guide</i> <i>LAN Configuration and Management Manual</i> <i>SWAN Concentrator Installation and Support Guide</i>
Printer manuals		Third-party documentation available in NTL.
Adapters		<i>G06.nn Release Version Update Compendium</i>
Supported connections		

Topic	Subsystem	Manuals (page 2 of 2)
Configuring hosts and printers		<i>Spooler FASTP Network Print Processes Manual</i>
Configuring UNIX-based Line Print Daemon (LPD), XNS, and Novell software		
Serial port	WAN	<i>Asynchronous Terminals and Printer Processes</i>
SWAN concentrator	ATP6100	<i>Configuration and Management Manual</i>
SWAN 2 concentrator		<i>SCF Reference Manual for Asynchronous Terminals and Printer Processes</i>
Wide area network (WAN)		<i>SWAN Concentrator Installation and Support Guide</i>
AWAN access server	WAN	<i>AWAN 3886 Server Installation and Configuration Guide</i>
Asynchronous wide-area network (AWAN)	TELSERV	<i>SCF Reference Manual for Telserv</i>
		<i>SWAN Concentrator Installation and Support Guide</i>
		<i>TCP/IP Configuration and Management Manual</i>
		<i>TCP/IP (Parallel Library) Configuration and Management Manual</i>
		<i>TCP/IPv6 Configuration and Management Manual</i>

Powering On and Starting the System

This section describes how to power on NonStop S-series system enclosures, how to power on external devices, and how to start the system.

- △ **Caution.** IOAM enclosures, Fibre Channel Disk Module (FCDM)s, and ESSs must be installed, powered on, and started by a service provider trained by HP. Your service provider should refer to the *Modular I/O Installation and Configuration Guide* which is located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

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Starting a System for the First Time

Startup Checklist

1. Determine whether the AC power receptacles in your computer room are compatible with the AC power cords on your new system.
2. Determine which AC power receptacles are controlled by which circuit breakers.
3. Install and connect these components, but do not power any of them on yet:

Component	See	Notes	Page
Ethernet switch or hub	Installing the Ethernet Switch or Hub	The switch or hub also must be connected to the server and the system console.	6-5
EPO cables	Emergency Power-Off Cables	Install if system requires EPO wiring.	1-25
Power-on cables	1. Connect Power-On Cables	Power-on cables are not the same as AC power cords.	3-1
Primary system console	Installing, Starting, and Testing a System Console		5-1
ServerNet cables	ServerNet Cabling	Install if system contains two or more enclosures.	1-35
Service-side doors	Installing Service-Side Doors	Shipped with all new systems; optional on others.	4-1
Enclosures	Installing Enclosures		2-1
Tape subsystem	Installing Tape Drives	It is recommended that you connect a tape subsystem to group 01.	7-1

4. Power on external devices such as the primary console, the tape subsystem, and any other devices you want started when the system starts.

If you connect only a primary system console and a tape subsystem to the system now, you can test your system before reconfiguring it or connecting other devices.

If you connect the tape subsystem to group 01, you can also dump processor memory to tape to diagnose a halt in processors 0 or 1, and use BACKUP and RESTORE to save data to and restore data from tape.

5. Power on the system.

Note. If an IOAM enclosure or FCDM is installed, they are powered on when you connect them to the AC power source. For more information, your service provider should refer to the *Modular I/O Installation and Configuration Guide* which is located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

6. Test the power cords and supplies in the system for fault-tolerance.

7. Configure the server components of the OSM or TSM software package. To configure and start OSM server processes, see the *OSM Migration Guide*.
8. With the OSM or TSM Low-Level Link, verify that the topology for the system has been set correctly and that system components display the correct attributes.
9. Start the system, which includes loading the NonStop operating system into the memory of each processor in the server and then reloading the processors.

Powering On External System Devices

Before you power on any system enclosures, power on the external system devices and any other devices you want started when the system starts. External system devices include system consoles, modems, and tape subsystems.

Powering On the Primary System Console and Modem

To power on the primary system console and modem, see [Powering On a System Console](#) on page 5-8.

Powering On the Tape Subsystem

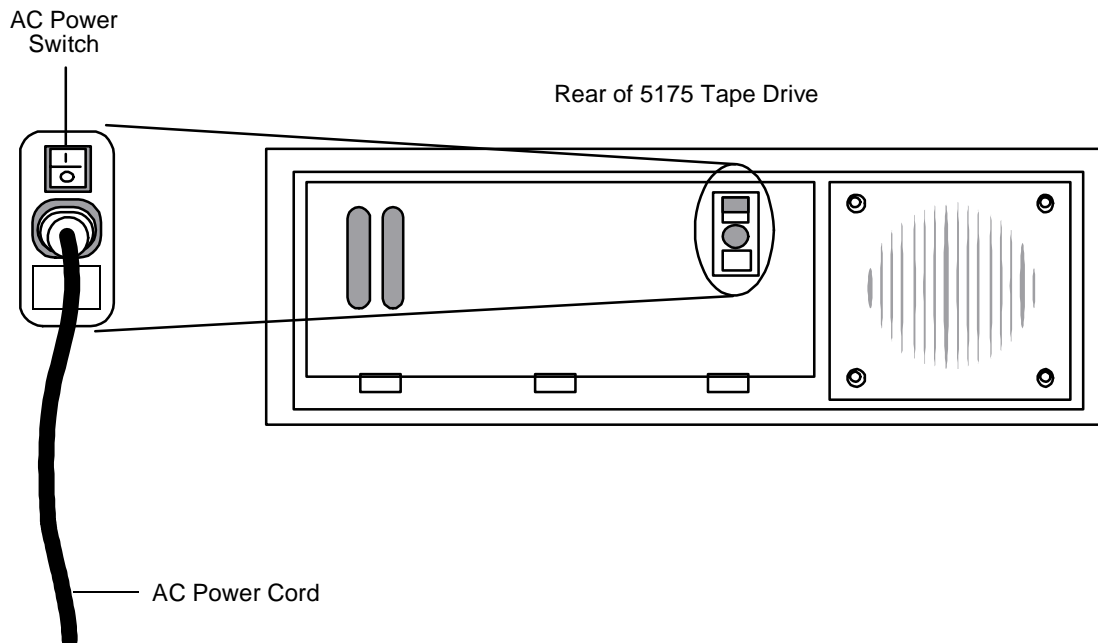
Choose one of these procedures to power on your tape subsystem:

Procedure	Page
Powering On a 5175 Tape Subsystem	8-3
Powering On a 519x Tape Subsystem	8-4

Powering On a 5175 Tape Subsystem

1. Ensure the 5175 tape subsystem is installed correctly. See [Installing a 5175 Open-Reel Tape Subsystem](#) on page 7-2.
2. Ensure that the AC power cord for the 5175 tape subsystem is plugged into a dedicated power receptacle, as indicated on the Floor Plan Diagram.

For every piece of equipment that has two power cords, plug each power cord into an AC power outlet controlled by a different breaker.
3. On the lower left side of the front panel, ensure the standby push-button switch is in the out (OFF) position.
4. At the back of the 5175 module, grasp the hand hold at the top of the back panel and pull down the back panel.
5. Press the AC power switch to apply power to the tape drive. See [Figure 8-1](#).

Figure 8-1. AC Power Switch for 5175 Tape Drive

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6. Close the back panel of the 5175 module, pushing at the top to seat the fasteners.
7. At the front of the tape subsystem, ensure that the tape door is closed.
8. On the lower left side of the front panel, press the standby push-button switch to the ON position.

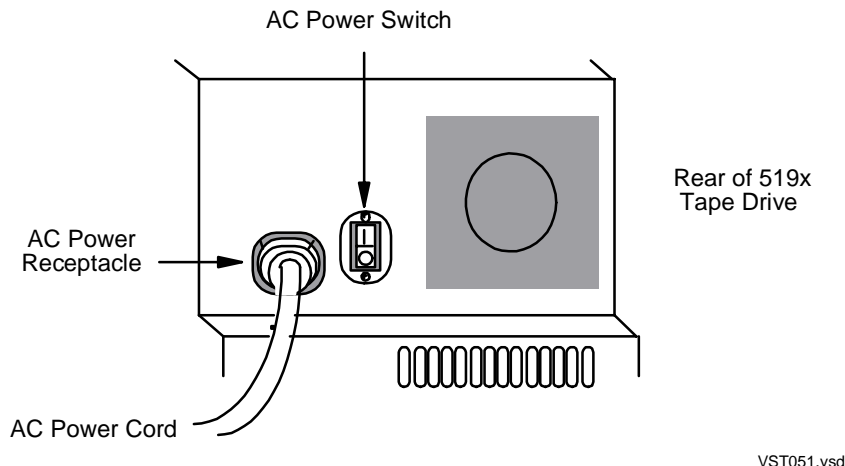
Powering On a 519x Tape Subsystem

The power-up sequence for the 519x tape subsystem is described in detail in the *5190/5194 Modular Tape Subsystem Manual*.

1. Ensure the 519x tape subsystem is installed correctly. See [Installing a 519x Cartridge Tape Subsystem](#) on page 7-8.
2. Ensure that the AC power cord for the 519x tape subsystem is plugged into a dedicated power receptacle, as indicated on the Floor Plan Diagram.

For every piece of equipment that has two power cords, plug each power cord into an AC power outlet controlled by a different breaker.

3. Open the rear bezel door of the 519x module by pulling the blue-green handle at the top. You can lower the door to a horizontal position.
4. Set the AC power switch to the ON position. See [Figure 8-2](#).

Figure 8-2. AC Power Switch for 519x Tape Drive

5. Close the rear bezel door of the 519x module.
6. If the tape subsystem includes an automatic cartridge loader (ACL), install the cleaning cartridge in the ACL. For instructions on installing the cleaning cartridge, see the *5190/5194 Modular Tape Subsystem Manual*.

You must install the cleaning cartridge before operating the ACL. If no cleaning cartridge is installed, a CHK F8 check code appears on the ACL front panel when the automatic cleaning routine is activated. Failing to install the cleaning cartridge can cause dirt buildup on the read-write head.

7. Check the tape subsystem SCSI ID using the operator buttons on the tape drive or ACL front panel. Reset the SCSI ID, if necessary, using the operator buttons. For information on checking and setting the SCSI ID, see the *5190/5194 Modular Tape Subsystem Manual*.

Powering On the System

Fault Tolerance and Access to Power Cutoffs

- Most NonStop S-series equipment supports two power cords. For fault tolerance, do not plug the two power cords on any one piece of equipment into the same AC receptacle. Plug each cord into a different receptacle that is connected to a different breaker.
- The AC receptacles to which the server is connected must be accessible to the operator.

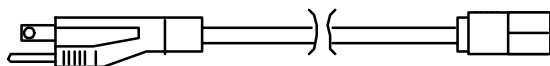
Alternatively, the branch circuit breaker supplying power to each receptacle must be accessible to the operator and plainly marked to indicate which receptacle the circuit breaker supports.

Power-On Procedure Using AC Power Cords

1. Find the detachable AC power cords included with your system. See [Figure 8-3](#).
 - AC power cords for enclosures without power shelves are packaged in one of the boxes included with your system.
 - AC power cords for enclosures with power shelves are preconnected to the power shelves in the enclosures.

The AC power cord plugs vary depending on the country to which the system is shipped. For AC power cord plug types and part numbers, see the *Part Numbers* topic of the Service Information section of the NTL [Support and Service Library](#) on page xxiv.

Figure 8-3. AC Power Cord

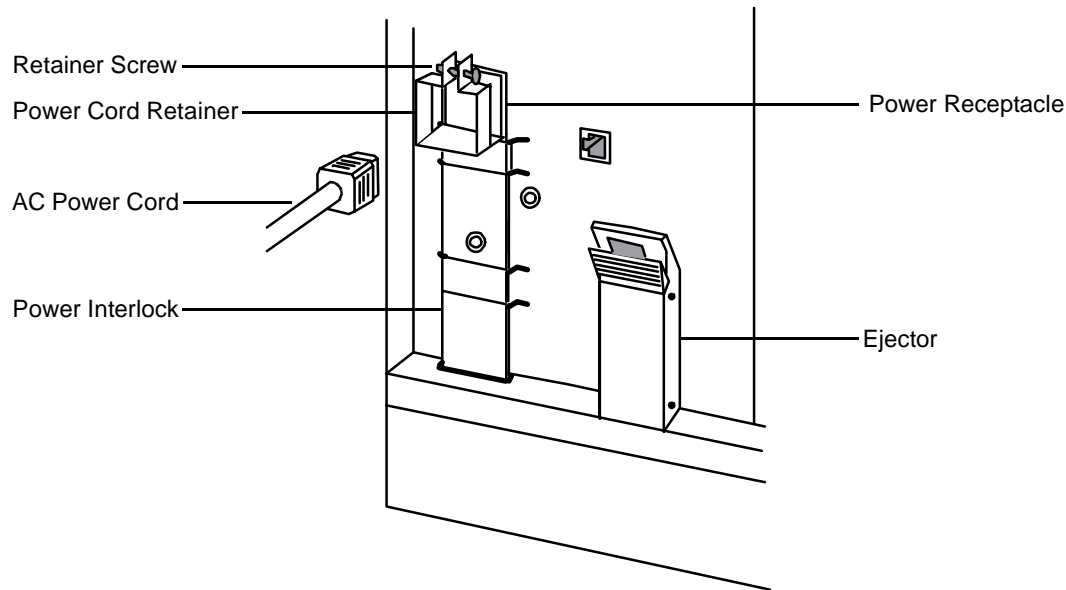


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-
1. For each enclosure in the system, plug one end of a detachable AC power cord into the appropriate receptacle on the system enclosure:

△ **Caution.** Do not plug the other end of the AC power cord into the dedicated outlet at this time. Doing so immediately powers on the PMF CRU or IOMF CRU.

- For enclosures that do not have power shelves:
 - a. Start with the group 01 processor enclosure.
 - b. Ensure the power interlock on the PMF CRU or IOMF CRU in slot 50 or 55 is fully engaged so that the power cord retainer is aligned with the power receptacle.
 - c. Connect the AC power cord to the power receptacle on the PMF CRU or IOMF CRU as shown in [Figure 8-4](#).
 - d. Using a stubby Phillips screwdriver, secure the AC power cord plug in the power cord retainer by tightening the retainer screw.
 - e. Repeat Step b through Step d for the other AC power cord for this enclosure and for all remaining enclosures that do not have power shelves.

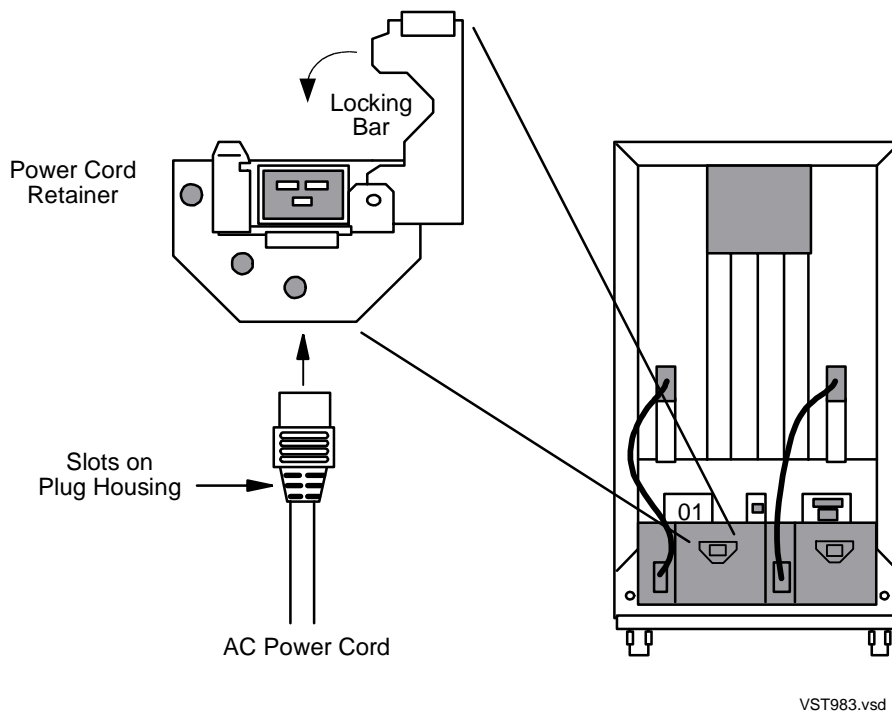
Figure 8-4. Connecting an AC Power Cord to an Enclosure With No Power Shelf

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- For enclosures that have power shelves, the AC power cords are shipped preconnected to the power shelves. Use this procedure only if these cords are not connected:
 - a. Start with the group 01 processor enclosure.
 - b. Insert the power cord into the retainer in the power shelf. See [Figure 8-5](#). Orient the molded end of the AC power cord with the single contact on bottom, and insert the plug into the retainer until it is fully seated.
 - c. If you have difficulty inserting the plug into the retainer, you might need to remove the power supply from the power shelf, insert the power cord into the retainer, and reinstall the power supply.

▲ **WARNING.** The underside of the locking bar is sharp. Placing your fingers under the locking bar can result in injury. Failure to fully seat the plug into the retainer can result in cord damage from the locking bar.

- d. Swing the locking bar down until it engages one of the slots on the plug housing and snaps into place.
- e. Repeat Step b through Step d for the other AC power cord for this enclosure and for all remaining enclosures that have power shelves.

Figure 8-5. Connecting an AC Power Cord to an Enclosure With a Power Shelf

-
2. When you are ready to power on the system, plug the AC power cords for the enclosures into the designated AC receptacles indicated on the Floor Plan Diagram.

If any piece of equipment has two power cords, plug each power cord into an AC power outlet controlled by a different breaker.

Start with the highest numbered group enclosure. Then work through the remaining enclosures in descending group-number order, from the highest group to group 01. The last group to be powered on is group 01.

If the AC power cords have a twist-lock plug on the end that connects to the AC receptacle, the receptacles at your site must be equipped to accept the twist-lock plugs.

If the dedicated AC receptacles are controlled by circuit breakers and currently do not have power, switch the circuit breakers on to provide power to the system.

3. Monitor power-on activity. These symptoms indicate that the system is powered:

- Fans on the appearance side of an enclosure start turning, and air begins to circulate through the enclosure. Place your hand near the exhaust grill, which is located above slots 51 through 54 on the service side, to feel for air circulation.

If the fans do not start turning a few seconds after you power on the system, check that the AC power cords and power-on cables are properly connected.

△ **Caution.** If the green power-on light-emitting diodes (LEDs) on the various CRUs are lit but the fans are not turning, power off the system immediately and contact your service provider.

- After the fans start to operate, the other system components begin to power on. Status LEDs on the various enclosures and CRUs light during a series of power-on self-tests (POSTs). Eventually, all components in the group 01 processor enclosure power on, and then the components in other groups power on one after another. When the POSTs finish successfully, which can take up to 10 minutes, the green power-on LEDs light on all CRUs. All LEDs become lit briefly during the POSTs, but only the green power-on LEDs should remain lit after the POSTs finish.

Ensure that the POSTs have finished successfully and that only green power-on LEDs are lit in the system enclosures before you start the system. See system startup procedures on [8-5](#).

For more information about status LEDs, see [Status LEDs During a Power-On Procedure](#) on page 8-10.

If AC power is being supplied to the system but the system still does not appear to be powered, the system might be running internal tests. Wait several minutes (at least 10 minutes for large configurations). If the system is still not powered on after this time and you cannot determine the cause of the problem, contact your service provider.

4. After all power-on tests are completed and the system is running, check the AC power cords. Perform this test only if you have connected redundant power cords to separate circuits. See Step 2 on page [8-8](#).
- a. Locate the circuit breaker that controls half the power cords.
 - b. Switch this breaker off.
 - c. Check all objects with redundant power cords to be sure that they are still operating.
 - d. Switch this breaker back on.
 - e. Locate the other circuit breaker that controls the other half of the power cords.
 - f. Switch this breaker off.

- g. Check all objects with redundant power cords to be sure that they are still operating.
- h. Switch this breaker back on.

If any two-corded piece of equipment fails during either power shutdown, there are three possibilities. In descending order of probability, the possibilities are:

- It is plugged in improperly.

Check the connection between each power cord and the AC power receptacle to which it is connected. If necessary, unplug and replug each cord to ensure that it is seated properly in the receptacle.

- It has a defective power cord.
- It has a defective power supply

Status LEDs During a Power-On Procedure

During a system power-on procedure, status LEDs on the enclosures and CRUs light during a series of POSTs. [Table 8-1](#) lists the status LEDs and their functions.

Table 8-1. Status LEDs and Their Functions (page 1 of 2)

Location	LED Name	Color	Function
PMF CRU	Power-on	Green	Lights when the PMF CRU is powered on successfully. On PMF CRUs of model S74000 and higher, lights as soon as power is applied.
	Service	Amber	Lights temporarily during power on when the PMF CRU has been initialized successfully. Lights continuously if POST fails. Flashes if the service processor (SP) image is being loaded from its peer.
IOMF CRU and IOMF 2 CRU	Power-on	Green	Lights when the IOMF CRU is powered on successfully.
	Service	Amber	Lights temporarily during power on when the IOMF CRU has been initialized successfully. Lights continuously if POST fails.
	ServerNet port service	Amber	Lights when the service processor (SP) detects an error in the transfer of ServerNet data.
IOAM Enclosure	Contact your service provider for LED status information after powering on an IOAM enclosure.		

Table 8-1. Status LEDs and Their Functions (page 2 of 2)

Location	LED Name	Color	Function
SEB or MSEB	Power-on	Green	Lights when the SEB or MSEB is powered on successfully.
	Fault	Amber	Lights temporarily during power on until the SEB or MSEB has been successfully configured by the service processor (SP). Lights continuously to indicate that the SEB or MSEB is not in a fully functional state.
	ServerNet port	Yellow	Unused.
ServerNet adapter	Power-on	Green	Lights when the ServerNet adapter is powered on successfully.
	Service	Amber	Lights temporarily during power on when the ServerNet adapter has been initialized successfully. Lights continuously if POST fails.
Disk drive	Power-on	Green	Lights when the drive is receiving power.
	Activity	Yellow or amber	Lights when the disk drive is executing a read or write command.
FCDM	Contact your service provider for LED status information after powering on an FCDM.		
System enclosure	Group service	Amber	Lights if a command to light the group service LED was issued using OSM or TSM. Lights during certain OSM guided replacement procedures.

Troubleshooting Abnormal LED States

Hardware or software faults can prevent the green power-on LED on a CRU from lighting when power is applied. If the amber service LED for a CRU lights and remains lit, the CRU cannot be accessed. A fault might have been detected, or the CRU might not have been successfully initialized and configured for use as a system resource.

Note. For troubleshooting abnormal LED states displayed in IOAM enclosures or FCDMs, contact your service provider trained by HP.

Table 8-2. Troubleshooting Abnormal LED States (page 1 of 2)

Location	LED State	Action
System enclosure	Group service LED is flashing.	<p>Check the group ID switch settings for all enclosures in the system:</p> <ul style="list-style-type: none"> ● Settings for the two switches within any enclosure must be the same. ● Settings for any two enclosures must be different. <p>Change the switch settings, if necessary, using the information about adding a processor enclosure in the <i>NonStop S-Series System Expansion and Reduction Guide</i>.</p> <p>In OSM, the action is Set Service LED State, which sets the state to On or Off. In TSM, the actions are Set Group Service LED and Clear Group Service LED.</p>
PMF CRU	Amber service LED is lit.	<p>With the OSM or TSM Event Viewer, check the EMS log files for pertinent event messages.</p> <p>Retry the operation.</p> <p>Replace the PMF CRU if necessary. See:</p> <ul style="list-style-type: none"> ● PMF CRU and IOMF CRU Power-On Self-Tests on page 1-57 ● OSM Guided Replacement Procedures on page xxiv ● TSM Guided Replacement Procedures on page xxv

Table 8-2. Troubleshooting Abnormal LED States (page 2 of 2)

Location	LED State	Action
IOMF CRU	Amber service LED is lit.	<p>With the OSM or TSM Event Viewer, check the EMS log files for pertinent event messages.</p> <p>Retry the operation.</p> <p>Replace the IOMF CRU if necessary. See:</p> <ul style="list-style-type: none"> ● PMF CRU and IOMF CRU Power-On Self-Tests on page 1-57 ● OSM Guided Replacement Procedures on page xxiv ● TSM Guided Replacement Procedures on page xxv
SEB or MSEB	Amber service LED is lit.	<p>With the OSM or TSM Event Viewer, check the EMS log files for pertinent event messages.</p> <p>Reseat the SEB or MSEB, as described on 2-25.</p> <p>If necessary, replace the SEB or MSEB. See:</p> <ul style="list-style-type: none"> ● OSM Guided Replacement Procedures on page xxiv ● TSM Guided Replacement Procedures on page xxv
	Yellow ServerNet port LEDs do not light.	No corrective action is necessary. SEB and MSEB yellow LEDs are not used.
ServerNet adapter	Amber service LED is lit.	<p>With the OSM or TSM Event Viewer, check the EMS log files for pertinent event messages. Reseat the adapter according to in the manual specific to that adapter. Replace the adapter if necessary.</p>

Verifying Topology and System Components

Before you start the system, use the OSM or TSM Low-Level Link to verify that the topology for the system has been set correctly and that system components are present with the correct attributes:

Note. To verify IOAM enclosure components, you must use the OSM Low-Level Link.

1. Log on to the OSM or TSM Low-Level Link.

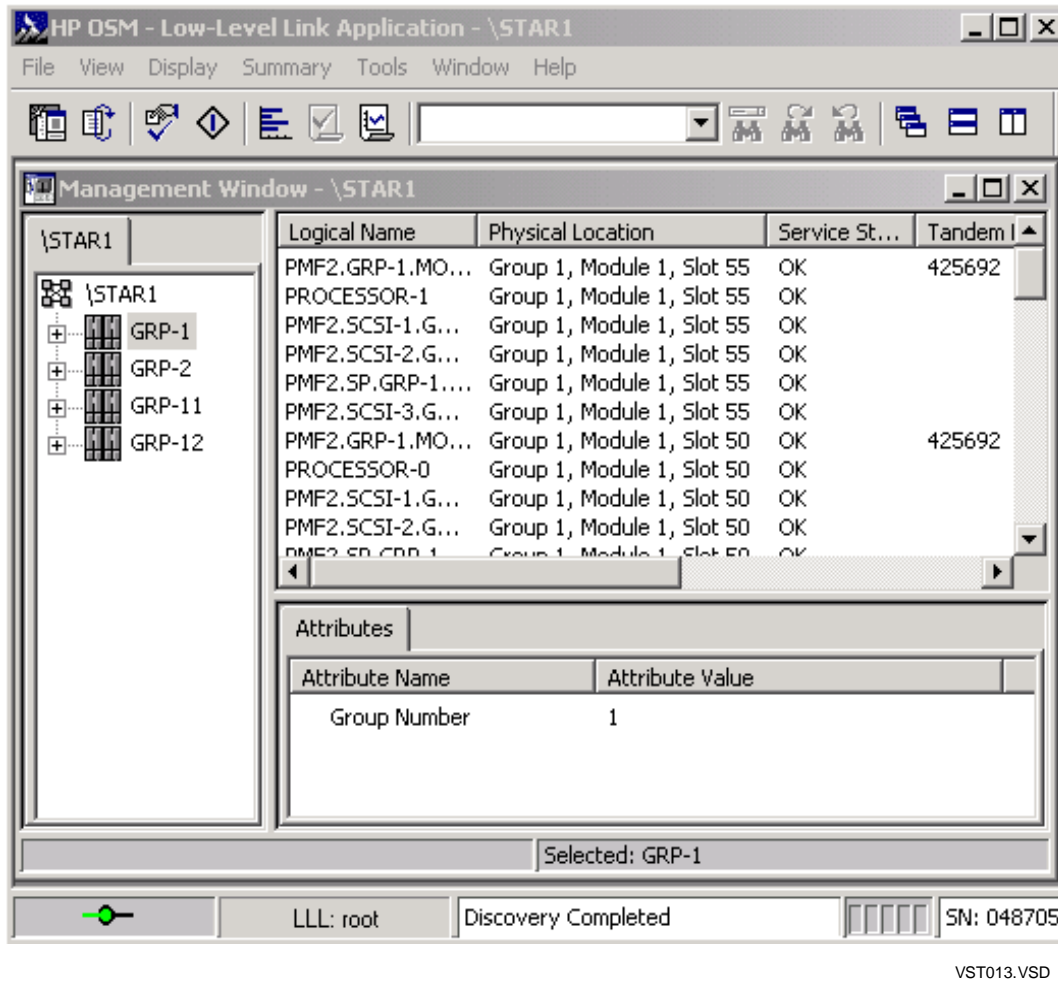
The Low-Level Link window and Log On to Low-Level Link dialog box appear.

2. In the Log On to Low-Level Link dialog box:
 - a. In the system list, select the system **NONAME**.
 - b. Enter **root** as the user name, with no password.
 - c. Click **Log on**.

3. On the toolbar, click **System Discovery**.

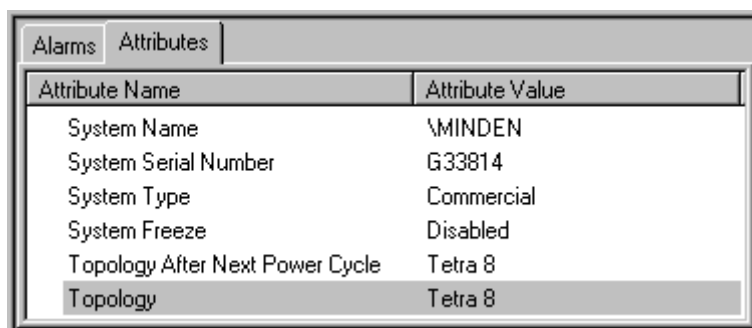
When system discovery finishes, the Management window appears as shown in [Figure 8-6](#).

4. Resize the Management window so that its tree, view, and details panes are fully visible. Resize the view pane so that the group 01 enclosure (GRP-1) is visible.

Figure 8-6. Management Window in OSM or TSM Low-Level Link

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5. Verify that the system topology is set correctly by referring to the Topology attribute in the details pane. The Attributes tab must be selected as shown in [Figure 8-7](#).

Figure 8-7. Verifying the System Topology

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If the Topology attribute value (Tetra 8 or Tetra 16) does not match the system configuration, you must reset the topology before loading the system. To reset the topology, see the OSM Low-Level Link online help or the *OSM User's Guide*.

- △ **Caution.** If the Topology attribute value specified in the details pane does not match the configuration of the installed system, the view pane might not display all installed enclosures.

6. Verify that the system components in the tree pane match the components ordered.
7. From the tree pane, click each system component in the enclosure. The attributes for the selected component appear in the details pane. Verify that the value for each attribute is as listed in [Table 8-3](#) on page 8-16.

If the Power State attribute for a PMF CRU does not have a value of OK, contact your service provider. The PMF CRU is either powered off or contains a fault.

Table 8-3. Checking the Attributes of Selected System Components

Tree Pane	Example	Details Pane: Attributes Tab	
		Name	Value
Double-click each IOMF or IOMF 2 CRU.	IOMF.GRP-11. MOD-1.SLOT-50	Power State	OK
Click the power supply in each IOMF or IOMF 2 CRU.	IOMF.PS.GRP-11. MOD-1.SLOT-50	Logon State	On
Double-click each PMF CRU.	PMF.GRP-1. MOD-1.SLOT-50	Power State	OK
Click the processor in the PMF CRU.	PROCESSOR-0	Total Memory Size	MB should match the memory ordered.
NonStop S7000 servers: click the power supply in the PMF CRU.	PMF.PS.GRP-1. MOD-1.SLOT-50	Logon State	On
All NonStop S-series servers except the S7000: click the power supply.	PS.GRP-1. MOD-1.SLOT-1	Logon State	On
Click remaining components.	FAN.GRP-1 .MOD-1.SLOT-25	Power State	OK

8. Close the Management window.
9. Optional: Run the SP Tool Application (intended for use only by trained service providers) to retrieve detailed information about the system hardware components and ServerNet system area network.

As of the G06.22 RVU, the SP Tool is no longer packaged with TSM. It is now packaged with the OSM Low-Level Link or it can be installed independently (from the HP NonStop System Console Installer CD) and can be used in conjunction with either the OSM or TSM software package.

- a. Run the SP Tool Application:
 - To start the SP Tool Application independently:
 1. Click **Start > Programs > HP SP Tool > SP Tool**. The SP Tool Logon dialog box appears.
 2. In the system list, select the system you want to log on to.
 3. Enter the low-level link (MSP) user name and password in the User Name and Password fields, respectively.
 4. Click **Log On**. The SP Tool Application main window appears.
 - To start the SP Tool Application from the OSM Low-Level Link:
 1. Launch the OSM Low-Level Link.
 2. In the system list, select the system you want to log on to.
 3. Enter the low-level link (MSP) user name and password in the User Name and Password fields, respectively.
 4. Click **Log On**. The OSM Low-Level Link Application main window appears.
- b. From the Tools menu, select **Advanced Service Processor Tool**. The HP SP Tool main window appears.
- c. From the **System** menu, select **Verify System** to display configuration information for all PMF CRUs and IOMF CRUs in the system and to verify that all ServerNet paths are functional.
- d. From the **ServerNet** menu, select **Path Test** to verify that all ServerNet paths from group 01 to all other groups in the system are functional.
- e. Click **Exit** to close the SP Tool Application.

Starting the System

Starting the system requires loading the NonStop operating system into the memory of each processor in the server. You load the operating system into one processor's memory from disk and then reload the remaining processors in the server.

For additional information on system startup, see [Section 1, Introduction](#), and the *NonStop S-Series Operations Guide*.

This subsection assumes that you have already logged on to the OSM or TSM Low-Level Link to verify system components and the topology. If you have not completed this task, see [Verifying Topology and System Components](#) on page 8-14.

If the system disk is not located in group 01, slots 11 and 12, load the system from the Load Processor-*n* from Disk dialog box, not the System Startup dialog box. For more information, see the *NonStop S-Series Operations Guide*.

After you load the operating system into processor 0 or 1, the remaining processors are reloaded by executing commands in the command-interpreter input (CIIN) file.

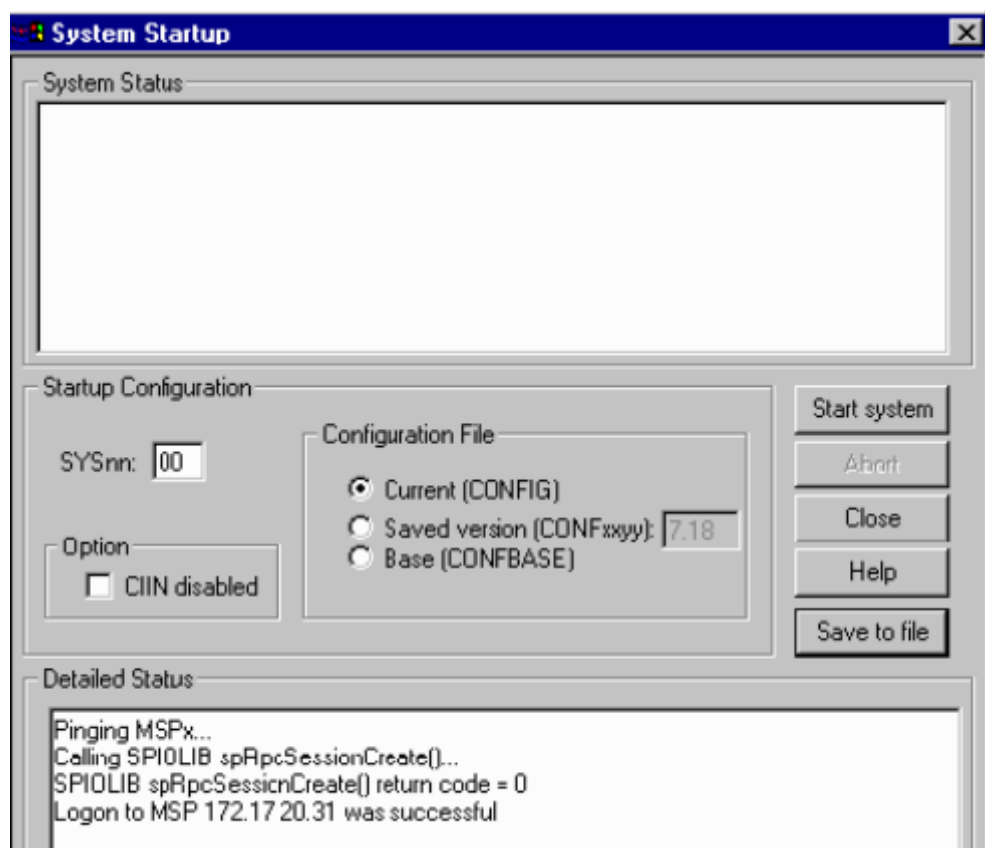
Loading the System

A normal system load consists of loading the operating system from disk into the memory of processor 0 or processor 1:

1. On the toolbar, click the **Start System** button, which appears as a vertical line enclosed in a diamond. The System Startup dialog box appears. For an example of its appearance in TSM (the OSM display is the same), see [Figure 8-8](#) on page 8-19.
2. In the System Startup dialog box:
 - a. In the SYS_{nn} field, enter **00**, which is the number of the system subvolume that contains the version of the operating system you will load.
 - b. Under Configuration File, select **Current (CONFIG)**, the default configuration file that represents the configuration currently running.
 - c. Under Option, verify that the CIIN disabled check box is unchecked.

The CIIN file must be enabled because it contains commands needed to start the server. The startup TACL process performs the commands in the CIIN file and then logs off.

For a description of the CIIN file, see the *NonStop S-Series Planning and Configuration Guide*.

Figure 8-8. Entering Information in the System Startup Dialog Box

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3. In the System Startup dialog box, click **Start system**. The system load begins.

If you want to stop the system startup process, click **Abort** in the System Startup dialog box. You might wait up to 30 seconds before the abort takes effect.

- △ **Caution.** Do not close the System Startup dialog box while startup is in progress. If you attempt to close the dialog box, an OSM or TSM message box indicates that the system startup process will be stopped if you continue. If you stop a system startup before the operation finishes, the state of your system cannot be predicted. You might need to perform another system startup to enable the system to resume normal operation.

Four OutsideView windows, consisting of two startup event stream windows (two CNSL sessions) and two startup TACL windows (two CLCI sessions), are automatically launched. It might take a few seconds before the windows appear.

One startup event stream window and one startup TACL window contain system startup information because they represent the primary ServerNet fabric (X or Y). The other two windows, which represent the backup ServerNet fabric, are blank.

If one or more of the startup event stream windows or startup TACL windows does not launch on the system console after a few minutes, you must connect to MSP 1 within each window. This step is described in the *NonStop S-Series Operations Guide*.

4. Monitor the system startup process. Messages indicating the progress and completion of the system load, as well as the reload of processors indicated in the CIIN file, appear in these display locations on the system console:

Display Location	Message Type
System Status box on the System Startup dialog box	Initial high-level messages that are not logged
Detailed Status box on the System Startup dialog box	Low-level messages that you can save to a file
Startup event stream windows	Startup event stream messages
Startup TACL windows	Startup messages

5. When the system load is complete (the operating system is loaded successfully into the memory of processor 0 or processor 1), the System Status box on the System Startup dialog box displays:

SYSTEM STARTUP COMPLETE, NSK RUNNING ON PROCESSOR *n*

- If nothing appears in any of the startup event stream windows and startup TACL windows, you must connect to MSP 1 within each window. For instructions, see the *NonStop S-Series Operations Guide*.
- If the system load fails, look for halt codes or messages displayed in the System Startup dialog box or related events in the OSM or TSM Event Viewer. For recovery procedures, see the *Processor Halt Codes Manual* or *Operator Messages Manual* and contact your service provider.
- If no messages appear in the Detailed Status box, the system load has probably failed.
- After the operating system is running on the server, messages are no longer sent to the System Status box. See the event messages sent to the startup event stream window.
- To correct abnormal LED states on enclosures and CRUs, see [Troubleshooting Abnormal LED States](#) on page 8-12.

Completing the System Load

To complete the system load, the processors must be reloaded. Reloading means copying the operating system into other processors in the system after the first processor is loaded from disk by a system load. Reloading can be done in one of two ways:

- With commands in the command-interpreter input (CIIN) file (default method)
- With the TACL command interpreter

The method using the CIIN file is usually automatic. However, if the operating system loaded successfully into processor 0 or processor 1, but the commands in the CIIN file do not reload all remaining processors, you must use the TACL command interpreter:

1. From the system console, log on to the system as a super-group user (255,*nnn*) and enter:

```
> RELOAD nn
```

where *nn* is the processor number of the processor you want to reload.

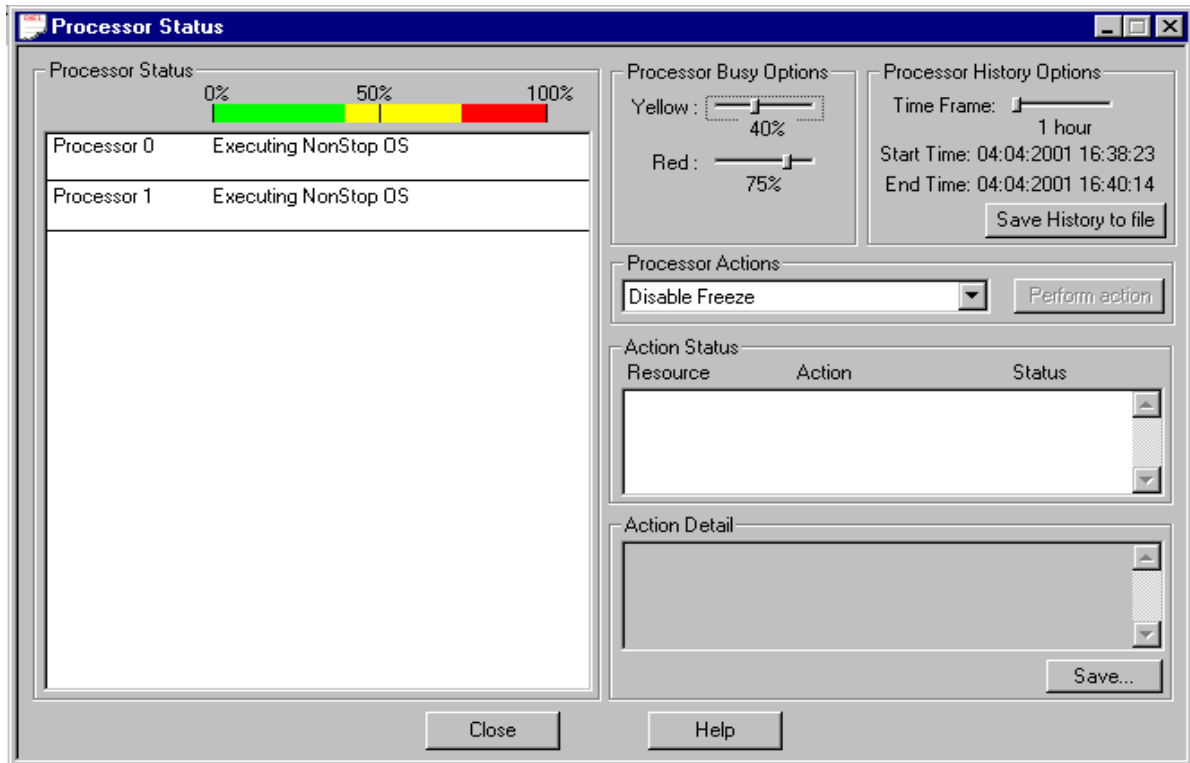
If the reload is initiated successfully, this message appears in a startup TACL window on the system console screen:

```
PROCESSOR RELOAD: nn
```

For complete syntax, considerations, and examples of the TACL RELOAD command, see the *TACL Reference Manual*.

Verifying the System Is Started

1. Verify that each processor is running the operating system:
 - a. From the Summary menu, select **Processor Status**.
 - b. The Processor Status dialog box should show each processor to be Executing NonStop OS. See [Figure 8-9](#) on page 8-22.

Figure 8-9. Checking Processor Status

VST008.vsd

- c. Close the Processor Status dialog box.
2. Verify that the NonStop operating system is working properly:
 - a. Check the startup TACL window to verify that the startup scripts completed successfully.
 - b. Check the startup event stream window and the startup TACL window for error messages.
3. Close the System Startup dialog box.

For more information on system loads, see:

- OSM Low-Level Link online help
- *OSM User's Guide*
- *NonStop S-Series Operations Guide*
- [Section 1, Introduction](#)

After the system starts successfully, you must perform post-startup tasks such as testing the system and configuring OSM or TSM. See [Section 9, Performing Post-Startup Tasks](#).

Performing Post-Startup Tasks

This section describes the tasks that you must perform after the NonStop S-series server has been powered up and started.

Note. If you installed an IOAM enclosure, Fibre Channel Disk Module (FCDM)s, or ESS, all post-startup tasks are performed by your service provider.

Topic	Page
Testing the System	9-1
Completing Final Installation Steps	9-12
Restarting the Inspect Monitor Process	9-14
Configuring the OSM or TSM Environment	9-16

Testing the System

This subsection provides examples of the commands you can use to do the following after the system has been started:

Test	Page
Check Power Supplies	9-2
Check System Enclosure Components	9-2
Check Critical System Processes	9-6
Check Disk Subsystem Status	9-7
Check Tape Subsystem Status	9-11
Test the Disk Drives	9-8
Test the Communications Lines	9-10
Test the Tape Subsystems	9-11

These procedures are not meant to be complete and might not be appropriate for your system. For more information about system components and configurations, see [Section 1, Introduction](#).

Check Power Supplies

Ensure that all power supplies are functioning properly: perform the Redundant Power Scrub action in the OSM Service Connection or TSM Service Application for all Module objects in the system.

Check System Enclosure Components

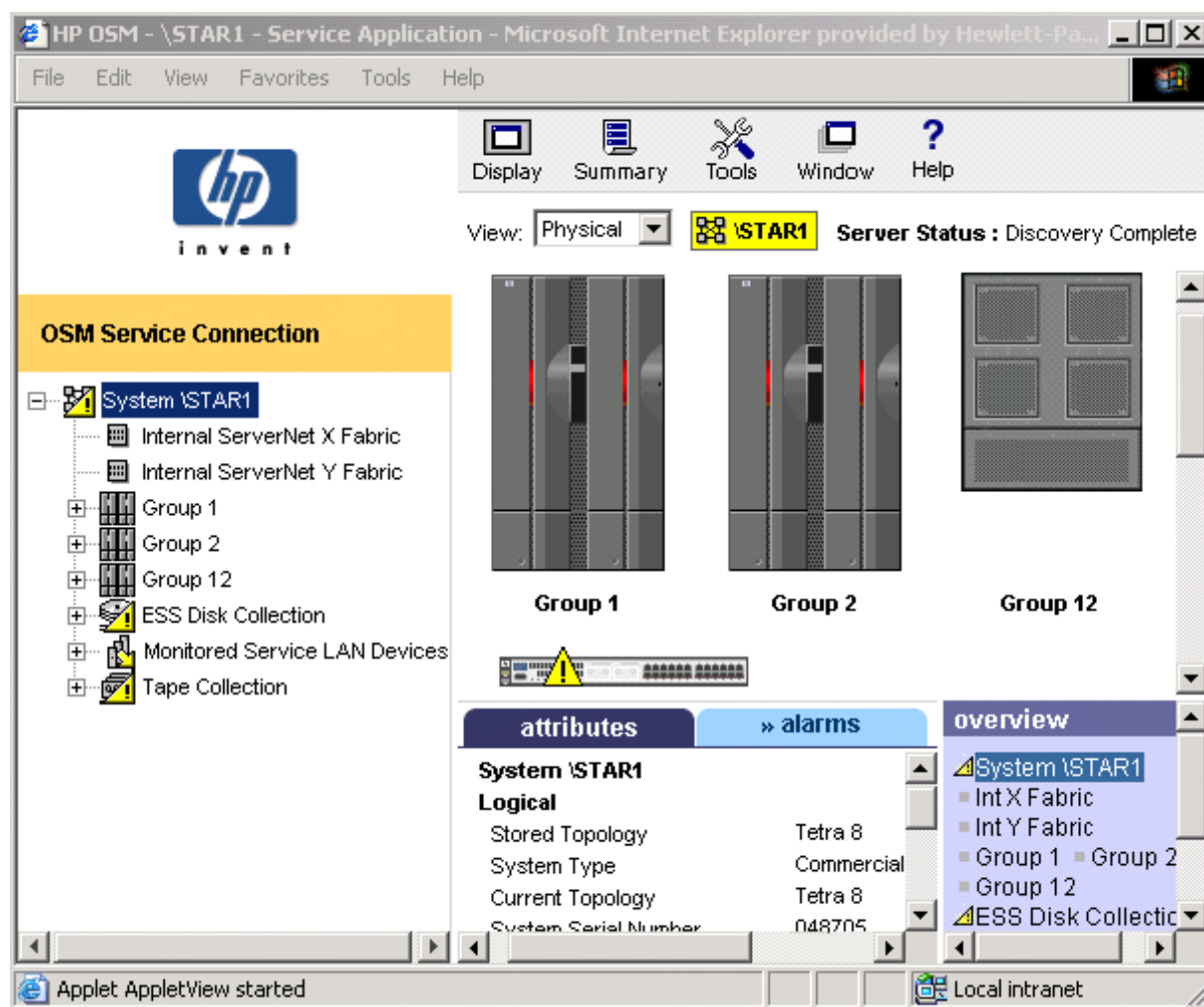
These tests provide a quick check that all system components are operating.

Use the OSM Service Connection or TSM Service Application to perform these tests. Do not use the OSM or TSM Low-Level Link for these tests because enclosures and system components that need service are not labeled with color-coded icons.

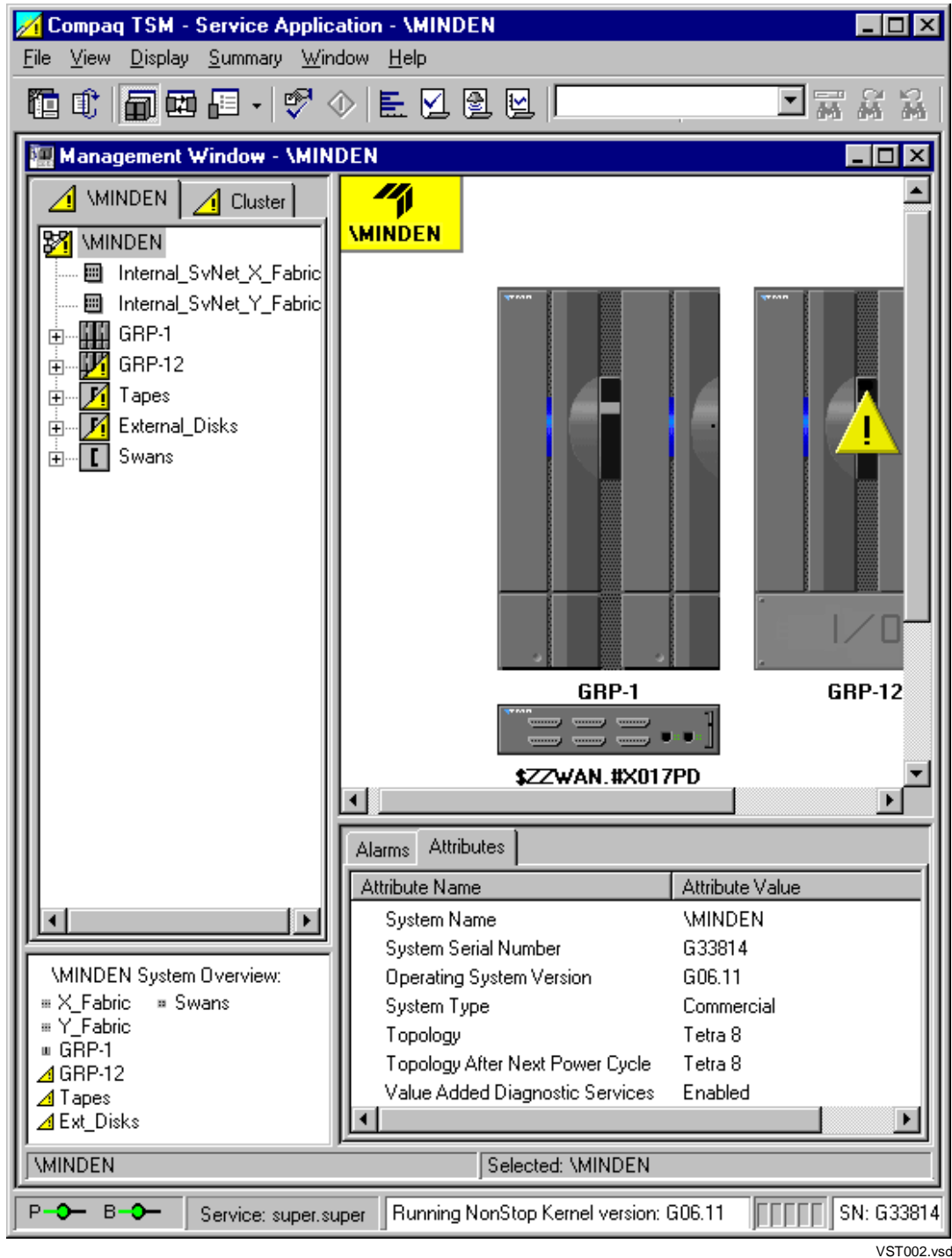
1. Log on to the OSM Service Connection or TSM Service Application.
2. Resize the Management window so that its tree, view, and details panes are fully visible.
3. Resize the view pane so that the group 01 enclosure (GRP-1) is fully visible.
4. Verify that no yellow or red triangular or arrow-shaped icons appear over the group diagrams in the view pane. Yellow triangle icons indicate that operator intervention is required.

[Figure 9-1](#) on page 9-3 shows the OSM Management Window.

[Figure 9-2](#) on page 9-4 shows the TSM Management Window.

Figure 9-1. Management Window in the OSM Service Connection

VST007.vsd

Figure 9-2. Management Window in the TSM Service Application

5. In the view pane, double-click the group 1 enclosure (**GRP-1**).

The Physical view of the enclosure appears.

6. In the view pane, verify that no components in the enclosure appear with a red or yellow icon.

If the icon is a	It affects the	And means that
Red triangle	Component	Service is required. The component is not functioning. For example, a processor is down.
Red arrow	Subcomponent	
		<ul style="list-style-type: none"> ● Select Alarms from the Summary menu. See the Alarm Summary dialog box for details. ● Click the Attributes tab in the details pane. See the Service State attribute, if it is present, for details. (The Service State attribute is visible in OSM only if the value is something other than OK.) ● Contact your service provider.
Yellow triangle	Component	Intervention is required. The component is functioning but needs attention. For example, an operator might have brought down a disk drive.
Yellow arrow	Subcomponent	

7. Compare the tree pane or the Inventory view to the view pane to verify that the components displayed in the view pane match the components that were ordered.
8. For the PMF CRU in slot 50 of the group 01 enclosure:
- In the view pane, click the PMF CRU. Click the Attributes tab.
Attributes for this PMF CRU appear in the details pane.
 - In the details pane, verify that the Power State attribute has a value of On in OSM, or OK in TSM. If the Power State attribute is not On or OK, the PMF CRU either is powered off or contains a fault. If it contains a fault, contact your service provider.
 - Select Processor 0.
 - In the Attributes tab, verify that the Halt Code attribute has a value of 0 and that the Halt Flag has a value of False in OSM, or 0 in TSM. If the Halt Code or Halt Flag attributes do not match these values, see the *Processor Halt Codes Manual*.
 - Also in the Attributes tab, verify that the Total Memory Size attribute (in MB) matches the amount of processor memory ordered.
 - Select the Power Supply.
 - In the Attributes tab, if the Service State attribute is visible, verify that it has a value of OK. (The Service State attribute is visible in OSM only if the value is something other than OK.)
9. Repeat Step 8 for the PMF CRU in slot 55 of group 01.

10. In the view pane, click the following enclosure components. Verify that the Power State attribute for each component has a value of On in OSM or OK in TSM:

- ServerNet expansion boards (SEBs)
- Modular ServerNet expansion boards (MSEBs)
- ServerNet adapters
- Disk drives
- Fans
- Power monitor and control units (PMcUs)

After you click a component, it might take a few seconds for the Power State attribute to appear in the details pane.

Note. IOAM and disk-drive enclosures are powered on when power is applied to the modular cabinet.

11. In the tree pane, click the system name icon.
12. Repeat Step 5 through Step 11 for each remaining system enclosure in the system. For the I/O enclosures, verify the status of IOMF CRUs instead of PMF CRUs.

Check Critical System Processes

1. From a TACL prompt, log on to the system using the super ID (255,255). New systems are shipped without a password for the super ID. For information about assigning a password, see the *Guardian User's Guide*.

```
> SUPER.SUPER
Password: password
```

2. Start SCF.

```
> SCF
```

3. Enter the LISTDEV command.

```
-> LISTDEV
```

- Verify that the LISTDEV display includes all processes shown in this example. If any of these processes do not appear in the display, contact your service provider.

LDev	Name	PPID	BPID	Type	RSize	Pri	Program
0	\$0	0,5	1,5	(1,0)	102	201	\NONAME.\$SYSTEM.SYS00.OSIMAGE
3	\$YMIOP	0,256	1,256	(6,4)	80	205	\NONAME.\$SYSTEM.SYS00.OSIMAGE
5	\$Z0	0,7	1,7	(1,2)	102	200	\NONAME.\$SYSTEM.SYS00.OSIMAGE
6	\$SYSTEM	0,257	1,257	(3,41)	4096	220	\NONAME.\$SYSTEM.SYS00.OSIMAGE
7	\$ZOPR	0,8	1,8	(1,0)	102	201	\NONAME.\$SYSTEM.SYS00.OSIMAGE
38	\$ZZKRN	0,15	1,12	(66,0)	132	180	\NONAME.\$SYSTEM.SYS00.OZKRN
39	\$ZZWAN	0,271	1,275	(50,3)	132	180	\NONAME.\$SYSTEM.SYS00.WANMGR
40	\$ZZSTO	0,272	1,282	(65,0)	4096	180	\NONAME.\$SYSTEM.SYS00.TZSTO
41	\$ZZLAN	0,14	1,15	(43,0)	132	180	\NONAME.\$SYSTEM.SYS00.LANMAN
45	\$ZSNET	0,15	1,12	(66,0)	132	180	\NONAME.\$SYSTEM.SYS00.OZKRN
46	\$ZNET	0,16	1,14	(50,63)	3900	175	\NONAME.\$SYSTEM.SYS00.SCP
61	\$ZM01	1,11	0,0	(45,0)	132	201	\NONAME.\$SYSTEM.SYS00.QIOMON
62	\$ZM00	0,13	0,0	(45,0)	132	201	\NONAME.\$SYSTEM.SYS00.QIOMON
63	\$ZLOG	0,286	0,0	(1,0)	4024	150	\NONAME.\$SYSTEM.SYS00.EMSACOLL
72	\$DSMSCM	0,280	1,261	(3,41)	4096	220	\NONAME.\$SYSTEM.SYS00.TSYSDP2
79	\$AUDIT	0,273	1,271	(3,41)	4096	220	\NONAME.\$SYSTEM.SYS00.TSYSDP2
85	\$ZTCP0	0,299	1,280	(48,0)	32000	200	\NONAME.\$SYSTEM.SYS00.TCPIP
88	\$ZTNP0	0,301	1,276	(46,0)	6144	170	\NONAME.\$SYSTEM.SYS00.TELSERV
98	\$ZTCP1	1,283	0,304	(48,0)	32000	200	\NONAME.\$SYSTEM.SYS00.TCPIP
100	\$ZTNP1	1,285	0,305	(46,0)	6144	170	\NONAME.\$SYSTEM.SYS00.TELSERV

Check Disk Subsystem Status

- Enter the SCF STATUS DISK command for all disk volumes on the system:
-> STATUS DISK \$*
- Verify that the STATUS DISK display includes all the disk subsystems shown in the following example and that the primary, backup, mirror, and mirror-backup paths are all described as STARTED. If any of these disk subsystems do not appear in the display, or if any of these paths are described as STOPPED, contact your service provider.

STORAGE - Status DISK \NONAME.\$AUDIT						
LDev	Primary	Backup	Mirror	MirrorBackup	Primary PID	Backup PID
79	*STARTED	STARTED	*STARTED	STARTED	0,273	1,271
STORAGE - Status DISK \NONAME.\$DSMSCM						
LDev	Primary	Backup	Mirror	MirrorBackup	Primary PID	Backup PID
72	*STARTED	STARTED	*STARTED	STARTED	0,280	1,261
STORAGE - Status DISK \NONAME.\$SYSTEM						
LDev	Primary	Backup	Mirror	MirrorBackup	Primary PID	Backup PID
6	*STARTED	STARTED	*STARTED	STARTED	0,257	1,257

Test the Disk Drives

You should test disk drives whenever you install a new system, replace a disk drive, or add a disk drive:

1. At the SCF prompt, check the status of all disks on the system:

```
-> STATUS DISK $*-*
```

2. In the display, ensure that paths to all installed disk drives are available. A path is available if the State column indicates STARTED. If no disk drive is installed in a slot, the Status column indicates INACTIVE, the State column indicates STOPPED, and the Substate column indicates HARDDOWN.

The following shows an example of a partial SCF STATUS DISK listing:

STORAGE - Status DISK \Example.\$DATA00						
LDev	Path	Status	State	Substate	Primary PID	Backup PID
06	PRIMARY	ACTIVE	STARTED		0,267	1,267
06	BACKUP	INACTIVE	STARTED		0,267	1,267
06	MIRROR	ACTIVE	STARTED		0,267	1,26
06	MIRROR-BACKUP	INACTIVE	STARTED		0,267	1,267
STORAGE - Status DISK \Example.\$DATA01						
LDev	Path	Status	State	Substate	Primary PID	Backup PID
07	PRIMARY	INACTIVE	STOPPED	HARDDOWN	0,33	1,33
07	BACKUP	INACTIVE	STOPPED	HARDDOWN	0,33	1,33
07	MIRROR	INACTIVE	STOPPED	HARDDOWN	0,33	1,33
07	MIRROR-BACKUP	INACTIVE	STOPPED	HARDDOWN	0,33	1,33

3. Determine the preferred path for each disk using the STATUS DISK command and specifying the name or logical device number of that disk. The asterisk (*) in the response indicates the preferred path. A mirrored disk volume has four paths (two for each physical disk) and two preferred paths.

```
->STATUS DISK $DATA00
STORAGE - Status DISK \Example.$DATA00
LDev Primary Backup Mirror MirrorBackup Primary Backup
PID PID
06 *STARTED STARTED *STARTED STARTED 0,30 1,30
```

4. For each disk drive whose paths you want to test, check that each path to that disk drive can be used as the preferred path. To test the paths to a disk named \$DATA00:

- a. Enter the following SCF command:

```
->SWITCH $DATA00-B
```

For the primary drive of the \$DATA00 disk, this command switches the current path, which is the primary path (\$DATA00-P), to the backup path (\$DATA00-B).

- b. Enter the STATUS DISK \$DATA00 command. See Step 3 to check that the path switch occurred. Make sure the processor number in the Primary PID column is the same as it was before the switch.

The following example shows the listing for the disk from the example in Step 3 after the path has been successfully switched:

```
->STATUS DISK $DATA00
STORAGE - Status DISK \Example.$DATA00
LDev Primary Backup Mirror MirrorBackup Primary Backup
PID PID
06 STARTED *STARTED *STARTED STARTED 0,30 1,30
```

- c. If you are testing a drive that is not mirrored, skip to Step 4e. Otherwise, enter:

```
->SWITCH $DATA00-MB
```

For the mirror drive of the \$DATA00 disk, this command switches the preferred path from the current preferred path, which is the mirror path (\$DATA00-M), to the mirror backup path (\$DATA00-MB).

- d. Enter the STATUS DISK \$DATA00 command. See Step 3 to check that the path switch occurred. Make sure the processor number in the Primary PID column is the same as it was before the switch.

The following example shows the listing for the disk from the example in Step 4b after the path has been successfully switched:

```
->STATUS DISK $DATA00
STORAGE - Status DISK \Example.$DATA00
LDev Primary Backup Mirror MirrorBackup Primary Backup
PID PID
06 STARTED *STARTED STARTED *STARTED 0,30 1,30
```

- e. Enter the following SCF command:

```
->PRIMARY DISK $DATA00, 1
```

This command switches the primary processor from the current primary processor to the backup processor.

- f. Enter the STATUS DISK \$DATA00 command. See Step 3 to check that the processor switch occurred. Make sure the processor number in the Primary PID column has changed to the number given in the command.

The following display shows that the primary processor was successfully switched:

```
->STATUS DISK $DATA00
STORAGE - Status DISK \Example.$DATA00
LDev Primary Backup Mirror MirrorBackup Primary Backup
PID PID
06 STARTED *STARTED STARTED *STARTED 1,30 0,30
```

Successfully completing these commands indicates that the disk can be accessed through both the primary and backup processors and through all the paths.

- g. Return the preferred paths and the primary processor for this disk to their original states by entering the following commands. Wait for the SCF prompt to appear before you enter each command:

```
->PRIMARY DISK $DATA00, 0
```

```
->SWITCH $DATA00-P
```

(Enter this command only if you are testing a mirrored disk.)

```
->SWITCH $DATA00-M
```

Use the STATUS DISK \$DATA00 command to check that the preferred paths and primary processor have returned to their original states. Compare with the example in Step 3.

5. Use the BAD attribute of the SCF INFO DISK command to check each disk for bad sectors. The following example checks for bad sectors on a disk named \$DATA00:

```
->INFO DISK $DATA00, BAD
```

If you detect bad sectors, use the SCF CONTROL DISK, SPARE command to replace them. For more information, see the *SCF Reference Manual for the Storage Subsystem*.

△ **Caution.** Using the CONTROL DISK, SPARE command can cause inconsistent data if processing is taking place when you issue the command. It is recommended that you stop all processing on the volume before issuing the CONTROL DISK, SPARE command, especially when sparing bad sectors on a system disk while one half of the volume is down.

6. If you must replace a disk drive, see the NTL Support and Service Library Service Procedures>NonStop S-Series Hardware Servicing>Replacing an Internal Disk Drive CRU.

Test the Communications Lines

For information about testing communications lines, see the manual specific to the appropriate communications line.

Check Tape Subsystem Status

OSM, TSM, and other utilities do not test tape libraries.

1. Enter the SCF STATUS TAPE command for all tape volumes on the system:

```
-> STATUS TAPE $*
```

2. Verify that the STATUS TAPE display includes the tape subsystem and that the state is STARTED, the substate is UP, and the device status is READY. The following example shows the status for tape drive \$T0151:

STORAGE - Status TAPE \$T0150				
LDev	State	Primary	Backup	Device Status
		PID	PID	
71	STARTED	0,282	1,273	READY

If the tape subsystem does not appear in the display, or if the state, substate, or device status is not correct, ensure that:

- The tape subsystem is plugged in.
- The cables are attached correctly.
- All appropriate start buttons have been pushed.
- All LEDs on the subsystem show normal status. See the subsystem manual.
- The tape drive is configured properly in the system database.

If these troubleshooting techniques do not work, contact your service provider.

Test the Tape Subsystems

Test tape subsystems with TSM, BACKUP and RESTORE, or SCF. OSM or TSM and other utilities do not test tape libraries.

- The OSM Service Connection and TSM Service Application support these tests for tape subsystems:

OSM or TSM Action	Description of Action
CRU Responsive Test	Verifies that a tape drive is installed and responding.
Test Extended	The specific test performed depends on type of tape drive. For more information, see the <i>OSM User's Guide</i> or the TSM Service Application online help. The tape drive must be in the down state.
Test Verify	Runs the power-on self-test for the tape drive and tests its internal circuitry. The tape drive must be in the down state.

For help using the OSM or TSM windows and dialog boxes, see online help for the OSM Service Connection or TSM Service Application. For information about concepts, commands, dialog boxes, and how to perform tape tasks, see the *TSM Online User Guide* or the *OSM User's Guide*.

- The BACKUP and RESTORE utilities test the status of tape drives. See the *Guardian Disk and Tape Utilities Reference Manual*.
- You can use SCF commands to obtain status information about a tape subsystem. For an example of the SCF STATUS TAPE command, see [Check Tape Subsystem Status](#) on page 9-11.

The SCF STATUS TAPE, DETAIL command produces a report that shows the processor numbers for the tape process, the logical device number of the tape drive, and the current state of the tape drive. The following example shows a report for \$TAPE0:

```
->STATUS TAPE $TAPE0, DETAIL
```

```
STORAGE - Detailed Status TAPE \ALM171.$TAPE0

Tape Process Information:
  LDev   State      Primary   Backup   DeviceStatus
      PID          PID
    51   STARTED    0,273    1,269    ONLINE, BOT

Tape I/O Process Information:
  Library File.....
  Program File..... $SYSTEM.SYS70.OTPPROCP

Current Settings:
  ACL..... INSTALLED          Buffer Level..... RECORD
  Checksum Mode..... NORMAL I/O *Compression..... OFF
  *Density..... 38000          Media Type..... 36-TRACKS
  Opens..... 0                *RecSize..... 2048
  Short Write Mode... ALLOWED, PADDED SubType..... 9
  Volume Switching.. TRANSPARENT

Media Information:
Automatic Volume Recognition Labels:
VOL1: SANYOA

HDR1: D87D040          SANYOA00010001000100000028 000000000000
HDR2: F080000080000          B
```

For more information about SCF commands for tape subsystems, see the *SCF Reference Manual for the Storage Subsystem*.

Completing Final Installation Steps

1. Complete any post-installation procedures or special instructions in the Installation Document Checklist.
2. Perform the required and optional system configuration changes and verifications listed in [Table 9-1](#).
3. Restart the Inspect Monitor Process.

System Configuration Changes and Verifications

Table 9-1. System Configuration Changes and Verifications (page 1 of 2)

Change or Verification	Required	Recommended	Optional or As Needed
Configure Kernel-Managed Swap Facility (KMSF) files. See the Kernel-Managed Swap Facility (KMSF) Manual.	X		
Change the system name and system number attributes. See Changing System Name, System Number, or Time Attributes on page 11-3.	X		
Check and set the system time. See the <i>SCF Reference Manual for the Kernel Subsystem</i> .		X	
Configure DSM/SCM. See the <i>DSM/SCM User's Guide</i> . Some DSM/SCM configuration is required as a result of changing the system name.	X		X
Verify that all updatable firmware is at the proper revision level, using the OSM Service Connection or TSM Service Application. See the <i>OSM User's Guide</i> , the <i>TSM Online User Guide</i> , or the <i>G06.nn Software Installation and Upgrade Guide</i> .		X	
Verify the SP firmware, using the OSM Service Connection or TSM Service Application. See the <i>OSM User's Guide</i> , the <i>TSM Online User Guide</i> , or the <i>G06.nn Software Installation and Upgrade Guide</i> .		X	
With SCF, verify that paths and connections within the ServerNet system area network are properly configured and functional. See the <i>NonStop S-Series Operations Guide</i> .		X	
Configure low-level link user names and passwords. See the <i>TSM Configuration Guide</i> or the OSM Low-Level Link online help. Service connection user names and passwords are created when you add NonStop user names and passwords.		X	
Configure a backup system console. See Section 10, Configuring the System .		X	
Invoke the STARTCOM and STARTSCF startup files to configure standard TCP/IP objects and start TCP/IP services. See 4e. Invoke STARTCOM and STARTSCF Startup Files on page E-40 .			X

Table 9-1. System Configuration Changes and Verifications (page 2 of 2)

Change or Verification	Required	Recommended	Optional or As Needed
Change time attributes.			X
Configure and initialize the spooler subsystem. See the <i>Spooler Utilities Reference Manual</i> and the <i>Guardian User's Guide</i> .			X
Configure the IOAM enclosure.			X
Configure and start additional subsystems. See the manual specific to that subsystem.			X

Restarting the Inspect Monitor Process

If Visual Inspect is installed on your system, then on the G05 and later RVUs, \$ZPM automatically starts the Inspect Monitor process \$IMON early in the system startup sequence to provide Inspect debugging and saveabend file capability. However, Visual Inspect requires that \$IMON be started after the TCP/IP and Port Mapper processes have started.

After \$ZPM has started all processes specified in the CONFIG file and you start all other TCP/IP and Port Mapper processes, stop and restart \$IMON as follows:

1. Log on as the super ID.
2. At the TACL prompt:


```
> Stop $IMON
```
3. At the TACL prompt, restart \$IMON:


```
> IMON /name $IMON, term $YMIOP.#CNSL, cpu <p>, nowait /<b>
```

where <p> and are the primary and backup processors, respectively, where \$IMON is to run.

Preparing for Daily Operations

If the new system is running properly, you can now prepare it for daily operations. Your preparation tasks might include:

- Adding users to the system
- Setting the file security of various program files and system files
- Loading application software

Reference Manuals

For more information about...

Performing routine system operations

Replacing failed hardware components and other support procedures

Guidelines, suggestions, and ideas about the following topics:

- Staffing
- Operations and support areas
- Operations documentation
- Production and problem management
- Change and configuration management
- Performance management
- Security
- Disaster prevention and recovery planning
- Application management
- Automating and centralizing operations
- Operations management and continuous improvement
- Operations management tools

See...

- *NonStop S-Series Operations Guide*
- *Guardian User's Guide*
- [Support and Service Library](#) on page xxiv
- [OSM Guided Replacement Procedures](#) on page xxiv
- [TSM Guided Replacement Procedures](#) on page xxv

Introduction to NonStop Operations Management

Procedures for loading application software depend on the application. For more information, see the documentation for the application.

Configuring the OSM or TSM Environment

Configuring the OSM Environment

To configure the OSM environment for a new system, see the *OSM User's Guide*, the OSM Low-Level Link online help, or the OSM Notification Director online help as appropriate.

Configuring the TSM Environment

TSM is disabled by default on all new NonStop S-Series systems. If you plan to use TSM instead of OSM, follow the instructions described under “Fallback Issues” in the *OSM Migration Guide*.

Once TSM is enabled, certain default configuration values are set by manufacturing. You need not perform any configuration if you accept the default values. However, the default values might not implement the features you want. For information about default values, see the *TSM Configuration Guide*.

Use the TSM Low-Level Link to:

- Change the default password (which is no password) for the user `root`. Change this password to prevent unauthorized access.
- Add new low-level link users. These users can log on to the master service processors (MSPs).
- Change the default IP addresses for the primary or backup dedicated service LAN.

Changing the default IP addresses used for service connection access requires editing macro files and running macros that are located on the server to restart the \$ZTCP0 and \$ZTCP1 processes. For this task, see the *TSM Configuration Guide*.

Use the TSM Notification Director to:

- Add a backup system console or additional system consoles to the dedicated service LAN.
- Configure onsite contact information.
- Configure how often the server generates periodic incident reports (IRs).
- Configure dial-out (remote notification) or dial-in (remote access) capability.
- Test the dial-out path to the GCSC.

The TSM Low-Level Link and the TSM Notification Director test the physical connections between the system console, the master service processors (MSPs), and the operating system. Status messages alert you to connectivity problems.

For more information, see the *TSM Configuration Guide*, the TSM Low-Level Link online help, or the TSM Notification Director online help.

10 Configuring the System

This section describes how to configure system consoles and NonStop S-series servers in several ways.

- Operating configuration
- With cascading Ethernet switches or hubs
- At an unattended site
- On a secure operations LAN
- With Ethernet 4 ServerNet Adapters (E4SAs)
- With Fast Ethernet ServerNet Adapters (FESAs)

For information about Gigabit Ethernet configurations, see the *Gigabit Ethernet Installation and Support Guide*.

Note. IOAM enclosures must be installed by service providers trained by HP. This requirement includes configuring the IOAM enclosure and its components, configuring Fibre Channel Disk Module (FCDM)s connected to FCSAs, and configuring system consoles to communicate with the IOAM enclosure using a maintenance switch. Your service provider should refer to the *Modular I/O Installation and Configuration Guide* which is located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

Topic	Page
Setup Configuration	10-2
Procedure to Create the Setup Configuration	10-2
Operating Configuration	10-3
Create the Operating Configuration	10-3
Add a System Console to the Operating Configuration	10-6
Add a Server to the Operating Configuration	10-8
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Add a System Console to the Cascading Ethernet Switches	10-12
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Unattended Site Configuration	10-13
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Secure Operations LAN Configuration	10-15
Construct a Secure Operations LAN Configuration	10-15

This section assumes that you have used the preceding sections of this guide to connect the primary system console and server in a setup configuration. Use the configurations in this section for installing and operating system consoles.

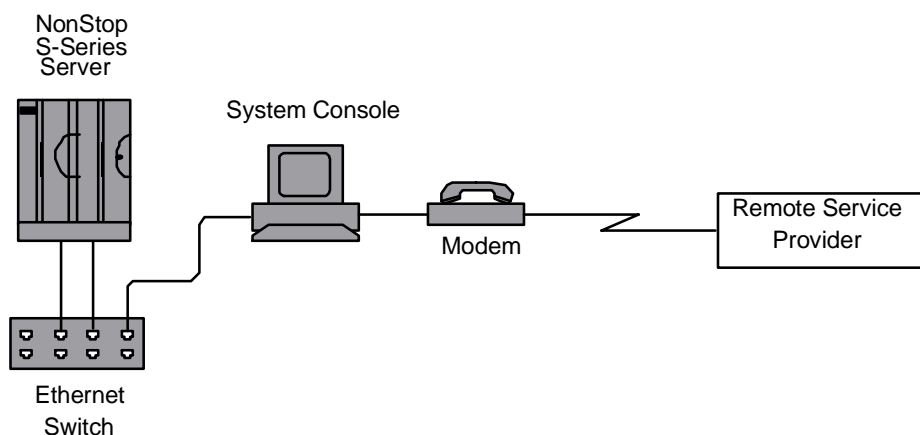
Your new system console is shipped with the Microsoft Windows XP Professional operating system already installed. To migrate an existing system console from the Microsoft Windows 2000 Professional operating system to the Microsoft Windows XP

Professional operating system, see the *NonStop System Console Guide for Migrating to Microsoft Windows XP Professional*.

Setup Configuration

The setup configuration is a stand-alone LAN used to configure Internet protocol (IP) addresses. These IP addresses allow a system console to communicate with the master service processors (MSPs) in the server as shown in [Figure 10-1](#). Actual connections vary depending upon the Ethernet switch or hub you use.

Figure 10-1. Setup Configuration



VST992.vsd

Procedure to Create the Setup Configuration

On a new server, all these tasks must be performed before you can expand to the operating configuration:

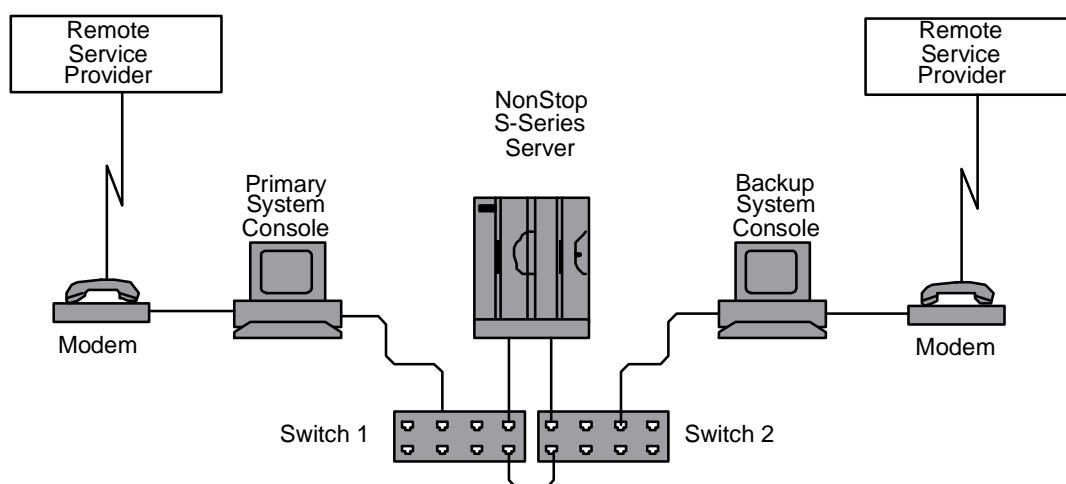
Task	Instructions	Page
Install and cable the server	Section 2, Installing Enclosures Section 3, Cabling Enclosures	2-1 3-1
Install, start, and test the system console	Section 5, Installing, Starting, and Testing a System Console	5-1
Install the Ethernet switch or hub	Installing the Ethernet Switch or Hub	6-5
Connect the Ethernet switch or hub to the server	Connect the Ethernet Switch or Hub to the Server	6-5
Connect the system console to the Ethernet switch or hub	Connect the System Console to the Ethernet Switch or Hub	6-6
Start the server	Powering On the System	8-5
Configure the OSM or TSM environment	Configuring the OSM or TSM Environment	9-16

Do not use the setup configuration as your working configuration. It lacks fault tolerance. Add fault tolerance to the setup configuration by connecting a backup system console and a second Ethernet switch or hub. See [Operating Configuration](#) on page 10-3.

Operating Configuration

After you have completed the setup configuration tasks, you can expand to the operating configuration by adding a backup system console and second Ethernet switch or hub. [Figure 10-2](#) shows primary and backup system consoles connected to separate Ethernet switches.

Figure 10-2. Operating Configuration



Note: Do not use this figure as a wiring diagram. Actual connections vary depending on the Ethernet switch you use.

VST998.vsd

Create the Operating Configuration

The primary system console is the system console installed in the setup configuration. Switch 1 is the switch installed in the setup configuration.

The backup system console and Switch 2 are added for fault tolerance. You can add a backup system console and switch to the setup configuration online. Do not add a backup system console until you have completed [Setup Configuration](#) on page 10-2.

The Ethernet switches or hubs are linked by a cable that enables the system consoles and server to be on the same subnet. This cable connects the cascade port of one switch to an open port on the other switch.

1. If the backup system console is not unpacked, see [Unpacking and Assembling a System Console](#) on page 5-2.
2. Start and test the backup system console. See [Starting and Testing a System Console](#) on page 5-8.
3. Change the IP address and host name for the backup system console. Because all system consoles are shipped with the same default IP address and computer name, you must modify the IP address and host name for the backup system console so that they do not conflict with those of the primary system console:
 - a. Select **Start>Settings>Control Panel**.
 - b. Double-click the **Network** icon.
The **Network** dialog box appears.
 - c. Click the **Protocols** tab.
 - d. In the Network Protocols box, double-click **TCP/IP Protocol**.
The Microsoft TCP/IP Properties dialog box appears.
 - e. Select **Specify an IP address** and enter:

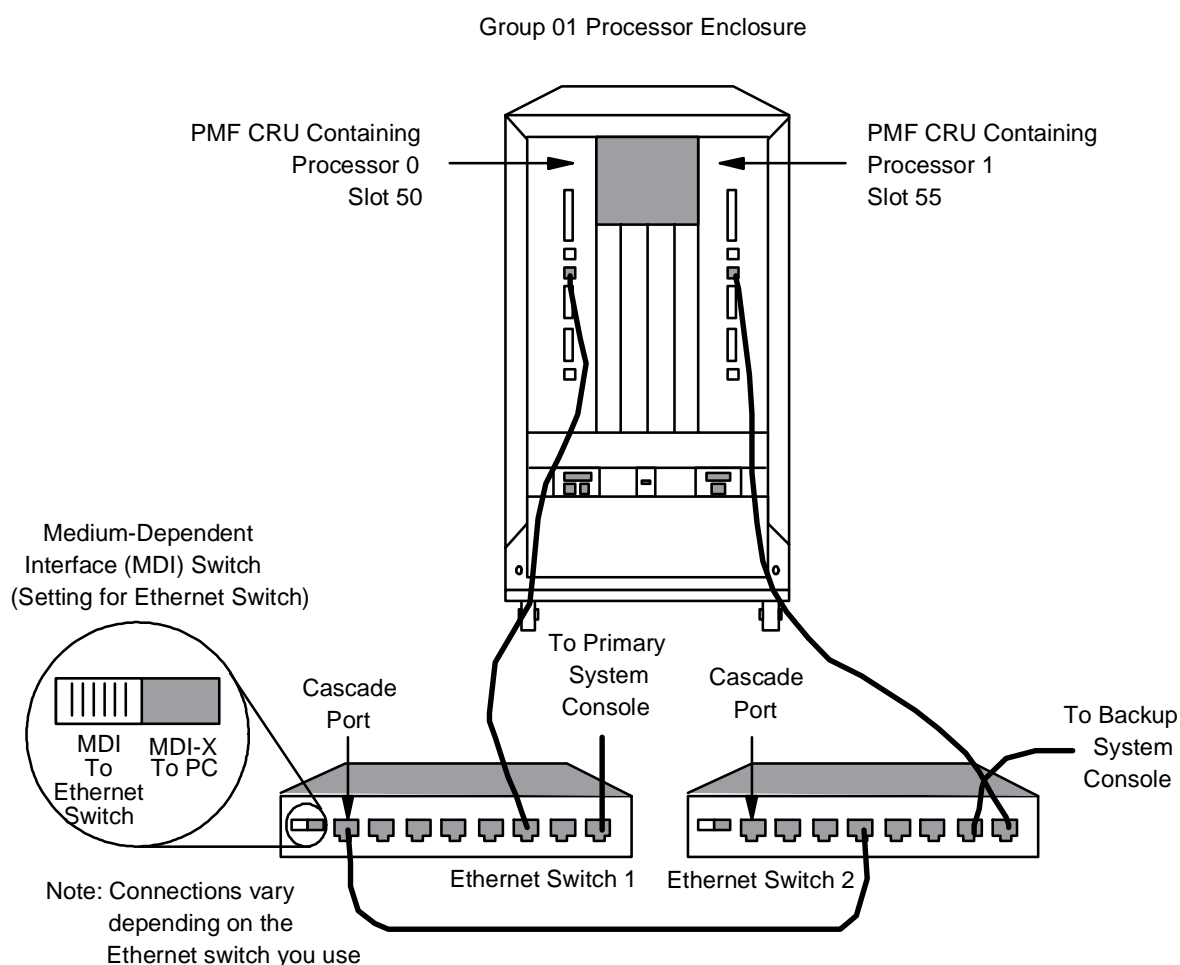
IP Address	192.231.36.4
Subnet Mask	255.255.255.0
Default Gateway	192.231.36.9
 - f. Click the **DNS** tab.
 - g. In the Host Name field, change the default name.
You can change it to anything that does not conflict with the host name used by another workstation already on the LAN. For example, if the default name is NONAME, you can change the name to NONAME1 or NONAME2.
 - h. Click **OK** to return to the Network dialog box.
 - i. Click **OK** to return to the Control Panel window.
 - j. Select **Start > Shut Down**.
 - k. Select **Restart the computer**. Click **Yes**.
4. Unpack and install an Switch 2 using the documentation that comes with the switch.

Switch 1 is the switch installed in the initial setup configuration. Switch 2 is the switch you add for fault tolerance.
5. Move the cable attached to the PMF CRU in group 01, slot 55, from Switch 1 to Switch 2.

To maintain EMC compliance in NonStop S-series systems, Ethernet cables must be equipped with a ferrite suppression component. Install the Ethernet cables that connect the PMF CRUs to the Ethernet switches or hubs with the ferrite end of the cables connected to the PMF CRUs.

- a. At Switch 1, disconnect the cable attached to the Ethernet port on the PMF CRU in slot 55, group 01.
- b. Reconnect this end of the cable to any port on Switch 2 except the cascade port. Insert the RJ-45 plug on the cable into the RJ-45 jack on the Ethernet switch or hub until the tab on the plug clicks into place as shown in [Figure 10-3](#).

Figure 10-3. Connections for the Operating Configuration



VST535.vsd

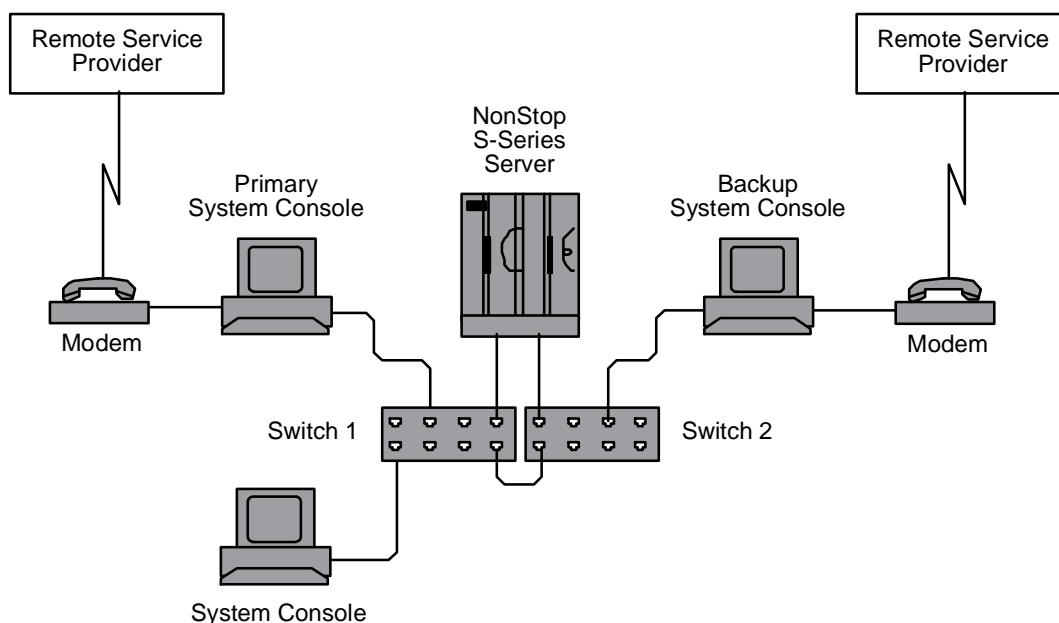
6. Connect the backup system console to Switch 2:
 - a. Connect an Ethernet cable to the 10Base-T connector on the network interface card (NIC) at the back of the system unit for the backup system console. For the location of the NIC connector, see the quick setup reference card.
 - b. Connect the other end of this Ethernet cable to any port on Switch 2 except the cascade port.
7. Set the medium-dependent interface (MDI) switch on Switch 1 to allow the cascade port of Switch 1 to connect to another switch or hub. See the documentation provided with Switch 1. The position of the MDI switch on Switch 2 does not matter.
8. Connect the three-foot Ethernet cable provided with the switch or hub from the cascade port of Switch 1 to any port on Switch 2 except the cascade port.

Add a System Console to the Operating Configuration

[Figure 10-2](#) on page 10-3 shows the operating configuration. You can add a system console to this configuration as long as you have an unused port on one of the Ethernet switches or hubs.

You can add a system console while all system components are online. [Figure 10-4](#) shows the operating configuration with an added system console.

Figure 10-4. Operating Configuration With an Added System Console



Do not use this figure as a wiring diagram. Actual connections vary depending on the Ethernet switch.

VST065.vsd

Before you add a system console to the operating configuration:

- Install the primary and backup system consoles and the two Ethernet switches or hubs. See [Create the Operating Configuration](#) on page 10-3.
- Install, start, and test the server fully, and ensure the operating system is up and running. See [Section 8, Powering On and Starting the System](#).
- Configure OSM or TSM. See [Configuring the OSM or TSM Environment](#) on page 9-16 and the *OSM User's Guide* or *TSM Configuration Guide*.

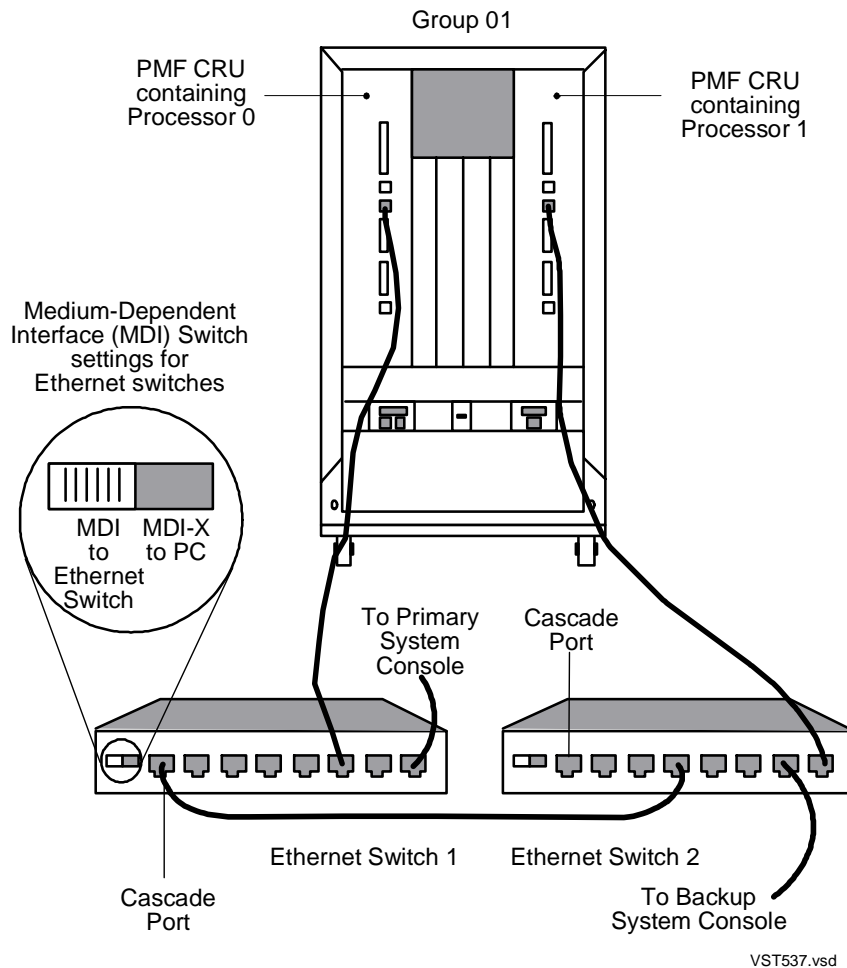
System consoles are shipped with the same default IP address and computer name. Ensure that the IP address and computer name of the system console you are adding are different from the address and name of all other workstations on the Ethernet LAN.

Procedure

1. Unpack the system console. See [Unpacking and Assembling a System Console](#) on page 5-2.
2. Start and test the system console. See [Starting and Testing a System Console](#) on page 5-8.
3. Before connecting the system console to the LAN, use the Windows XP Professional operating system to assign a unique IP address and computer name to the system console. For information about setting these and other network parameters, see [Step 3 on page 10-4](#) or the online help for the operating system.
4. Connect one end of an Ethernet cable to the 10Base-T connector on the network interface card (NIC) at the back of the system unit for the backup system console.

5. Connect the other end of this Ethernet cable to any port on an Ethernet switch or hub except the cascade port. See [Figure 10-5](#).

Figure 10-5. Adding a System Console to the Operating Configuration



Add a Server to the Operating Configuration

A server in the operating configuration requires connections to both Ethernet switches or hubs. If each switch or hub has an unused port, you can add a server to the configuration online.

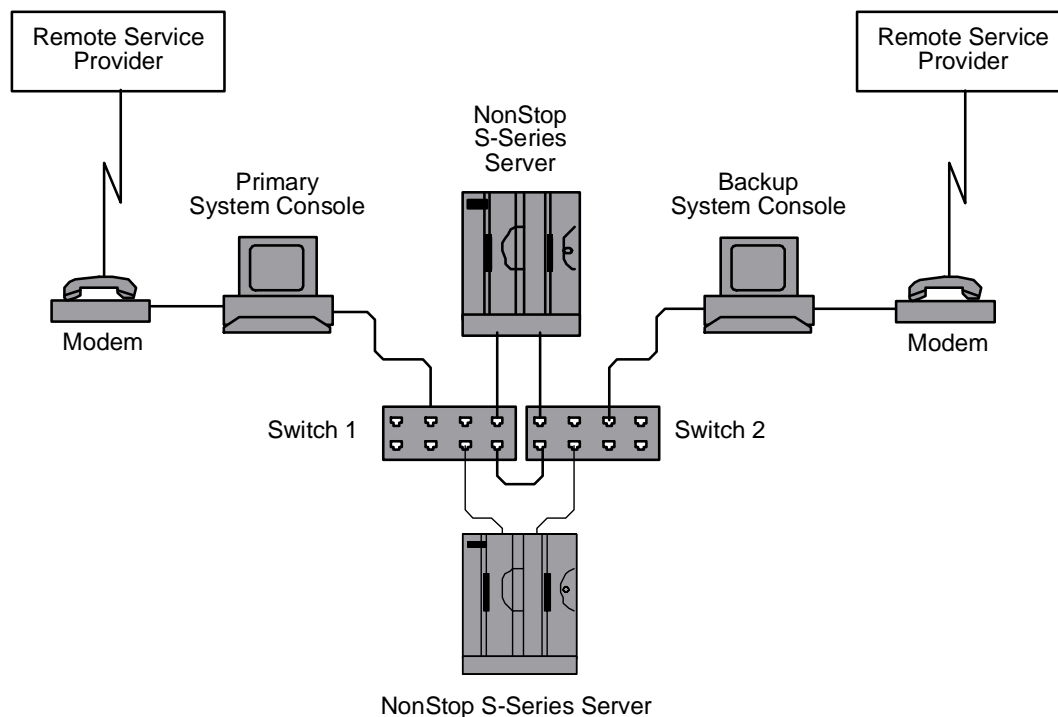
Before you add a server to the operating configuration:

- Install a primary system console, a backup system console, and two Ethernet switches or hubs. See [Operating Configuration](#) on page 10-3.
- Ensure that the existing server in the operating configuration is fully operational. See [Section 8, Powering On and Starting the System](#).
- Configure OSM or TSM. See [Configuring the OSM or TSM Environment](#) on page 9-16 and the *OSM User's Guide* or *TSM Configuration Guide*.

- Because all servers are shipped with the same default low-level link (MSP) and operating system IP addresses, ensure that the server you are adding has IP addresses different from those of all servers currently on the Ethernet LAN. To view or change the MSP IP addresses, use the OSM or TSM Low-Level Link.

[Figure 10-6](#) shows a server that has been added to the operating configuration.

Figure 10-6. Operating Configuration With an Added Server



Do not use this figure as a wiring diagram. Actual connections vary depending on the Ethernet switch.

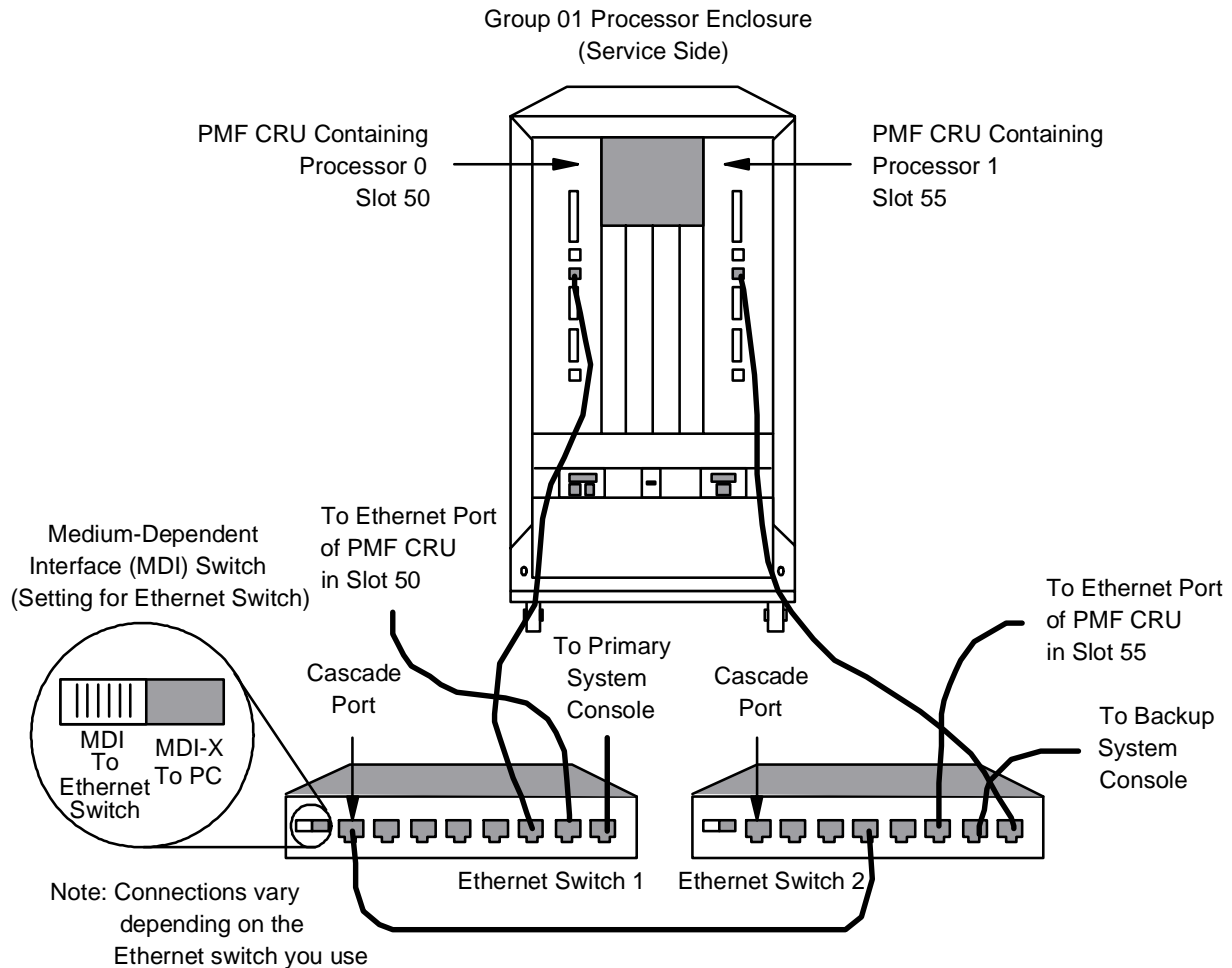
VST068.vsd

Procedure

1. Create a temporary setup configuration using the server you are adding, its system console, and its switch or hub. See [Setup Configuration](#) on page 10-2.
2. Configure the OSM or TSM environment. While you are configuring the server you are adding, make sure you assign IP addresses that do not conflict with the addresses used by the server already installed in the operation configuration.
3. Disconnect the server you are adding from the temporary setup configuration. Then connect that server to the operating configuration.
4. Connect the ferrite-bead end of an Ethernet cable to the Ethernet port on the PMF CRU in slot 50 of group 01 of new server you are adding. Connect the other end of this Ethernet cable to any port on Switch 1 except the cascade port. Make sure the RJ-45 plug on the cable clicks into place as shown in [Figure 10-7](#).

5. Connect the ferrite-bead end of another Ethernet cable to the Ethernet port on the PMF CRU in slot 55 of group 01 of the server you are adding. Connect the other end of this Ethernet cable to any port on Switch 2 except the cascade port. Make sure the RJ-45 plug on the cable clicks into place.

Figure 10-7. Connections for Adding a Server to the Operating Configuration

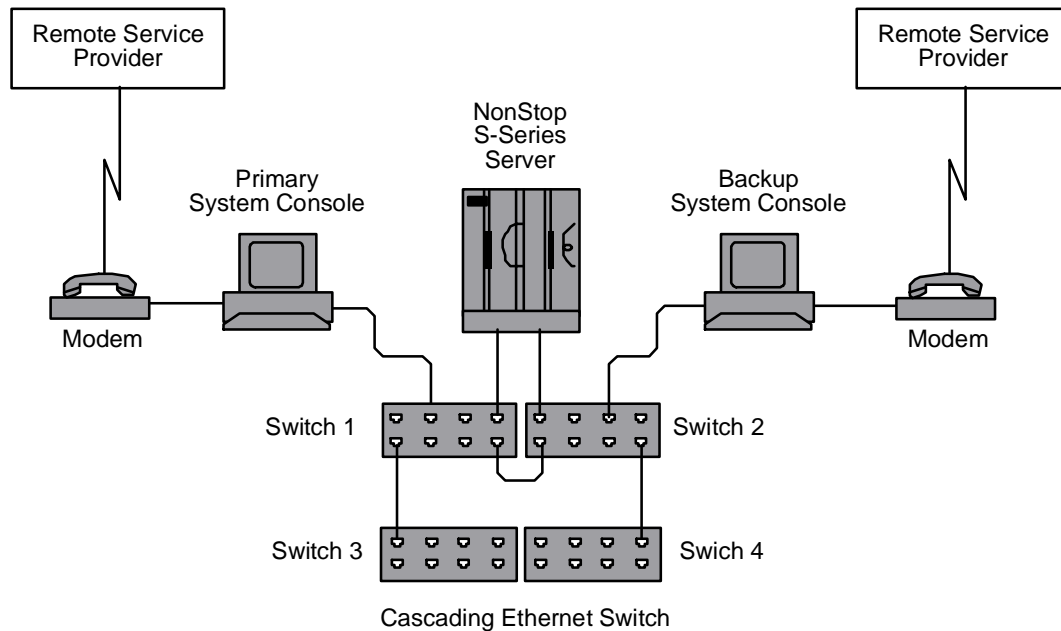


VST536.vsd

Create a Cascading Ethernet Switch Configuration

When no ports are left on the Ethernet switches or hubs in the operating configuration, you can expand the configuration by cascading two additional Ethernet switches or hubs online. [Figure 10-8](#) shows a cascading Ethernet switch configuration.

A cascading Ethernet switch configuration containing more than four switches or hubs is not supported for LAN configurations.

Figure 10-8. Cascading Ethernet Switch Configuration

Do not use this figure as a wiring diagram. Actual connections vary depending on the Ethernet switch.

VST069.vsd

Procedure

This procedure to construct a cascading Ethernet switch configuration assumes you have already constructed the operating configuration shown in [Figure 10-2](#) on page 10-3.

Switch 1 and Switch 2 are the Ethernet switches or hubs already installed in the operating configuration. You are adding cascading switches or hubs 3 and 4.

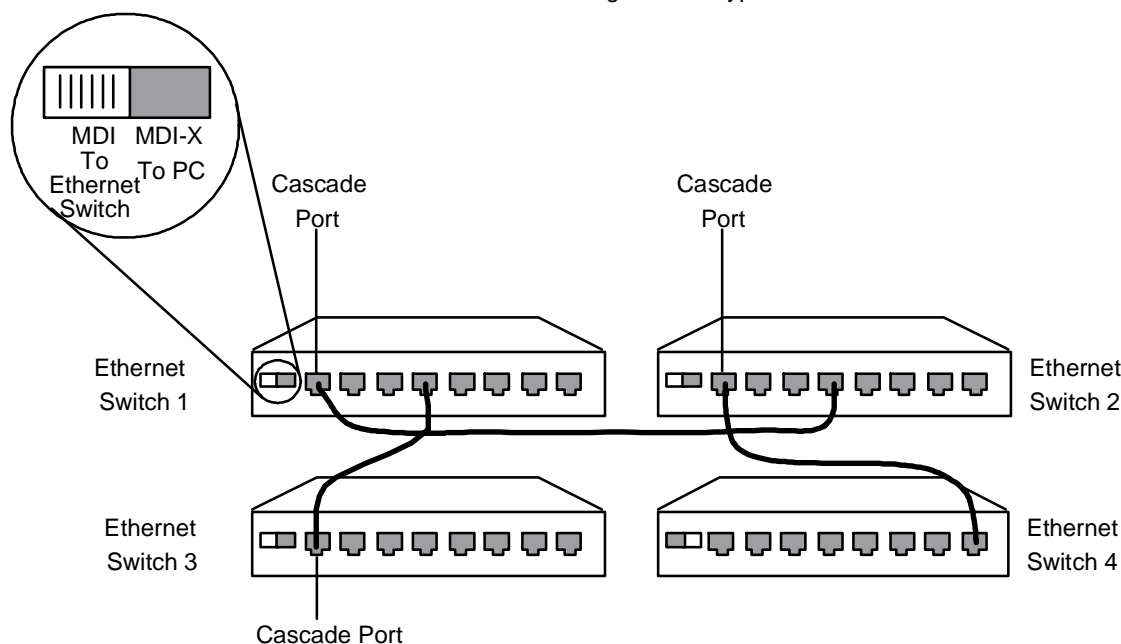
1. Unpack and install Switch 3 using the documentation that came with the switch or hub.
2. Unpack and install Switch 4 using the documentation that came with the switch or hub.
3. Set the MDI switch on Switches 2 and 3 to allow the cascade ports of Switches 2 and 3 to connect to another switch or hub as shown in [Figure 10-9](#). To set the MDI switch, see the documentation provided with the Ethernet switches or hubs.

The MDI switch on Switch 1 should already be set to allow the cascade port of Switch 1 to connect to another Switch.

Figure 10-9. Connecting Cascading Ethernet Switches

Medium-Dependent
Interface (MDI) Switch
(Settings for Ethernet
Switches 1, 2, and 3)

Note: The actual location of the cascade port varies
among different types of Ethernet Switches.



VST070.vsd

4. Connect a three-foot Ethernet cable, provided with the switch or hub, from the cascade port of Switch 2 to any port on Switch 4 except the cascade port.
5. Connect a three-foot Ethernet cable from the cascade port of Switch 3 to any unused port on Switch 1.

Add a System Console to the Cascading Ethernet Switches

See [Add a System Console to the Operating Configuration](#) on page 10-6.

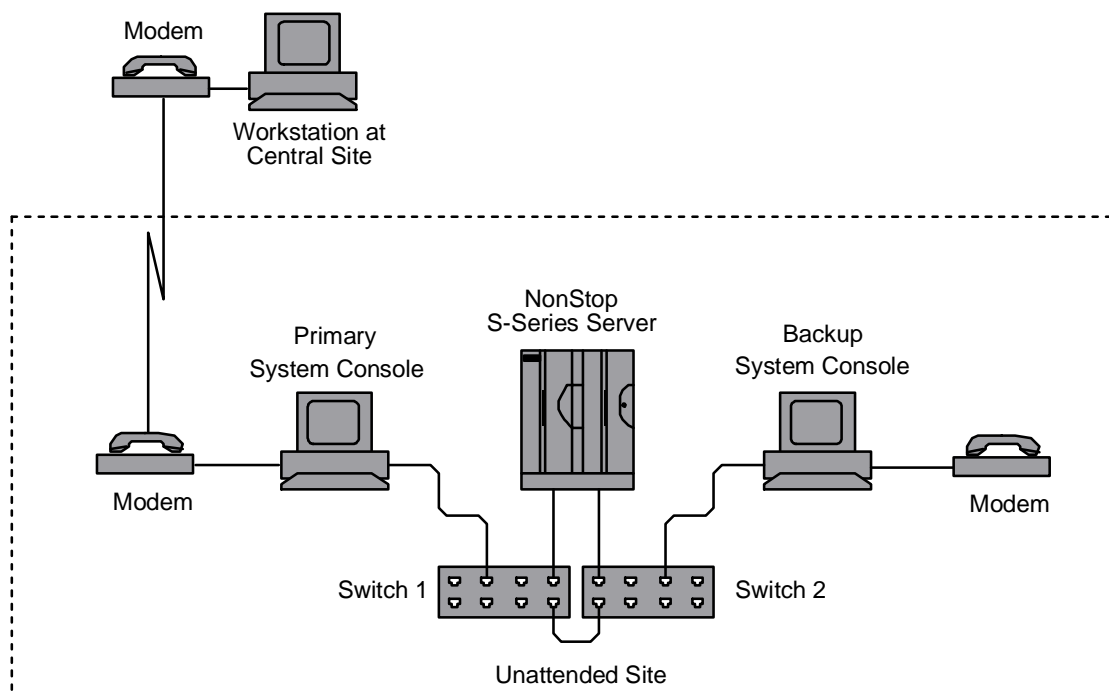
Add a Server to the Cascading Ethernet Switches

See [Add a Server to the Operating Configuration](#) on page 10-8.

Unattended Site Configuration

An unattended site configuration consists of one or more system consoles at one site, typically a centralized monitoring station, and a stand-alone, dedicated network at a remote site that includes primary and backup system consoles. Because it has no onsite operator, the remote site is referred to as an unattended site. [Figure 10-10](#) shows an example of an unattended site configuration.

Figure 10-10. Unattended Site Configuration



Note: Do not use this figure as a wiring diagram. Actual connections vary depending on the Ethernet switch you use.

VST528.vsd

Create the Unattended Site Configuration

A system console at the central site typically is configured for low-level link and service connection access to the remote site. This workstation can be an independent system console, as shown in [Figure 10-10](#), or part of another network configuration. Redundant workstations are recommended to prevent loss of communications as a result of a workstation failure.

Procedure

1. At the central site, install the system console to be used for monitoring the unattended site.
 - a. Unpack and assemble the system console. See [Unpacking and Assembling a System Console](#) on page 5-2.
 - b. Start and test the system console. See [Starting and Testing a System Console](#) on page 5-8.
2. At the unattended site, construct a secure stand-alone network by using one of these procedures:

**To construct this
network configuration**

See this topic

Setup configuration

[Setup Configuration](#) on page 10-2

Operating configuration

[Operating Configuration](#) on page 10-3

3. See the *TSM Configuration Guide* for information about configuring the system consoles at the central site and at the unattended site.
4. If your system uses OSM: Although OSM supports unattended site configurations, automatic logon is not necessary. The OSM Notification Director runs as a Windows service, so it does not need a user to be logged on in order to receive and dial out incident reports. If you did not choose the option for the Notification Director to run automatically as a service during OSM installation, you can change the configuration without reinstalling OSM. See the OSM Notification Director online help.

If your system uses TSM: reinstall TSM. Configure the workstation for automatic logon at the unattended site.

Add a Server to an Unattended Site Configuration

See [Add a Server to the Operating Configuration](#) on page 10-8.

Secure Operations LAN Configuration

A secure operations LAN:

- Connects servers to system consoles using Ethernet ports
- Can include many clients, servers, routers, and bridges
- Provides extra flexibility in locating system consoles
- Allows system consoles outside the dedicated service LAN to access the server
- Is used only by the OSM Service Connection, the TSM Service Application, and the OSM or TSM Event Viewer.

△ **Caution.** System consoles that act as a primary or backup system console must connect to a dedicated service LAN. See [Section 6, Connecting a System Console](#).

Construct a Secure Operations LAN Configuration

You can connect system consoles to a secure operations LAN if the following conditions are true:

If you are using OSM

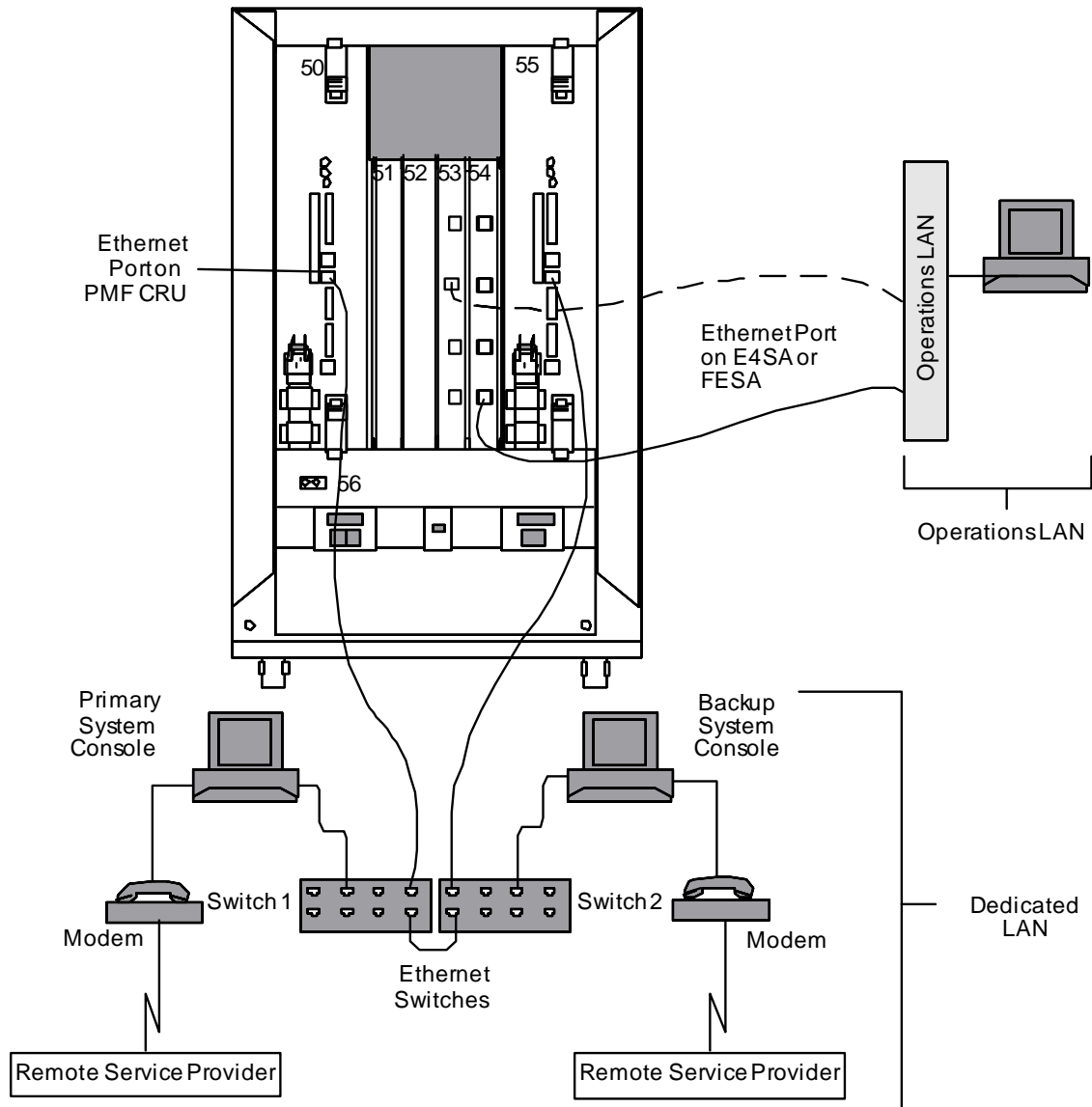
Your server is running the G06.08 or later RVU.

If you are using TSM

Your server is running the G06.04 or later RVU.

You have installed SPR T7945AAG or later.

To connect system consoles to a secure operations LAN, use the server's E4SA, FESA, or GESA ports.

Figure 10-11. LAN Configurations: Operations and Dedicated

Note: Do not use this figure as a wiring diagram. Actual connections vary depending on your Ethernet switch.

VST061.vsd

Procedure

1. Connect the system console to the operations LAN as shown in [Figure 10-11](#).
 - a. Connect the Ethernet cable to the 10Base-T connector on the network interface card (NIC) at the back of the system console.
 - b. Connect the other end of the Ethernet cable to the operations LAN.
 - c. Connect the operations LAN to the ServerNet adapter.
 - d. On the system console, configure the IP address for the console, and the subnet mask and gateway for the operations LAN, as described in [Step 3 on page 10-4](#).

2. Install OSM or version 7.0 or later of the TSM client software. See the applicable documentation:

- *NonStop System Console Installer Guide*
- *TSM Online User Guide*
- *OSM Migration Guide*

When asked if the workstation is installed on a dedicated service LAN, click **No**.

The OSM package should already be installed on the workstation, but it might be configured for a dedicated service LAN. If so, all OSM client applications appear in the OSM Start Menu shortcuts, but you can use only the TSM Service Application, the OSM Service Connection, and the OSM or TSM Event Viewer.

3. Use the OSM Service Connection or TSM Service Application to enter the IP addresses for the ServerNet adapter. For instructions using TSM, see the *TSM Configuration Guide*. For OSM, see the *OSM Migration Guide*.
4. Specify the TCP/IP process associated with the ServerNet adapter. For TSM, use TEDIT or EDIT (see the *TSM Configuration Guide*). For OSM, see the *OSM Migration Guide*.
5. Configure the OSM or TSM Event Viewer to use the TCP/IP process associated with the ServerNet adapter. For instructions, see the *OSM Migration Guide* or *TSM Configuration Guide*.
6. Test the operations LAN connection:
 - a. For OSM:

For the configuration changes made in the OSMCONF file (in steps 3-5) to take effect, use the **Reload Configuration Settings** option from the Tools menu in the OSM Service Connection. See the *OSM User's Guide* for more information.

For TSM:

1. Wait 30 minutes to ensure that the server has executed the changes in the TSMINI file for TSM.
2. Start and log on to the TSM Service Application.

For more information on the operations LAN, see the *LAN Configuration and Management Manual* and the *Ethernet Adapter Installation and Support Guide*.

11 Offline Configuration Tasks

This section describes offline configuration tasks, which change software or hardware configurations and require the system to be shut down.

Topic	Page
Changes That Must Be Made Offline	11-1
Application Reconfiguration	11-2
Installing a New RVU	11-2
Installing a Product Revision	11-2
Changing System Name, System Number, or Time Attributes	11-3
Changing the System Topology	11-3
Changing the CONFTEXT File	11-3

Changes That Must Be Made Offline

A few configuration changes must be made offline:

- Installing a new RVU.
- Installing a product revision, such as a software product revision (SPR), that requires a system load.
- Making configuration changes that either cannot be made using an online configuration tool or require a system load to take effect, such as changing the system name.
- Changing the system topology.
- Changing the configuration of the QIOMON process.
- Changing the CONFTEXT file.
- Some online PMF CRU upgrades are not allowed. To see what upgrades can be made online, see the *NonStop S-Series Planning and Configuration Guide*. No others are supported.
- Installing TSM. System consoles are initially configured by HP manufacturing with OSM enabled and TSM disabled. This includes disabling the power scrub test and processor alarm functionality in TSM. If you want to use TSM instead of OSM, follow the instructions described under Fallback Issues in the *OSM Migration Guide*.

Offline changes are usually performed during a planned outage. For more information about planned outages, see the *NonStop S-Series Planning and Configuration Guide*.

Application Reconfiguration

Reconfiguring an application can sometimes require that the application be taken offline. A discussion of application reconfiguration is beyond the scope of this guide. However, the *Availability Guide for Application Design* provides information on designing highly available applications.

Installing a New RVU

HP currently requires that you shut down your system to activate a new version of the operating system. By using the Distributed Systems Management/Software Configuration Manager (DSM/SCM), your current system can continue to run while you create a new SYS_{nn}; you have to shut down the system only to perform the system load.

To install a new RVU, perform the tasks described in the *G06.nn Software Installation and Upgrade Guide*. These tasks involve:

- Receiving the new software into the archive and creating the new software revision.
- Building and applying a software revision to the target system.
- Activating the new software on the target system. The activation instructions created by DSM/SCM indicate the steps to perform, such as performing a system load or updating the firmware.

Installing a Product Revision

A product revision, such as an SPR, might include one or more fixes to programs supplied by HP, or it might contain code that adds new function to an HP software product. Installing a product revision might or might not require that the system be shut down. Follow the installation instructions provided with the product revision. The *DSM/SCM User's Guide* describes installing product revisions in detail.

Changing System Name, System Number, or Time Attributes

After the first system load, use SCF to modify the values for the following system attributes:

- SYSTEM_NAME
- SYSTEM_NUMBER
- TIME_ZONE_OFFSET
- DAYLIGHT_SAVINGS_TIME

See the *SCF Reference Manual for the Kernel Subsystem*.

Because the attributes that change the system name and Expand system (node) number are stored in a SEEPROM in the enclosure backplane, changes to them require a system reset and reload to take effect. If you do not modify these attribute values, they default to the values shipped by HP:

SYSTEM_NAME	\NONAME
SYSTEM_NUMBER	254
TIME_ZONE_OFFSET	0:00 (London)
DAYLIGHT_SAVINGS_TIME	NONE

△ **Caution.** Changing the system name or Expand system (node) number is intended for a newly installed system. If you change the system name or system number on an existing system and are running complex applications like NonStop SQL/MP, HP NonStop Transaction Management Facility (TMF), or HP NonStop Open System Services (OSS), you must reconfigure the applications and take additional precautions to avoid losing data.

Changing the System Topology

If you want or need to change the topology of a system, you must shut down the system. The *NonStop S-Series System Expansion and Reduction Guide* gives complete information about the procedures necessary to reconfigure your system offline.

Changing the CONFTEXT File

Any changes to the CONFTEXT file take effect after the next system load. If you want to modify the CONFTEXT file, see the *System Generation Manual for G-Series RVUs*.

The modified CONFTEXT file is used by DSM/SCM when generating a new operating system image. See the *DSM/SCM User's Guide*.

12 Online Configuration Tasks

This section describes how to configure your system online using the Subsystem Control Facility (SCF), Kernel-Managed Swap Facility (KMSF), OSM, and TSM, and how to create an alternate \$SYSTEM disk.

Topic	Page
<u>SCF</u>	<u>12-2</u>
<u>Initial CONFIG file</u>	<u>12-2</u>
<u>Subsystems in G-Series RVUs</u>	<u>12-3</u>
<u>Generic Processes</u>	<u>12-4</u>
<u>Making Important Processes Persistent</u>	<u>12-5</u>
<u>Types of System Configuration Files</u>	<u>12-6</u>
<u>KMSF</u>	<u>12-8</u>
<u>Initial Configuration of KMSF Swap Files</u>	<u>12-8</u>
<u>Changing the Configuration of KMSF Swap Files</u>	<u>12-8</u>
<u>KMSF and the Operations Environment</u>	<u>12-8</u>
<u>The OSM and TSM Packages</u>	<u>12-9</u>
<u>Creating an Alternate System Disk</u>	<u>12-10</u>
<u>1. Choose the Target Disk and Plan Its Space and Files</u>	<u>12-11</u>
<u>2. Verify That the Target Disk Is Present</u>	<u>12-12</u>
<u>3. Stop Access to the Target Disk and Display Its Status</u>	<u>12-12</u>
<u>4. Change the Label of the Target Disk</u>	<u>12-13</u>
<u>5. Create a New System Volume and a System Image Tape (SIT)</u>	<u>12-14</u>
<u>6. Install the Boot Millicode on the Target Disk</u>	<u>12-14</u>
<u>7. Verify the Installation of Boot Millicode on the Target Disk</u>	<u>12-15</u>
<u>8. Copy Subvolumes to the Target Disk</u>	<u>12-16</u>

SCF

The Subsystem Control Facility (SCF) configures, controls, and collects information about subsystems and the objects (devices, subdevices, processes, and so forth) belonging to each subsystem.

Using SCF commands, you can:

- Add, alter, or delete objects (such as I/O processes or generic processes) in the system configuration
- Obtain configured or current information about objects

System configuration changes that are made online using SCF take effect as soon as the object is restarted (using the SCF START command). For subsystems that are new for the G-series, these changes are permanent; that is, they persist through processor and system loads (unless you load the system with a different configuration file).

The general method for performing SCF configuration changes is:

1. Create a command file containing the SCF commands to implement a configuration change.
2. For fallback purposes, save the current configuration database CONFIG file using the SCF SAVE command. The following example saves the current CONFIG file to a file named CONF0102 on the \$SYSTEM.ZSYSCONF subvolume:

```
-> SAVE CONFIGURATION 1.2
```

3. Invoke the command file created in Step 1. For example:

```
-> OBEY SCFCONF
```

If the most recent change results in a problem, you can fall back to a known, stable configuration by loading the system from the saved configuration file. These steps are described in detail in the *SCF Reference Manual for G-Series RVUs*.

Initial CONFIG file

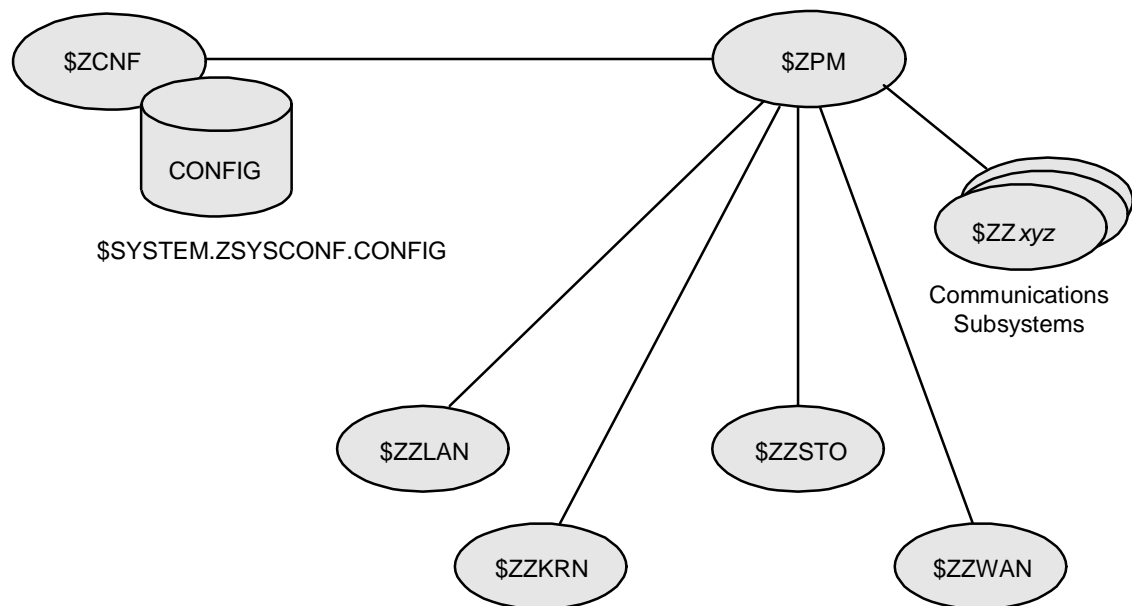
When a system is delivered, the \$SYSTEM.ZSYSCONF.CONFIG file contains a standard system configuration created by HP. The contents of this file, called the initial CONFIG file, are described in *NonStop S-Series Planning and Configuration Guide*.

This initial CONFIG file is also saved on your system as the ZSYSCONF.CONF0000 file. See the *SCF Reference Manual for G-Series RVUs* for example displays from the CONF0000 file.

Subsystems in G-Series RVUs

A system running a G-series RVU has multiple subsystems that handle the configuration and management of subsystem-specific generic processes, I/O processes, and system hardware. This illustration is an overview of the configuration components in these systems.

Figure 12-1. Subsystems in G-Series RVUs



VST115.vsd

Component	Function
CONFIG system configuration database file	Contains information about the location and characteristics of all system components. This file is on the \$SYSTEM.ZSYSCONF subvolume.
\$ZCNF configuration utility process	Is the database server for the subsystem managers and monitor processes. Controls access to the system configuration database. Manages requests for information about the CONFIG file. Starts and maintains the \$ZPM persistence manager process.
\$ZPM persistence manager process	Starts and maintains persistence of subsystem managers and monitor processes. Starts, stops, and (optionally) restarts generic processes. Coordinates system load and processor reload activities.
Subsystem managers and monitor processes	Configure and control subsystem devices.

Each subsystem manager or monitor process is started by the \$ZPM persistence manager process at system load and has the following functions:

- Creates I/O processes and other manager processes within the subsystem
- Configures subsystem objects such as adapter hardware and the ServerNet addressable controllers (SACs) supported by those adapters
- Identifies the names of processes that must be reserved at system load
- Monitors its processes to immediately re-create any process that has terminated (if it was configured to be persistent)

Each configuration manual listed in the *NonStop S-Series Planning and Configuration Guide* describes a subsystem, the objects the subsystem supports, and how to configure those objects.

You can display information about the following generic processes for G-series RVUs that are subsystem managers or monitor processes.

Subsystem	Process
ATM	\$ZZATM, the Asynchronous Transfer Mode (ATM) monitor process
Expand	\$ZEXP, the Expand manager process
Kernel	\$ZZKRN, the Kernel subsystem manager process
PAM	\$ZZPAM, the Port Access Method (PAM) manager process
QIO	\$ZM _{nn} , the Query I/O (QIO) monitor process in processor <i>nn</i>
ServerNet/FX adapter	\$ZZFOX, the FOX monitor process
SLSA	\$ZZLAN, the ServerNet LAN Systems Access (SLSA) subsystem manager process
Storage	\$ZZSTO, the storage subsystem manager process
WAN	\$ZZWAN, the wide area network (WAN) subsystem manager process

Generic Processes

Generic processes can be created by the operating system or by a user. Examples of generic processes created by a user are an HP program, a third-party program, or a user-written program that you configure to be controlled by the operating system.

When the system is started, all generic processes that are configured to be persistent are started automatically by the \$ZPM persistence manager or by the subsystem manager, which is started by \$ZPM.

See the *SCF Reference Manual for the Kernel Subsystem* for more information about generic processes.

Making Important Processes Persistent

You can make important system processes, such as the Expand manager process or the Subsystem Control Point (SCP) process, start automatically at system load and be persistent (that is, restart automatically if stopped abnormally) by creating them as generic processes in the system configuration database and specifying the AUTORESTART parameter.

This example SCF command file adds persistent generic processes for the CLCI TACL, Expand manager, and SCP processes. This file can be invoked by the following TACL command:

```
> SCF / IN GPADD /

== This file is GPADD

== Adds the CLCI TACL, Expand manager, and SCP processes as generic
== processes.

=====
== CLCI TACL                                                    ==
=====
ADD PROCESS $ZZKRN.#CLCI-TACL, NAME $CLCI, PRIORITY 199, &
    AUTORESTART 10, PROGRAM $SYSTEM.SYSTEM.TACL, PRIMARYCPU 0, &
    BACKUPCPU 1, TYPE OTHER, STARTMODE MANUAL, HOMETERM $YMIOP.#CLCI, &
    INFILE $YMIOP.#CLCI, OUTFILE $YMIOP.#CLCI, STARTUPMSG "<BCKP-CPU>"
=====
== Expand manager process                                     ==
=====
ADD PROCESS $ZZKRN.#ZEXP, NAME $ZEXP, PRIORITY 180, AUTORESTART 10, &
    PROGRAM $SYSTEM.SYSTEM.OZEXP, PRIMARYCPU 0, BACKUPCPU 1, TYPE OTHER, &
    STARTMODE SYSTEM, HOMETERM $ZHOME, OUTFILE $ZHOME, &
    STARTUPMSG "<BCKP-CPU>"
=====
== SCP                                                         ==
=====
ADD PROCESS $ZZKRN.#SCP, NAME $ZNET, PRIORITY 175, AUTORESTART 10, &
    PROGRAM $SYSTEM.SYSTEM.SCP, PRIMARYCPU 0, BACKUPCPU 1, TYPE OTHER, &
    STARTMODE SYSTEM, HOMETERM $ZHOME, OUTFILE $ZHOME, &
    STARTUPMSG "<BCKP-CPU> ; AUTOSTOP -1"
```

Types of System Configuration Files

On systems running G-series RVUs:

- Most I/O processes are not prebuilt by SYSGENR. Rather, the subsystems send information about these processes into the system configuration database.
- The `SYSnn.OSCONFIG` file contains only Software Problem Isolation and Fix Facility (SPIFF) and Software ID (SWID) records.
- The system configuration database files are stored on the `$SYSTEM.ZSYSCONF` subvolume, independent of the `SYSnn` subvolume on which the operating system is running.

The system configuration files used on systems running G-series RVUs are:

File Type	File Name	Description
-----------	-----------	-------------

On the `$SYSTEM.SYSnn` subvolume:

Base CONFIG	CONFBASE	Contains the minimal configuration to load the system. You use this file when you want to rebuild the system configuration from the absolute minimum configuration.
----------------	----------	---

File Type	File Name	Description
-----------	-----------	-------------

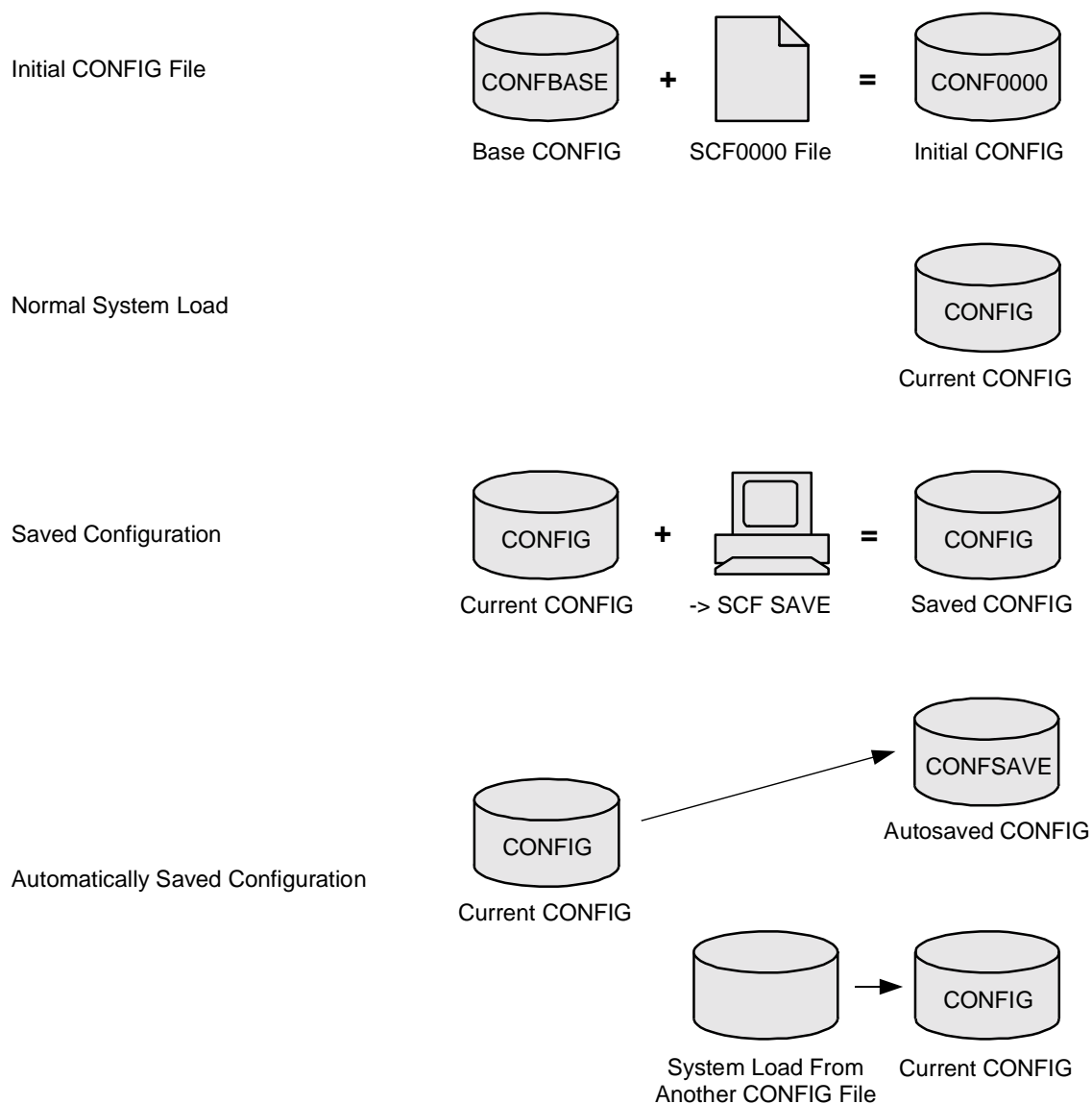
On the `$SYSTEM.ZSYSCONF` subvolume:

Input to initial CONFIG	SCF0000	Is used to create the CONF0000 file, which HP uses to configure and test a standard system before shipment.
Current CONFIG	CONFIG	Contains the current system configuration.
Saved CONFIG	CONF _{xxyy}	Contains a copy of a CONFIG file, saved for future use. You can use one of these files to return to an earlier, stable configuration. The file-naming convention is to let <i>xx</i> indicate a major configuration change and <i>yy</i> indicate a minor change.
Autosaved CONFIG	CONFSAVE	Contains a saved version of the current CONFIG file that the operating system automatically creates when you load the system from a saved CONFIG file. If you load the system from CONFBASE or a CONF _{xxyy} file to abandon a corrupt configuration, HP can analyze the corrupt configuration file to determine the reason for the corruption. If the CONFSAVE file is not corrupt, you can use it to reload the system if you first rename it to CONF _{xxyy} .

See the *TSM Configuration Guide* or the *OSM User's Guide* for instructions on how to select a system configuration file during system load.

This figure illustrates the differences among the types of system configuration files.

Figure 12-2. Differences Among System Configuration Files



VST911.vsd

KMSF

Kernel-managed swap space manages virtual memory using swap files controlled by the operating system. During a shortage of available physical memory, pages of memory not currently in use are *swapped*, or copied, to disk. These memory pages are swapped back or overwritten to physical memory when the code or data is needed. When swapped to disk, the data is stored in *swap files*. Through the Kernel-Managed Swap Facility (KMSF), the operating system opens one or more swap files for each processor and manages the files for all the processes needing them.

Proper configuration and management of kernel-managed swap space is critical to system operation.

When you set up a new system, you must configure KMSF swap files. Using the guidelines provided in the *Kernel-Managed Swap Facility (KMSF) Manual*, you decide:

- How much swap space you should configure
- Where to place swap files
- What guidelines to create for operations staff on monitoring and altering swap files

Initial Configuration of KMSF Swap Files

New systems are initially configured with these default KMSF swap files:

Attribute	Value
Location	\$SYSTEM
Number	1 swap file for each processor
Name	\$SYSTEM.ZSYSSWAP.SWAP _{nn} , where <i>nn</i> is the processor number
Size	128 MB with at least 64 MB allocated

Changing the Configuration of KMSF Swap Files

Change the configuration of KMSF swap files if:

- Your system is using default swap file configurations. These configurations are minimums for system load. To run most applications, you must configure additional swap files.
- You want to increase the number or size of your swap files.
- You want to change the location of one or more swap files.

KMSF and the Operations Environment

KMSF affects routine operations. Operations staff must monitor KMSF and operator messages to spot potential problems and dynamically add swap space as needed. Event Management Service (EMS) messages are generated to alert staff to swap files that have reached a configured threshold and to changes in KMSF configuration.

The OSM and TSM Packages

The OSM and TSM packages are collections of software products that provide troubleshooting, maintenance, and service tools.

Note. Beginning with TSM 2005A (T8184ABI), the TSM Low-Level Link is replaced by the OSM Low-Level Link.

With the OSM or TSM package, you can make these configuration changes online:

- Verify and update firmware for components.
- Implement remote monitoring and maintenance functions.
- Specify IP addresses of system consoles and the master service processors.

With the OSM or TSM Notification Director and the OSM or TSM Low-Level Link, you can configure:

- User names and passwords for the OSM or TSM package (for security)
- Remote dial-in access to the system from a service provider
- Remote access from the system to an unattended line
- Remote dial-out access from the system to a service provider
- IP addresses for the dedicated local area network (LAN)

For information you need to configure remote access, contact your service provider.

For information about performing configuration changes, see:

- OSM Low-Level Link online help
- OSM Notification Director online help
- *OSM User's Guide*
- *TSM Configuration Guide*
- *TSM Low-Level Link online help*
- *TSM Notification Director online help*
- *TSM Online User Guide*

For a more detailed comparison of OSM and TSM functionality, see:

- *OSM Migration Guide*
- *OSM User's Guide*

Creating an Alternate System Disk

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2. Verify That the Target Disk Is Present	12-12
3. Stop Access to the Target Disk and Display Its Status	12-12
4. Change the Label of the Target Disk	12-13
5. Create a New System Volume and a System Image Tape (SIT)	12-14
6. Install the Boot Millicode on the Target Disk	12-14
7. Verify the Installation of Boot Millicode on the Target Disk	12-15
8. Copy Subvolumes to the Target Disk	12-16

Reasons to create an alternate system disk include:

- Minimizing unplanned outage minutes by having an alternate system disk configured as a backup.
- Avoiding planned outages by configuring an alternate system disk to use in case you must stop your current system disk.
- Keeping your system running with the alternate system disk while the main system disk is offline.

For more information, see the *DSM/SCM User's Guide*.

1. Choose the Target Disk and Plan Its Space and Files

The target disk is the disk that will become the alternate system disk. Before choosing the target disk, plan its space and the files that will be stored on it.

Ensure that this target disk has enough room for the subvolumes it will hold. The best way to do this is to set aside an entire disk as the target disk. If you cannot set aside an entire disk, you might need to purge files from the disk you will use.

Plan your alternate system disk using the following considerations:

- Allow enough space on the target disk for the Kernel-Managed Swap Facility (KMSF) to operate.

Note. The default KMSF swap files immediately allocate 64 megabytes of swap space and can grow to a maximum size of 128 megabytes. However, the *Kernel-Managed Swap Facility (KMSF) Manual* recommends that you initially configure a swap file of 512 megabytes for each processor. Because the optimal amount of swap space varies, you should adjust the size of the swap files depending on system use and workflow patterns.

As much as 2 gigabytes could be required for a processor with 1 gigabyte of memory.

HP recommends configuring KMSF swap files instead of using the default KMSF swap files because many processes require more swap space than is provided by default swap files. Insufficient swap space can result in errors, process failures, and processor halts.

- Ensure that all the files that will remain on the target disk can still be accessed when it is used as an alternate system disk. For example, you cannot have audited files on the alternate system disk if your TMF audit trails also are located on that disk.
- Ensure that your startup files, such as the CIIN file, refer to \$SYSTEM.

2. Verify That the Target Disk Is Present

Use SCF to verify that the target disk you have chosen is physically present on the system. In this example, the target disk is \$DATA08.

```
7-> status $data08,detail
STORAGE - Detailed Status DISK \WAGER.$DATA08
```

Disk Path Information:

LDev	Path	Status	State	Substate	Primary PID	Backup PID
74	PRIMARY	ACTIVE	STARTED		2,261	
74	BACKUP	INACTIVE	STARTED		2,261	
74	MIRROR	ACTIVE	STARTED		2,261	
74	MIRROR-BACKUP	INACTIVE	STARTED		2,261	

General Disk Information:

Device Type.....	3	Device Subtype.....	42
Primary Drive Type....	4608-1	Mirror Drive Type.....	4608-1
Physical Record Size..	4096	Priority.....	220
Library File.....			
Program File.....	\WAGER.\$SYSTEM.SYS00.TSYS DP2		
Protection.....	MIRRORED		

Hardware Information:

Path	Location (group,module,slot)	Power	Physical Status
PRIMARY (2,1,18)	(2,1,17) DUAL	DUAL PRESENT	PRESENT MIRROR

3. Stop Access to the Target Disk and Display Its Status

Use the SCF STOP command to stop access to the target disk.

You can use the SCF STATUS command to check whether access to that disk has been stopped.

```
8-> stop $data08
STORAGE W01007 The STOP DISK $DATA08 operation will cause \WAGER.$DATA08
                to be INACCESSIBLE to user processes.
Do you want to STOP DISK \WAGER.$DATA08 (Y/[N])y
```

```
9-> status $data08
STORAGE - Status DISK \WAGER.$DATA08
```

LDev	Primary	Backup	Mirror	MirrorBackup	Primary PID	Backup PID
74	STOPPED	STOPPED	STOPPED	STOPPED	2,262	

4. Change the Label of the Target Disk

Use SCF to change the label of the target disk.

In this example, the preferred volume name is set to \$SYSTEM, and the alternate name is not changed.

```
12-> info $data08, label
STORAGE - Label Information DISK \WAGER.$DATA08
Disk Label Information $DATA08 Primary:
*Volume Name..... $SYSTEM
*Alternate Volume Name..... $DATA08
Volume ID..... 19
Volume Label Verifier..... D2
Volume Label Version..... 0
Operating System Last Mounted Under.. F40 (P40)
Volume Label Last Written..... 02 Apr 1997, 16:41:06.036
Disk Subtype..... 42
```

Section Name	Address	Length	Version	Parameter
0. Spare Tracks Table	000000.003000	000000.005000	0	000000.000000
1. Boot	000000.000000	000000.000000	0	000000.000000
2. Free Space Table	000000.010000	000000.020000	0	000000.000000
3. Directory Label	000000.110000	000000.010000	0	000000.000000
4. Unused	000000.000000	000000.000000	0	000000.000000
5. Undo	000000.120000	000000.020000	0	000000.000000
6. Pool	000000.000000	000000.000000	0	000000.000000
10. Pool-LSA	000000.000010	000407.061554	3	000000.000000
11. Free Space Table-LSA	000000.000010	000000.000020	3	000000.000000
12. Boot-LSA	000000.000000	000000.000000	0	000000.000000

```
Disk Label Information $DATA08 Mirror:
*Volume Name..... $SYSTEM
*Alternate Volume Name..... $DATA08
Volume ID..... 19
Volume Label Verifier..... D2
Volume Label Version..... 0
Operating System Last Mounted Under.. F40 (P40)
Volume Label Last Written..... 02 Apr 1997, 16:41:06.036
Disk Subtype..... 42
```

Section Name	Address	Length	Version	Parameter
0. Spare Tracks Table	000000.003000	000000.005000	0	000000.000000
1. Boot	000000.000000	000000.000000	0	000000.000000
2. Free Space Table	000000.010000	000000.020000	0	000000.000000
3. Directory Label	000000.110000	000000.010000	0	000000.000000
4. Unused	000000.000000	000000.000000	0	000000.000000
5. Undo	000000.120000	000000.020000	0	000000.000000
6. Pool	000000.000000	000000.000000	0	000000.000000
10. Pool-LSA	000000.000010	000407.061554	3	000000.000000
11. Free Space Table-LSA	000000.000010	000000.000020	3	000000.000000
12. Boot-LSA	000000.000000	000000.000000	0	000000.000000

5. Create a New System Volume and a System Image Tape (SIT)

Create a new system volume and a system image tape (SIT) for the target disk.

You can create a system volume in either of these ways:

- Use DSM/SCM to place needed subvolumes on the target disk.
- Back up the original subvolumes to tape and then restore them to the target disk.

For more information on either of these procedures or the procedure for creating a SIT, see the *DSM/SCM User's Guide*.

6. Install the Boot Millicode on the Target Disk

Use SCF to install the boot millicode on the target disk. In this example, the boot millicode is installed on \$DATA08.

```
13-> control $data08, replaceboot $system.sys00.sysdisc
STORAGE W01012 The CONTROL DISK, REPLACEBOOT operation will OVERWRITE
                the existing bootstrap on $DATA08.
Are you sure you want to REPLACE the bootstrap on $DATA08 (Y/[N])y
STORAGE W01013 To protect you against failure when replacing the bootstrap
                file on $DATA08, SCF can place
                $DATA08-M in a STOPPED summary state, substate HARDDOWN.
Do you want to abort $DATA08-M (Y/[N])n
```

7. Verify the Installation of Boot Millicode on the Target Disk

Use the SCF INFO, LABEL command to verify that the boot millicode was installed correctly.

In this example, section 12 (Boot-LSA) shows that the address and length values are now nonzero values.

```
14-> info $data08, label
STORAGE - Label Information DISK \WAGER.$DATA08
Disk Label Information $DATA08 Primary:
*Volume Name..... $SYSTEM
*Alternate Volume Name..... $DATA08
Volume ID..... 20
Volume Label Verifier..... D2
Volume Label Version..... 0
Operating System Last Mounted Under.. F40 (P40)
Volume Label Last Written..... 02 Apr 1997, 16:41:45.006
Disk Subtype..... 42
```

Section Name	Address	Length	Version	Parameter
0. Spare Tracks Table	000000.003000	000000.005000	0	000000.000000
1. Boot	000000.030000	000000.020000	0	000000.000000
2. Free Space Table	000000.010000	000000.020000	0	000000.000000
3. Directory Label	000000.110000	000000.010000	0	000000.000000
4. Unused	000000.000000	000000.000000	0	000000.000000
5. Undo	000000.120000	000000.020000	0	000000.000000
6. Pool	000000.000000	000000.000000	0	000000.000000
10. Pool-LSA	000000.000010	000407.061554	3	000000.000000
11. Free Space Table-LSA	000000.000010	000000.000020	3	000000.000000
12. Boot-LSA	000000.000030	000000.000020	0	000000.000000

```
Disk Label Information $DATA08 Mirror:
*Volume Name..... $SYSTEM
*Alternate Volume Name..... $DATA08
Volume ID..... 20
Volume Label Verifier..... D2
Volume Label Version..... 0
Operating System Last Mounted Under.. F40 (P40)
Volume Label Last Written..... 02 Apr 1997, 16:41:45.006
Disk Subtype..... 42
```

Section Name	Address	Length	Version	Parameter
0. Spare Tracks Table	000000.003000	000000.005000	0	000000.000000
1. Boot	000000.030000	000000.020000	0	000000.000000
2. Free Space Table	000000.010000	000000.020000	0	000000.000000
3. Directory Label	000000.110000	000000.010000	0	000000.000000
4. Unused	000000.000000	000000.000000	0	000000.000000
5. Undo	000000.120000	000000.020000	0	000000.000000
6. Pool	000000.000000	000000.000000	0	000000.000000
10. Pool-LSA	000000.000010	000407.061554	3	000000.000000
11. Free Space Table-LSA	000000.000010	000000.000020	3	000000.000000
12. Boot-LSA	000000.000030	000000.000020	0	000000.000000

8. Copy Subvolumes to the Target Disk

You might want to copy these subvolumes to the target disk. These are examples only; your files and subvolumes might be different.

File	Location
All copies of the system configuration database	\$SYSTEM.ZSYSCONF.*
OSM subvolumes	\$SYSTEM.ZSERVICE.* \$SYSTEM.ZOSM.* \$SYSTEM.ZOSMLH.*
TSM subvolumes	\$SYSTEM.ZSERVICE.* \$SYSTEM.ZTSM.*
System startup files	For example, \$SYSTEM.STARTUP.*
System shutdown files	For example, \$SYSTEM.SHUTDOWN.*
Spooler data files	For example, \$SYSTEM.SPL.*

Also copy any subvolume that contains configuration information, such as the subvolume that contains your TCP/IP HOSTS file (normally \$SYSTEM.ZTCPIP).

Create a Command File

A command file can automate the task of reconfiguring paths that have been stopped or deleted. For example, a set of disk drives can be added in one operation rather than one at a time. The command file must be constructed before the system is prepared to lose access to the paths.

To prepare a command file that configures a disk drive:

1. Create an editable file by issuing the SCF LOG command:

```
-> SCF LOG [ logfile-spec [ ! ] ]
```

```
-> SCF LOG LOGFILE43
```

2. Write to this file by issuing the SCF INFO DISK, OBEYFORM command:

```
-> INFO DISK $disk-name, OBEYFORM
```

where *\$disk-name* is a disk to be reconfigured by the command file.

```
-> info $data3,obeyform
ADD DISK $data3 , &
  SENDTO STORAGE , &
  BACKUPCPU 3 , &
  HIGHPIN ON , &
  PRIMARYCPU 2 , &
  PROGRAM $SYSTEM.SYSTEM.TSYS DP2 , &
  STARTSTATE STARTED , &
  PRIMARYDEVICEID 0 , &
  PRIMARYLOCATION (2,1,54) , &
  PRIMARYSAC 3 , &
  BACKUPDEVICEID 0 , &
  BACKUPLOCATION (2,1,54) , &
  BACKUPSAC 4 , &
  AUDITTRAILBUFFER 0 , &
  AUTOREVIVE OFF , &
  AUTOSTART ON , &
  CBPOOLLEN 1000 , &
  FSTCACHING OFF , &
  FULLCHECKPOINTS ENABLED , &
  HALTONERROR 1 , &
  LKIDLONGPOOLLEN 8 , &
  LKTABLESPACELEN 15 , &
  MAXLOCKSPEROCB 5000 , &
  MAXLOCKSPERTCB 5000 , &
  NUMDISKPROCESSES 4 , &
  OSSCACHING ON , &
  PROTECTDIRECTORY SERIAL , &
  REVIVEBLOCKS 1 , &
  REVIVEINTERVAL 100 , &
  SERIALWRITES ENABLED
-> log
```

3. Stop writing to this log file by either exiting from SCF or using the SCF LOG command:

```
-> LOG
```

4. Edit this log file to create a command file:

- Remove the top line (the INFO command).
- Remove the bottom line (the LOG command).
- Update the locations for any affected adapters (PRIMARYLOCATION and BACKUPLOCATION).

```

== STORAGE - Obeyform Information Magnetic DISK \S3.$data3
ADD DISK $data3 , &
    SENDTO STORAGE , &
    BACKUPCPU 3 , &
    HIGHPIN ON , &
    PRIMARYCPU 2 , &
    PROGRAM $SYSTEM.SYSTEM.TSYSDP2 , &
    STARTSTATE STARTED , &
    PRIMARYDEVICEID 0 , &
    PRIMARYLOCATION (1,1,53) , &
    PRIMARYSAC 3 , &
    BACKUPDEVICEID 0 , &
    BACKUPLOCATION (1,1,53) , &
    BACKUPSAC 4 , &
    AUDITTRAILBUFFER 0 , &
    AUTOREVIVE OFF , &
    AUTOSTART ON , &
    CBPOOLLEN 1000 , &
    FSTCACHING OFF , &
    FULLCHECKPOINTS ENABLED , &
    HALTONERROR 1 , &
    LKIDLONGPOOLLEN 8 , &
    LKTABLESPACELEN 15 , &
    MAXLOCKSPEROCB 5000 , &
    MAXLOCKSPERTCB 5000 , &
    NUMDISKPROCESSES 4 , &
    OSSCACHING ON , &
    PROTECTDIRECTORY SERIAL , &
    REVIVEBLOCKS 1 , &
    REVIVEINTERVAL 100 , &
    SERIALWRITES ENABLED

```

5. Save this command file for later use.

Creating Startup and Shutdown Files

This section describes command files that automatically start and shut down a NonStop S-series server.

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Automating System Startup and Shutdown

Startup

You can use startup command files to automate the starting of devices and processes on the system, which minimizes the possibility of operator errors caused by forgotten or mistyped commands.

The system is shipped with a basic startup file named CIIN, located on the \$SYSTEM.SYS00 subvolume. The CIIN file must be specified in a particular way. See [CIIN File](#) on page 13-6 for more information.

After the commands in the CIIN file are executed, other startup files can be invoked either automatically, from another startup file, or manually in commands entered by the operator. The startup file sequence usually starts the spooler and other system software first and then starts applications.

Shutdown

Automating system shutdown with a collection of shutdown files helps the operator bring the system to an orderly halt. The shutdown file sequence reverses the order of commands in the startup file sequence: applications are shut down first, followed by the spooler and other system software.

For More Information

For information about ...	See
Configuring the spoolers	<i>Spooler Utilities Reference Manual</i>
Configuring and managing Pathway applications	<i>TS/MP System Management Manual</i>
Configuring and managing TMF	<i>TMF Planning and Configuration Guide</i> <i>TMF Operations and Recovery Guide</i>
Configuring and managing TRANSFER applications	<i>TRANSFER Installation and Management Guide</i>
Configuring and managing your system monitoring environment	<i>TSM Configuration Guide</i>

Processes That Represent the System Console

On NonStop S-series servers, the system console is a pair of windows on a LAN-connected system console. It is represented by the processes \$YMIOP.#CLCI and \$YMIOP.#CNSL, and the home terminal is represented by the \$ZHOME process pair.

\$YMIOP.#CLCI

\$YMIOP.#CLCI is the primary interactive terminal for the operator interface to the system.

This process:

- Runs on the system console
- Is preconfigured on your system during system generation

TACL processes are started on \$YMIOP.#CLCI by commands in the CIIN file. If a read operation is pending, such as a TACL prompt on \$YMIOP.#CLCI, write operations are blocked, causing the process attempting the write operation to wait indefinitely.

\$YMIOP.#CNSL

\$YMIOP.#CNSL is a write-only device for logging.

This process:

- Runs on the system console
- Is preconfigured on your system during system generation

\$ZHOME

The \$ZHOME process is a process pair that provides a reliable home terminal to which processes can perform write operations. The \$ZHOME process can be used by processes that must write to the system console but do not require a response.

\$ZHOME is preconfigured on your system by the CONFBASE file. \$ZHOME is a generic process that is part of the SCF Kernel subsystem. Note the following about the configuration of \$ZHOME:

- The \$ZHOME process is configured with \$YMIOP.#CLCI as its HOMETERM, INFILE, and OUTFILE.

- Because \$ZHOME acts as a reliable home terminal designed to interact with the system console, \$YMIOP.#CLCI, HP recommends that you do not change its configuration. Most important:
 - Do not specify \$ZHOME for the INFILE, OUTFILE, or HOMETERM for the \$ZHOME process.
 - Never specify \$ZHOME for the INFILE for a process. The \$ZHOME process returns the FEINVALOP error (file-system error 2) in response to any read operation.
- Generic processes started by the \$ZPM persistence manager inherit \$YMIOP.#CLCI as the HOMETERM, INFILE, and OUTFILE unless these attributes are changed in the configuration record for the generic process. HP recommends that you configure most NonStop Kernel and system-level generic processes to use \$ZHOME for the HOMETERM and OUTFILE.

\$ZHOME Alternative

Instead of \$ZHOME, you might want to use the optional NonStop Virtual Hometerm Subsystem (VHS) product if both of the following conditions are true:

- The processes you are configuring cannot handle error responses returned if \$YMIOP.#CNSL or \$YMIOP.#CLCI is not available.
- The process must perform read operations to the device.

Example Command Files

This section describes and shows examples of command files that can be used to start up and shut down the server:

- Examples and sample programs are for illustration only and might not be suited for your particular purpose.

HP does not warrant, guarantee, or make any representations regarding the use or the results of the use of any examples or sample programs in any documentation. You must verify the applicability of any example or sample program before placing the software into production use.

- These examples are for a system whose configuration has been changed from the factory-installed configuration. Your system's initial configuration will differ from these examples.
- The examples in this section are based on the examples in [Appendix 14, Case Study: Installing and Configuring a System](#).

The startup files in this section assume that the objects they start have already been added to the configuration database for the system. For examples of files that add these objects to the configuration database, see [Appendix 14, Case Study: Installing and Configuring a System](#).

- The IP addresses used in this section are examples only. If you use the example files described in this section on your system, you must change the IP addresses in these examples to IP addresses that are appropriate for your LAN environment.
- The configuration track-ID for the SWAN concentrator used in the example files, X001XX, is also an example.

If you use the example files described in this section on your system, you must change the configuration track-ID used in these examples to the actual configuration track-ID assigned to your SWAN concentrator.

CIIN File

The CIIN file contains a limited set of commands that usually:

- Start a TACL process pair on the system console for the system console TACL window (\$YMIOP.#CLCI)

When the startup TACL executes the commands in the CIIN file and terminates, the \$YMIOP.#CLCI process pair lets you log on to the system and complete the system startup.

Note. Before these TACL processes start, open the appropriate HP Tandem terminal emulator (TTE) windows with the OSM or TSM Low-Level Link. You must open these windows before performing a system load.

OSM or TSM software lets you define primary and backup IP addresses for TACL windows. For more information about configuring OSM or TSM software, see the *OSM User's Guide* or the *TSM Configuration Guide*.

- Load all processors that are not currently running

Alternatively, the CIIN file can reload a minimal set of processors, such as processor 1, to bring up a minimal system. You can then test for successful startup of a minimal system environment before you bring up the remainder of the system.

Establishing a CIIN File

The CIIN file is configured at the factory as \$DSMSCM.SYS.CIIN. You do not need to establish this file. DSM/SCM automatically copies the CIIN file from the initial location into each SYS_{nn} you create.

Note. The CIIN file must be owned by a member of the super-group (255,_n). HP recommends that you specify "N" for the read access portion of the file security attribute (RWE_P) to allow the file to be read by any user on the network. For example, you might secure this file "NCCC."

The name of the CIIN file is specified in the INITIAL_COMMAND_FILE entry of the CONFTEXT configuration file.

The SYSGENR program (run from the DSM/SCM application) copies the file specified in the CONFTEXT file onto the SYS_{nn} subvolume on the disk and renames the file CIIN. If no file is specified in CONFTEXT, the operating system does not look for the startup file SYS_{nn}.CIIN at system startup, even if you enable that file. You cannot simply copy a startup file to the SYS_{nn} subvolume and name it CIIN.

For information about SYSGENR, see the *System Generation Manual for G-Series RVUs*.

Modifying a CIIN File

After the CIIN file is established on \$SYSTEM.SYS_{nn} (as part of running DSM/SCM), you can modify the contents of SYS_{nn}.CIIN with a text editor such as TEDIT. You need not run DSM/SCM again to make these changes effective.

You might want to modify the RELOAD command in the CIIN file to reload only a minimal set of processors, such as processor 1.

Note. Do not start other command files in the CIIN file. To ensure proper startup and to facilitate recovery in case of failure, bring up the system in stages, each verified by an operator.

If a CIIN File Is Not Specified or Enabled in OSM or TSM

The results of the startup TACL process varies depending on whether a CIIN file is specified in the CONFTEXT file and whether the CIIN option is enabled.

CONFTEXT CIIN Entry and CIIN File	CIIN Option	Results
1. CONFTEXT has CIIN entry, and file is available in specified location.	Enabled	CIIN is executed by initial (startup) TACL process. Upon completion, this TACL process terminates. You must log on to a different TACL process (the TACL process on \$YMIOP.#CLCI started by the CIIN file) to complete the system startup process.
2. CONFTEXT has CIIN entry, and file is available in specified location, but file is empty or aborts because of syntax errors before another TACL process is started.	Enabled	CIIN is executed by initial (startup) TACL process. Upon completion, this TACL process terminates, leaving no TACL process available. You must reload the system with the CIIN option disabled in the System Startup dialog box invoked from the OSM or TSM Low-Level Link; then log on and correct the CIIN file. Then, either enable the CIIN option, using the System Startup dialog box, and reload; or complete the system startup process manually.
3. CONFTEXT has CIIN entry, but file is not available in specified location.	Enabled	Initial TACL process is started and left in logged-off state. You must log on to complete the system startup process.
4. CONFTEXT has CIIN entry.	Disabled	Initial TACL process is started and left in logged-off state. You must log on to complete the system startup process.
5. CONFTEXT has no CIIN entry.	Enabled or disabled	Initial TACL process is started and left logged on to the super ID (255,255). You must initiate the remainder of the system startup process manually and then log off.

-
- △ **Caution.** Situation 5 presents a security issue: the initial TACL process is left logged on to the super ID (255,255). You must either immediately continue with the system startup process (as described in the Results column), log on to another user ID, or log off.
-

Example CIIN Files

This example CIIN file does not include a persistent CLCI TACL process.

```

Comment -- This is the initial command input (CIIN) file for the system.
Comment -- If CIIN is enabled in TSM and configured in your CONFTEXT
Comment -- file, the initial TACL process will read this file and
Comment -- then terminate.

Comment -- This file is used to reload the remaining processors and
Comment -- start a TACL process pair for the system console.

Comment -- Reload the remaining processors.

RELOAD /TERM $ZHOME, OUT $ZHOME/ *

Comment -- Start a TACL process pair for the system console TACL window.
Comment -- Use the TSM Low-Level Link to start a TTE session
Comment -- for the startup TACL before issuing this command (see the
Comment -- Start Terminal Emulator command under the File menu).
Comment -- These should be the last commands in this file, because
Comment -- the TACL process displays a prompt and attempts to read
Comment -- from $YMIOP.#CLCI, blocking other processes from writing to
Comment -- this device.

TACL/TERM $YMIOP.#CLCI, IN $YMIOP.#CLCI, OUT $YMIOP.#CLCI, NAME $SC0, &
PRI 199, CPU 0/1
TACL/TERM $YMIOP.#CLCI, IN $YMIOP.#CLCI, OUT $YMIOP.#CLCI, NAME $SC0, &
PRI 199, CPU 1/0

Comment -- Upon completion of this file, the initial TACL process
Comment -- terminates. You need to log on to a new TACL session
Comment -- to complete the remainder of the system startup process.
```

This example CIIN file shows what you would use if you had created a persistent CLCI TACL process by configuring it as a generic process. See [Section 12, Online Configuration Tasks](#).

-
- △ **Caution.** If you use the following example as *is*, you must first create the \$ZZKRN.#CLCI-TACL process. See [Making Important Processes Persistent](#) on page 12-5. If you do not create the \$ZZKRN.#CLCI-TACL process first, you might have no access to the system after it loads. To recover, load the system again from another SYS_{nn} or with CIIN disabled.
-

```

Comment -- This is the initial command input (CIIN) file for the system.
Comment -- If CIIN is enabled in TSM and configured in your CONFTEXT
Comment -- file, the initial TACL process will read this file and
Comment -- then terminate.

Comment -- This file is used to reload the remaining processors and
Comment -- start a TACL process pair for the system console.

Comment -- Reload the remaining processors.

RELOAD /TERM $ZHOME, OUT $ZHOME/ *

Comment -- Use SCF to start a persistent TACL process pair for the
Comment -- system console TACL window.
Comment -- Use the TSM Low-Level Link to start a TTE session
```

```
Comment -- for the startup TACL before issuing this command (see the
Comment -- Start Terminal Emulator command under the File menu). This SCF
Comment -- command must be the last command in this file, because the TACL
Comment -- process creates displays a prompt and attempts to read from
Comment -- $YMIOP.#CLCI, blocking other processes from writing to this
Comment -- device.
```

```
SCF /NOWAIT, OUT/ START PROCESS $ZZKRN.#CLCI-TACL
```

Tips for Startup Files

HP recommends that you specify “N” for the read access portion of the file security attribute (RWEF) for your startup files to allow the files to be read by any user on the network. For example, you might secure these files “NCCC.”

The sequence in which you invoke startup files can be important. Some processes require other processes to be running before they can be started. Be sure to indicate the order in which your startup files are to be run.

Because the TCP/IP configurations are not stored in the configuration database, they are not preserved after system loads. Therefore, TCP/IP stacks must be configured as well as started each time the system is started.

How Process Persistence Affects Configuration and Startup

When the system is started, all processes that are configured to be persistent are started automatically by the \$ZPM persistence manager or by the subsystem manager, which is started by \$ZPM.

For example, when the system is started, the WAN subsystem manager automatically starts all WAN I/O processes (IOPs) that were started before the system was shut down. However, communications lines and paths must be started manually by the operator.

To make important system processes like the Expand manager process or the Subsystem Control Point (SCP) process start automatically at system load and be persistent (that is, restart automatically if stopped abnormally), you should create them as generic processes in the system configuration database. See [Section 12, Online Configuration Tasks](#).

For more information about persistence and the \$ZPM persistence manager, see the *SCF Reference Manual for G-Series RVUs*.

Startup File Examples

You can implement the system startup sequence with a collection of startup files, each with a specific purpose. HP recommends that you invoke the startup files in this order:

1. Startup file for the system, to be invoked after the CIIN file is invoked
2. Startup files for the system software
3. Startup files for the subsystems
4. Startup files for the communications lines
5. Startup files for the applications

See the *NonStop S-Series Operations Guide* for detailed instructions on the startup procedure. For information about automating disk processes upon startup, see the *NonStop S-Series Planning and Configuration Guide*.

Note. Examples and sample programs are for illustration only and might not be suited for your particular purpose. HP does not warrant, guarantee, or make any representations regarding the use or the results of the use of any examples or sample programs in any documentation. You must verify the applicability of any example or sample program before placing the software into production use. For more information, see [Example Command Files](#) on page 13-5.

System Startup File

The following example shows a partial command file that starts up the system software and invokes other startup files.

After the commands in the CIIN file have been executed and the initial system startup sequence is complete, the local operator invokes this file by entering the following TACL command:

```
> OBEY $SYSTEM.STARTUP.STRTSYS

Comment -- This is $SYSTEM.STARTUP.STRTSYS

comment -- Start the server for labeled tape processing.

ZSERVER / NAME $ZSVR, NOWAIT, PRI 145, CPU 0 / 1
ZSERVER / NAME $ZSVR, NOWAIT, PRI 145, CPU 1 / 0
MEDIACOM ALTER TAPEDRIVE *, NLCHECK OFF

Comment -- If you have used SCF to start a persistent Subsystem
Comment -- Control Process (SCP) process pair, you do not need an
Comment -- explicit SCP command to start $ZNET, unless you load the
Comment -- system from a different CONFIG file.
Comment -- All SCF commands are routed through the SCP process.  $ZNET
Comment -- routes each request to the appropriate communication
Comment -- management process (such as Expand or SNAX).

Comment -- If you have not configured SCP as a persistent generic
Comment -- process, remove the commenting from the following SCP
Comment -- command and start SCP as a nonpersistent process pair.
Comment -- SCP / NAME $ZNET, NOWAIT, PRI 199, TERM $ZHOME, OUT $ZHOME, &
Comment -- CPU 0/1; AUTOSTOP -1
```



```
Comment -- If you have used SCF to start a persistent $ZEXP Expand
Comment -- manager process pair, you do not need an explicit SCP
Comment -- command to start $ZEXP, unless you load the system from a
Comment -- different CONFIG file.

Comment -- If you have not configured $ZEXP as a persistent generic
Comment -- process, remove the commenting from the following SCP
Comment -- command and start $ZEXP as a nonpersistent process pair.
Comment -- OZEXP / NAME $ZEXP, NOWAIT, PRI 180, OUT $ZHOME, CPU 0/1

comment -- Warm start the spooler subsystem using the SPOOLCOM command
comment -- file SPLWARM

OBEY $SYSTEM.STARTUP.SPLWARM

comment -- Start the Transaction Management Facility (TMF) subsystem
comment -- using the TMFCOM command file TMFSTART

TMFCOM / IN $SYSTEM.STARTUP.TMFSTART, OUT $ZHOME /

comment -- Configure and start the TCP/IP stacks on the E4SA ports used
comment -- by the SWAN

OBEY $SYSTEM.STARTUP.IPSTK*

comment -- Start the CP6100 lines on the SWAN

SCF / IN $SYSTEM.STARTUP.STRTCP6, OUT $ZHOME /


comment -- Start the ATP6100 lines on the SWAN

SCF / IN $SYSTEM.STARTUP.STRTATP, OUT $ZHOME /

comment -- Start the X.25 lines on the SWAN

SCF / IN $SYSTEM.STARTUP.STRTX25, OUT $ZHOME /

comment -- Start the printers on the SWAN

SCF / IN $SYSTEM.STARTUP.STRTLTP, OUT $ZHOME /

comment -- Start the Expand-over-IP line to \Case2

SCF / IN $SYSTEM.STARTUP.IP2CASE2, OUT $ZHOME /

comment -- Start the direct-connect line

SCF / IN $SYSTEM.STARTUP.STRTLH, OUT $ZHOME /
```

Spooler Warm-Start File

This example command file warm starts the spooler.

After the spooler has been brought up, the printer devices should be in the WAITING state. This file can be invoked automatically from the STRTSYS file, or you can invoke it by using the following TACL command:

```
> OBEY $SYSTEM.STARTUP.SPLWARM

comment -- This is $SYSTEM.STARTUP.SPLWARM
comment -- This file warm starts the spooler, leaving all jobs intact.

SPOOL / IN $SYSTEM.SPL.SPL, OUT $ZHOME, NAME $SPLS, NOWAIT, PRI 149, &
CPU 1/0
SPOOLCOM; SPOOLER, START

comment -- check to see that the spooler started successfully

SPOOLCOM; SPOOLER, STATUS
```

TMF Warm-Start File

This example command file warm starts the TMF subsystem.

This file can be invoked automatically from the STRTSYS file, or you can invoke it by using the following TACL command:

```
> TMFCOM / IN $SYSTEM.STARTUP.TMFSTART, OUT $ZHOME /

-- This is $SYSTEM.STARTUP.TMFSTART
-- This file warm starts the Transaction Management Facility (TMF) subsystem
-- and checks to see if TMF started successfully.

START TMF;ENABLE DATAVOLS *;STATUS TMF;EXIT
```

TCP/IP Stack Configuration and Startup File

Configuration data for NonStop TCP/IP (conventional TCP/IP) processes is not added to the configuration database. Therefore, TCP/IP stacks must be both configured and started for each LAN port that connects to a SWAN concentrator each time you start the system, unless you are using Parallel Library TCP/IP or NonStop TCP/IPv6 over SWAN. (If so, see the manuals that support those TCP/IP subsystems.)

You can create TACL command files to configure TCP/IP stacks on the other ports by assigning the appropriate values the following variables in this example file:

GW^ADDR	LINE^NAME	TCP^CPU2
HOST^NAME	LST^NAME	TCP^NAME
IP^ADDR	TCP^CPU1	TEL^NAME

The Parallel Library TCP/IP and the NonStop TCP/IPv6 subsystems participate in the system configuration database (however, not with the initial configuration database that is shipped with a new system). For more information, see:

- *TCP/IP Configuration and Management Manual*
- *TCP/IP (Parallel Library) Configuration and Management Manual*
- *TCP/IPv6 Configuration and Management Manual*

This example shows a TACL command file that configures the TCP/IP stack on \$ZZLAN.L018.

```
?TACL MACRO

== This file is $SYSTEM.STARTUP.IPSTK1
== Adds TCPIP and related processes to $ZZLAN.L018

#FRAME
#PUSH CON^NAME, LINE^NAME, TCP^NAME, LST^NAME, TEL^NAME
#PUSH HOST^NAME, IP^ADDR, GW^ADDR, TCP^CPU1, TCP^CPU2

#SET IP^ADDR      192.231.36.099
#SET GW^ADDR      192.231.36.17

#SET CON^NAME     $ZHOME
#SET LINE^NAME    L018
#SET TCP^NAME     $ZB018
#SET LST^NAME     $ZP018
#SET TEL^NAME     $ZN018
#SET HOST^NAME    "Case1_L018.DevInc.com"
#SET TCP^CPU1     0
#SET TCP^CPU2     1

[#IF NOT [#PROCESSEXISTS $ZNET]
|THEN|
#OUTPUT
#OUTPUT Starting SCP...
SCP /NAME $ZNET, NOWAIT, CPU 0, PRI 165, TERM [CON^NAME]/ 1; AUTOSTOP -1
]

[#IF [#PROCESSEXISTS [LST^NAME]]
|THEN|
STOP [LST^NAME]
]

#OUTPUT

#OUTPUT Stopping existing TCP/IP processes...
[#IF [#PROCESSEXISTS [TEL^NAME]]
|THEN|
STOP [TEL^NAME]
]

[#IF [#PROCESSEXISTS [LST^NAME]]
|THEN|
STOP [LST^NAME]
]

[#IF [#PROCESSEXISTS [TCP^NAME]]
|THEN|
#PUSH #INLINEPREFIX
SET VARIABLE #INLINEPREFIX +
```

```

        SCF /INLINE, OUT [#MYTERM], NAME/
        + ALLOW ALL ERRORS
        + ABORT PROCESS [TCP^NAME]
        + EXIT
        #POP #INLINEPREFIX
    ]

#OUTPUT

#OUTPUT Starting TCP/IP: [TCP^NAME]
TCPIP /NAME [TCP^NAME], TERM [CON^NAME], NOWAIT, CPU [TCP^CPU1] / [TCP^CPU2]
DELETE DEFINE =TCPIP^PROCESS^NAME
ADD     DEFINE =TCPIP^PROCESS^NAME, FILE [TCP^NAME]
PARAM TCPIP^PROCESS^NAME [TCP^NAME]
PARAM ZTNT^TRANSPORT^PROCESS^NAME [TCP^NAME]

#OUTPUT
#OUTPUT Configuring TCP/IP...
PUSH #INLINEPREFIX
SET VARIABLE #INLINEPREFIX +
SCF /INLINE, OUT [#MYTERM], NAME/
+ ALLOW ALL ERRORS
+ ASSUME PROCESS [TCP^NAME]
+ ALTER , HOSTNAME [HOST^NAME]
+ ADD SUBNET #SN1, TYPE ETHERNET, IPADDRESS [IP^ADDR], DEVICENAME [LINE^NAME]
+ ALTER SUBNET #SN1, SUBNETMASK %%hFFFFFF00
+ ALTER SUBNET #LOOP0, IPADDRESS 127.1
+ START SUBNET *
+ ADD ROUTE #GW, DESTINATION 0, GATEWAY [GW^ADDR], DESTTYPE BROADCAST
+ START ROUTE *
+ EXIT
POP #INLINEPREFIX

#OUTPUT
#OUTPUT Starting Listener: [LST^NAME]
LISTNER /NAME [LST^NAME], CPU [TCP^CPU1], PRI 160, NOWAIT, TERM [CON^NAME],
HIGHPIN OFF/ $SYSTEM.ZTCPIP.PORTCONF

#OUTPUT
#OUTPUT Starting Telnet: [TEL^NAME]
TELSERV /NAME [TEL^NAME], CPU [TCP^CPU1], PRI 170, NOWAIT, TERM [CON^NAME]/ -
backupcpu [TCP^CPU2]

#OUTPUT
#OUTPUT Starting Telnet: [TEL^NAME]
TELSERV /NAME [TEL^NAME], CPU [TCP^CPU1], PRI 170, NOWAIT, TERM [CON^NAME]/ -
backupcpu [TCP^CPU2]

DELETE DEFINE =TCPIP^PROCESS^NAME
CLEAR  PARAM TCPIP^PROCESS^NAME
CLEAR  PARAM ZTNT^TRANSPORT^PROCESS^NAME
#UNFRAME

```

CP6100 Lines Startup File

This example shows an SCF command file that starts the CP6100 lines associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX).

This file can be invoked automatically from the STRTSYS file, or you can invoke it by using the following TACL command:

```
> SCF / IN $SYSTEM.STARTUP.STRTCP6, OUT $ZHOME /  
== This is $SYSTEM.STARTUP.STRTCP6  
== Starts CP6100 lines associated with the SWAN concentrator  
== $ZZWAN.#S01  
  
ALLOW 20 ERRORS  
  
START LINE $CP6*
```

ATP6100 Lines Startup File

This example shows an SCF command file that starts the ATP6100 lines associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX).

This file can be invoked automatically from the STRTSYS file, or you can invoke it by using the following TACL command:

```
> SCF / IN $SYSTEM.STARTUP.STRTATP, OUT $ZHOME /  
== This is $SYSTEM.STARTUP.STRTATP  
== Starts ATP6100 lines associated with the SWAN concentrator  
== $ZZWAN.#S01  
  
ALLOW 20 ERRORS  
  
START LINE $ATP*
```

X.25 Lines Startup File

This example shows an SCF command file that starts the X.25 lines associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX).

This file can be invoked automatically from the STRTSYS file, or you can invoke it by using the following TACL command:

```
> SCF / IN $SYSTEM.STARTUP.STRTX25, OUT $ZHOME /  
== This is $SYSTEM.STARTUP.STRTX25  
== Starts the X.25 lines associated with the SWAN concentrator  
== $ZZWAN.#S01  
  
ALLOW 20 ERRORS  
  
START LINE $X25*
```

Printer Line Startup File

This example shows an SCF command file that starts a printer line associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX).

This file can be invoked automatically from the STRTSYS file, or you can invoke it by using the following TACL command:

```
> SCF / IN $SYSTEM.STARTUP.STRTLP, OUT $ZHOME /
== This is $SYSTEM.STARTUP.STRTLP
== Starts the printer associated with the SWAN concentrator
== $ZZWAN.#S01
ALLOW 20 ERRORS
START LINE $LP5516
```

Expand-Over-IP Line Startup File

This example shows an SCF command file that starts an Expand-over-IP communications line from \$ZZLAN.LAN08, at IP address 192.231.36.094, to \Case2, a NonStop K-series server at IP address 192.231.36.089.

This file can be invoked automatically from the STRTSYS file, or you can invoke it by using the following TACL command:

```
> SCF / IN $SYSTEM.STARTUP.IP2CASE2, OUT $ZHOME /
```

Note that the IP addresses used in this file are examples only. If you use this example file on your system, you must change these IP addresses to IP addresses that are appropriate for your LAN environment.

```
== This is $SYSTEM.STARTUP.IP2CASE2
ALLOW 100 ERRORS

START LINE $Case2IP
```

Expand Direct-Connect Line Startup File

This example shows an SCF command file that starts an Expand direct-connect line on a SWAN concentrator.

This file can be invoked automatically from the STRTSYS file, or you can invoke it by using the following TACL command:

```
> SCF / IN $SYSTEM.STARTUP.STRTLH, OUT $ZHOME /
== This is $SYSTEM.STARTUP.STRTLH
START LINE $Case2elh
```

Tips for Shutdown Files

HP recommends that you specify “N” for the read access portion of the file security attribute (RWEF) for your shutdown files to allow the files to be read by any user on the network. For example, you might secure these files “NCCC.”

The sequence in which you invoke shutdown files can be important. Some processes require other processes to be stopped before they can be stopped. Be sure to indicate the order in which shutdown files are to be run.

Shutdown File Examples

You can implement the system shutdown sequence with a collection of shutdown files, each with a specific purpose. HP recommends that you invoke the shutdown files in this order:

1. Shutdown files for the applications
2. Shutdown files for the communications lines
3. Shutdown files for the subsystems
4. Shutdown files for the system software
5. Shutdown file for the system

See the *NonStop S-Series Operations Guide* for detailed instructions on the shutdown procedure.

Note. Examples and sample programs are for illustration only and might not be suited for your particular purpose. HP does not warrant, guarantee, or make any representations regarding the use or the results of the use of any examples or sample programs in any documentation. You must verify the applicability of any example or sample program before placing the software into production use. For other information about these examples, see [Example Command Files](#) on page 13-5.

System Shutdown File

This example shows a TACL command file that shuts down the system software and invokes other shutdown files.

The local operator invokes this file by entering the following TACL command:

```
> OBEY $SYSTEM.SHUTDOWN.STOPSYS
```

Note. Shutting down the system in an orderly fashion does not require that you shut down every process. Some processes that have startup files might not need shutdown files.

```
comment -- This is $SYSTEM.SHUTDOWN.STOPSYS
comment -- Use this file to shut the system down in an orderly fashion.
comment -- Shut down the CP6100 lines associated with the SWAN concentrator
SCF/ IN $SYSTEM.SHUTDOWN.SDNCP6, OUT $ZHOME /
comment -- Shut down the ATP6100 lines associated with the SWAN concentrator
SCF/ IN $SYSTEM.SHUTDOWN.SDNATP, OUT $ZHOME /
comment -- Shut down the X.25 lines associated with the SWAN concentrator
SCF/ IN $SYSTEM.SHUTDOWN.SDNX25, OUT $ZHOME /
comment -- Shut down the printer lines associated with the SWAN concentrator
SCF/ IN $SYSTEM.SHUTDOWN.SDNLP, OUT $ZHOME /
comment -- Shut down the Expand-over-IP line to \Case2
SCF/ IN $SYSTEM.SHUTDOWN.IP2CASE2, OUT $ZHOME /
comment -- Shut down the Expand manager process, $ZEXP
SCF/ IN $SYSTEM.SHUTDOWN.SDNEXP, OUT $ZHOME /
comment -- Shut down the direct-connect line
SCF/ IN $SYSTEM.SHUTDOWN.STRTLH, OUT $ZHOME /
comment -- Drain the spooler subsystem using the SPOOLCOM command file
comment -- SPLDRAIN.

OBEY $SYSTEM.SHUTDOWN.SPLDRAIN

comment -- Stop the Transaction Management Facility (TMF) subsystem using the
comment -- TMFCOM command file TMFSTOP.

TMFCOM / IN $SYSTEM.SHUTDOWN.TMFSTOP, OUT $ZHOME /
```


CP6100 Lines Shutdown File

This example shows an SCF command file that stops the ATP6100 lines associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX).

This file can be invoked automatically from the STOPSYS file, or you can invoke it by using the following TACL command:

```
> SCF/ IN $SYSTEM.SHUTDOWN.SDNCP6, OUT $ZHOME /  
== This is $SYSTEM.SHUTDOWN.SDNCP6  
== This shuts down the CP6100 lines associated with the SWAN concentrator  
== $ZZWAN.#S01  
  
ALLOW 20 ERRORS  
  
ABORT LINE $cp6*
```

ATP6100 Lines Shutdown File

This example shows an SCF command file that stops the ATP6100 lines associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX).

This file can be invoked automatically from the STOPSYS file, or you can invoke it by using the following TACL command:

```
> SCF/ IN $SYSTEM.SHUTDOWN.SDNATP, OUT $ZHOME /  
== This is $SYSTEM.SHUTDOWN.SDNATP  
== This shuts down the ATP6100 lines associated with the SWAN concentrator  
== $ZZWAN.#S01  
  
ALLOW 20 ERRORS  
  
ABORT LINE $ATP*
```

X.25 Lines Shutdown File

This example shows an SCF command file that stops the X.25 lines associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX).

This file can be invoked automatically from the STOPSYS file, or you can invoke it by using the following TACL command:

```
> SCF/ IN $SYSTEM.SHUTDOWN.SDNX25, OUT $ZHOME /  
== This is $SYSTEM.SHUTDOWN.SDNX25  
== This shuts down the X.25 lines associated with the SWAN concentrator  
== $ZZWAN.#S01  
  
ALLOW 20 ERRORS  
  
ABORT LINE $X25*
```

Printer Line Shutdown File

This example shows an SCF command file that stops the printer line associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX).

This file can be invoked automatically from the STOPSYS file, or you can invoke it by using the following TACL command:

```
> SCF/ IN $SYSTEM.SHUTDOWN.SDNLP, OUT $ZHOME /
== This is $SYSTEM.SHUTDOWN.SDNLP
== Shuts down the printer associated with the SWAN concentrator
== $ZZWAN.#S01
ALLOW 20 ERRORS
ABORT LINE $LP5516
```

Expand-Over-IP Line Shutdown File

This example shows an SCF command file that stops the Expand-over-IP communications line from \Case1, a NonStop S7000 server, to \Case2, a NonStop K-series server.

This file can be invoked automatically from the STOPSYS file, or you can invoke it by using the following TACL command:

```
> SCF/ IN $SYSTEM.SHUTDOWN.IP2CASE2, OUT $ZHOME /
== This is $SYSTEM.SHUTDOWN.IP2CASE2
ABORT LINE $Case2IP
```

Direct-Connect Line Shutdown File

This example shows an SCF command file that stops the direct-connect line on a SWAN concentrator.

This file can be invoked automatically from the STOPSYS file, or you can invoke it by using the following TACL command:

```
> SCF/ IN $SYSTEM.SHUTDOWN.STOPLH, OUT $ZHOME /
== This is $SYSTEM.SHUTDOWN.STOPLH
== This shuts down the direct-connect line
ALLOW 20 ERRORS
ABORT LINE $Case2elh
```

Spooler Shutdown File

This example shows a TACL command file that drains the spooler.

This file can be invoked automatically from the STOPSYS file, or you can invoke it by using the following TACL command:

```
> OBEY $SYSTEM.SHUTDOWN.SPLDRAIN
```

To maintain the integrity of the spooler environment, HP recommends that you wait until the spooler has finished draining rather than stop any spooler processes by using the TACL STOP command.

```
comment -- This is $SYSTEM.SHUTDOWN.SPLDRAIN
comment -- This file drains the spooler subsystem leaving all jobs intact.
SPOOLCOM $SPLS; SPOOLER, DRAIN
```

TMF Shutdown File

This example shows a TMFCOM command file that stops the Transaction Management Facility (TMF) subsystem.

This file can be invoked automatically from the STOPSYS file, or you can invoke it by using the following TACL command:

```
> TMFCOM / IN $SYSTEM.SHUTDOWN.TMFSTOP, OUT $ZHOME /
```

To maintain the integrity of the TMF environment, HP recommends that you wait until all transactions have finished rather than stop any TMF processes by using the TACL STOP command.

```
! comment -- This is $SYSTEM.SHUTDOWN.TMFSTOP
! comment -- This file stops any new transactions from being started,
! comment -- allows any transactions in process to finish, and then
! comment -- stops the TMF subsystem.

DISABLE BEGINTRANS; STOP TMF, WAIT ON; EXIT
```

Adding Super-Group User IDs

After you determine that the system is performing correctly, you can add the super-group user IDs for your local operators and your service provider:

1. Add a super-group user ID for the local operator and for your service provider (if you are allowing access to the system for remote support) using the TACL ADDUSER command. Set the passwords and default characteristics for these user IDs. Adding user IDs and setting default characteristics for user IDs is described in the *Guardian User's Guide*.
2. Ask the local operator to log on to the system and verify the passwords.

Case Study: Installing and Configuring a System

This section documents the installation and configuration of a NonStop S7000 system for a fictitious company.

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Note. Examples and sample programs are illustrations only and might not suit your purposes. HP does not warrant, guarantee, or make any representations regarding the use, or the results of the use, of examples or sample programs in any documentation. You must verify the applicability of any example or sample program before placing the software into production use.

About These Examples

Note the following about the examples in this appendix:

- This case study does not document the factory-installed configuration.

To determine the configuration of your system, see the SCF Configuration File printout that is shipped with your server for a listing of names and locations of configured drives. This file can also be found on the ZSYSCONF subvolume under the name SCF0000. After you have installed and started your system, you can use SCF to determine the configuration of your system. See the *SCF Reference Manual for G-Series RVUs* for more information about this task.

- The IP addresses used in this appendix are reserved for HP and are only examples.

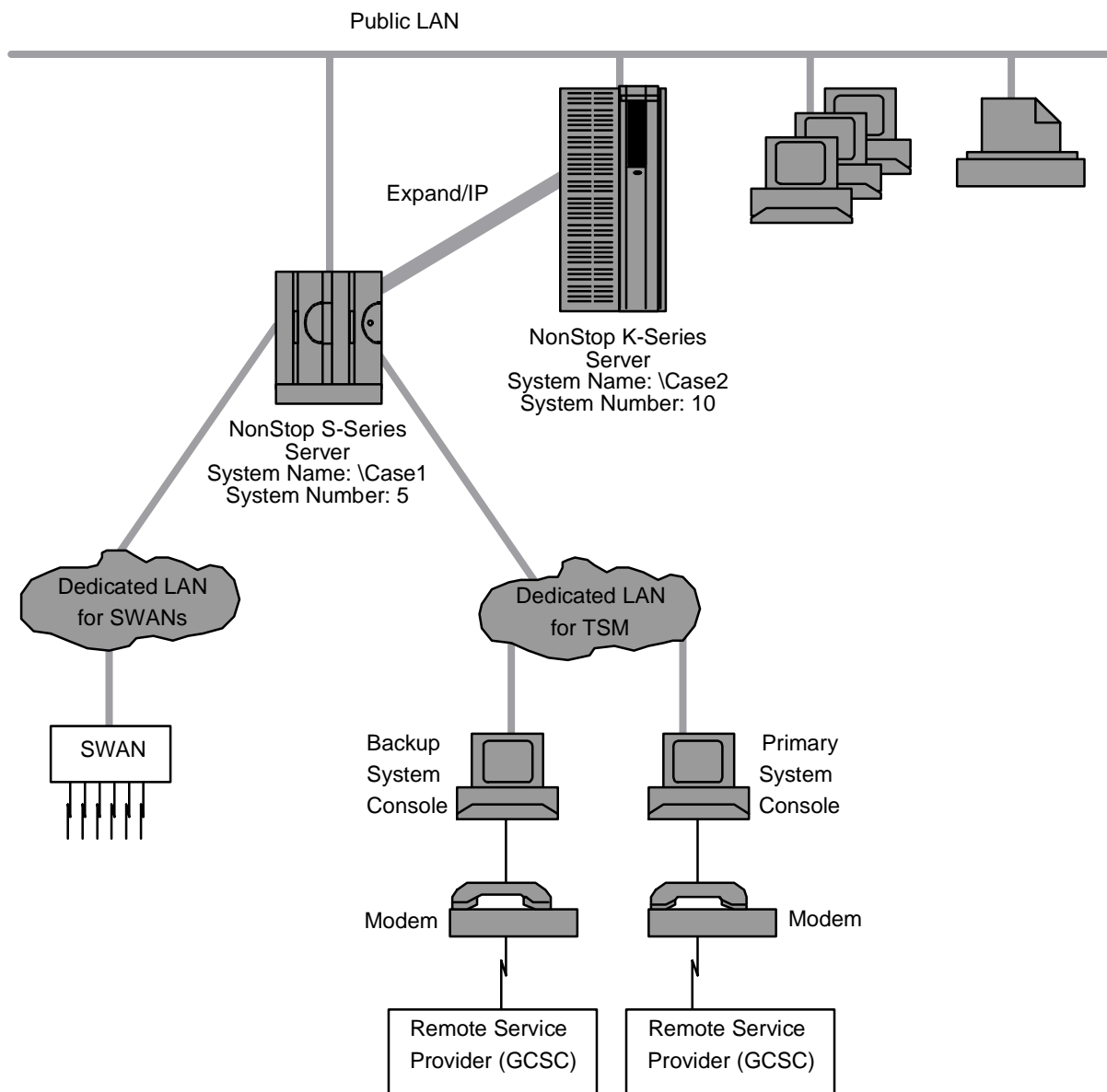
If you use files described in this appendix on your system, you must change these IP addresses to IP addresses that are appropriate for your LAN environment.

- Names for devices such as tape drives and disks are only examples.

To determine which PMF CRU or IOMF CRU to connect tape drives to on your own system, you need to know the factory-default configuration of your tape drives. The configuration track-ID for the SWAN concentrator used in the example files, X001XX, is also an example. Each SWAN concentrator is uniquely identified by a configuration track-ID, which is printed on the label on the back of the SWAN concentrator. This track-ID, which is case-sensitive, is an important part of the system configuration for the SWAN concentrator. If you use files described in this appendix on your system, you must change the configuration track-ID to the configuration track-ID assigned to your SWAN concentrator.

Background for Developers Inc.

Developers Inc., a fictitious software development company, plans to add a NonStop S7000 system to their development environment. They already have a NonStop K20000 running the D42.xxsuper-group RVU, and they plan to port applications from the K20000 server to the S7000 server. This conceptual drawing shows what the environment will look like after the NonStop S7000 server is installed.



VST919.vsd

Hardware Configuration

The hardware configuration for \Case1, the NonStop S7000 system described in this case study, includes:

- Two system enclosures, each containing:
 - Two processor multifunction (PMF) CRUs. Each processor has 256 megabytes (MB) of memory.
 - Two ServerNet expansion boards (SEBs).
 - Two Ethernet 4 ServerNet adapters (E4SAs).
 - Sixteen 4-gigabyte (GB) disk drives.
- One 5175 open-reel tape drive attached to the PMF CRU in group 01, module 01, slot 50. This PMF CRU contains processor 0.
- One 5190 or 5194 cartridge tape drive attached to the PMF CRU in group 01, module 01, slot 55. This PMF CRU contains processor 1.
- Primary and backup system consoles attached to a LAN connected to the Ethernet ports on the PMF CRUs in group 01.
- One SWAN concentrator. The configuration track-ID for this concentrator is X001XX.
- Four Ethernet switches.

Installation Documents

The following figures contain the installation documents needed for the system described in this case study.

Examples of completed configuration forms and worksheet for the SWAN concentrator are included in the *SWAN Concentrator Installation and Support Guide*.

Case Study: Installation Document Checklist

<div style="float: right; text-align: right;"> System Name <u>\Case1</u> Date <u>07</u> / <u>22</u> / <u>96</u> Page <u>1</u> of <u>1</u> </div> Installation Document Checklist	
<input checked="" type="checkbox"/> Form, Diagram, or Checklist	<input checked="" type="checkbox"/> Form, Diagram, or Checklist
<div style="display: flex; justify-content: space-between;"> <input checked="" type="checkbox"/> System Equipment Inventory Form </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;">1</div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>
<div style="display: flex; justify-content: space-between;"> <input checked="" type="checkbox"/> Preinstalled I/O Device Cable Checklist </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;">1</div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>
<div style="display: flex; justify-content: space-between;"> <input checked="" type="checkbox"/> Enclosure Arrangement Diagram </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;">1</div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>
<div style="display: flex; justify-content: space-between;"> <input checked="" type="checkbox"/> Floor Plan </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;">1</div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>
<div style="display: flex; justify-content: space-between;"> <input checked="" type="checkbox"/> System Enclosure Checklist </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;">2</div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>
<div style="display: flex; justify-content: space-between;"> <input checked="" type="checkbox"/> PMF CRU Configuration Form and PMF 2 CRU Configuration Form </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;">4</div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> IOMF CRU Configuration Form and IOMF 2 CRU Configuration Form </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;"></div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>
<div style="display: flex; justify-content: space-between;"> <input checked="" type="checkbox"/> Adapter Configuration Form </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;">4</div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> ServerNet Communication Pathways Worksheet </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;"></div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> ServerNet Cabling Form </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;"></div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Cross-Row Cabling Worksheet, SEB to SEB </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;"></div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Cross-Row Cabling Worksheet, SEB to IOMF CRU </div> <div style="text-align: right; border-bottom: 1px solid black; width: 50px;"></div>	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> _____ </div>

Special Notes or Instructions:

VST305.vsd

VST233.vsd

[illegible]

Case Study: Enclosure Arrangement Diagram

Enclosure Arrangement Diagram

Building 5 Room 2239

Scale: 1/4 inch = 1 foot

System Name \Case1

Date 07 / 21 / 96

System Number
(In Expand Network) 10

Number of Rows 1

Processor Enclosure

Group 02

Processor Enclosure

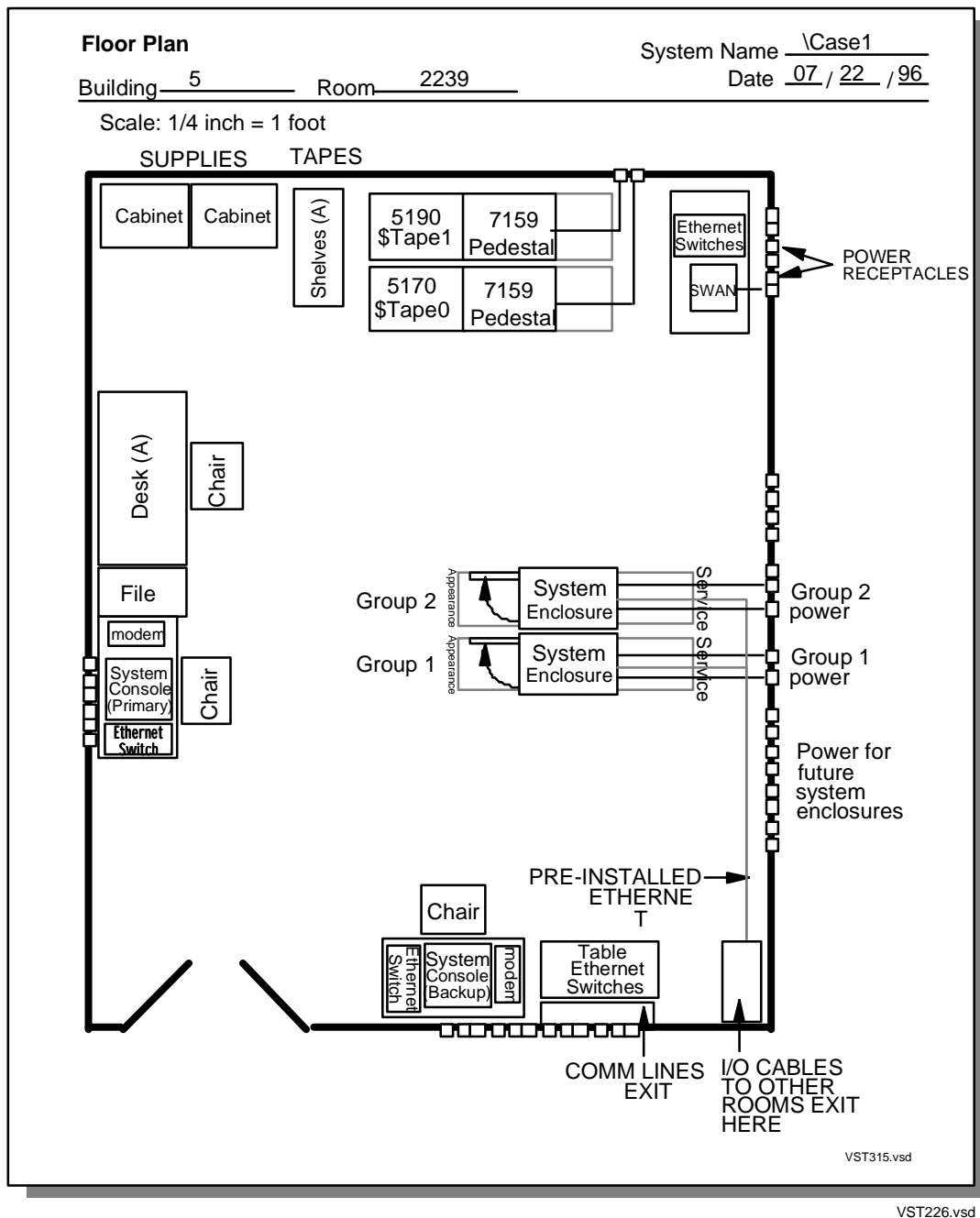
Group 01

Note which enclosures are base enclosures and which are stacked enclosures.
You can indicate a base enclosure by drawing casters on it.

VST316.vsd

VST202.vsd

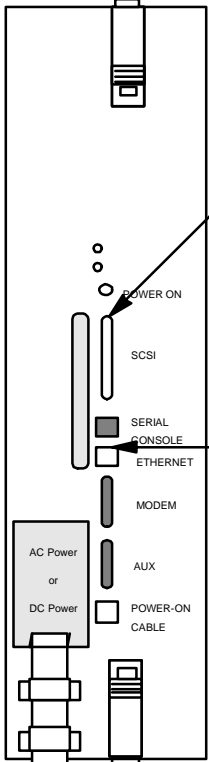
Case Study: Floor Plan



[illegible]

Case Study: Group 01 Slot 50 PMF CRU Configuration Form

System Name <u>\Case1</u>	
Date <u>07</u> / <u>21</u> / <u>96</u>	
PMF CRU Configuration Form	
Shaded areas indicate nonconfigurable components	
Group <u>01</u>	Module <u>01</u>
Slot <u>50</u>	



SCSI Port

Product Number:
5794

SCF Name:
\$TAPE0

SCSI Cable:
PN 131369

Ethernet Port

IP Address:
Initially 192.231.36.10
Get new address from LAN department

Adapter Name:
\$ZZLAN.MIOE0

SAC Name:
\$ZZLAN.MIOE0.0

SAC Access List:
0,1

PIF Name:
\$ZZLAN.MIOE0.0.A

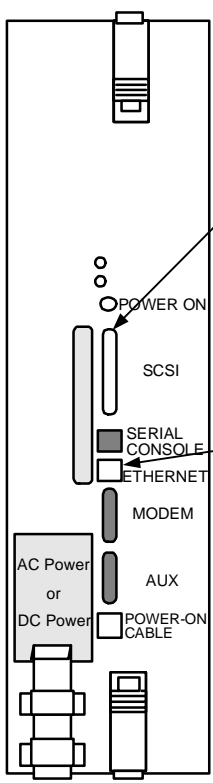
LIF Name:
\$ZZLAN.LANX

VST 304 .vsd

VST 207 .vsd

Case Study: Group 01 Slot 55 PMF CRU Configuration Form

PMF CRU Configuration Form <small>Shaded areas indicate nonconfigurable components</small>	System Name <u>\Case1</u> Date <u>07</u> / <u>21</u> / <u>96</u>
Group <u>01</u> Module <u>01</u> Slot <u>55</u>	



SCSI Port

Product Number: 5175

SCF Name: \$TAPE0

SCSI Cable: PN 131369

Ethernet Port

IP Address: Initially 192.231.36.11
Get new address from LAN department

Adapter Name: \$ZZLAN.MIOE1

SAC Name: \$ZZLAN.MIOE1.0

SAC Access List: 1,0

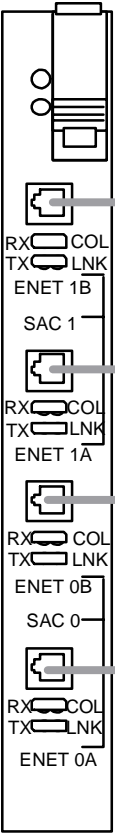
PIF Name: \$ZZLAN.MIOE1.0.A

LIF Name: \$ZZLAN.LANY

VST304.vsd

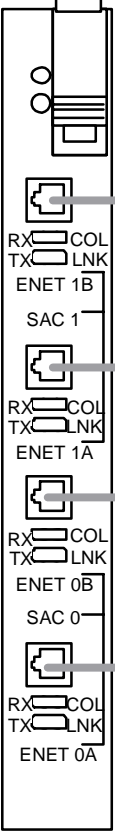
VST209.vsd

Case Study: Group 01 Slot 53 E4SA Configuration Form

E4SA Configuration Form		System Name <u>\Case1</u> Date <u>07</u> / <u>21</u> / <u>96</u>
Group <u>01</u> Module <u>01</u> Slot <u>53</u>		
	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">SAC 1 ENET 1B: IP Address: <u>192.168.2.093</u> Adapter Name: <u>E0153</u> SAC Name: <u>E0153.1</u> SAC Access List: <u>(0,1)</u> PIF Name: <u>E0153.1.B</u> LIF Name: <u>L01B</u></div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">SAC 1 ENET 1A: IP Address: <u>192.168.2.092</u> Adapter Name: <u>E0153</u> SAC Name: <u>E0153.1</u> SAC Access List: <u>(0,1)</u> PIF Name: <u>E0153.1.A</u> LIF Name: <u>L01A</u></div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">SAC 0 ENET 0B: IP Address: <u>192.231.36.091</u> Adapter Name: <u>E0153</u> SAC Name: <u>E0153.0</u> SAC Access List: <u>(0,1)</u> PIF Name: <u>E0153.0.B</u> LIF Name: <u>L019</u></div> <div style="border: 1px solid black; padding: 5px;">SAC 0 ENET 0A: IP Address: <u>192.231.36.090</u> Adapter Name: <u>E0153</u> SAC Name: <u>E4SA0.0</u> SAC Access List: <u>(0,1)</u> PIF Name: <u>E4SA0.0.A</u> LIF Name: <u>L018</u></div>	VST320.vsd

VST234.vsd

Case Study: Group 01 Slot 54 E4SA Configuration Form

E4SA Configuration Form		System Name <u>\Case1</u> Date <u>07</u> / <u>21</u> / <u>96</u>
Group <u>01</u> Module <u>01</u> Slot <u>54</u>		
	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">SAC 1 ENET 1B: IP Address: <u>192.231.36.093</u> Adapter Name: <u>E0154</u> SAC Name: <u>E0154.1</u> SAC Access List: <u>(1,0)</u> PIF Name: <u>E0154.1.B</u> LIF Name: <u>L01F</u></div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">SAC 1 ENET 1A: IP Address: <u>192.231.36.092</u> Adapter Name: <u>E0154</u> SAC Name: <u>E0154.1</u> SAC Access List: <u>(1,0)</u> PIF Name: <u>E0154.1.A</u> LIF Name: <u>L01E</u></div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">SAC 0 ENET 0B: IP Address: <u>192.168.2.091</u> Adapter Name: <u>E0154</u> SAC Name: <u>E0154.0</u> SAC Access List: <u>(1,0)</u> PIF Name: <u>E0154.0.B</u> LIF Name: <u>L01D</u></div> <div style="border: 1px solid black; padding: 5px;">SAC 0 ENET 0A: IP Address: <u>192.168.2.090</u> Adapter Name: <u>E0154</u> SAC Name: <u>E0154.0</u> SAC Access List: <u>(1,0)</u> PIF Name: <u>E0154.0.A</u> LIF Name: <u>L01C</u></div>	VST320.vsd

VST235.vsd

Case Study: Group 02 System Enclosure Checklist

System Enclosure Checklist

Date07/21/96

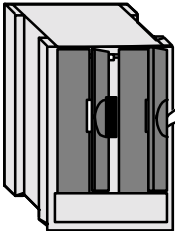
System Name \Case1

Group Number02

Shaded areas indicate nonconfigurable components

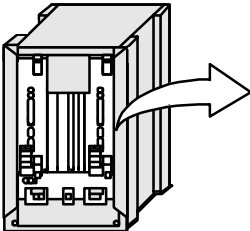
Module Number01

Appearance Side:



\$DATA12-M	\$DATA11-M	\$DATA11-P	\$DATA10-M	\$DATA10-P	\$DATA09-M	\$DATA09-P	\$DATA08-M
4608	4608	4608	4608	4608	4608	4608	4608
08	06	05	04	03	02	01	18
\$DATA08-M	\$DATA07-M	\$DATA07-P	\$DATA06-M	\$DATA06-P	\$DATA05-M	\$DATA05-P	
4608	4608	4608	4608	4608	4608	4608	
18	16	15	14	13	12	11	

Service Side:



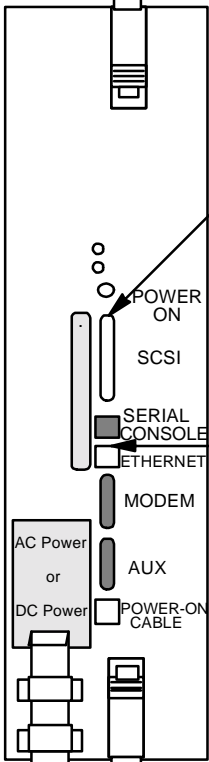
50					55
PMF					PMF
	51	52	53	54	
	SEB	SEB	E4SA	E4SA	
			E0253	E0254	
Processor 2					Processor 3

VST303.vsd

VST205.vsd

Case Study: Group 02 Slot 50 PMF CRU Configuration Form

System Name <u>\Case1</u>	
Date <u>07</u> / <u>21</u> / <u>96</u>	
PMF CRU Configuration Form	
Shaded areas indicate nonconfigurable components	
Group <u>02</u> Module <u>01</u> Slot <u>50</u>	



SCSI Port

Product Number: Available for future use

SCF Name: _____

SCSI Cable: _____

Ethernet Port

IP Address: Port is not available for use.

Adapter Name: _____

SAC Name: _____

SAC Access List: _____

PIF Name: _____

LIF Name: _____

VST304.vsd

VST211.vsd

Case Study: Group 02 Slot 55 PMF CRU Configuration Form

System Name \Case1
Date 07 / 21 / 96

PMF CRU Configuration Form

Shaded areas indicate nonconfigurable components

Group 02 Module 01 Slot 55

SCSI Port

Product Number: Available for future use

SCF Name:

SCSI Cable:

Ethernet Port

IP Address: Port is not available for use.

Adapter Name:

SAC Name:

SAC Access List:

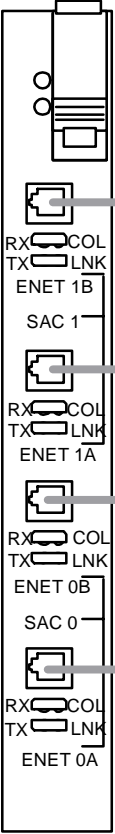
PIF Name:

LIF Name:

VST304.vsd

VST213.vsd

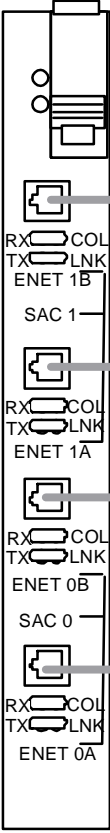
Case Study: Group 02 Slot 53 E4SA Configuration Form

E4SA Configuration Form		System Name <u>\Case1</u> Date <u>07</u> / <u>21</u> / <u>96</u>
		Group <u>02</u> Module <u>01</u> Slot <u>53</u>
SAC 1 ENET 1B: IP Address: <u>192.168.2.097</u> Adapter Name: <u>E0253</u> SAC Name: <u>E4SA2.1</u> SAC Access List: <u>(2,3)</u> PIF Name: <u>E4SA2.1.B</u> LIF Name: <u>L02B</u>		
SAC 1 ENET 1A: IP Address: <u>192.168.2.096</u> Adapter Name: <u>E0253</u> SAC Name: <u>E4SA2.1</u> SAC Access List: <u>(2,3)</u> PIF Name: <u>E4SA2.1.A</u> LIF Name: <u>L029</u>		
SAC 0 ENET 0B: IP Address: <u>192.231.36.096</u> Adapter Name: <u>E0253</u> SAC Name: <u>E4SA2.0</u> SAC Access List: <u>(2,3)</u> PIF Name: <u>E4SA2.0.B</u> LIF Name: <u>L02A</u>		
SAC 0 ENET 0A: IP Address: <u>192.231.36.094</u> Adapter Name: <u>E0253</u> SAC Name: <u>E4SA2.0</u> SAC Access List: <u>(2,3)</u> PIF Name: <u>E4SA2.0.A</u> LIF Name: <u>L028</u>		

VST320.vsd

VST236.vsd

Case Study: Group 02 Slot 54 E4SA Configuration Form

E4SA Configuration Form		System Name <u>\\Case1</u> Date <u>07</u> / <u>21</u> / <u>96</u>
Group <u>02</u> Module <u>01</u> Slot <u>54</u>		
	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">SAC 1 ENET 1B: IP Address: <u>192.168.2.097</u> Adapter Name: <u>E0254</u> SAC Name: <u>E4SA3.1</u> SAC Access List: <u>(2,3)</u> PIF Name: <u>E4SA3.1.B</u> LIF Name: <u>L02B</u></div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">SAC 1 ENET 1A: IP Address: <u>192.168.2.096</u> Adapter Name: <u>E0254</u> SAC Name: <u>E4SA3.1</u> SAC Access List: <u>(2,3)</u> PIF Name: <u>E4SA3.1.A</u> LIF Name: <u>L029</u></div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">SAC 0 ENET 0B: IP Address: <u>192.231.36.096</u> Adapter Name: <u>E0254</u> SAC Name: <u>E4SA3.0</u> SAC Access List: <u>(2,3)</u> PIF Name: <u>E4SA3.0.B</u> LIF Name: <u>L02A</u></div> <div style="border: 1px solid black; padding: 5px;">SAC 0 ENET 0A: IP Address: <u>192.231.36.094</u> Adapter Name: <u>E0254</u> SAC Name: <u>E4SA3.0</u> SAC Access List: <u>(2,3)</u> PIF Name: <u>E4SA3.0.A</u> LIF Name: <u>L028</u></div>	VST320.vsd

VST239.vsd

System Configuration: CONFTEXT File

This example shows the CONFTEXT file for \Case1. This file is used by DSM/SCM and is stored in the SYS_{nn} subvolume of the \$DSMSCM disk.

ALLPROCESSORS :

```

SYSTEM_PROCESSOR_TYPE                NSR-W;
SYSTEM_VOLUME_SUBVOL                 $SYSTEM.SYS00;
SYSTEM_LIBRARY_CODE_FILES            TANDEM^LIBRARY^CODE^FILES;
SYSTEM_PROCESS_CODE_FILES            TANDEM^PROCESS^CODE^FILES;
SYSTEM_PROCESS_LIBRARY_FILES         TANDEM^PROCESS^LIBRARY^FILES;
STANDARD_MICROCODE                   TANDEM^STANDARD^MICROCODE;
MICROCODE_FILES                     TANDEM^MICROCODE^FILES;
FILES_TO_COPY_TO_NEW_SYSTEM          TANDEM^FILES^TO^COPY;
FORMATTER_TEMPLATE_FILES             TANDEM^FORMATTER^TEMPLATE^FILES;
INITIAL_COMMAND_FILE                 $DSMSCM.SYSnn.CIIN;
```

LAN Environment at Developers Inc.

Developers Inc. has installed a LAN in their building that connects to multiple workstations and printers, as well as to \Case2, the NonStop K-series server at their site. They plan to connect the new NonStop S-series server, \Case1, to this LAN. Developers Inc. also has a staff responsible for managing this operations LAN and keeping track of the IP addresses of the various LANs in the building.

Registry of IP Addresses

Developers Inc. decided to create a registry of the IP addresses used on their LANs, because they found that problems on their LANs had often been caused by multiple endpoints using the same IP address. The registry allowed them to keep track of the IP addresses already in use.

Note. The IP addresses used in this appendix are examples only. If you use files described in this appendix on your system, **you must change these IP addresses to IP addresses that are appropriate for your LAN environment.**

Registry of IP Addresses for Developers Inc.

IP Address	Purpose
192.231.36.1	System console
192.231.36.2	Ethernet port on PMF 0 (MSP0 TSM access)
192.231.36.3	Ethernet port on PMF 1 (MSP1 TSM access)
192.231.36.10	Ethernet port on PMF 0 (operating system access for TSM)
192.231.36.11	Ethernet port on PMF 1 (operating system access for TSM)
192.231.36.17	Gateway address for \$ZZLAN.L018 (ENET 0A in E4SA in (01,01,53))
192.231.36.099	\$ZZLAN.L018 (ENET 0A in E4SA in (01,01,53))
192.231.36.100	\$ZZLAN.L019 (ENET 0B in E4SA in (01,01,53))
192.168.2.099	\$ZZLAN.L01A (ENET 1A in E4SA in (01,01,53))
192.168.2.100	\$ZZLAN.L01B (ENET 1B in E4SA in (01,01,53))
192.231.36.089	\Case2 IP address (destination for \$zzwan.#Case2IP)
192.168.3.099	\$ZZLAN.L01C (ENET 0A in E4SA in (01,01,54))
192.168.3.100	\$ZZLAN.L01D (ENET 0B in E4SA in (01,01,54))
192.168.4.099	\$ZZLAN.L01E (ENET 1A in E4SA in (01,01,54))
192.168.4.100	\$ZZLAN.L01F (ENET 1B in E4SA in (01,01,54))
192.168.5.099	\$ZZLAN.L028 (ENET 0A in E4SA in (02,01,53))
192.168.5.100	\$ZZLAN.L029 (ENET 1A in E4SA in (02,01,53))
192.168.6.099	\$ZZLAN.L02A (ENET 0B in E4SA in (02,01,53))
192.168.6.100	\$ZZLAN.L02B (ENET 1B in E4SA in (02,01,53))
192.168.7.099	\$ZZLAN.L02C (ENET 0A in E4SA in (02,01,54))
192.168.7.100	\$ZZLAN.L02D (ENET 1A in E4SA in (02,01,54))
192.168.8.099	\$ZZLAN.L02E (ENET 0B in E4SA in (02,01,54))
192.168.8.100	\$ZZLAN.L02F (ENET 1B in E4SA in (02,01,54))
192.231.36.101	\$ZZWAN.#S01 (SWAN, track-ID X001XX), path 1.a
192.168.2.101	\$ZZWAN.#S01 (SWAN, track-ID X001XX), path 1.b
192.231.36.102	\$ZZWAN.#S01 (SWAN, track-ID X001XX), path 2.a
192.168.2.102	\$ZZWAN.#S01 (SWAN, track-ID X001XX), path 2.b
192.231.36.103	\$ZZWAN.#S01 (SWAN, track-ID X001XX), path 3.a
192.168.2.103	\$ZZWAN.#S01 (SWAN, track-ID X001XX), path 3.b

Installing the System

The installers at Developers Inc. installed the system as it was shipped from the factory. They also changed the system name and number, and changed other parts of the system configuration. The examples in [Customizing the Configuration](#), following, show examples of command files that Developers Inc. can use to build a custom configuration.

Customizing the Configuration

The following subsections contain examples of adding various objects to the configuration database. All examples add and start the objects.

These examples assume that the E4SAs and SWAN concentrators were not added at the factory. For your configuration, disks, tapes, ServerNet adapters, and SWAN concentrators and other processes are configured at the factory. For a description of the initial configuration files, see the *NonStop S-Series Planning and Configuration Guide*.

Note. Beginning with the G06.13 RVU, you do not need to add the WANBOOT, SNMPTMUX, TFTPSESV processes. These processes are automatically added and started when the SWAN concentrators are configured at the factory.

The startup and shutdown files, used to start and stop this system in an orderly manner, are described in [Section 13, Creating Startup and Shutdown Files](#).

Adding Ethernet 4 ServerNet Adapters (E4SAs)

This example contains an SCF command file that adds Ethernet 4 ServerNet adapters (E4SAs) to the configuration database. It also contains a startup file.

```
== This is $SYSTEM.STARTUP.ADDE4SA
== This SCF command file adds the E4SAs to the configuration.
ALLOW 20 ERRORS
ASSUME PROCESS $ZZLAN
== Add the adapter in Group 01, Module 01, Slot 53
ADD ADAPTER E0153, TYPE E4SA, LOCATION (1,1,53), ACCESSLIST (0,1)
== Start the adapter and the SACs and PIFs subordinate to it
START ADAPTER E0153, SUB ALL
== Add the LIFs associated with the PIFs
ADD LIF L018, PIF E0153.0.A
ADD LIF L019, PIF E0153.0.B
ADD LIF L01A, PIF E0153.1.A
ADD LIF L01B, PIF E0153.1.B
== Start the LIFs on the adapter
START LIF L018
START LIF L019
START LIF L01A
START LIF L01B

== Add the adapter in Group 01, Module 01, Slot 54
ADD ADAPTER E0154, TYPE E4SA, LOCATION (1,1,54), ACCESSLIST (1,0)
== Start the adapter and the SACs and PIFs subordinate to it
START ADAPTER E0154, SUB ALL
== Add the LIFs associated with the PIFs
ADD LIF L01C, PIF E0154.0.A
ADD LIF L01D, PIF E0154.0.B
ADD LIF L01E, PIF E0154.1.A
ADD LIF L01F, PIF E0154.1.B
== Start the LIFs on the adapter
START LIF L01C
START LIF L01D
START LIF L01E
START LIF L01F

== Add the adapter in Group 02, Module 01, Slot 53
ADD ADAPTER E0253, TYPE E4SA, LOCATION (2,1,53), ACCESSLIST (2,3)
== Start the adapter and the SACs and PIFs subordinate to it
START ADAPTER E0253, SUB ALL
```

```

== Add the LIFs associated with the PIFs
ADD LIF L028, PIF E0253.0.A
ADD LIF L029, PIF E0253.0.B
ADD LIF L02A, PIF E0253.1.A
ADD LIF L02B, PIF E0253.1.B

== Start the LIFs on the adapter
START LIF L028
START LIF L029
START LIF L02A
START LIF L02B

== Add the adapter in Group 02, Module 01, Slot 54
ADD ADAPTER E0254, TYPE E4SA, LOCATION (2,1,54), ACCESSLIST (3,2)

== Start the adapter and the SACs and PIFs subordinate to it
START ADAPTER E0254, SUB ALL

== Add the LIFs associated with the PIFs
ADD LIF L02C, PIF E0254.0.A
ADD LIF L02D, PIF E0254.0.B
ADD LIF L02E, PIF E0254.1.A
ADD LIF L02F, PIF E0254.1.B

== Start the LIFs on the adapter
START LIF L02C
START LIF L02D
START LIF L02E
START LIF L02F

```

Adding ConMgr Process

This example contains a startup file and an SCF command file that adds the concentrator manager to the configuration database.

```

== This is $SYSTEM.STARTUP.ADDMGR
== This file adds the ConMgr process.
ALLOW 20 ERRORS

== Add and start 1 ConMgr for each processor to the database
ADD PROCESS $ZZWAN.#0, IOPOBJECT $SYSTEM.SYS00.CONMGR
ADD PROCESS $ZZWAN.#1, IOPOBJECT $SYSTEM.SYS00.CONMGR
ADD PROCESS $ZZWAN.#2, IOPOBJECT $SYSTEM.SYS00.CONMGR
ADD PROCESS $ZZWAN.#3, IOPOBJECT $SYSTEM.SYS00.CONMGR

START PROCESS $zzwan.#0
START PROCESS $zzwan.#1
START PROCESS $zzwan.#2
START PROCESS $zzwan.#3

```

Configuring NonStop TCP/IP Stacks on E4SA Ports

This example contains a TACL command file that configures and starts the NonStop TCP/IP stack on \$ZZLAN.L018. NonStop TCP/IP stacks must be created for each LAN port that connects to a SWAN concentrator and must be both configured and started each time the system is started. The TACL command files to configure and start TCP/IP stacks on the other ports can be created by changing the following variables to the appropriate values:

GW^ADDR	LINE^NAME	TCP^CPU2
HOST^NAME	LST^NAME	TCP^NAME
IP^ADDR	TCP^CPU1	TEL^NAME

Note. If you are using Parallel Library TCP/IP or NonStop TCP/IPv6, you might not need to create a TACL command file because these subsystems participate in the system configuration database. See the *TCP/IP (Parallel Library) Configuration and Management Manual* or the *TCP/IPv6 Configuration and Management Manual*.

```
?TACL MACRO

== This file is $SYSTEM.STARTUP.IPSTK1
== Adds TCPIP and related processes to $ZZLAN.L018

#FRAME
#PUSH CON^NAME, LINE^NAME, TCP^NAME, LST^NAME, TEL^NAME
#PUSH HOST^NAME, IP^ADDR, GW^ADDR, TCP^CPU1, TCP^CPU2

#SET IP^ADDR      192.231.36.099
#SET GW^ADDR      192.231.36.17

#SET CON^NAME     $ZHOME
#SET LINE^NAME    $L018
#SET TCP^NAME     $ZB018
#SET LST^NAME     $ZP018
#SET TEL^NAME     $ZN018
#SET HOST^NAME    "Case1_L018.DevInc.com"
#SET TCP^CPU1     0
#SET TCP^CPU2     1

[ #IF NOT [ #PROCESSEXISTS $ZNET ]
  | THEN |
  #OUTPUT
  #OUTPUT Starting SCP...
  SCP /NAME $ZNET, NOWAIT, CPU 0, PRI 165, TERM [CON^NAME]/ 1; AUTOSTOP -1
]

#OUTPUT
#OUTPUT Stopping existing TCP/IP processes...
[ #IF [ #PROCESSEXISTS [TEL^NAME] ]
```

```

    | THEN |
      STOP [TEL^NAME]
  ]

[ #IF [#PROCESSEXISTS [LST^NAME]]
  | THEN |
    STOP [LST^NAME]
]

[ #IF [#PROCESSEXISTS [TCP^NAME]]
  | THEN |
    #PUSH #INLINEPREFIX
    SET VARIABLE #INLINEPREFIX +
    SCF /INLINE, OUT [#MYTERM], NAME/
    + ALLOW ALL ERRORS
    + ABORT PROCESS [TCP^NAME]
    + EXIT
    #POP #INLINEPREFIX
]

#OUTPUT

#OUTPUT Starting TCP/IP: [TCP^NAME]
TCPIP /NAME [TCP^NAME], TERM [CON^NAME], NOWAIT, CPU [TCP^CPU1] / [TCP^CPU2]
DELETE DEFINE =TCPIP^PROCESS^NAME
ADD     DEFINE =TCPIP^PROCESS^NAME, FILE [TCP^NAME]
PARAM TCPIP^PROCESS^NAME [TCP^NAME]
PARAM ZTNT^TRANSPORT^PROCESS^NAME [TCP^NAME]

#OUTPUT
#OUTPUT Configuring TCP/IP...
PUSH #INLINEPREFIX
SET VARIABLE #INLINEPREFIX +
SCF /INLINE, OUT [#MYTERM], NAME/
+ ALLOW ALL ERRORS
+ ASSUME PROCESS [TCP^NAME]
+ ALTER , HOSTNAME [HOST^NAME]
+ ADD SUBNET #SN1, TYPE ETHERNET, IPADDRESS [IP^ADDR], DEVICENAME [LINE^NAME]
+ ALTER SUBNET #SN1, SUBNETMASK %%hFFFFFFF00
+ ALTER SUBNET #LOOP0, IPADDRESS 127.1
+ START SUBNET *
+ ADD ROUTE #GW, DESTINATION 0, GATEWAY [GW^ADDR], DESTTYPE BROADCAST
+ START ROUTE *
+ EXIT
POP #INLINEPREFIX

#OUTPUT
#OUTPUT Starting Listner: [LST^NAME]
LISTNER /NAME [LST^NAME], CPU [TCP^CPU1], PRI 160, NOWAIT, TERM [CON^NAME],
HIGHPIN OFF/ $SYSTEM.ZTCPIP.PORTCONF

#OUTPUT
#OUTPUT Starting Tel serv: [TEL^NAME]
TELSERV /NAME [TEL^NAME], CPU [TCP^CPU1], PRI 170, NOWAIT, TERM [CON^NAME]/ -
backupcpu [TCP^CPU2]

DELETE DEFINE =TCPIP^PROCESS^NAME
CLEAR  PARAM TCPIP^PROCESS^NAME
CLEAR  PARAM ZTNT^TRANSPORT^PROCESS^NAME
#UNFRAME

```

Adding Persistent CLCI TACL, Expand Manager, and SCP Processes

This example shows an SCF command file that adds persistent generic processes for the CLCI TACL, Expand manager, and SCP processes to the configuration database. These processes are started automatically at system load and are restarted automatically if they are stopped abnormally.

```
== This file is GPADD
== Adds the CLCI TACL, Expand manager, and SCP processes as generic
== processess.

=====
== CLCI TACL                                     ==
=====
ADD PROCESS $ZZKRN.#CLCI-TACL, NAME $CLCI, PRIORITY 199, &
    AUTORESTART 10, PROGRAM $SYSTEM.SYSTEM.TACL, PRIMARYCPU 0, &
    BACKUPCPU 1, TYPE OTHER, STARTMODE MANUAL, HOMETERM $YMIOP.#CLCI, &
    INFILE $YMIOP.#CLCI, OUTFILE $YMIOP.#CLCI, STARTUPMSG "<BCKP-CPU>"
=====
== Expand manager process                       ==
=====
ADD PROCESS $ZZKRN.#ZEXP, NAME $ZEXP, PRIORITY 180, AUTORESTART 10, &
    PROGRAM $SYSTEM.SYSTEM.OZEXP, PRIMARYCPU 0, BACKUPCPU 1, TYPE OTHER, &
    STARTMODE SYSTEM, HOMETERM $ZHOME, OUTFILE $ZHOME, &
    STARTUPMSG "<BCKP-CPU>"
=====
== SCP                                           ==
=====
ADD PROCESS $ZZKRN.#SCP, NAME $ZNET, PRIORITY 175, AUTORESTART 10, &
    PROGRAM $SYSTEM.SYSTEM.SCP, PRIMARYCPU 0, BACKUPCPU 1, TYPE OTHER, &
    STARTMODE SYSTEM, HOMETERM $ZHOME, OUTFILE $ZHOME, &
    STARTUPMSG "<BCKP-CPU> ; AUTOSTOP -1"
```

Starting the \$ZEXP Expand Manager Process

This example contains a TACL command file that starts the Expand manager process, \$ZEXP, if the Expand manager processes was not configured as a persistent generic process.

```
== This is $SYSTEM.STARTUP.STRTEXP
OZEXP/ NAME $zexp,OUT $ZHOME,PRI 180,NOWAIT, CPU 0/1
```

Adding a SWAN Concentrator

This example contains an SCF command file that adds a SWAN concentrator to the configuration database. The values for TRACKID, hostip, and ALThostip are only examples. This example also contains a startup file.

```

== This is $SYSTEM.STARTUP.ADDSWAN
== This file should be invoked after ADDMGR
ALLOW ALL ERRORS

== Add SWAN concentrator with configuration track-ID X001XX. Use E4SA LIFs
== $ZZLAN.L018 and $ZZLAN.L01C

ADD ADAPTER $ZZWAN.#S01,      &
TRACKID "X001XX",            &
TCPIP $ZB018,                &
ALTTCPIP $ZB01C,             &
hostip 192.231.36.099,       &
ALThostip 192.168.3.099,     &
SNMPCODE $system.CSSnn.C7849P00
KERNELCODE $SYST3M.CSSnn.C7953P00
SUBNETMASK 255.255.255.0
ALTSUBNETMASK 255.255.255.0

delay 2

ADD SERVER $ZZWAN.#S01.1
ADD SERVER $ZZWAN.#S01.2
ADD SERVER $ZZWAN.#S01.3

delay 2

ADD PATH $ZZWAN.#S01.1.a,ipaddress 192.231.36.101
ADD PATH $ZZWAN.#S01.1.b,ipaddress 192.168.3.101
ADD PATH $ZZWAN.#S01.2.a,ipaddress 192.231.36.102
ADD PATH $ZZWAN.#S01.2.b,ipaddress 192.168.3.102
ADD PATH $ZZWAN.#S01.3.a,ipaddress 192.231.36.103
ADD PATH $ZZWAN.#S01.3.b,ipaddress 192.168.3.103

START ADAPTER $ZZWAN.#S01,SUB ALL

```

Adding a SWAN 2 Concentrator

The SNMP attribute is optional for both SWAN and SWAN 2 concentrators because the SNMP module is linked with the SWAN NonStop kernel (in G06.07 and later RVUs) and does not have to be downloaded.

Adding CP6100 Lines

This example contains an SCF command file that adds two CP6100 lines associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX) to the configuration database. It also contains a startup file.

```
== This is $SYSTEM.STARTUP.ADDCP6
== This file should be invoked after ADDMGR, STRTMGR,
== ADDSWAN, and STRTSWAN.

ALLOW 20 ERRORS

ADD PROFILE $ZZWAN.#profbsc, FILE $SYSTEM.sys00.PCP6BSC
ADD PROFILE $ZZWAN.#profadcp, FILE $SYSTEM.sys00.PCP6ADCP

ADD DEVICE      $ZZWAN.#cp6p1,      &
CPU             0,                  &
ALTCPU         1,                  &
PROFILE        profbsc,             &
IOOBJECT       $system.sys00.ocp6css, &
TYPE           (51,1),             &
RECSIZE        150,                &
CLIP           1,                  &
LINE           0,                  &
ADAPTER        s01,                &
PATH           A

ADD DEVICE      $ZZWAN.#cp6p2,      &
CPU             0,                  &
ALTCPU         1,                  &
PROFILE        profadcp,             &
IOOBJECT       $system.sys00.ocp6css, &
TYPE           (51,2),             &
RECSIZE        150,                &
CLIP           2,                  &
LINE           0,                  &
ADAPTER        s01,                &
PATH           A

START DEVICE $ZZWAN.#CP6*

== To enable data communications, you must start the lines using
== the command START LINE $CP6* or by invoking a startup file that
== contains this command.
```

Adding an ATP6100 Line

This example contains an SCF command file that adds an ATP6100 line associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX) to the configuration database. This line can be used to connect an asynchronous terminal that uses the RS-232 interface. It also contains a startup file.

```

== This is $SYSTEM.STARTUP.ADDATP
== This file should be invoked after ADDMGR,
== and ADDSWAN.
== Add and start an ATP6100 device
allow 20 errors
ADD PROFILE $ZZWAN.#prof6530, FILE $SYSTEM.sys00.PATP6530
ADD DEVICE      $ZZWAN.#atpp1,      &
CPU             0,                  &
ALTCPU          1,                  &
PROFILE         prof6530,           &
IOPOBJECT       $system.sys00.oatpcss, &
TYPE            (53,00),            &
RECSIZE         150,                &
CLIP            2,                  &
LINE            1,                  &
ADAPTER         s01,                &
PATH            A
START DEVICE $ZZWAN.#S01

== To enable data communications, you must start the lines using
== the command START LINE $atpp1 or by invoking a startup file that
== contains this command.

== To start a process, such as a TACL process, on this line
== specify $ATPP1.#TERM.
```

Adding a 5516 Printer

This example contains an SCF command file that adds a 5516 printer associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX) to the configuration database. It also contains a startup file.

```
== This is $SYSTEM.STARTUP.ADDLP
== This file should be invoked after ADDMGR,
== and ADDSWAN.
== Add and start a 5516 printer
ADD PROFILE $ZZWAN.#PRINTER, FILE $SYSTEM.SYS00.PATP5516
```

```
ADD DEVICE      $ZZWAN.#LP5516,      &
CPU             0,                   &
ALTCPU         1,                   &
PROFILE        printer,              &
IOOBJECT       $system.sys00.oatpcss, &
TYPE           (51,0),               &
RECSIZE        132,                  &
BAUD19200      ,                     &
CLIP           1,                    &
LINE           1,                    &
ADAPTER        s01,                  &
PATH           A
```

```
START DEVICE $ZZWAN.#LP5516
```

```
== To enable data communications, you must start the lines using
== the command START LINE $LP5516 or by invoking a startup file that
== contains this command.
```

```
== To refer to this printer, such as in a FUP copy command
== or when defining it in the spooler, specify $LP5516.#LP.
```

Adding an X.25 Line

This example contains an SCF command file that adds an X.25 line associated with the SWAN concentrator \$ZZWAN.#S01 (configuration track-ID X001XX) to the configuration database. It also contains a startup file.

```

== This is $SYSTEM.STARTUP.ADDX25
== This file should be invoked after ADDMGR,
== and ADDSWAN.

allow 20 errors

ADD PROFILE $ZZWAN.#profx25, FILE $SYSTEM.sys00.PX25DTE

ADD DEVICE      $ZZWAN.#x25p1,      &
CPU             0,                  &
ALTCPU          1,                  &
PROFILE         profx25,            &
IOOBJECT        $system.sys00.x25obj, &
TYPE            (61,63),            &
RECSIZE         150,                &
CLIP            3,                  &
LINE            0,                  &
ADAPTER         S01,                &
PATH            A

ADD DEVICE      $ZZWAN.#x25s1,      &
CPU             0,                  &
ALTCPU          1,                  &
PROFILE         profx25,            &
IOOBJECT        $system.sys00.x25obj, &
TYPE            (61,63),            &
RECSIZE         150,                &
CLIP            3,                  &
LINE            1,                  &
ADAPTER         S01,                &
PATH            A

== Start the devices configured above.

START DEVICE ($ZZWAN.#x25p1, $ZZWAN.#x25s1)

== To enable data communications, you must start the lines using
== the command START LINE $x25* or by invoking a startup file that
== contains this command.
```

Configuring and Starting the \$NCP Network Control Process

This example contains an SCF command file that configures and starts the network control process, \$NCP.

```
== This is $SYSTEM.STARTUP.ADDNCP
== This file configures and starts $NCP.

== Add NCP profile
ALLOW 100 ERRORS
ADD PROFILE $zzwan.#pexpncp, FILE $SYSTEM.SYS00.PEXPNCP
ADD DEVICE $zzwan.#ncp, PROFILE pexpncp, CPU 0,ALTCPU 1, &
IOPOBJECT $SYSTEM.SYS00.NCPOBJ, TYPE (62,6),RECSIZE 1
DELAY 5
START DEVICE $zzwan.#ncp
```

Adding an Expand-Over-IP Line

This example contains a startup file, and an SCF command file that configures and starts an Expand-over-IP communications line from \$ZZLAN.L028, at IP address 192.168.5.99, to \Case2, a NonStop K-series server at IP address 192.231.36.089. These IP addresses are only examples.

```
== This is $SYSTEM.STARTUP.IP2CASE2
== Add an Expand-over-IP line from $ZZLAN.L028 to \Case2.
ALLOW 100 ERRORS
ADD PROFILE $zzwan.#pexpsip , FILE $system.sys00.pexpsip
ADD DEVICE $zzwan.#Case2IP, TYPE (63,0) , PROFILE pexpsip , &
IOPOBJECT $system.sys00.lhobj , RECSIZE 03 , CPU 0 , ALTCPU 1, &
SRCIPADDR 192.168.5.099, DESTIPADDR 192.231.36.089, &
SRCIPPORT 5701, DESTIPPORT 5700, NEXTSYS 252, ASSOCIATEDEV $ZTC028

== Start the device configured above.
START DEVICE $zzwan.#Case2IP

== To enable data communications, you must start the lines using
== the SCF command START LINE $Case2IP or by invoking a startup file that
== contains this command.
```

Adding a Direct-Connect Line

This example contains an SCF command file that adds a direct-connect line and a startup file.

```
== This is $SYSTEM.STARTUP.ADDLH

ADD PROFILE $zzwan.#pexpsswn, FILE $system.sys00.pexpsswn

ADD DEVICE $zzwan.#Case2elh, CPU 0, ALTCPU 1, RSIZE 12, &
    IOOBJECT $system.sys00.lhobj, TYPE (63,5), PROFILE pexpsswn, &
    NEXTSYS 252, ADAPTER s01, CLIP 1, LINE 0, PATH A

== Start the device configured above.

START DEVICE $ZZWAN.#Case2elh

== To enable data communications, you must start the lines using
== the command START LINE $Case2elh or by invoking a startup file that
== contains this command.
```

A Part Numbers

For all part numbers, see:

- The Support and Service Library. For the location of the Support and Service Library, see [Support and Service Library](#) on page xxiv.
- The *NonStop S-Series Planning and Configuration Guide*.

ServerNet Cabling

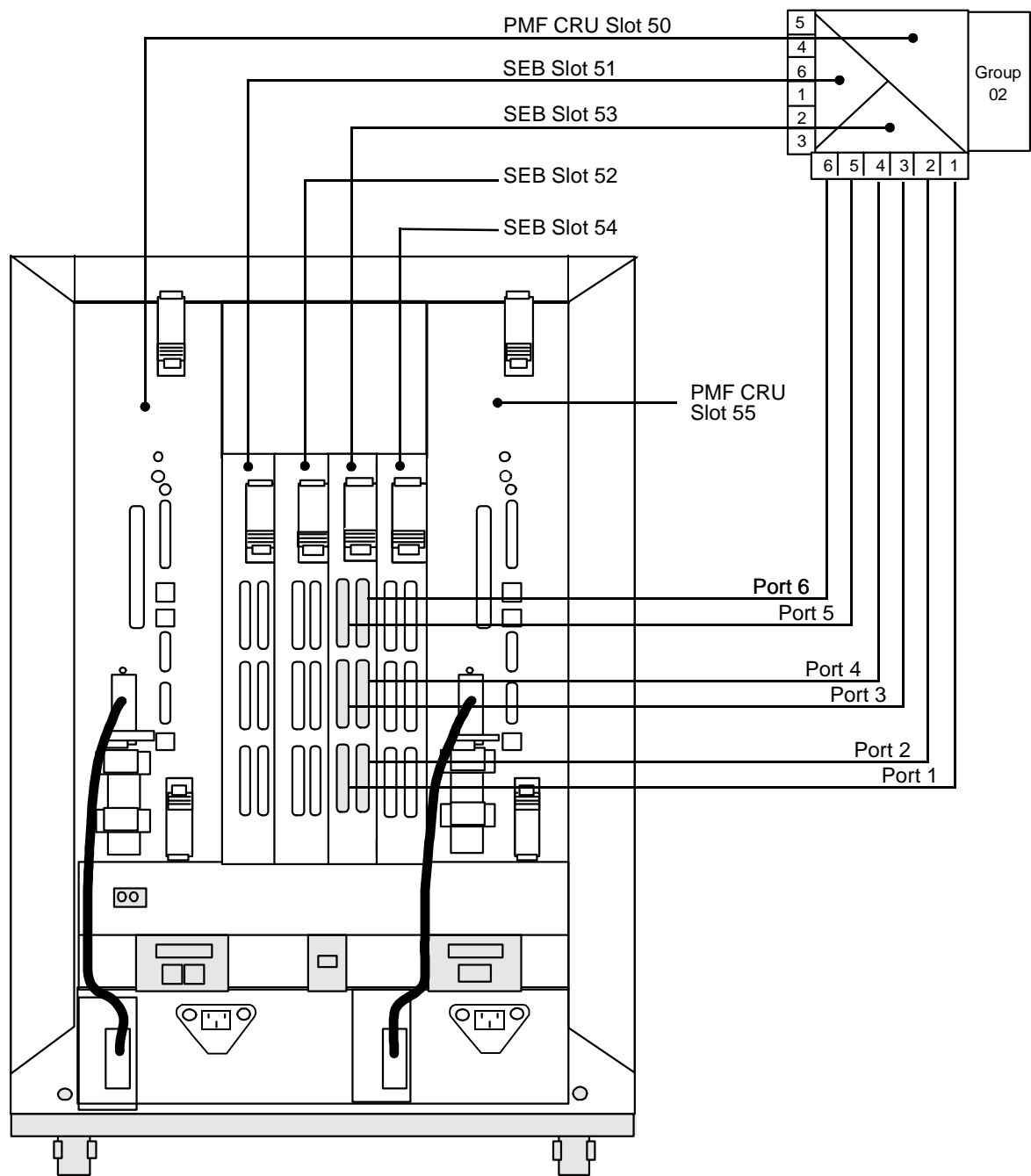
This appendix contains ServerNet cabling diagrams and tables for maximum Tetra 8 and Tetra 16 configurations. It also contains diagrams and tables for selected smaller configurations.

-
- △ **Caution.** Whenever I/O enclosures are listed, an IOAM enclosure can be substituted. However, IOAM enclosures must be installed and cabled by service providers trained by HP. Your service provider should refer to the *Modular I/O Installation and Configuration Guide* which is located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.
-

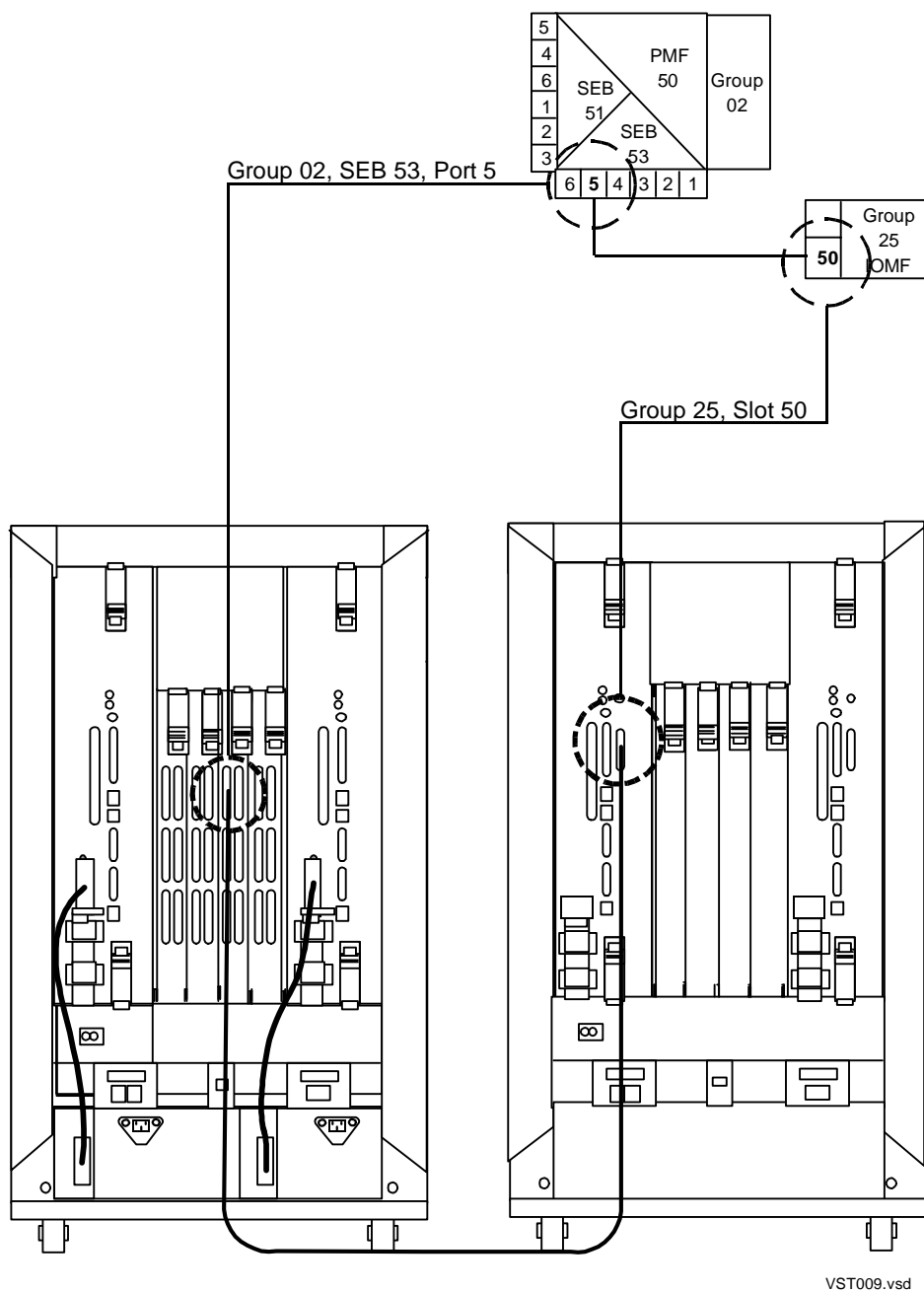
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What ServerNet Cabling Diagrams Mean

Figure B-1. Correlation Between ServerNet Cable Diagram and One Enclosure



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Figure B-2. Correlation Between ServerNet Cable Diagram and Two Enclosures

Maximum ServerNet Configurations

Figure B-3. Maximum Tetra 8 Topologies, X and Y Fabrics

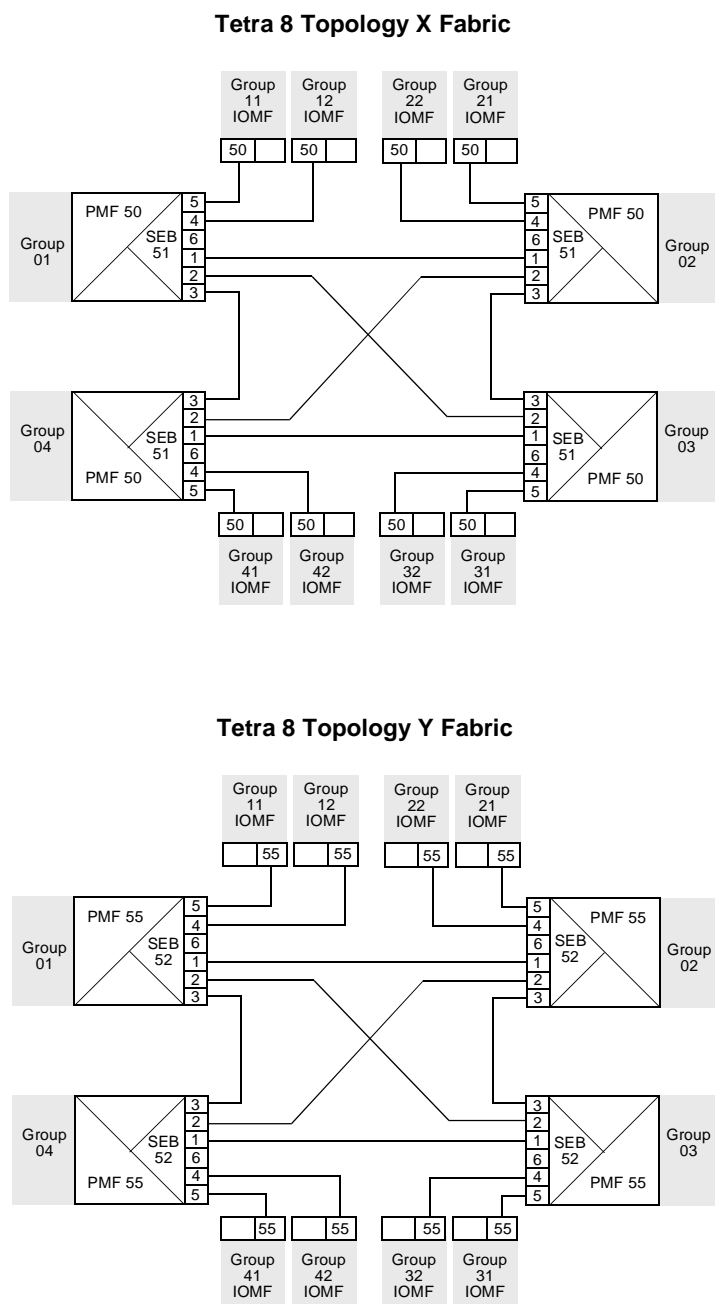


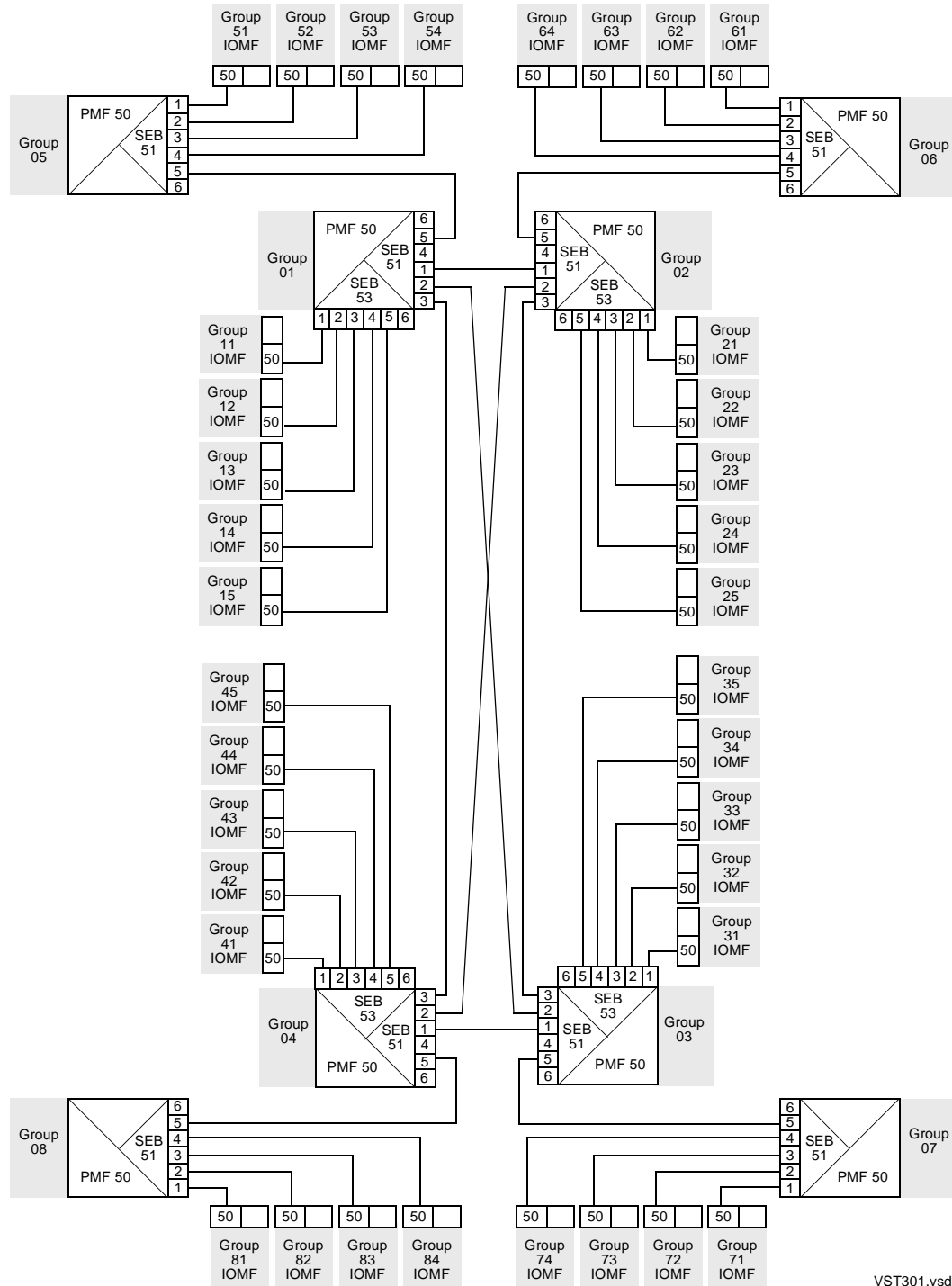
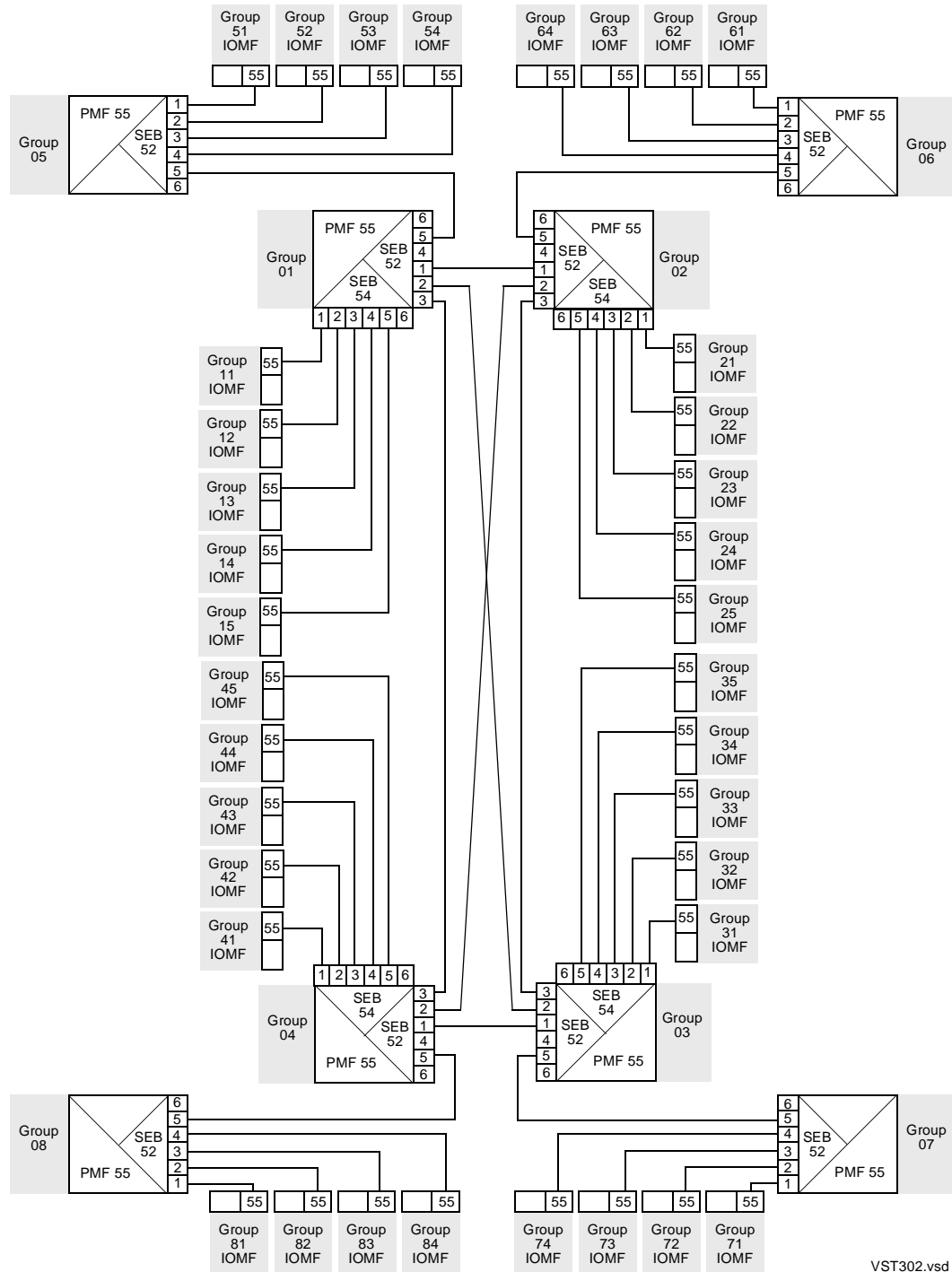
Figure B-4. Maximum Tetra 16 Topology, X Fabric

Figure B-5. Maximum Tetra 16 Topology, Y Fabric

Maximum ServerNet Cabling Tables

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Shaded Areas in These Tables	B-7
Tetra 8 Cabling Tables	B-8
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Maximum Tetra 16 ServerNet Cabling, I/O Enclosures	B-11

Each table in this section describes the ServerNet cable connections for the specified enclosures in the maximum topology.

Whenever a SEB is identified, an MSEB can also appear.

Shaded Areas in These Tables

In any table, shaded areas indicate the redundant entry for each cable. For example, the cable that connects these groups:

From			To		
Group	Slot	Port	Group	Slot	Port
01	51	1	02	51	1

Is the same cable that connects these groups:

From			To		
Group	Slot	Port	Group	Slot	Port
02	51	1	01	51	1

A cabling table can list this cable in two categories (From Group 01 and From Group 02), but the second category will be shaded.

Tetra 8 Cabling Tables

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Maximum Tetra 8 ServerNet Cabling, Processor Enclosures	B-8
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Table B-1. Maximum Tetra 8 ServerNet Cabling, Processor Enclosures

From			To		
Group	Slot	ServerNet Port	Group	Slot	ServerNet Port
01	51	1	02	51	1
01	52	1	02	52	1
01	51	2	03	51	2
01	52	2	03	52	2
01	51	3	04	51	3
01	52	3	04	52	3
02	51	1	01	51	1
02	52	1	01	52	1
02	51	2	04	51	2
02	52	2	04	52	2
02	51	3	03	51	3
02	52	3	03	52	3
03	51	1	04	51	1
03	52	1	04	52	1
03	51	2	01	51	2
03	52	2	01	52	2
03	51	3	02	51	3
03	52	3	02	52	3
04	51	1	03	51	1
04	52	1	03	52	1
04	51	2	02	51	2
04	52	2	02	52	2
04	51	3	01	51	3
04	52	3	01	52	3

Table B-2. Maximum Tetra 8 ServerNet Cabling, I/O Enclosures

From		To		
Group	Slot	Group	Slot	ServerNet Port
11	50	01	51	5
11	55	01	52	5
12	50	01	51	4
12	55	01	52	4
21	50	02	51	5
21	55	02	52	5
22	50	02	51	4
22	55	02	52	4
31	50	03	51	5
31	55	03	52	5
32	50	03	51	4
32	55	03	52	4
41	50	04	51	5
41	55	04	52	5
42	50	04	51	4
42	55	04	52	4

Tetra 16 Cabling Tables

Table

Page

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[B-10](#)
[Maximum Tetra 16 ServerNet Cabling, I/O Enclosures](#)
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Table B-3. Maximum Tetra 16 ServerNet Cabling, Processor Enclosures

Group	Slot	Port	Connects to	Group	Slot	Port (page 1 of 2)
01	51	1		02	51	1
01	52	1		02	52	1
01	51	2		03	51	2
01	52	2		03	52	2
01	51	3		04	51	3
01	52	3		04	52	3
01	51	5		05	51	5
01	52	5		05	52	5
02	51	1		01	51	1
02	52	1		01	52	1
02	51	3		03	51	3
02	52	3		03	52	3
02	51	2		04	51	2
02	52	2		04	52	2
02	51	5		06	51	5
02	52	5		06	52	5
03	51	2		01	51	2
03	52	2		01	52	2
03	51	3		02	51	3
03	52	3		02	52	3
03	51	1		04	51	1
03	52	1		04	52	1
03	51	5		07	51	5
03	52	5		07	52	5
04	51	3		01	51	3
04	52	3		01	52	3
04	51	2		02	51	2
04	52	2		02	52	2
04	51	1		03	51	1

Table B-3. Maximum Tetra 16 ServerNet Cabling, Processor Enclosures

Group	Slot	Port	Connects to	Group	Slot	Port (page 2 of 2)
04	52	1		03	52	1
04	51	5		08	51	5
04	52	5		08	52	5
05	51	5		01	51	5
05	52	5		01	52	5
06	51	5		02	51	5
06	52	5		02	52	5
07	51	5		03	51	5
07	52	5		03	52	5
08	51	5		04	51	5
08	52	5		04	52	5

Table B-4. Maximum Tetra 16 ServerNet Cabling, I/O Enclosures

Group	Slot	Connects to	Group	Slot	Port (page 1 of 3)
11	55		01	54	1
12	50		01	53	2
12	55		01	54	2
13	50		01	53	3
13	55		01	54	3
14	50		01	53	4
14	55		01	54	4
15	50		01	53	5
15	55		01	54	5
21	50		02	53	1
21	55		02	54	1
22	50		02	53	2
22	55		02	54	2
23	50		02	53	3
23	55		02	54	3
24	50		02	53	4
24	55		02	54	4
25	50		02	53	5
25	55		02	54	5
31	50		03	53	1

Table B-4. Maximum Tetra 16 ServerNet Cabling, I/O Enclosures

Group	Slot	Connects to	Group	Slot	Port (page 2 of 3)
31	55		03	54	1
32	50		03	53	2
32	55		03	54	2
33	50		03	53	3
33	55		03	54	3
34	50		03	53	4
34	55		03	54	4
35	50		03	53	5
35	55		03	54	5
41	50		04	53	1
41	55		04	54	1
42	50		04	53	2
42	55		04	54	2
43	50		04	53	3
43	55		04	54	3
44	50		04	53	4
44	55		04	54	4
45	50		04	53	5
45	55		04	54	5
51	50		05	51	1
51	55		05	52	1
52	50		05	51	2
52	55		05	52	2
53	50		05	51	3
53	55		05	52	3
54	50		05	51	4
54	55		05	52	4
61	50		06	51	1
61	55		06	52	1
62	50		06	51	2
62	55		06	52	2
63	50		06	51	3
63	55		06	52	3
64	50		06	51	4

Table B-4. Maximum Tetra 16 ServerNet Cabling, I/O Enclosures

Group	Slot	Connects to	Group	Slot	Port (page 3 of 3)
64	55		06	52	4
71	50		07	51	1
71	55		07	52	1
72	50		07	51	2
72	55		07	52	2
73	50		07	51	3
73	55		07	52	3
74	50		07	51	4
74	55		07	52	4
81	50		08	51	1
81	55		08	52	1
82	50		08	51	2
82	55		08	52	2
83	50		08	51	3
83	55		08	52	3
84	50		08	51	4
84	55		08	52	4

Small Tetra 8 Systems

This subsection provides ServerNet cabling tables and diagrams for selected small Tetra 8 configurations. These configurations range in size up to six processor enclosures and six I/O enclosures.

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About This Information

- You do not have to conform to one of these enclosure configurations. They are merely examples. The number of possible enclosure arrangements for all systems is too great to provide tables and diagrams for all.
- Wherever a SEB is identified, an MSEB can also appear.
- Installation requires four types of connections:

Connection	Information Appears in ...
Groundstraps	Section 2, Installing Enclosures
EPO cables	Section 2, Installing Enclosures
ServerNet cables	This appendix
Power-on cables	This appendix

Tetra 8 Systems With One Processor Enclosure

One Processor Enclosure, No I/O Enclosures

Systems consisting of one processor enclosure (two processors) with no I/O enclosures do not require ServerNet cables because the processors communicate through the backplane.

One Processor Enclosure, One I/O Enclosure

Table B-5. Tetra 8 Cabling: One Processor Enclosure, One I/O Enclosure

Group	Slot	Connects to	Group	Slot	Port
11 (I/O)	50		01	51	ServerNet 5
11 (I/O)	55		01	52	ServerNet 5

One Processor Enclosure, Two I/O Enclosures

Table B-6. Tetra 8 Cabling: One Processor Enclosure, Two I/O Enclosures

Group	Slot	Connects to	Group	Slot	Port
11 (I/O)	50		01	51	ServerNet 5
11 (I/O)	55		01	52	ServerNet 5
12 (I/O)	50		01	51	ServerNet 4
12 (I/O)	55		01	52	ServerNet 4

Tetra 8 Systems With Two Processor Enclosures

Two Processor Enclosures, No I/O Enclosures

Table B-7. Tetra 8 Cabling: Two Processor Enclosures, No I/O Enclosures

Group	Slot	Port	Connects to	Group	Slot	Port
01	51	ServerNet 1		02	51	ServerNet 1
01	52	ServerNet 1		02	52	ServerNet 1

Two Processor Enclosures, One I/O Enclosure

Table B-8. Tetra 8 Cabling: Two Processor Enclosures, One I/O Enclosure

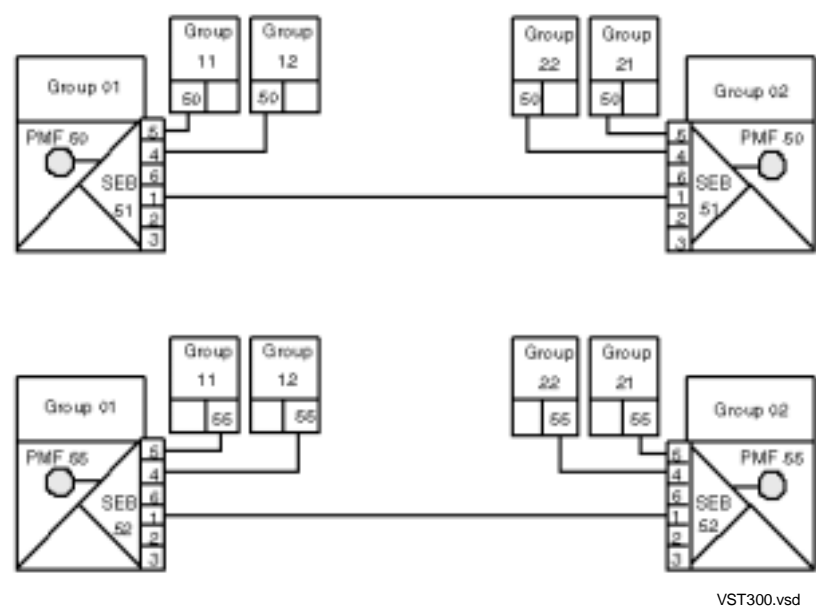
Group	Slot	Port	Connects to	Group	Slot	Port
01	51	ServerNet 1		02	51	ServerNet 1
01	52	ServerNet 1		02	52	ServerNet 1
11 (I/O)	50			01	51	ServerNet 5
11 (I/O)	55			01	52	ServerNet 5

Two Processor Enclosures, Two I/O Enclosures

Table B-9. Tetra 8 Cabling: Two Processor Enclosures, Two I/O Enclosures

Group	Slot	Port	Connects to	Group	Slot	Port
01	51	ServerNet 1		02	51	ServerNet 1
01	52	ServerNet 1		02	52	ServerNet 1
11 (I/O)	50			01	51	ServerNet 5
11 (I/O)	55			01	52	ServerNet 5
21 (I/O)	50			02	51	ServerNet 5
21 (I/O)	55			02	52	ServerNet 5

Figure B-6. Tetra 8 Cabling: Two Processor Enclosures, Two I/O Enclosures



Tetra 8 Systems With Three Processor Enclosures

Three Processor Enclosures, No I/O Enclosures

Table B-10. Tetra 8 Cabling: Three Processor Enclosures, No I/O Enclosures

Group	Slot	Port	Connects to	Group	Slot	Port
01	51	ServerNet 1		02	51	ServerNet 1
01	52	ServerNet 1		02	52	ServerNet 1
01	51	ServerNet 2		03	51	ServerNet 2
01	52	ServerNet 2		03	52	ServerNet 2
02	51	ServerNet 3		03	51	ServerNet 3
02	52	ServerNet 3		03	52	ServerNet 3

Three Processor Enclosures, One I/O Enclosure

Table B-11. Tetra 8 Cabling: Three Processor Enclosures, One I/O Enclosure

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	Port
01	51	ServerNet 1	02	51	ServerNet 1
01	52	ServerNet 1	02	52	ServerNet 1
01	51	ServerNet 2	03	51	ServerNet 2

Table B-11. Tetra 8 Cabling: Three Processor Enclosures, One I/O Enclosure

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	Port
01	52	ServerNet 2	03	52	ServerNet 2
11 (I/O)	50		01	51	ServerNet 5
11 (I/O)	55		01	52	ServerNet 5
02	51	ServerNet 3	03	51	ServerNet 3
02	52	ServerNet 3	03	52	ServerNet 3

Three Processor Enclosures, Two I/O Enclosures

Table B-12. Tetra 8 Cabling: Three Processor Enclosures, Two I/O Enclosures

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	Port
01	51	ServerNet 1	02	51	ServerNet 1
01	52	ServerNet 1	02	52	ServerNet 1
01	51	ServerNet 2	03	51	ServerNet 2
01	52	ServerNet 2	03	52	ServerNet 2
11 (I/O)	50		01	51	ServerNet 5
11 (I/O)	55		01	52	ServerNet 5
02	51	ServerNet 3	03	51	ServerNet 3
02	52	ServerNet 3	03	52	ServerNet 3
21 (I/O)	50		02	51	ServerNet 5
21 (I/O)	55		02	52	ServerNet 5

Three Processor Enclosures, Three I/O Enclosures

Table B-13. Tetra 8 Cabling: Three Processor Enclosures, Three I/O Enclosures

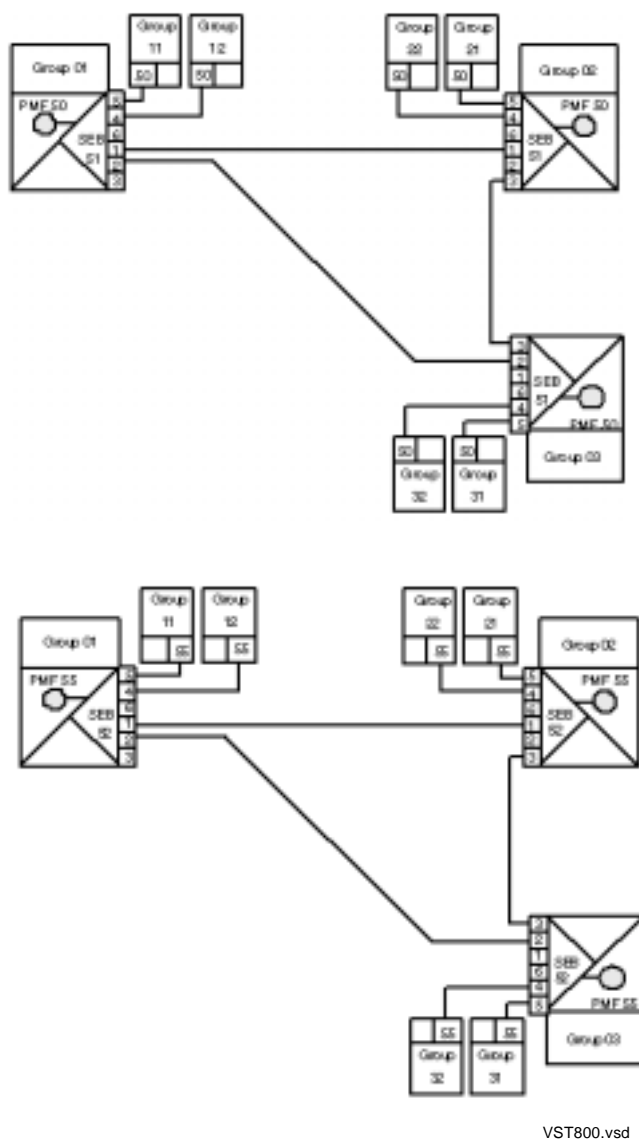
Attach cable between...			And...		
Group	Slot	Port	Group	Slot	SEB or MSEB Port
01	51	ServerNet 1	02	51	ServerNet 1
01	52	ServerNet 1	02	52	ServerNet 1
01	51	ServerNet 2	03	51	ServerNet 2
01	52	ServerNet 2	03	52	ServerNet 2
11 (I/O)	50		01	51	ServerNet 5
11 (I/O)	55		01	52	ServerNet 5

Table B-13. Tetra 8 Cabling: Three Processor Enclosures, Three I/O Enclosures

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	SEB or MSEB Port
02	51	ServerNet 3	03	51	ServerNet 3
02	52	ServerNet 3	03	52	ServerNet 3
21 (I/O)	50		02	51	ServerNet 5
21 (I/O)	55		02	52	ServerNet 5
31 (I/O)	50		03	51	ServerNet 5
31 (I/O)	55		03	52	ServerNet 5

Three Processor Enclosures, Six I/O Enclosures

Figure B-7. Tetra 8 Cabling: Three Processor Enclosures, Six I/O Enclosures



Tetra 8 Systems With Four Processor Enclosures

Four Processor Enclosures, No I/O Enclosures

Table B-14. Tetra 8 Cabling: Four Processor Enclosures, No I/O Enclosures

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	Port
01	51	ServerNet 1	02	51	ServerNet 1
01	52	ServerNet 1	02	52	ServerNet 1
01	51	ServerNet 2	03	51	ServerNet 2
01	52	ServerNet 2	03	52	ServerNet 2
01	51	ServerNet 3	04	51	ServerNet 3
01	52	ServerNet 3	04	52	ServerNet 3
02	51	ServerNet 2	04	51	ServerNet 2
02	52	ServerNet 2	04	52	ServerNet 2
02	51	ServerNet 3	03	51	ServerNet 3
02	52	ServerNet 3	03	52	ServerNet 3
03	51	ServerNet 1	04	51	ServerNet 1
03	52	ServerNet 1	04	52	ServerNet 1

Four Processor Enclosures, One I/O Enclosure

Table B-15. Tetra 8 Cabling: Four Processor Enclosures, One I/O Enclosure

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	Port
01	51	ServerNet 1	02	51	ServerNet 1
01	52	ServerNet 1	02	52	ServerNet 1
01	51	ServerNet 2	03	51	ServerNet 2
01	52	ServerNet 2	03	52	ServerNet 2
01	51	ServerNet 3	04	51	ServerNet 3
01	52	ServerNet 3	04	52	ServerNet 3
11 (I/O)	50		01	51	ServerNet 5
11 (I/O)	55		01	52	ServerNet 5
02	51	ServerNet 2	04	51	ServerNet 2
02	52	ServerNet 2	04	52	ServerNet 2
02	51	ServerNet 3	03	51	ServerNet 3

Table B-15. Tetra 8 Cabling: Four Processor Enclosures, One I/O Enclosure

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	Port
02	52	ServerNet 3	03	52	ServerNet 3
03	51	ServerNet 1	04	51	ServerNet 1
03	52	ServerNet 1	04	52	ServerNet 1

Four Processor Enclosures, Two I/O Enclosures

Table B-16. Tetra 8 Cabling: Four Processor Enclosures, Two I/O Enclosures

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	Port
01	51	ServerNet 1	02	51	ServerNet 1
01	52	ServerNet 1	02	52	ServerNet 1
01	51	ServerNet 2	03	51	ServerNet 2
01	52	ServerNet 2	03	52	ServerNet 2
01	51	ServerNet 3	04	51	ServerNet 3
01	52	ServerNet 3	04	52	ServerNet 3
11 (I/O)	50		01	51	ServerNet 5
11 (I/O)	55		01	52	ServerNet 5
02	51	ServerNet 2	04	51	ServerNet 2
02	52	ServerNet 2	04	52	ServerNet 2
02	51	ServerNet 3	03	51	ServerNet 3
02	52	ServerNet 3	03	52	ServerNet 3
21 (I/O)	50		02	51	ServerNet 5
21 (I/O)	55		02	52	ServerNet 5
03	51	ServerNet 1	04	51	ServerNet 1
03	52	ServerNet 1	04	52	ServerNet 1

Four Processor Enclosures, Three I/O Enclosures

Table B-17. Tetra 8 Cabling: Four Processor Enclosures, Three I/O Enclosures

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	Port
01	51	ServerNet 1	02	51	ServerNet 1
01	52	ServerNet 1	02	52	ServerNet 1
01	51	ServerNet 2	03	51	ServerNet 2

Table B-17. Tetra 8 Cabling: Four Processor Enclosures, Three I/O Enclosures

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	Port
01	52	ServerNet 2	03	52	ServerNet 2
01	51	ServerNet 3	04	51	ServerNet 3
01	52	ServerNet 3	04	52	ServerNet 3
11 (I/O)	50		01	51	ServerNet 5
11 (I/O)	55		01	52	ServerNet 5
02	51	ServerNet 2	04	51	ServerNet 2
02	52	ServerNet 2	04	52	ServerNet 2
02	51	ServerNet 3	03	51	ServerNet 3
02	52	ServerNet 3	03	52	ServerNet 3
21 (I/O)	50		02	51	ServerNet 5
21 (I/O)	55		02	52	ServerNet 5
03	51	ServerNet 1	04	51	ServerNet 1
03	52	ServerNet 1	04	52	ServerNet 1
31 (I/O)	50		03	51	ServerNet 5
31 (I/O)	55		03	52	ServerNet 5

Four Processor Enclosures, Four I/O Enclosures

Table B-18. Tetra 8 Cabling: Four Processor Enclosures, Four I/O Enclosures

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	Port
01	51	ServerNet 1	02	51	ServerNet 1
01	52	ServerNet 1	02	52	ServerNet 1
01	51	ServerNet 2	03	51	ServerNet 2
01	52	ServerNet 2	03	52	ServerNet 2
01	51	ServerNet 3	04	51	ServerNet 3
01	52	ServerNet 3	04	52	ServerNet 3
11 (I/O)	50		01	51	ServerNet 5
11 (I/O)	55		01	52	ServerNet 5
02	51	ServerNet 2	04	51	ServerNet 2
02	52	ServerNet 2	04	52	ServerNet 2
02	51	ServerNet 3	03	51	ServerNet 3
02	52	ServerNet 3	03	52	ServerNet 3
21 (I/O)	50		02	51	ServerNet 5

Table B-18. Tetra 8 Cabling: Four Processor Enclosures, Four I/O Enclosures

Attach cable between...			And...		
Group	Slot	Port	Group	Slot	Port
21 (I/O)	55		02	52	ServerNet 5
03	51	ServerNet 1	04	51	ServerNet 1
03	52	ServerNet 1	04	52	ServerNet 1
31 (I/O)	50		03	51	ServerNet 5
31 (I/O)	55		03	52	ServerNet 5
41 (I/O)	50		04	51	ServerNet 5
41 (I/O)	55		04	52	ServerNet 5

Small Tetra 16 Systems

About This Information

- You do not have to conform to one of these enclosure configurations. They are merely examples. The number of possible enclosure arrangements for all systems is too great to provide tables and diagrams for all.
- Wherever a SEB is identified, an MSEB can also appear.
- Installation requires four types of connections. You can find information about these connections as follows:

Connection	Information Appears in ...
Groundstraps	Section 2, Installing Enclosures
EPO cables	Section 2, Installing Enclosures
ServerNet cables	This appendix
Power-on cables	This appendix

- The following diagrams illustrate Tetra 16 configurations for all NonStop systems except NonStop S7000, S7xx, and S7x systems. NonStop S7000 systems support Tetra 16 configurations but are limited to two I/O enclosures per processor enclosure.

Tetra 16 Systems With Four Processor Enclosures

Figure B-8. Tetra 16 Cabling: Four Processor Enclosures, X Fabric

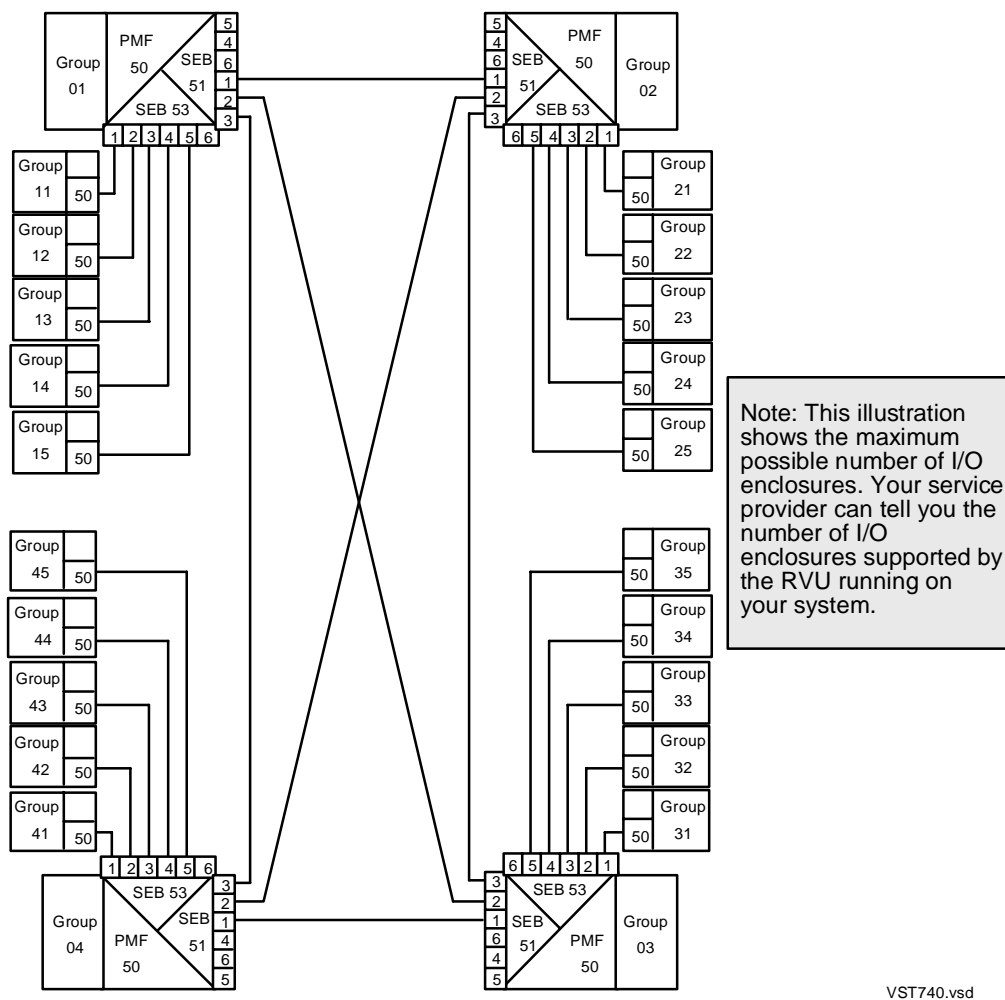
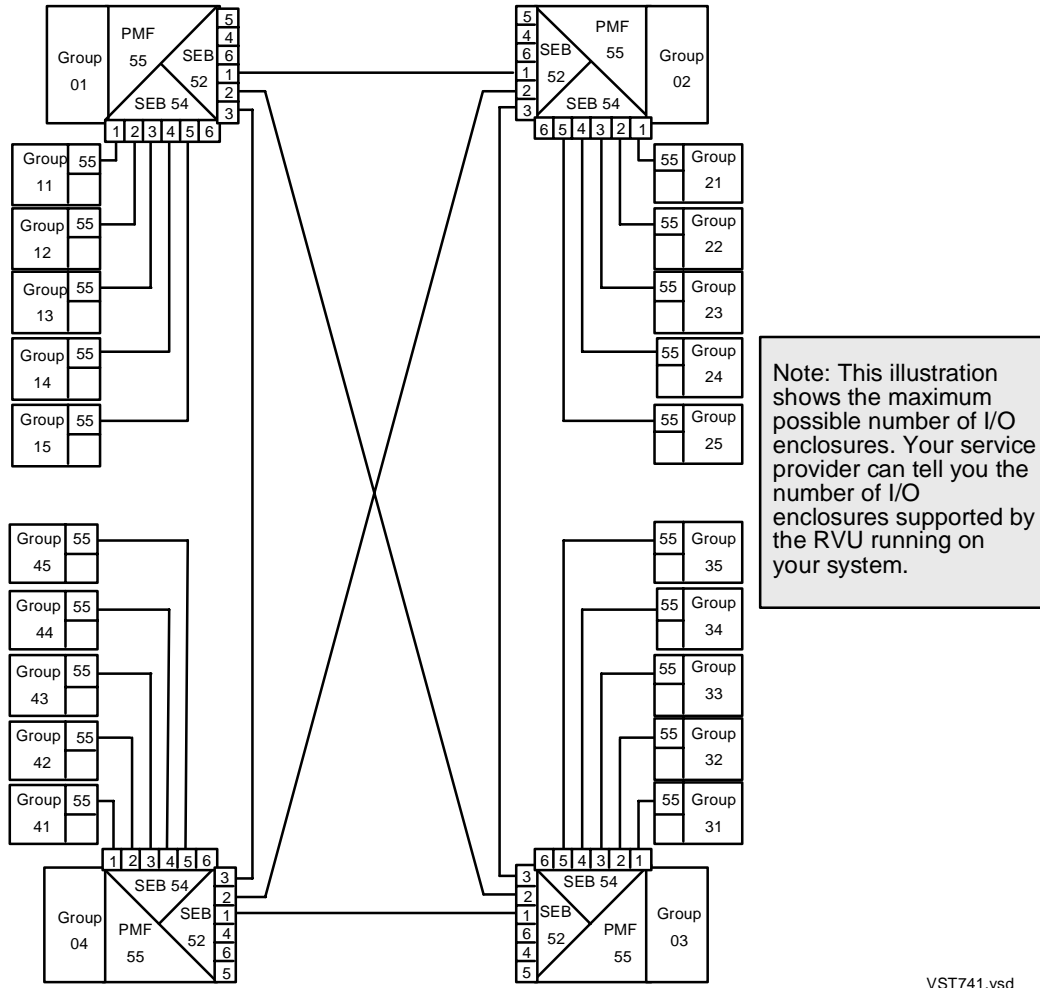
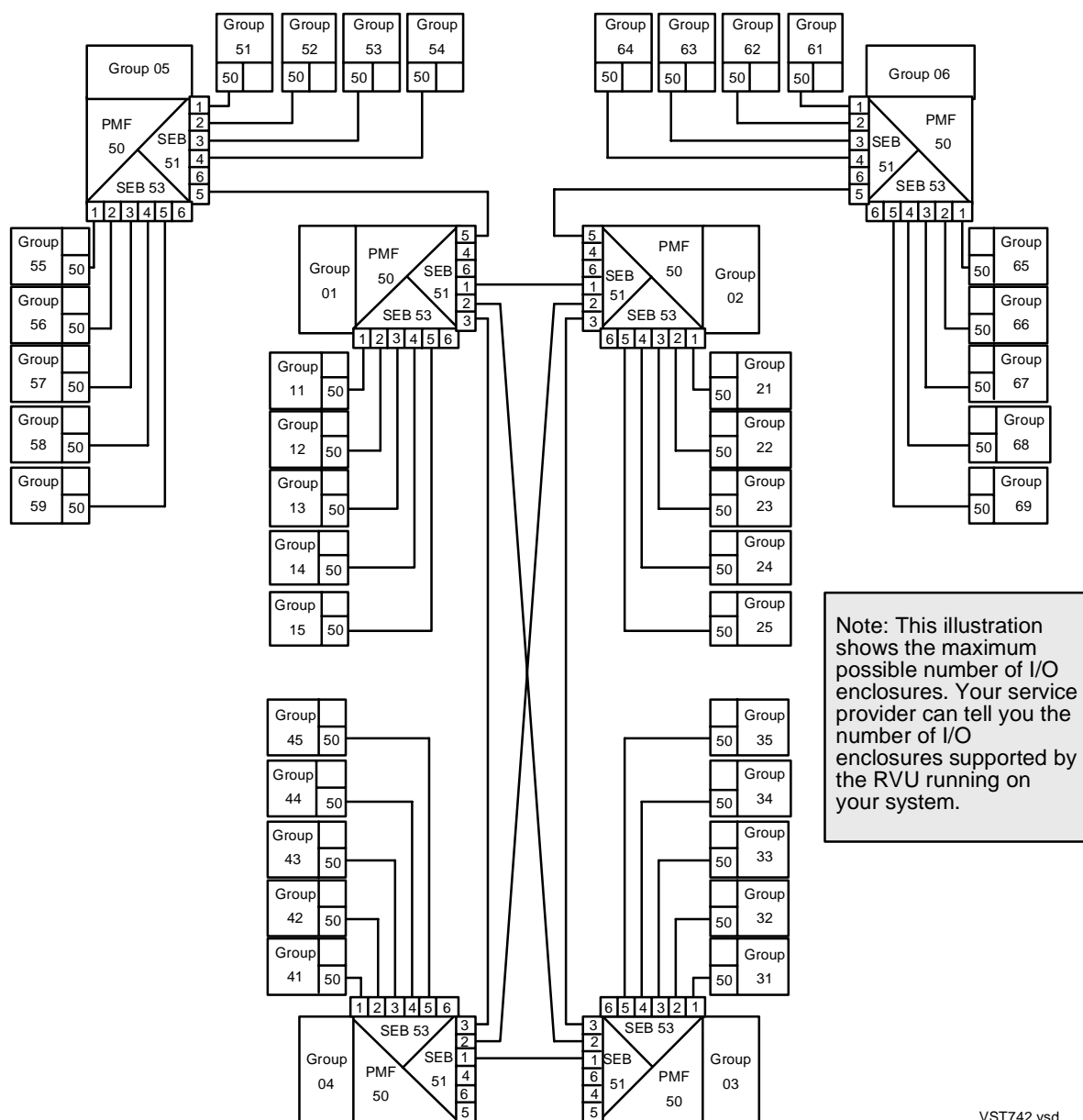


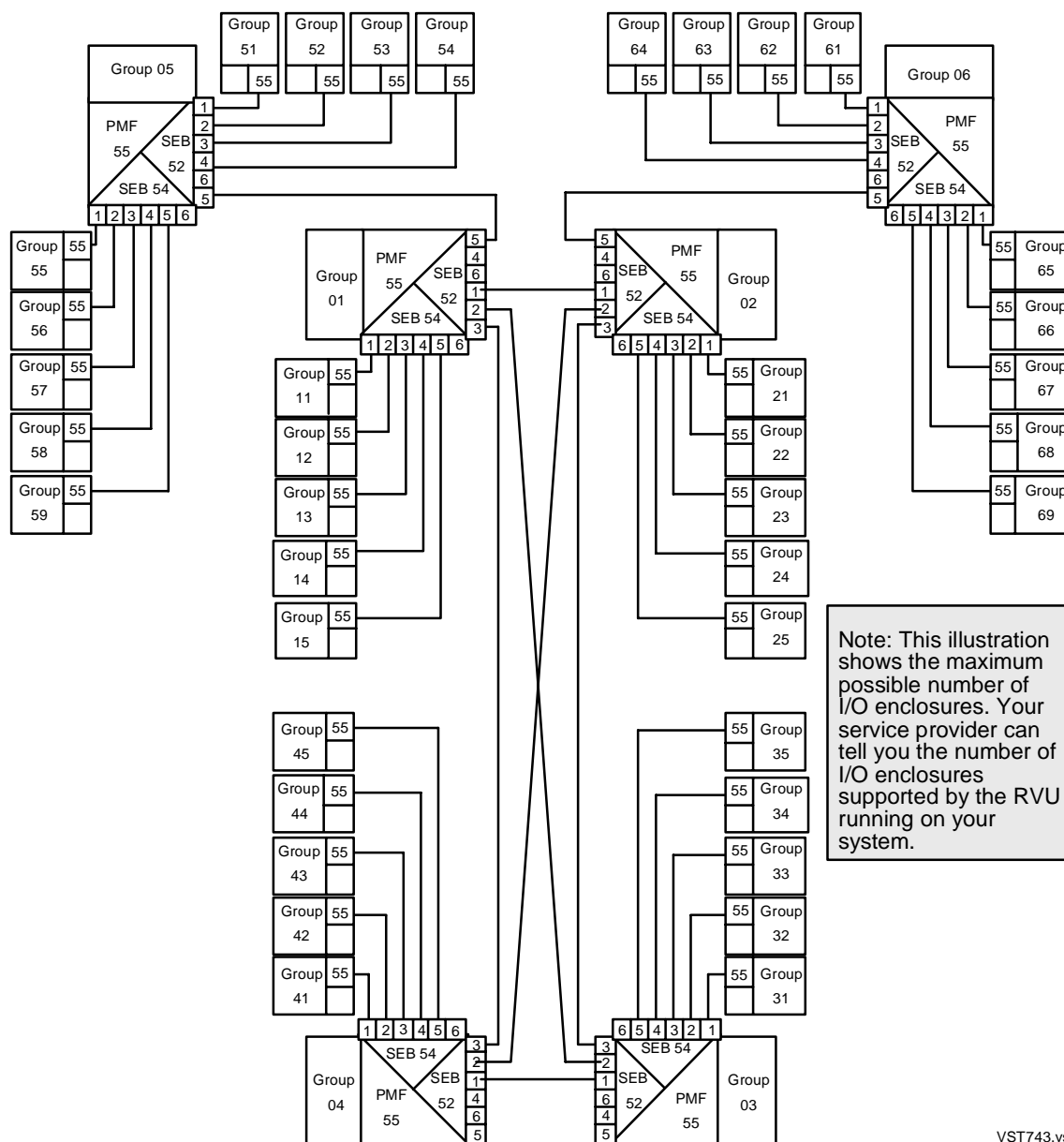
Figure B-9. Tetra 16 Cabling: Four Processor Enclosures, Y Fabric

Tetra 16 Systems With Six Processor Enclosures

Figure B-10. Tetra 16 Cabling: Six Processor Enclosures, X Fabric



VST742.vsd

Figure B-11. Tetra 16 Cabling: Six Processor Enclosures, Y Fabric

VST743.vsd

C Power-On Cabling

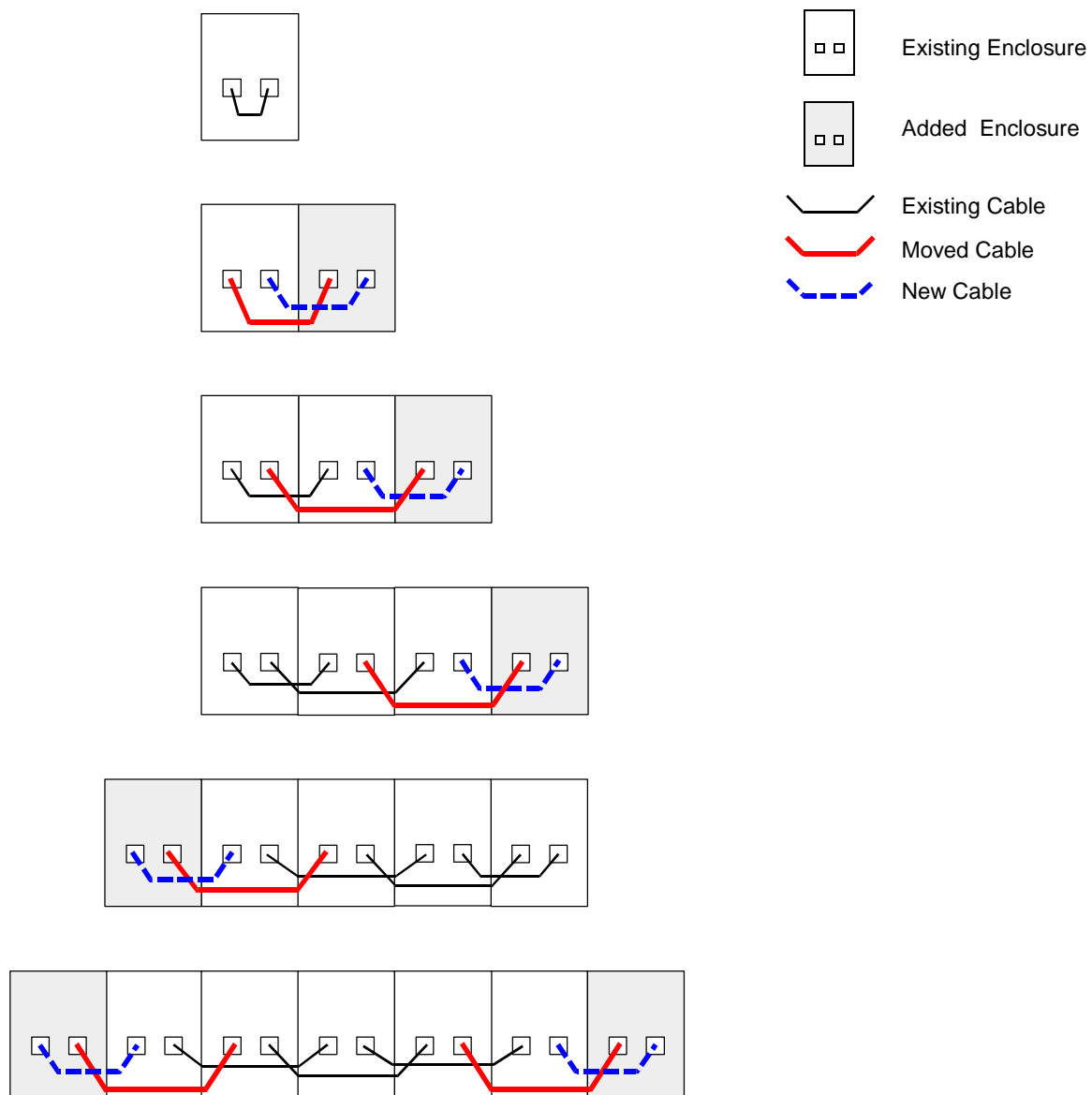
This section provides power-on cabling diagrams for selected large and smaller ServerNet configurations.

Note. If an IOAM enclosure or Fibre Channel Disk Module is installed, they are powered on when you connect them to the AC power source. For more information, your service provider should refer to the *Modular I/O Installation and Configuration Guide* which is located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

Although the power-on cabling connections are required, the arrangement of your enclosures does not have to conform to these illustrations. For example, you can stack two enclosures or place them side by side.

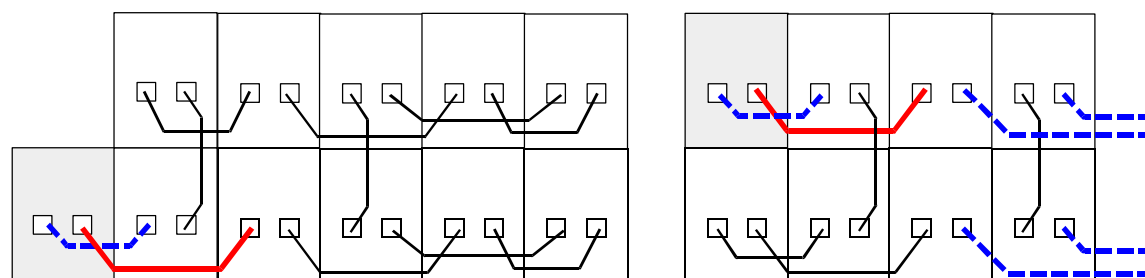
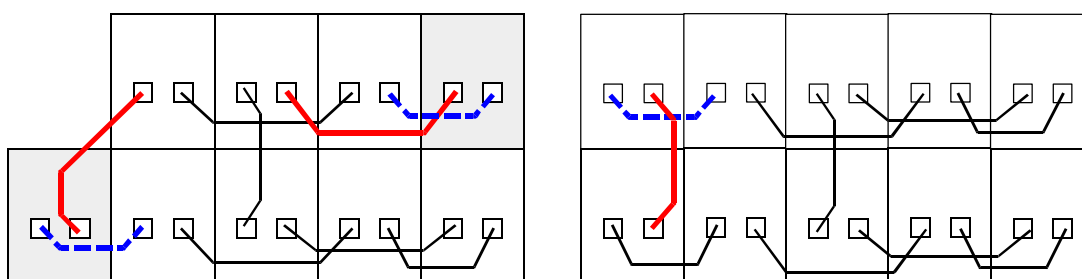
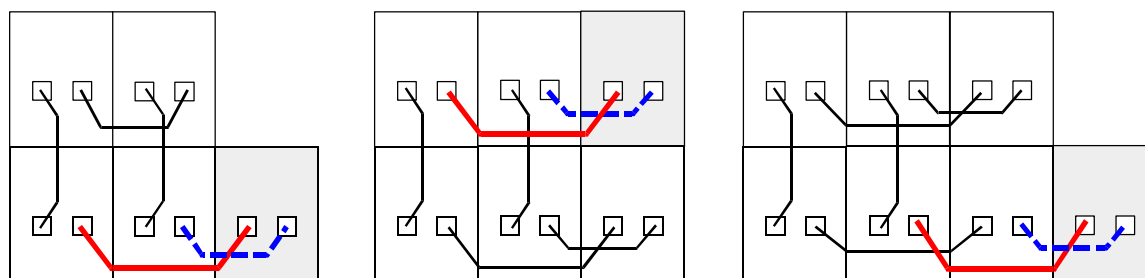
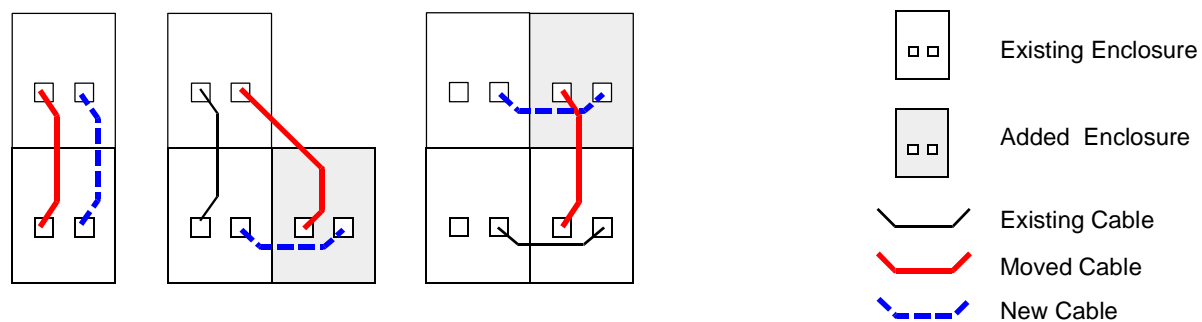
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Figure C-1. Power-On Cabling: Single-High Stacks

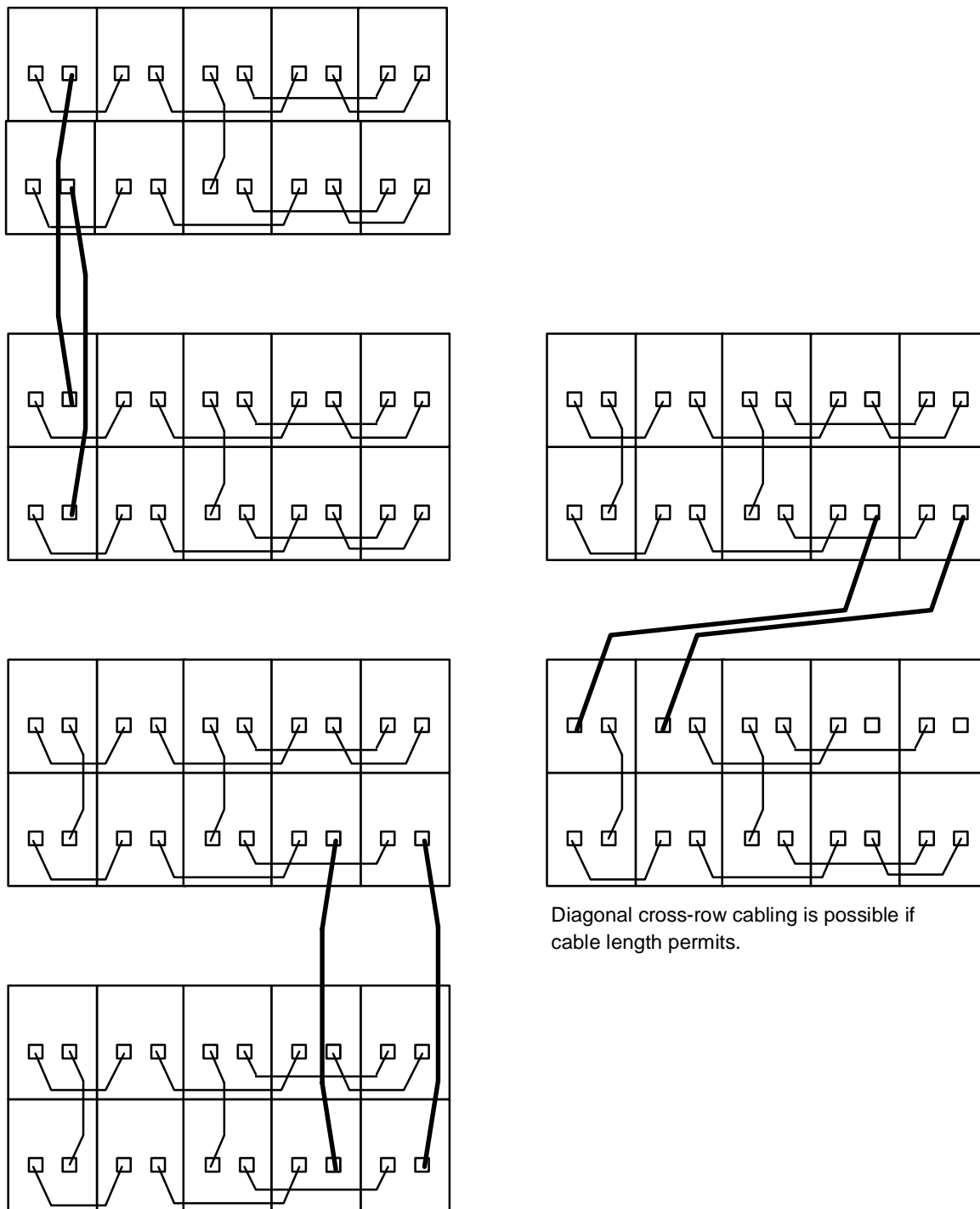


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Figure C-2. Power-On Cabling: Mixed Single-High and Double-High Stacks

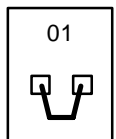


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Figure C-3. Power-On Cabling: Multiple-Row Systems

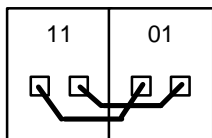
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Figure C-4. Power-On Cable: One Processor Enclosure



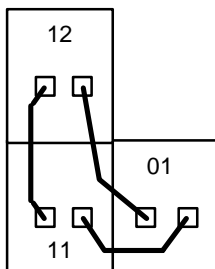
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Figure C-5. Power-On Cables: One Processor Enclosure, One I/O Enclosure



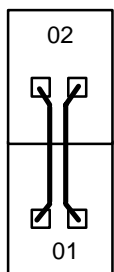
VST111.vsd

Figure C-6. Power-On Cables: One Processor Enclosure, Two I/O Enclosures



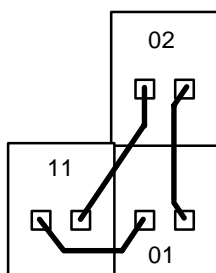
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Figure C-7. Power-On Cables: Two Processor Enclosures, No I/O Enclosures



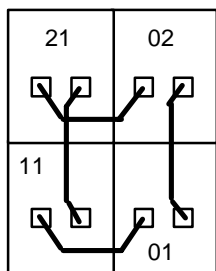
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Figure C-8. Power-On Cables: Two Processor Enclosures, One I/O Enclosure



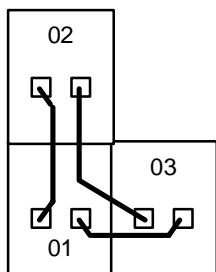
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Figure C-9. Power-On Cables: Two Processor Enclosures, Two I/O Enclosures



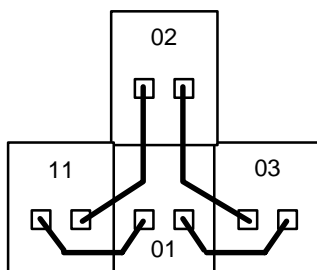
VST122.vsd

Figure C-10. Power-On Cables: Three Processor Enclosures, No I/O Enclosures



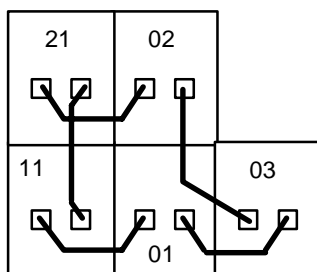
VST130.vsd

Figure C-11. Power-On Cables: Three Processor Enclosures, One I/O Enclosure



VST131.vsd

Figure C-12. Power-On Cables: Three Processor Enclosures, Two I/O Enclosures



VST132.vsd

Figure C-13. Power-On Cables: Three Processor Enclosures, Three I/O Enclosures

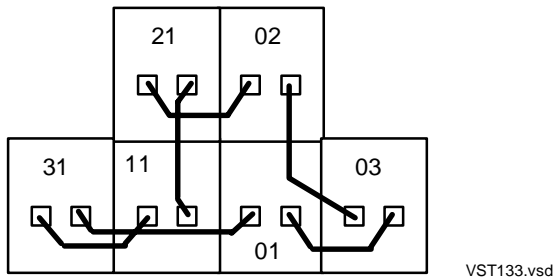


Figure C-14. Power-On Cables: Four Processor Enclosures, No I/O Enclosures

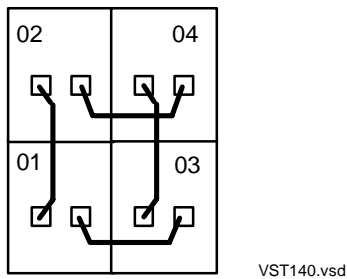


Figure C-15. Power-On Cables: Four Processor Enclosures, One I/O Enclosure

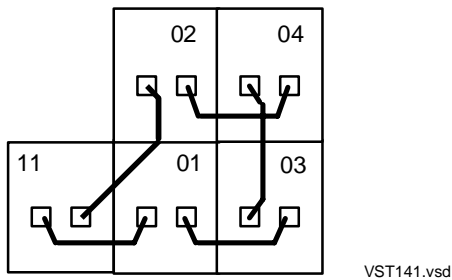


Figure C-16. Power-On Cables: Four Processor Enclosures, Two I/O Enclosures

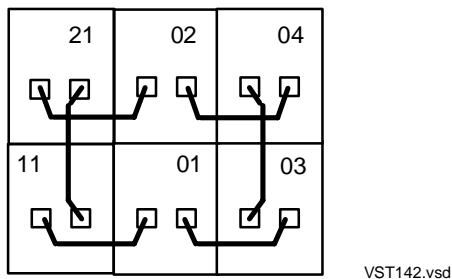


Figure C-17. Power-On Cables: Four Processor Enclosures, Three I/O Enclosures

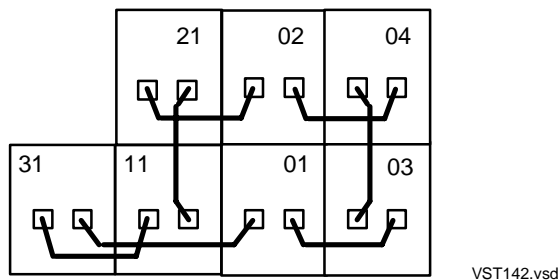
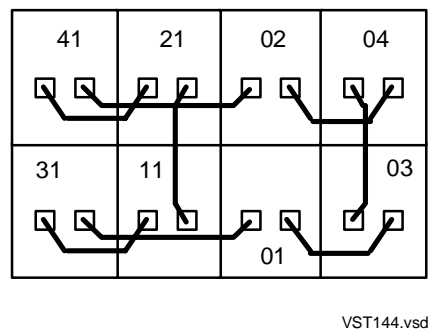


Figure C-18. Power-On Cables: Four Processor Enclosures, Four I/O Enclosures



D Troubleshooting

This appendix explains basic recovery tasks for the system and system console.

Note. For troubleshooting an IOAM enclosure, Fibre Channel Disk Module (FCDM)s, or ESSs, contact your service provider.

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Power States

This table summarizes the NonStop S-series server power-on, power-off, and power-fail/recovery states. For more information about the effects of starting or shutting down the server, see the *NonStop S-Series Operations Guide*.

Server State	External Event	Result (page 1 of 2)
The server has been shut down with SCF or the OSM or TSM Low-Level Link. AC power is disconnected from the server.	You reconnect AC power to the server.	Power is applied to the server components. The components complete their startup sequence.
The server has been shut down with SCF or the OSM or TSM Low-Level Link. AC power remains connected to the server.	You push the power-on push button on a PMF CRU.	The server is ready for system start.
The server components complete their startup sequence.	You start the system with the OSM or TSM Low-Level Link.	The operating system is loaded and started. The system is ready.
The system is operating normally.	You stop the system with SCF, OSM, or TSM.	Processing halts. Power is disconnected from the server components.

Server State	External Event	Result (page 2 of 2)
The system is operating normally. The batteries are connected, enabled, and charged.	AC power fails for less than 30 seconds.	<p>The batteries provide power to the server components inside the enclosures.</p> <p>Processing is uninterrupted.</p> <p>The default time for power-fail protection is 30 seconds.</p>
	AC power fails for more than 30 seconds.	<p>Processing is interrupted.</p> <p>The batteries provide power to memory, usually for approximately 45 minutes, depending on charge state and the system configuration.</p> <p>Memory contents are saved until the batteries are drained.</p>
The system is operating normally. The batteries are disconnected, disabled, or not charged.	AC power fails.	<p>Processing halts.</p> <p>Memory content is lost.</p> <p>Processing cannot be recovered from the point where AC power failed.</p>
	AC power is restored before the batteries are drained.	<p>Power is applied to the server components.</p> <p>The system restarts processing at the point where AC power failed.</p>
AC power fails for more than 30 seconds. The batteries are drained.	AC power is restored.	<p>Memory content is lost.</p> <p>Processing cannot be recovered from the point where AC power failed.</p>
		<p>Power is applied to the server components.</p> <p>These components complete their startup sequence.</p> <p>The system is ready.</p>

Status LEDs

Location	LED Name	Color	Function (page 1 of 2)
Disk drive CRU	Power-on	Green	Lights when the disk drive is receiving power.
	Activity	Yellow or Amber	Lights when the disk drive is executing a read or write command.
FCSA	Power-on	Green	Lights when the adapter is receiving power.
	Service	Amber	Lights temporarily when first installed and continuously when the adapter is not fully functional.
G4SA	Power-on	Green	Lights when the adapter is receiving power.
	Fault	Amber	Lights temporarily during power-on procedure and continuously when the ServerNet adapter is not fully functional.
IOMF CRU	Power-on	Green	Lights when the IOMF CRU is receiving power.
	Service	Amber	Lights temporarily during power-on procedure and continuously when the IOMF CRU is not fully functional.
	ServerNet port service	Amber	Lights when the service processor (SP) detects an error in the transfer of ServerNet data. In an IOMF 2 CRU, the Prepare to Power Off action in OSM or TSM causes this LED to flash, to help identify the CRU for removal or replacement.
IOAM Fan	Power-on	Green	Flashes temporarily during power-on procedure then continuously when the fan is operating normally.
	Fault	Amber	Lights continuously to indicate that the fan is not operational.
IOAM Power Supply	Power-on	Green	Flashes temporarily during the power-on procedure then continuously when the power supply is receiving power from the AC power source.
	Predictive Fail	Amber	Flashes continuously when the power supply is about to fail due to a fan problem.
	Fail	Amber	Lights continuously to indicate that the power supply is not operational.
IOAM ServerNet switch board	Power-on	Green	Lights when the ServerNet switch board is receiving power.
	Service	Amber	Lights temporarily during the power-on procedure and continuously when the ServerNet switch board is not fully functional.

Location	LED Name	Color	Function (page 2 of 2)
PMF CRU	Power-on	Green	Lights when the PMF CRU is receiving power.
	Service	Amber	Lights temporarily during power-on procedure, and continuously when the PMF CRU is not fully functional. In a PMF CRU identified in OSM or TSM as a PMF 2 CRU, the Prepare to Power Off action in OSM or TSM causes this LED to flash, to help identify the CRU for removal or replacement.
SEB or MSEB	Power-on	Green	Lights when the SEB is receiving power.
	Fault	Amber	Lights to indicate that the SEB is not fully functional. At initial power on, this LED lights until the SEB has been successfully configured by the service processor (SP). Then the LED becomes unlit. Lights continuously to indicate the SEB or MSEB is not operational.
ServerNet adapter	Power-on	Green	Lights when the ServerNet adapter is receiving power.
	Service	Amber	Lights temporarily during power-on procedure and continuously when the ServerNet adapter is not fully functional.
System enclosure	Group service (2 per enclosure)	Amber	Lights when a command to light the group service LED is issued using OSM or TSM.

Powering On the System

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System Does Not Appear to Be Powered On

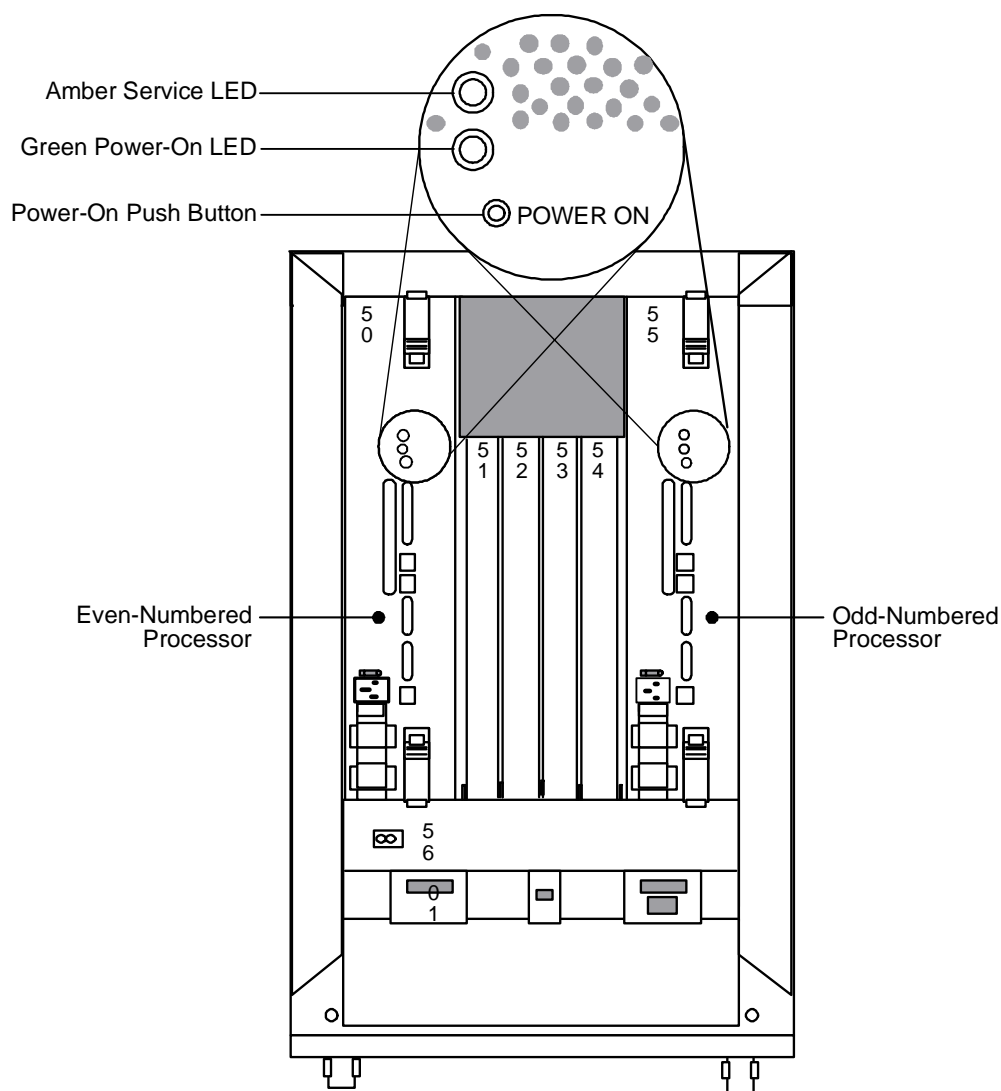
1. If the fans are not turning and if none of the green LEDs on the system components in an enclosure are lit, the power might not have been properly applied. Check that the AC power cords and the power-on cables are properly connected and repeat the power-on procedure.
2. If AC power is being supplied to the system but the system still does not appear to be powered on, the system might be running internal power-on self-tests (POSTs). Wait several minutes. It can take as long as 10 minutes for the POSTs to finish.
3. If the system still does not appear to be powered on after this time and you cannot determine the cause of the problem, contact your service provider.

Power Is Applied to Enclosure But Fans Are Not Turning

△ **Caution.** If the system is powered on, green LEDs are lit on enclosures, and fans are not turning in one or more enclosures, power off the system immediately to avoid potential hardware damage. Then contact your service provider.

1. If a green LED is not lit on one or more system enclosures:
 - a. Ensure that all AC power cords and power-on cables are properly connected.
 - b. Repeat the power-on procedure.
2. If the AC power cords and power-on cables are properly connected and the server still is not powered on:
 - a. Locate the power-on push button on the PMF CRU.

- b. Press and hold the power-on push button for at least one second.



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3. If the system still cannot be powered on, contact your service provider.

Any Green LED Is Not Lit

Note. To troubleshoot any LEDs in an IOAM enclosure, contact your service provider who can refer to the *Modular I/O Installation and Configuration Guide* located in the NTL Hardware Service and Maintenance Collection in the Support and Service Library.

1. Make sure the fans are turning. If the fans are not turning and if none of the green LEDs on the system components in an enclosure are lit, the power might not have been properly applied. Check that the power-on cables are properly connected and repeat the power-on procedure.
2. Wait for the POSTs to finish. It can take several minutes after power is applied for the green LEDs on all system components to light.
3. If a green LED still does not light on a system component, it might have failed its POST. Check for other indications that the POST has failed. For example, the following are indications that a POST for a PMF CRU has failed:

Power-On Self-Test

Failed Processor Memory Test

Failed System Load Path Test

Failed MFIOB Test

Other Indications of Failure

- Processor halts with a halt code of %100236.
- Hardware error freeze occurs.
- Processor halts with a halt code of %100237.
- PMF CRU green power-on and amber service LEDs do not light if the MFIOB is not operational.
- PMF CRU amber service LED lights if the MFIOB is partially operational.

4. Unseat and reseal the component.
5. If you cannot determine the cause of the problem, contact your service provider.
6. If necessary, replace the component using the procedures in the Service Procedures>NonStop S-Series Hardware Servicing section of the NTL [Support and Service Library](#).

If the component is an IOMF, PMF, SNDA, Power Supply, SEB, or MSEB, see the guided replacement procedures in the OSM Service Connection, or the appropriate guided procedure located in the TSM program group.

To access the OSM guided replacement procedures, see [OSM Guided Replacement Procedures](#) on page xxiv.

Any Amber LED Remains Lit After POST

A fault might have been detected, or the component might not have been correctly initialized and configured:

1. Check that the power-on cables are properly connected.
2. Repeat the power-on procedure.
3. Unseat and reseat the component.
4. If necessary, replace the component using the procedures on the [Support and Service Library](#).
5. If you cannot determine the cause of the problem, contact your service provider.

Yellow ServerNet Port LEDs on SEBs or MSEBs Are Not Lit

No corrective action is necessary. These LEDs are not used.

Group Service LED on System Enclosure Is Flashing

Check the group ID switch settings for all enclosures in the system. Settings for the two switches within an enclosure must match, but two different enclosures must not have the same group ID settings. If necessary, change the group ID switch settings using the information about adding a processor enclosure in the *NonStop S-Series System Expansion and Reduction Guide*.

The group service LED might have been activated manually using the OSM or TSM package. To deactivate the LED:

1. Log on to the OSM Service Connection or TSM Service Application.
2. In the Tree pane, right-click the Group for that system enclosure.
3. Select **Actions**.
4. In OSM, select **Set Service LED State**, click **Perform action**, and select **Off**. In TSM, select **Clear Group Service LED** and click **Perform action**.

Correcting Topology Attribute

If the value for the Topology attribute is Tetra 16 or error, use the OSM or TSM Low-Level Link to:

- Reset the Topology attribute: before system discovery, click **System Actions**.
- Power off the system: before system discovery, click **System Power Off**.
- Power on the system.
- Ensure that the fans are turning and that the POSTs have finished.

If any system enclosure remains not visible in the Physical view, contact your service provider.

You can reset the Topology attribute and power off the system before or after system discovery. See the OSM or TSM Low-Level Link online help.

Starting the System

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Startup Event Stream and Startup TACL Windows Do Not Appear

1. Log on to the OSM or TSM Low-Level Link.
2. From the File menu, select **Start Terminal Emulator > For Startup TACL**.
Two OutsideView windows appear, one on top of the other. If the TACL prompt does not appear in one window, view the other with the Windows taskbar buttons.
3. From the File menu, select **Start Terminal Emulator > For Event Streams**.
Two OutsideView windows appear, one on top of the other. If the TACL prompt does not appear in one window, view the other with the Windows taskbar buttons.

If any of the four startup windows do not appear after the previous steps:

1. Select **Start > OutsideView > OutsideView**. The OutsideView dialog box appears.
2. From the Session menu, select **New**. The New Session Properties dialog box appears.
3. On the Session tab, in the Session Caption box, enter a session caption name, such as **Startup Events** or **Startup TACL**.
4. Click **IO Properties**. The TCP/IP Properties dialog box appears.
5. Enter the IP address of MSP 1, a space, and the port number of the window type (303 for the startup event stream window, 301 for the startup TACL window). For example:

```
192.231.36.2 303 (startup event stream window)
192.231.36.3 303 (startup event stream window)
192.231.36.2 301 (startup TACL window)
192.231.36.3 301 (startup TACL window)
```

If your workstation is not authorized or is not in the access list in the TSM Low Level Link, you will not receive such a list.

6. Click **OK**. You are returned to the New Session Properties dialog box.
7. Click **OK**. The startup event stream window or startup TACL window appears. A TACL prompt appears in the startup TACL window.

With the OSM or TSM Event Viewer, look for important messages that might have been logged to the EMS log during this procedure.

System Load Fails

- △ **Caution.** Performing a tape load from a system image tape (SIT) to restore the system image files to the \$SYSTEM disk (SYS_{nn} and CSS_{nn} subvolumes) is generally not recommended. **Perform a tape load only with the advice of the GCSC or your service provider.** Loading from a tape reinitializes the disk directory, overlays the disk directory with the directory from the tape, and destroys all files on the disk. Many additional steps are required to restore your system to working order because the SIT does not contain all the files that were on the \$SYSTEM disk, including almost all important system configuration information.
-

If a system load is not successful or if the system halts:

1. Check the following locations for halt code or event messages:
 - The Processor Status dialog box of the TSM Low-Level Link
 - The System Status and Detailed Status boxes in the System Startup dialog box
 - The OSM or TSM Event Viewer
 - The startup TACL window
 - The startup event stream window
2. Record any event messages or halt codes. See the appropriate documentation for recovery information.
 - If possible, look up event messages in the EMS logs (\$0 and \$ZLOG). For the cause, effect, and recovery procedures for these events, see the documentation appropriate for your system among the TSM Event Viewer online help, the *OSM User's Guide*, and the *Operator Messages Manual*. (If you configured your processor to print event messages to a printer, you might be able to retrieve messages sent while the system was going down.)
 - For the cause and recovery procedures, look up the halt code in the *Processor Halt Codes Manual*.
3. Perform a processor dump, if needed. See [Dumping Processor Memory](#) on page D-16. Do not prime or reset the processor before performing the dump.
4. Correct any problems shown in the dump, or contact your service provider.
5. Load the system again.

You can also try loading the system using one of the following methods:

1. Load the system from an earlier version of the system configuration database by specifying a saved version of the CONFIG file if one is available. You can use this method to recover from a configuration change that caused a problem:
 - a. Load the system from a system console, specifying a saved version of the system configuration file in the form *xx.yy*. For example, the CONF0205 file would be specified as 02.05 or 2.5.
 - b. When the system starts and displays a TACL prompt, log on and start the rest of the system applications.

2. If the current configuration file has become corrupted, and there is no saved configuration file from which you can load the system, use the following procedure to load the system and re-create the initial CONFIG file that was delivered to you when you first received your system:
 - a. Log on to the OSM or TSM Low-Level Link.
 - b. Using the System Startup dialog box:
 - In the SYS_{nn} field, enter **00** as the number of the SYS_{nn} subvolume containing the version of the operating system to be loaded.
 - In the Configuration File box, select **Base (CONBASE)** as the configuration file.
 - The CIIN disabled option must be selected. Click the checkbox.
 - c. Click **Start system**.
 - d. After the system starts and displays a TACL prompt, log on and start SCF with a command that invokes the SCF command file SCF0000. For example:


```
> SCF / IN $SYSTEM.ZSYSCONF.SCF0000 /
```

SCF executes the SCF0000 file, makes online configuration changes to the running system, creates an SCFLOG file of the processed commands and returned messages, and records the changes permanently in the CONFIG file.

SCF adds these configuration changes to the CONFBASE file to create the CONFIG file. At this point, the contents of the CONFIG file are the same as those of the CONF0000 file shipped with the system.
 - e. At the startup TACL prompt, issue the following command for each of the processors to be reloaded:


```
> reload (nn), prime
```
3. If you still cannot load the system, contact your service provider.

CIIN File Is Not Invoked During System Startup

After the first processor is loaded, the initial TACL process invokes the CIIN file automatically only if all the following conditions are true:

- The CONFTEXT configuration file located in the \$SYSTEM.SYS_{nn} subvolume has an INITIAL_COMMAND_FILE entry for the CIIN file.
- The CIIN file is available in the specified location.
- The CIIN option is not disabled in the System Startup dialog box.

If the CIIN file is not invoked, issue the following command at the startup TACL prompt for each of the processors to be reloaded:

```
> reload (nn), prime
```

Reload Fails

If a reload is not successful:

1. Check the following locations for halt code or event messages:
 - The Processor Status dialog box of the OSM or TSM Low-Level Link
 - The System Startup dialog box (System Status and Detailed Status boxes)
 - OSM or TSM Event Viewer
 - The startup TACL window
 - The startup event stream window
2. Record any event messages or halt codes, and see the appropriate documentation for recovery information:
 - Look up event messages in the EMS logs (\$0 and \$ZLOG). For information about the cause, effect, and recovery for this event, see the documentation appropriate for your system among the TSM Event Viewer online help, the *OSM User's Guide*, and the *Operator Messages Manual*.
 - Look up the halt code in the *Processor Halt Codes Manual*. That manual contains information about the cause and recovery.
3. Contact your service provider. Perform a processor dump, if needed. See [Dumping Processor Memory](#) on page D-16. Do not prime or reset the processor before performing the processor dump.
4. Correct the problem, and reload the processor or processors using one of the following methods:
 - At the startup TACL prompt, issue the following command for each of the processors to be reloaded:

```
> reload (nn), prime
```
 - If you cannot prime or load a processor, as indicated by messages on the status line of the terminal-emulation window, use the following procedure:
 - a. Log on to the OSM or TSM Low-Level Link.
 - b. From the toolbar, select **Processor Status**.
 - c. Select the processors to be reloaded.
 - d. From the Processor Actions menu, scroll to **Prime for Reload**.
 - e. Click **Perform Action**.
 - f. Close the Processor Status dialog box.

CPU Memory Test Fails

The CPU memory test checks the system main memory. If the CPU memory test finishes successfully, the boot millicode starts the system load path test. If the test fails, the service processor (SP) does not light the green power-on LED on the PMF CRU.

Generally, the CPU memory test fails because of a correctable memory error (CME) or a hardware error freeze.

Signs of a Failed CPU Memory Test

- PMF CRU green power-on LED remains unlit.
- Processor halts with a halt code of %100236.
- Hardware error freeze occurs.

Corrective Action

1. Retry the operation.
2. If the test fails a second time, use the OSM or TSM Event Viewer to check the event logs for event messages. The location of a failed memory CRU is stored in an SpEvCruTestComplete event message.

The memory might need to be replaced.
Contact your service provider.

System Load Path Test Fails

The system load path test checks the system load paths. If the system load path test finishes successfully, firmware for the intelligent SCSI processor (ISP) is loaded, the SCSI buses are scanned, the processor is reset, and the boot millicode starts the multifunction I/O board (MFIOB) test.

Signs of a Failed System Load Path Test

- PMF CRU green power-on LED remains unlit.
- Processor halts with a halt code of %100237.

Corrective Action

1. Retry the operation.
2. If the test fails a second time, replace the PMF CRU. See:
 - [OSM Guided Replacement Procedures](#) on page xxiv
 - [TSM Guided Replacement Procedures](#) on page xxv

Multifunction I/O Board (MFIOB) Test Fails

The multifunction I/O board (MFIOB) test checks the MFIOB. If the MFIOB test finishes successfully, the service processor (SP) extinguishes the amber service LED on the PMF CRU or IOMF CRU and generates an event, completing the POST. If the MFIOB test fails, the MFIOB is either partially operational or not operational.

Indications of a Failed MFIOB Test

- PMF CRU or IOMF CRU amber service LED lights if the MFIOB is partially operational.
- PMF CRU or IOMF CRU green power-on and amber service LEDs do not light if the MFIOB is not operational.

Corrective Action

1. Retry the operation.
2. If the test fails a second time, use the OSM or TSM Event Viewer to check the event logs for the SpEvCruTestComplete event message.
3. Replace the PMF CRU or IOMF CRU. See:
 - [OSM Guided Replacement Procedures](#) on page xxiv
 - [TSM Guided Replacement Procedures](#) on page xxv

Dumping Processor Memory

You can dump (copy) the contents of processor memory to disk or tape. Your service provider can then use the memory dump to troubleshoot your system.

- When a system or processor is online, you can dump processor memory to disk.
- When a system or processor is offline, you can dump processor memory to tape.

Topic	Page
Dumping Processor Memory to Disk Online	D-16
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Procedure for Dumping Processor Memory to Disk	D-17
Making a Compressed Disk Copy of a Dump File	D-19
Dumping Processor Memory to Tape Offline	D-20

Dumping Processor Memory to Disk Online

A processor dump to disk occurs online, over either the X or Y fabric of the system:

1. If a disk file called *dumpfile* does not exist, the RCVDUMP utility creates it.
2. The RCVDUMP utility copies the dump in a compressed format from the processor into *dumpfile*.
3. As the dump proceeds, the status of the processor being dumped changes in the Processor Status dialog box.
4. When the dump is finished:
 - The status of the processor again changes in the Processor Status dialog box.
 - RCVDUMP sends a message to the terminal-emulation window from which it was run:

CPU n has been dumped to dumpfile.

Prerequisites

Before you perform a processor dump to disk:

- If *dumpfile* already exists, it must be empty. Its EOF must be zero.
- You must not prime or reset the processor beforehand.
- You must have access to:
 - A second processor that is running
 - A connected terminal or workstation with a running command interpreter
 - A disk with enough space to store the dump

A processor dump requires 256 extents. Each extent should equal slightly more than 1/256 the size of the processor memory. For example, a processor with 256 megabytes of main memory requires 256 extents of at least 512 pages each.

Procedure for Dumping Processor Memory to Disk

If you do not have failure-recovery software installed on your system, perform the following steps to dump processor memory to disk on a running system.

Note. You must be assigned the super ID (255,255) to issue the TACL RECEIVEDUMP command (or run the RCVDUMP utility) to obtain a dump of a halted processor.

For complete syntax and considerations for the TACL RECEIVEDUMP command and the RCVDUMP utility, and the error and informational messages that they generate, see the *Guardian User's Guide* .

1. Log on to the OSM or TSM Low-Level Link.
2. On the toolbar, click **Processor Status**.

The Processor Status dialog box appears.

3. Write down the status message displayed in the Processor Status dialog box for the halted processor.

Do this so that you have complete information about the halt when you notify your system manager or service provider after completing these steps.

4. Make sure that the processor you want to dump is halted.

If the processor is not halted (its state is "Executing NonStop OS"), use the Processor Status dialog box to perform a halt action on it:

- a. Select the processor you want to dump to disk.
- b. In the Actions list, select **Halt**.
- c. Click **Perform action**.

5. Log on to a TACL session as the super ID (255,255).
6. Ensure that the disk file *dumpfile* either does not exist or is empty.

- If *dumpfile* does not exist, RCVDUMP creates it.
- If *dumpfile* already exists, it must be empty. Its EOF must be zero.

To empty an existing *dumpfile*:

```
> FUP PURGEDATA dumpfile
```

7. Dump the memory of the processor to a disk file in either of two ways:

- Issue the TACL RECEIVEDUMP command, which runs the RCVDUMP utility:

```
> RECEIVEDUMP / OUT dumpfile / cpu , { 0 | 1 }
```
- Run the RCVDUMP utility directly.

The syntax of the RCVDUMP command is:

```
RCVDUMP [ / run-option [ , run-option ] _ / ] dump-file ,  
cpu , { X | Y } [ , param [ , param ] ] ]
```

param is either:

```
{ PRIME | NOPRIME }
```

```
{ FULL | PARTIAL }
```

or:

ONLINE (You cannot also specify another param or bus X|Y.)

For example, you could enter:

```
> RCVDUMP dumpfile , cpu , { X | Y } , FULL
```

RCVDUMP begins copying the dump in a compressed format from the specified processor *cpu*, over the specified ServerNet X or Y fabric, into the disk file *dumpfile*. The processor performing the dump is the one in which the TACL command interpreter is running.

For an explanation of the RCVDUMP messages, see the *TACL Reference Manual*.

8. Monitor the dump to ensure it finishes successfully.

As the dump proceeds, the status of the processor being dumped should change in the Processor Status dialog box. When the dump is finished, the status of the selected processor changes to indicate the completion of the dump.

In addition, RCVDUMP sends the following message to the terminal from which it was run:

```
CPU n has been dumped to dumpfile
```

9. Ensure the dump was successful by checking the size of *dumpfile*:

```
> FUP INFO dumpfile
```

The end-of-file pointer (EOF) should not be zero.

If a message indicates that the dump was not successful, repeat Step 7 over the other ServerNet fabric.

If a halt code appears in the Processor Status dialog box for the selected processor, see the *Processor Halt Codes Manual*.

10. After the dump finishes successfully, reload the processor by issuing the `RELOAD nn, PRIME` command at the TACL prompt.
11. Log off of the OSM or TSM Low-Level Link and the TACL session.

Making a Compressed Disk Copy of a Dump File

1. At the TACL prompt:

```
> COPYDUMP { $tape | dumpfile }, destfile
```

where:

<code>\$tape</code>	name of the tape drive where the tape dump file is located
<code>dumpfile</code>	name of the disk dump file specified in the <code>RECEIVEDUMP</code> or <code>RCVDUMP</code> command
<code>destfile</code>	name of the destination disk file

2. When the copy operation is complete, this message appears:

```
{ $tape# | dumpfile } HAS BEEN COPIED (COMPRESSED) TO  
destfile
```

Dumping Processor Memory to Tape Offline

Systems running G-series RVUs support tape dump only on down systems, which means that all processors in the system must be halted.

△ **Caution.** Performing a tape dump on a running system can result in disk corruption.

If you need a processor dump on tape, you must do one of the following:

- Halt all processors and perform a tape dump as described in this subsection. You must stop the system to use this method.
- Dump the processor to disk. See [Dumping Processor Memory to Disk Online](#) on page D-16. This method can be used on a running system.

Then use the BACKUP utility to copy the dump from disk to tape. For information about the BACKUP utility, see the *Guardian Disk and Tape Utilities Reference Manual*.

Procedure For Dumping Processor Memory to Tape

1. Mount a tape that is not write-protected (for open-reel tapes, make sure the write-enable ring is present) on a tape drive. Position the tape at the load point and put the drive online.

△ **Caution.** Ensure the tape is at the load point. If a load from tape is attempted but the tape is not at the load point, the operation fails with no indication of the cause of failure.

2. Log on to the OSM or TSM Low-Level Link.
3. From the toolbar, click **Processor Status**.
4. Record the status message for the processor to be dumped so that you have complete information about the halt when you notify your system manager or service provider after completing these steps.
5. Check to see whether any processors are still running (have a state of “Executing NonStop OS”).
6. Halt any running processors. In the Processor Status dialog box:
 - a. Select the processors to be halted.
 - b. In the Processor Actions field, scroll to **Halt**.
 - c. Click **Perform action**.

7. In the Processor Status dialog box:
 - a. When all processors are halted, select the processor you want to dump to tape.
 - b. In the Processor Actions field, scroll to **Tape Dump**.
 - c. Click **Perform action**. The Dump Processor-*n* to Tape dialog box appears, where *n* is the processor number of the selected processor.
8. In the Dump Processor-*n* to Tape dialog box:
 - a. Specify the location of the PMF CRU to which the tape drive is connected.

Tape drives connected to processor 0 or processor 1 are connect to SCSI controllers on PMF CRUs. Each PMF CRU is associated with a ServerNet fabric (X or Y). For example, you might select the PMF CRU in group 01, module 01, slot 55, ServerNet Y fabric.

Note. You can dump only to a tape drive that is connected to processor 0 or 1.

 - b. Specify the small computer system interface (SCSI) ID of the tape drive. The default value is 5, the current software requirement.
 - c. Click **Dump**.
9. Monitor the tape dump. Status messages in the Processor Status dialog box indicate the progress of the tape dump.
10. After the dump finishes successfully, start the system using the OSM or TSM Low-Level Link.
11. Log off the OSM or TSM Low-Level Link.

Expand-Over-IP Connections

You can diagnose most Expand-over-IP problems using information provided by the Expand subsystem SCF STATUS LINE command with the DETAIL option.

Task	Page
Recovery Actions for the CONNECTING State	D-24
Recovery Actions for the WAIT State	D-24

Example D-1. SCF STATUS LINE, DETAIL Display

```
EXPAND   Detailed Status  LINE $IPPF2
PPID..... ( 0,      31) BPID..... ( 1,      28)
State.....          STARTED Path LDEV.....          39
Trace Status.....          OFF
Detailed State.....          CONNECTING
Detailed Info...          None
```

This display provides error information in the Detailed State and Detailed Info fields. [Table D-1](#) lists the possible values for the Detailed State field and describes the cause, effect, and recovery action for each state.

Table D-1. Troubleshooting the Expand Connection Procedure (page 1 of 2)

Detailed State	Cause and Effect	Recovery
BINDING	The Expand-over-IP line-handler process is binding to the local NonStop TCP/IP process. This state is normal while the line is coming up.	If this state persists, contact your service provider.
CONNECTING	The Expand-over-IP line-handler process has connected to the local NonStop TCP/IP process and is now attempting to connect to the remote Expand-over-IP line-handler process. This state is normal while the connection is being established. If the line remains in this state: <ul style="list-style-type: none"> ● The remote Expand-over-IP line-handler process might not be operational. ● There might be a network problem. 	Diagnose the problem with the SCF STATS LINE and SCF INFO LINE commands on D-24 .

Table D-1. Troubleshooting the Expand Connection Procedure (page 2 of 2)

Detailed State	Cause and Effect	Recovery
PASSIVE	<p>If the Expand-over-IP line-handler process is configured to issue passive connect requests, this state indicates that the line-handler process is waiting for the remote Expand-over-IP line-handler process to initiate a connection.</p> <p>If the Expand-over-IP line-handler process is configured to issue active connect requests, this state indicates that the reconnect limit has been reached and that the line-handler process has been configured to subsequently issue passive connect requests.</p>	This state is normal. No recovery action is required.
QUERY	A connection has been established with the remote Expand-over-IP line-handler process, but no data has been received within the inactivity interval. The Expand-over-IP line-handler process is sending Probe messages to the remote Expand-over-IP line-handler process to verify that it is operational.	If the line remains in this state, the remote (destination) Expand-over-IP line-handler process is down or there is a network problem.
SOCKET WAIT	<p>The Expand-over-IP line-handler process is waiting for a User Datagram Protocol (UDP) socket to be created.</p> <p>This state is normal while the line is coming up. If the line remains in this state, an internal error might have occurred.</p>	If the line remains in this state, contact your service provider.
WAIT	<p>The Expand-over-IP line-handler process is waiting for another process or subsystem.</p> <p>The line remains started, but it is not ready for data transfer.</p>	<p>See the Detailed Info field of the SCF STATUS LINE display for more specific error information.</p> <p>Recovering from these types of problems is described further on D-24.</p>

Recovery Actions for the CONNECTING State

If the SCF STATUS LINE, DETAIL command displays CONNECTING in the Detailed State field, use the SCF STATS LINE command to obtain further information:

- If the line is configured to issue active connect requests, determine whether Connect Command frames (Conn Cmd column) are being sent (Send row).
If the line is configured to issue passive connect requests, determine whether Connect Command frames (Conn Cmd column) are being received (Rcvd row).
If no Connect Command frames are being sent or received, the destination line-handler process might not be operational or there might be a network problem.
- If the Invalid Frames Rcvd counter is greater than 0, frames are being corrupted. Contact your service provider.
- If the Invalid IP Addr Rcvd counter is greater than 0, the internet protocol (IP) address configured for the local or remote Expand-over-IP line-handler process might be invalid. Use the SCF INFO LINE command with the DETAIL option to display the configured IP addresses and associated NonStop TCP/IP process.

Recovery Actions for the WAIT State

If the SCF STATUS LINE, DETAIL command displays WAIT in the Detailed State field, check the Detailed Info field for more detailed error information:

Detailed Info	Description
IP shared memory system unavailable	The QIO subsystem is not available. Check the QIO subsystem. The line becomes ready when the QIO subsystem becomes available.
IP ownership error	<p>The Expand-over-IP line-handler process cannot switch processors. The NonStop TCP/IP process associated with the Expand-over-IP line-handler process is no longer the primary process, but the line-handler process cannot switch processors because other lines in the multiline path are active.</p> <p>An Expand-over-IP line-handler process and the NonStop TCP/IP process with which it is associated must always reside in the same processor. The Expand-over-IP line-handler process cannot switch processors until all other lines in the path are inactive, meaning that they do not have socket connections.</p>
IP associate TCP process unavailable	The NonStop TCP/IP process associated with the Expand-over-IP line-handler process is not available. Check the NonStop TCP/IP process. The line becomes ready when the associated NonStop TCP/IP process becomes available.

The Detailed Info field displays the last error message returned to the Expand-over-IP line-handler process. This field provides more information about the current detailed state. Each possible entry in this field corresponds to an Event Management Service (EMS) event generated by the Expand subsystem.

For cause, effect, and recovery information for the events generated by the Expand subsystem, see the *Operator Messages Manual*.

Detailed Info	Event Number
Internal error <i>nnn</i> , Info %Hxxx, Loc %yyy	8
Shared Memory error <i>nnn</i> , Info %Hxxx, Loc %yyy	9
Unexpected QIO event, Info %Hxxx, Loc %yyy	10
TCP error <i>nnn</i> , Info %Hxxx, Loc %yyy	11
Response error <i>nnn</i> , <i>nnn</i> , Info %Hxxx, Loc %yyy	12
Ownership error	13
Associate TCP process unavailable	14
Shared memory system unavailable	15
Connect retries exhausted	16
Timeout waiting for assoc TCP process, Info %Hxxx, Loc %yyy	17

Backing Out a Software Revision

If you encounter problems, you can back out from the current software revision to a previous revision.

For example, if you install an SPR that causes system problems, you can use the following procedure to return to the previous revision. DSM/SCM makes the current revision inaccessible, reapplies the previous revision, and displays instructions for activating the previous revision.

Task	Page
Prerequisites	D-26
1. Start DSM/SCM	D-26
2. Start and Log On to Target Interface	D-27
3. Initiate Backout Activity	D-27
4. Monitor Backout Process	D-28
5. Stop All Applications	D-28
6. Rename Software Files Using ZPHIRNM	D-29
7. Stop System	D-29
8. Load System From Saved Configuration	D-30
9. Start Applications	D-30

Prerequisites

- Skip [7. Stop System](#) and [8. Load System From Saved Configuration](#) if the current revision did not require SYSGENR or system load.
- When backing out a revision, you do not need to fall back to a previous firmware version if you have not updated the firmware to versions different from that shipped with your NonStop S-series server.
- If you need to back out a revision and DSM/SCM will not run, see the *DSM/SCM User's Guide*.

1. Start DSM/SCM

1. If the TMF subsystem is not already running, start it at a TACL prompt:


```
> TMFCOM START TMF
```
2. If DSM/SCM is not already running, start it:


```
> VOLUME $DSMSCM.ZDSMSCM
> RUN STARTSCM
```

2. Start and Log On to Target Interface

1. Start the Target Interface at the TACL prompt:

```
> RUN ZPHITI
```

The Target Interface Logon Menu appears.

2. Enter your password and press **F1**. The Target Interface Main Menu appears.

3. Initiate Backout Activity

1. Enter **3** (Perform target activities) in the Selection number field, and press **F1**. The Target Menu - Select Target Screen appears.
2. On the Target Menu - Select Target Screen, enter the number corresponding to the name of the target system, and press **F1**.
3. On the Target Menu - Select Action screen, enter **2** (Perform backout to S/W) in the Selection number field, and press **F1**.

DSM/SCM displays the Backout - Verify Request screen, which contains the following:

- The SYS_{nn}, date, and timestamp of the current software revision and of the previous revision, which becomes the current revision once the Backout request finishes
 - The location where DSM/SCM places the snapshot
 - A warning that this request makes the last software applied on this target inaccessible
4. Press **F1** to submit the backout request. DSM/SCM automatically reapplies the previous software revision to the target system.

While the backout request is processing, DSM/SCM displays the Backout - Processing Backout screen, which gives a description of the request, its processing status, and the location of the previous SYS_{nn} software affected by the request. The screen is updated with current status information approximately every 15 seconds.

5. The Backout - Complete Backout screen with operator instructions appears:
 - a. Choose a printer to receive the instructions.
 - b. Press **Shift-F16** to exit the Target Interface.

4. Monitor Backout Process

1. From a system console, go to the task menu bar and select **Start > Programs > Dsmscm > DSMSCM**.
2. Log on to the Planner Interface by using the super ID (255,255). DSM/SCM displays the Planner Interface main screen.
3. From the Requests menu, select **Request list**.
4. The Requests list screen appears, showing the type of activity and current status. Double-click to select the backout activity, which should be at the top of the Requests list.
5. Click **Status details**.
6. The Request Activity Summary screen appears. Monitor the backout processing activity by watching the timestamp in the upper right-hand corner of the screen. Select **Show EMS events** to obtain an update at any time.
7. When the backout is complete, exit the Planner Interface.

△ **Caution.** Do not stop DSM/SCM until the backout operation is complete.

5. Stop All Applications

1. To stop DSM/SCM, enter the following at the TACL prompt:

```
> VOLUME $DSMSCM.ZDSMSCM  
> RUN STOPSCM
```
2. Stop the TMF subsystem:

```
> TMFCOM STOP TMF
```
3. Stop all other applications.

Note. In some cases, certain applications or subsystems such as the TMF subsystem might need to be running during ZPHIRNM. Depending on how your system is configured, you also might need to leave the Safeguard application running during ZPHIRNM.

6. Rename Software Files Using ZPHIRNM

1. Enter the following command using the `SYSnn` for the software configuration you are backing out to:

```
> RUN ZPHIRNM $DSMSCM.SYSnn
```

The following prompt appears:

```
Do you want to use a log file with this session? (Y/N)
```

2. Enter **Y**. The following prompt appears:

```
You may use any file for logging. If you request to use a  
disk file that doesn't exist, it will be created as an  
entry-sequenced file.
```

```
Please enter a filename:
```

3. Enter a disk file name. The following message appears:

```
Log file, filename, was successfully created.
```

ZPHIRNM then renames the applied files. ZPHIRNM issues an EMS event message when it has successfully finished.

ZPHIRNM must run without errors to complete the software activation. If ZPHIRNM notifies you of any errors, correct them and run ZPHIRNM again.

7. Stop System

Skip this step if SYSGENR and system load are not required for the revision you are backing out to and were not required the last time you created a new revision.

1. Shut down any user applications that are still running, such as TMF and Safeguard.
2. Drain the spooler.
3. Log on to the OSM or TSM Low-Level Link.
4. From the Processor Status dialog box:
 - a. Select every processor displayed.
 - b. From the Actions list, select **Halt**.
 - c. Click **Perform Action**.
 - d. A message appears asking if you want to halt the processor. Click **OK**.

8. Load System From Saved Configuration

Skip this step if SYSGENR and system load are not required for the revision you are backing out to, and were not required the last time you created a new revision.

1. From the toolbar of the OSM or TSM Low-Level Link, click **Start System**.
2. In the System Startup dialog box, enter the necessary information:
 - a. Enter the SYS_{nn} you are backing out to.
 - b. Select **Saved Version** of the system configuration and enter the appropriate value.
3. Click **Start system**. Two startup event stream windows and two startup TACL windows are displayed.
4. Log off the OSM or TSM Low-Level Link.

You are now back to your previous software configuration.

9. Start Applications

You can now start your applications, including TMF.

System Consoles

Topic	Page
Connectivity Problems	D-32
Keyboard Is Inoperative	D-32
Mouse Is Inoperative	D-33
Monitor Screen Is Blank	D-34
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Software Configuration Problems	D-36
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Create, Update, and Use an ERD or ASR	D-47

Your new system console is shipped with the Microsoft Windows XP Professional operating system already installed. To migrate an existing system console from Microsoft Windows 2000 Professional operating system to the Microsoft Windows XP Professional operating system, see the *NonStop System Console Guide for Migrating to Microsoft Windows XP Professional*.

Connectivity Problems

Connectivity refers to the connections, or interfaces, between the devices and components of a system. This subsection contains diagnostic procedures for the following connectivity problems:

Topic	Page
Keyboard Is Inoperative	D-32
Mouse Is Inoperative	D-33
Monitor Screen Is Blank	D-34
System Unit Is Inoperative	D-35

Keyboard Is Inoperative

An inoperative keyboard might be the result of software configuration problems. See also [Table D-6, Monitor Screen Is Frozen](#), on page D-36.

Table D-2. Keyboard Is Inoperative

Symptom	Recovery
Typing on the keyboard has no effect.	<ol style="list-style-type: none"> 1. Ensure that the keyboard cable is securely attached to its connector on the system unit. 2. Disconnect the keyboard cable from the system unit. Examine the cable, connector, and receptacle for damage such as loose pins, bent pins, connector housing cracks, and frayed or broken cable wires and insulation. 3. Verify that all the keys on the keyboard operate with no resistance. 4. Repair or replace any defective items. 5. Reconnect the keyboard cable to the system unit and recheck keyboard operation.

Mouse Is Inoperative

Table D-3. Mouse Is Inoperative

Symptom	Recovery
Moving the mouse or clicking its buttons has no effect.	<ol style="list-style-type: none"> 1. Ensure that you are not experiencing a software configuration problem. Press the Start key or the Windows key. If the Start menu does not appear, a system or software configuration error has occurred. See Monitor Screen Is Frozen on page D-36. 2. Ensure that the mouse cable is securely attached to its connector on the system unit. 3. Disconnect the mouse cable from the system unit. Examine the cable, connector, and receptacle for damage such as loose pins, bent pins, connector housing cracks, and frayed or broken cable wires and insulation. 4. Verify that the ball inside the mouse moves freely in all directions. If the ball does not move freely, dislodge dust or dirt in the ball mechanism by doing one of the following: Lightly spray the ball and the surrounding area with compressed air from an aerosol can or other source. Dampen (do not soak) a lint-free cloth with a solution of mild detergent and water, lay it on a flat surface, and move the mouse around on the cloth as you would during normal operation. Allow the mouse to dry. 5. Verify that all the mouse buttons operate with no resistance. 6. Repair or replace any defective items. 7. Reconnect the mouse cable to the system unit. Recheck mouse operation.

Monitor Screen Is Blank

Table D-4. Monitor Screen Is Blank

Symptom	Recovery
The display monitor screen appears as if it is switched off.	<ol style="list-style-type: none"> 1. Verify that the power switch on the display monitor is in the on position and that the display monitor power indicator light is lit. 2. Verify that power is available from the power source. 3. Ensure that the display monitor power cord is securely connected to the power source. 4. Check that the display monitor interface cable is securely attached to its connector on the system unit. 5. Verify that the brightness and contrast controls are adjusted to produce a proper display, using the vendor documentation as required. 6. Power off the display monitor and system unit. 7. Unplug the display monitor power cord from the power source. Examine the cable, connector, and receptacle for damage such as connector housing cracks, and frayed or broken cable wires and insulation. Reconnect the power cord to the power source. 8. Disconnect the display monitor interface cable from the system unit, and examine the cable, as in the previous step. Reconnect the interface cable. 9. Repair or replace any defective items. 10. Power on the system unit and display monitor and recheck the display monitor operation.

System Unit Is Inoperative

Table D-5. System Unit Is Inoperative

Symptom	Recovery
None of the indicator lights on the system unit are lit, and the hard-disk drive and cooling fan are not operating.	<ol style="list-style-type: none">1. Ensure that the system unit power cord is securely attached to its connector on the system unit and to the power source.2. Verify that the power switch on the system unit is in the on position.3. Verify that power is available from the power source.4. Try restarting the system console by pressing Ctrl-Alt-Del and selecting Restart.5. If restarting the system console does not work, power off the system console.6. Disconnect the system unit power cord from the power source. Examine the cable, connector, and receptacle for damage such as connector housing cracks, and frayed or broken cable wires and insulation. Disconnect the power cord from the system unit and repeat this examination.7. Reconnect the power cord, first to the system unit and then to the power source.8. Power on the system console and recheck the system unit operation.

Software Configuration Problems

When you encounter a software problem, first see the application documentation to ensure that you are using the software properly.

Any change to the software configuration of a system console can affect the function of the programs installed on it, or prevent access to them or to the system console.

The software on the system console hard disk operates this workstation as a system console for NonStop S-series servers. Changing this configuration is not supported. Neither is loading and using software other than that provided with the initial configuration.

Monitor Screen Is Frozen

See also [Table D-4](#) on page D-34.

Table D-6. Monitor Screen Is Frozen

Symptom	Recovery
Typing on the keyboard or using the mouse has no effect on the screen.	<ol style="list-style-type: none">1. Press the Esc key, and then try to use the keyboard and mouse. Do the same with the Ctrl-Q key combination, in that order.2. If the keyboard and mouse still do not work, restart the system console: press Ctrl-Alt-Del and select Shutdown. In the Shutdown screen, select Shutdown and Restart.3. When the system console has restarted, you should be able to use the keyboard and mouse normally.

Software Corruption and Hard-Disk Problems

The software on the system console might exhibit various symptoms indicating that software has been destructively altered in some way. Software corruption can manifest itself in many ways, from simple data errors and functional quirks to application failures, system failures, and workstation inoperability.

Software corruption and hard-disk problems can seriously affect and even prevent the operation of the system console. Fortunately, almost all of these types of problems can be easily corrected using the tools provided with the system console. Only the most severe conditions, such as hard-disk failures, require outside assistance.

Always start investigating a problem with the simple and easily correctable, such as improper use or connectivity and software configuration problems, before you investigate software corruption and equipment failures.

Application Fails Immediately When Started

Table D-7. Application Fails Immediately When Started

Symptom	Recovery
Clicking an application icon produces an error message indicating that the application is unavailable or disabled.	<ol style="list-style-type: none"> 1. Record the error message for further reference. 2. Try again to start the application. If the failure occurs again, record the error message accompanying the failure. 3. Press Ctrl-Alt-Del and select Shutdown to restart the system console. In the Shutdown screen, select Shutdown and Restart, and then try again to start the application. 4. You might need to restore configuration information using your ERD or ASR. 5. If this last attempt fails, you might need to restore the application. See Restoring Software on the Hard Disk on page D-38. 6. If restoring the application fails, contact your service provider.

If repeated attempts to start the system console are unsuccessful, you might need to reinstall the Microsoft operating system and other software. For information about installing or restoring applications, see [Restoring Software on the Hard Disk](#) on page D-38.

Restoring Software on the Hard Disk

Topic	Page
Install Operating System and Configure System Console	D-39
Configure the System Console	D-43
Install Software Provided by HP	D-45
Create, Update, and Use an ERD or ASR	D-47

If one or more applications become unusable or the hard disk becomes corrupted, you must restore the software on the hard disk with the following tools and information:

Materials	Where to Find
On any of the computers	
ERD or ASR	If you do not already have an ERD or ASR, see Create an Emergency Repair Disk (ERD) or Automated System Recovery (ASR) Disk on page 5-10.
Windows OS Product ID number	On the Certificate of Authorization for the workstations
HP NonStop Server System Console Installer	Shipped with each system console and included in the system console binder

Try restoring individual applications before reinstalling the XP Professional operating system. See [Install Software Provided by HP](#) on page D-45.

-
- △ **Caution.** Restoring individual applications can erase all information on the hard disk. If possible, back up all applications before restoring software on the hard disk.
-

Install Operating System and Configure System Console

Install the Operating System

Use the HP Restore CD to install the XP Professional operating system on the following computers:

- HP iPAQ Evo D500 Ultra-Slim Desktop
- HP Deskpro EN-Series, models 6350, 6500, or 866

Note. This procedure reformats your hard drive.

Table D-8. Install Windows XP Professional Operating System (page 1 of 4)

Action	Result
1. Insert the HP Restore CD into the CD-ROM drive. Press Ctrl-Alt-Del .	You are prompted to select the language interface.
2. Select English. Press Enter .	The HP Restore CD screen appears.
3. Click BEGIN .	You are prompted to select the operating system and language.
4. Select XP Professional for operating system and English for language.	A list appears of the options you have chosen to restore the operating system.
5. Click Next .	You are asked which drive to format.
6. On the Drive Partitioning Scheme, click the right arrow until the file system is NTFS.	
7. Click Next .	A message warns you that your hard disk contents will be destroyed.
8. Click Next .	A second warning appears.
9. Click Yes .	Your hard disk is partitioned. A graph shows the progress. A message appears.
10. Click Reboot .	The workstation restarts. Files are copied to the hard disk.
11. After the files are copied to the hard disk, remove the HP Restore CD. Insert the Windows XP Professional operating system CD. Click Next .	Windows XP (English) files are copied to the hard disk. A message indicates that your hard drive is formatted and prepared. You are prompted to click Begin Setup .
12. Click Begin Setup . Remove the Windows XP Professional Workstation CD. Click OK .	The workstation restarts several times. Files are copied to your system. The Windows XP Professional Setup Wizard appears.
13. Click Next .	The software license agreement appears.

Table D-8. Install Windows XP Professional Operating System (page 2 of 4)

Action	Result
14. Click I accept this agreement . Click Next .	The Installing Devices screen appears.
15. In the Regional Settings screen, customize the appearance of numbers, currencies, dates, and keyboard layout. Click Next .	The Name and Organization screen appears.
16. For name, type NonStop S-series System Console . Type the name of your organization. Click Next .	The Date and Time Settings screen appears.
17. Set the date and time. Check Automatically adjust clock for daylight saving changes . Click Next .	Installing Components screens appear. Performing Final Tasks screens appear.
18. When setup is complete, click Finish . Click Restart Now .	The system restarts. More software is installed.
19. Press Enter .	The system automatically converts the file system from FAT to NTFS. The Desktop appears.
20. Double-click Connect to the Internet .	The Internet Connection wizard appears.
21. Select I want to setup my internet connection manually...	The Setup Internet Connection screen appears.
22. Select I connect through a local area network (LAN) . Click Next .	The Local Area Network Configuration screen appears.
23. Select Automatic Discovery of proxy server (recommended). Click Next .	The Setup Internet Mail Account appears.
24. Select No . Click Next .	The Completing Internet Connection wizard appears.
25. Clear the checkmark. Click Finish .	The Desktop appears. The Connect to Internet icon disappears.
26. Start > Settings > Control Panel	The Control Panel appears.
27. Double-click the System icon.	The System Properties screen appears.
28. In the Network Identification tab, start the Network Identification Wizard.	The Network Identification Wizard appears.
29. Click the Network ID button. Click Next .	
30. Select This computer is part of a business network . Click Next .	The Connecting to the Network screen appears.
31. Select My computer uses a network without a domain . Click Next .	The Workgroup dialog box appears.

Table D-8. Install Windows XP Professional Operating System (page 3 of 4)

Action	Result
32. Verify that the Workgroup field contains Workgroup . Click Next . Click Finish .	The Completing Network Configuration screen appears.
33. Click OK to restart the computer.	
34. Click Properties . Type Tandem for computer name. Click OK twice to restart. Click Yes to restart.	The Identification Changes Workgroup radio button is selected. The Network ID Screen appears.
35. Start > Settings > Control Panel	The Control Panel appears.
36. Select the Modems tab. Select Add . Click Next .	The Add/Remove Hardware Wizard and Install New Hardware screen appears.
37. Double-click Phone and Modem .	The Phone and Modem screen appears.
38. Select Don't detect new hardware . Click Next .	A list of manufacturers and models appears.
39. Find your modem manufacturer (should be Multitech) and model. If MT5634ZBA is not in the list, click Have disk .	The Install From Disk screen appears.
40. Enter C:\Multitech or browse to find your driver on the Installer CD.	The Install From Disk screen continues to be displayed
41. Select 56ZBA-V . Select Open .	The Install screen appears.
42. Select Install from disk . Click OK .	The Install New Modem screen appears.
43. Select Multitech Systems MT5634ZBA . Click Next .	The Select the Port screen appears.
44. Select Selected Ports . Select Com1 . Click Next .	The Modem Installation is Finished screen appears.
45. Click Finish .	The Phone and Modem screen appears.
46. Click OK .	You return to the Control Panel.
47. Double-click the Network and Dialup Connections icon.	The Dialup and Networks Screen appears on the Network Connection Wizard.
48. Click the Make New Connection icon.	The Network Connection Type appears.
49. Select Next .	Options appear.
50. Select Accept incoming connections .	The Devices for Incoming Connection screen appears.
51. Select Multitech MT5634ZBA . Click Next .	The Incoming Virtual Private Connection screen appears.

Table D-8. Install Windows XP Professional Operating System (page 4 of 4)

Action	Result
52. Select Do not allow virtual private connections . Click Next .	The Allowed Users screen appears.
53. Select GCSC User . If this selection is not available, call the GCSC. Otherwise, click Next .	The Network Components screen appears.
54. Select Internet Protocol TCP/IP . Click Properties .	The Incoming TCP/IP Properties screen appears.
55. Under Network Access, select Allow callers to access my local network .	The Incoming TCP/IP Properties screen indicates the selection.
56. If the Specify an IP address check box is not checked, check it.	The Incoming TCP/IP Properties screen indicates the selection.
57. In the IP Address field, type: Default From value: 192.231.36.77 Default To value: 192.231.36.78 Select Allow calling computer to specify its own address . Click OK .	The Networking Components Screen appears.
58. Click Next .	The Completing the Network Connection Wizard and the default name of the Dialup Connection appear.
59. Incoming Connection is selected. Click Finish .	The Local Area Network Connection Status screen appears.
60. Click Properties . Double-click Local Area Connection .	The Local Area Connection Status screen appears.
61. Click Properties .	The TCP/IP Properties screen appears.
62. If the Specify and IP address check box is not checked, check it. All the following values are defaults.	
63. In the IP Address field, type 192.231.36.1	
64. In the Subnet Mask field, type 255.255.255.0	
65. In the Default Gateway field, type 192.231.36.9	
66. Click OK twice.	The Local Area Communications Status screen appears.
67. Click Close .	You have completed the procedure.

Configure the System Console

Table	Task	Page
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Table D-10	Set Event Log Settings	D-44

Set Up Date and Time

Table D-9. Set Up Date and Time

Action	Result
1. If the date/time properties in the form of a map of the world are not displayed, select Start > Settings > Control Panel .	The Control Panel appears.
2. Click the Date/Time icon.	The Date/Time Properties screen appears.
3. In the Date & Time tab, set day, month, and year.	
4. Select your time zone from the menu. Click Date & Time .	
5. Click the Time Zone tab and select your time zone from the menu. Optionally, select Automatically adjust clock for daylight saving changes . Click OK .	The Date/Time Properties screen closes.
6. Still in the control panel, click the Display icon.	The Display Properties screen appears.
7. In the Settings tab, under Desktop Area, move the slide button to the right (toward More). Show 800 X 600 pixels or more.	
8. Under Color Palette, select 65536 Colors . Click Test .	Setup displays a message regarding the test pattern and a five-second wait.
9. Click OK to start the test.	After the test, you are prompted if you saw the bitmap.
10. Click Yes if the screen is readable. If not, change the desktop setting by repeating Steps 7 through 9. Click OK .	The Display Properties screen closes.

Set Event Log Settings

This step is required because OSM or TSM generates many events in normal operation.

Table D-10. Set Event Log Settings

Action	Result
1. Start > Settings > Control Panel	The Control Panel opens.
2. Click the Administrative Tools folder.	Administrative Tools opens.
3. Click the Event Viewer icon.	Event View opens.
4. In the left pane, select Security Log .	Security events appear in the right pane.
5. In main menu: Action > Properties .	The Properties dialog box opens.
6. In the event log wrap section, click Overwrite Events as needed . Click OK .	If the log file fills, older security events are overwritten.
7. In the left pane, click Application Log .	Application events appear in the right pane.
8. In main menu: Action > Properties .	Properties dialog box opens.
9. In the event log wrap section, click Overwrite Events as needed . Click OK .	As the log file fills, older application events are overwritten.
10. Close Event Viewer Window.	You have completed the procedure.

Install Software Provided by HP

If you have problems while installing software, you can restart the console and repeat the installation of the individual software product without reinstalling all the products.

Table	Topic	Page
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NA	Install DSM/SCM	D-45
Table D-11	Install Internet Explorer	D-46
NA	Install the OutsideView Terminal Emulator	D-46
NA	Install OSM or TSM Client Software	D-46
NA	For installation instructions, see the NonStop System Console Installer Guide.	D-46
NA	Configure the System Console for Remote Access	D-47
NA	Start the OSM or TSM Low-Level Link and TSM Service Application or OSM Service Connection	D-47
NA	Create, Update, and Use an ERD or ASR	D-47

You are now working in a Windows environment. When a procedure requires you to restart the system console, you might need to log on again. Details of logging on are not repeated in these procedures. You might have to enter a user name and password, if configured. Otherwise, you can close the logon screen by clicking OK.

Install Windows XP Professional Service Pack

Your new system console is shipped with the Microsoft Windows XP Professional operating system already installed. To migrate an existing system console from the Windows 2000 Professional operating system to the Windows XP Professional operating system, see the *NonStop System Console Guide for Migrating to Microsoft Windows XP Professional*.

Install DSM/SCM

You must download DSM/SCM client software from the SUT. For download and installation instructions, see the *G06.nn Software Installation and Upgrade Guide*.

Install Internet Explorer

If necessary, insert the System Console CD-ROM into the CD-ROM drive.

Table D-11. Install Internet Explorer

Action	Result
1. In the All Folders column, navigate to the folder D:\IE6 .	The contents of the Iexplorer folder appear.
2. Open the I386 folder.	The contents of the I386 folder appear.
3. Double-click ie6setup.exe .	Internet Explorer 6.0 Active Setup wizard appears.
4. Click Next .	The License Agreement dialog box appears.
5. Accept the agreement. Click Next .	The Installation Open dialog box appears.

After your computer is restarted, the following items are installed:

- Internet Explorer
- Internet Explorer tools
- Security
- Desktop settings

Install the OutsideView Terminal Emulator

This copy of the OutsideView terminal emulator is licensed only for the system console and must not be installed on any other workstation.

For installation instructions, see the *NonStop System Console Installer Guide*.

Install OSM or TSM Client Software

For installation instructions, see the *NonStop System Console Installer Guide*.

Install Carbon Copy Version 5.7

You must uninstall your existing Carbon Copy version before installing Carbon Copy Version 5.7. For installation instructions (and instructions for removing your existing copy), see the *NonStop System Console Installer Guide*.

Configure the System Console for Remote Access

To enable access to your system console during unattended periods, configure Carbon Copy to load whenever the system console is restarted. For configuration instructions, see the *NonStop System Console Installer Guide*, Carbon Copy Help topics (under Carbon Copy's Help menu) and ReadMe (from the Start>Programs>Altiris Carbon Copy submenu).

Start the OSM or TSM Low-Level Link and TSM Service Application or OSM Service Connection

See the following documentation:

- *OSM User's Guide*
- OSM Low-Level Link online help
- The *TSM Online User Guide*
- The TSM Low-Level Link online help
- The TSM Service Application online help

Create, Update, and Use an ERD or ASR

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Create or Update an ERD or ASR	D-47
Restore Configuration Information From an ERD or ASR	D-47

The Emergency Repair Disk (ERD) or Automated System Recovery (ASR) disk saves repair information for you to reconstruct Windows system files, system configuration, and startup environment variables.

Note. This guide assumes that you have already created an ERD or ASR as part of the final system console setup steps. See [Create an Emergency Repair Disk \(ERD\) or Automated System Recovery \(ASR\) Disk](#) on page 5-10.

The OSM or TSM Low-Level Link and the OSM or TSM Notification Director save important configuration information to the Windows registry.

To back up this information, you must create or update an ERD or ASR for your workstation. Update your ERD or ASR any time you use OSM or TSM to change the OSM or TSM environment.

Create or Update an ERD or ASR

Use the procedure in the Windows 2000 or XP Professional documentation shipped with your system console.

Restore Configuration Information From an ERD or ASR

Use the procedure in the Windows 2000 or XP Professional documentation shipped with your system console.

Configuring a ProCurve 24-Port Ethernet Switch

-
- △ **Caution.** These procedures restore Windows registry files. Your existing configuration might be lost. Before using these procedures, try restoring the configuration from tape backups, or access the last known good configuration by holding down the space bar as your computer restarts.
-

If you are using ProCurve 24-port (managed) Ethernet switches for your dedicated OSM/TSM service LAN, you should configure the switch ports that are used for connecting to PMF CRUs—and only those ports—to protect the Services Processors from possible overload. This procedure is not needed and does not apply to ProCurve 8-port (unmanaged) switches.

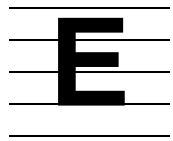
1. To access the switch's configuration interface, open an Internet Explorer browser window and enter the IP address of the switch in this form:

`http://<ip address>.`

2. In the configuration interface, select the **Configuration** tab, then select **Port Configuration**.
3. Double-click the port being used for connectivity to the Ethernet port on the PMF CRU.
4. Make sure Port Enabled is set to **Yes**.
5. Set Mode to **10HDx**.
6. In the Broadcast Limit window, enter a value of **1**.
7. Click Apply Settings (you may then close the switch configuration interface window).

Note. The switch requires a username and password for configuration changes. See documentation shipped with the switch for the default values

8. Repeat steps 1 through 7 for all other connections to PMFs on all of the switches.



FastPath Tasks: Required

This appendix contains all the tasks required to install, start, and configure a two-processor or four-processor NonStop S-series server in the Tetra 8 topology.

If your server contains more than four processors or must be configured in the Tetra 16 topology, do not use this appendix. See the rest of this manual.

If you intend to add this server to a ServerNet cluster, do not do so until the server is fully installed and configured. For more information, see the *ServerNet Cluster Manual* and the *ServerNet Cluster 6780 Planning and Installation Guide*.

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1. Install Hardware

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<u>15. Install Tape Drive</u>	<u>E-19</u>

1. Inventory Shipment

1a. Inventory the OPEN FIRST Box

Depending on your configuration, the box might contain:

Inventory Lists

Item	Description	Enables You To
Invoice	Information about your order	Inventory equipment
Box Inventory	Part numbers, descriptions, quantities	
Envelope	Description of system as it was ordered	Review initial system configuration

System Files and Documentation

Item	Description	Enables You To
CONFTEXT configuration file list	Attributes that define operating system image for system processors	Review initial system configuration
SCF configuration file list	Attributes that define system configuration	Plan customized system configuration
NLT CD-ROM	NonStop Technical Library	Read user documentation
Documentation	This manual	Install, set up, operate system
	<i>SWAN Concentrator Installation and Support Guide</i> (if applicable)	Install and configure SWAN concentrator
	<i>SWAN 2 Concentrator Installation and Support Guide</i> (if applicable)	Install and configure SWAN 2 concentrator
	<i>AWAN 3886 Server Installation and Configuration Guide</i> (if applicable)	Install and configure device

Tools, Components, and Equipment

Item	Description	Enables You To
Envelope	Contains: <ul style="list-style-type: none"> ● 4-mm hexagonal wrench ● Number labels ● Flash memory for AWAN ● iTP Web Server CD ● DAT tape 	<ul style="list-style-type: none"> ● Unlock a system enclosure door ● Designate enclosures
Power-on cable	Installed between enclosures	Power on multiple enclosures
Groundstraps	Installed between enclosures	Electrically ground enclosures
Ethernet cables	Type depends on your location	Connect workstation to system
Modem and cable	Types depend on your location	Allow system to receive dial-ins
Site update tape (SUT)	Contain files already installed on your system disk	Store system startup files (not to install or start your system)
System image tape (SIT)		

1b. Inventory Equipment

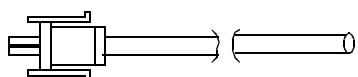
1. Verify that all equipment you ordered has arrived:
 - If you have a System Equipment Inventory Form, check off each piece of equipment received.
 - If you do not have a System Equipment Inventory Form, compare the Product List or the Box Inventory List to the equipment you have received.

Note. Inventory the following equipment in later steps:

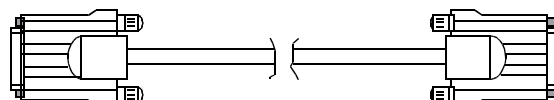
- CRUs in enclosures: [5. Inventory and Inspect All Components](#) on page E-11.
- System consoles: [10. Install Primary System Console](#) on page E-16.
- Tape subsystem SCSI cables: [15. Install Tape Drive](#) on page E-19.

2. Verify that all cables are the length you ordered.
3. Ensure that the other smaller containers contain the following:

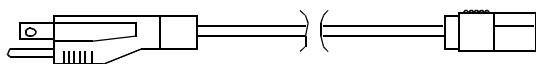
✓	Item	Quantity
	Detachable AC power cords	Two per enclosure
	Groundstraps	The number of enclosures minus one; none for one processor enclosure with no I/O enclosures.
	ServerNet cables	Quantity varies with number of enclosures; none for one processor enclosure with no I/O enclosures. Type varies with plug-in cards (PICs) installed in PMF CRUs and IOMF CRUs.
	Cable ties	12 per enclosure
	EPO cables	One per enclosure
	Power-on cables	One per enclosure



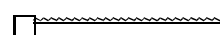
Emergency Power-Off (EPO) Cable



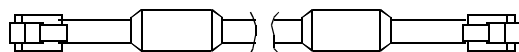
ServerNet ECL Cable



AC Power Cord



Cable Tie



Power-On Cable



Groundstrap

VST977.vsd

4. Report any missing or damaged items to your service provider.

2. Collect Tools

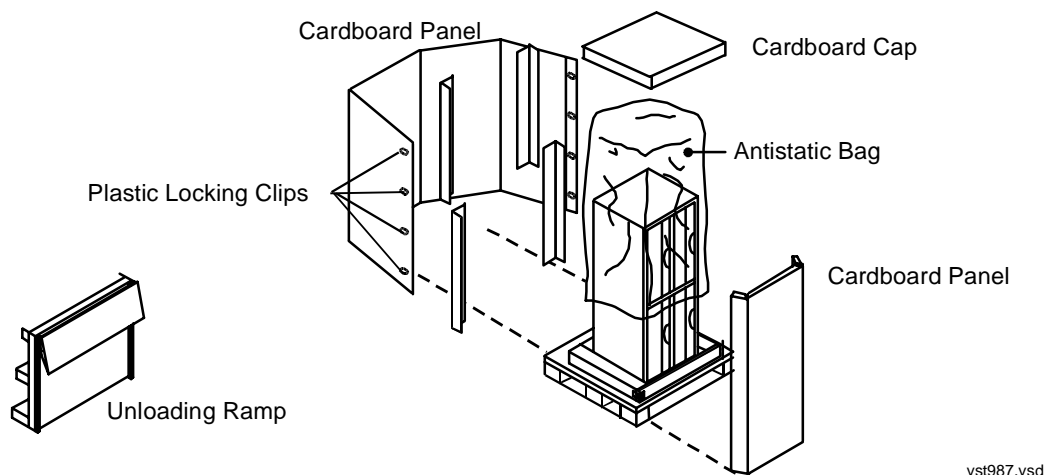
Object	Tools for Installation	Purpose
System enclosure	ESD protection kit	Protect components against electrostatic discharge
	Heavy-freight-handling equipment	Move shipping pallet to installation site
	Safety glasses	Protect eyes
	Scissors or cutters	Cut banding straps
	Open-end wrench: 3/4 inch (19 mm) or 9/16 inch (15 mm)	Lower enclosure legs
	4 mm diagonal wrench (provided)	Unlock system enclosure door
	Phillips screwdriver	Fasten groundstraps
	Stubby Phillips screwdriver	Secure AC power cords if present
	Labels and pens or pencils	Label cables
Tape subsystem	Open-end wrench: 15/16 inch (24 mm) or adjustable	Lower legs on subsystem enclosure
	Small slotted screwdriver	Remove shipping restraints if present

3. Unpack and Unload Server

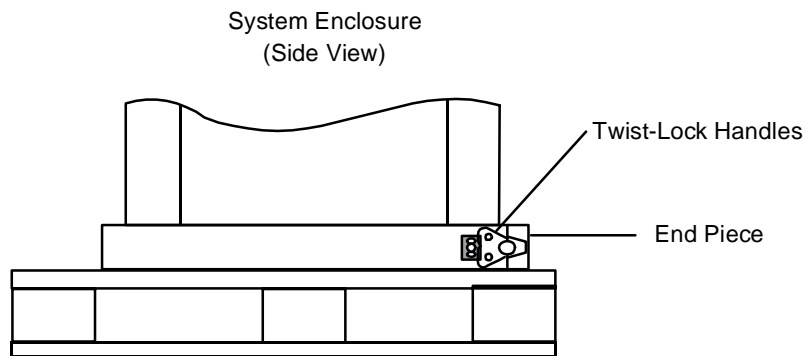
Note. One unloading ramp is provided regardless of the number of enclosures shipped.

1. Move each shipping pallet as close as possible to the installation area.
2. If necessary, allow components to warm to room temperature before installation.
This practice reduces condensation that can damage electronic and moving parts.
3. At the installation site, remove all packaging from each enclosure stack.

Figure E-1. Packaging of Enclosure Stack

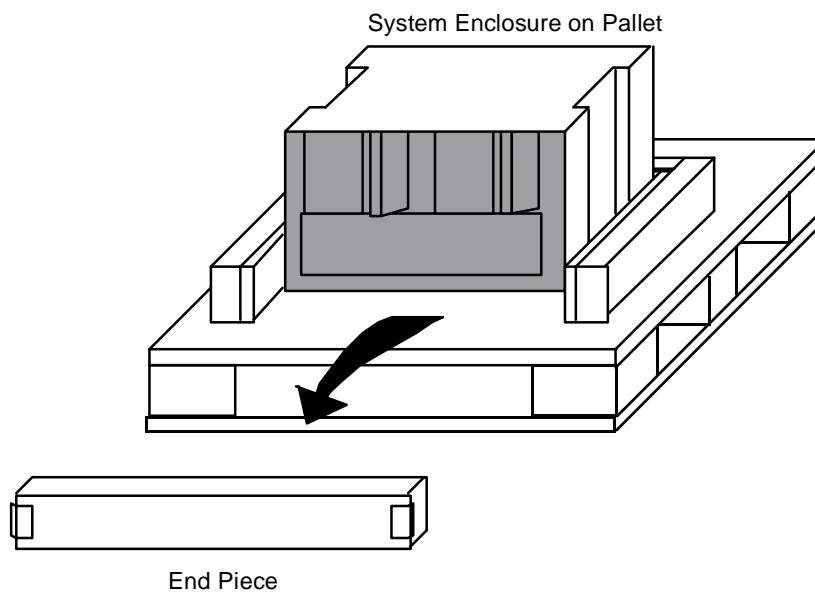


4. Prepare to roll the enclosure stack off the pallet:
 - a. Flip open the twist-lock handles on the pallet end piece. To loosen the end piece, turn the twist-lock handles counterclockwise as far as they can go:



VST951.vsd

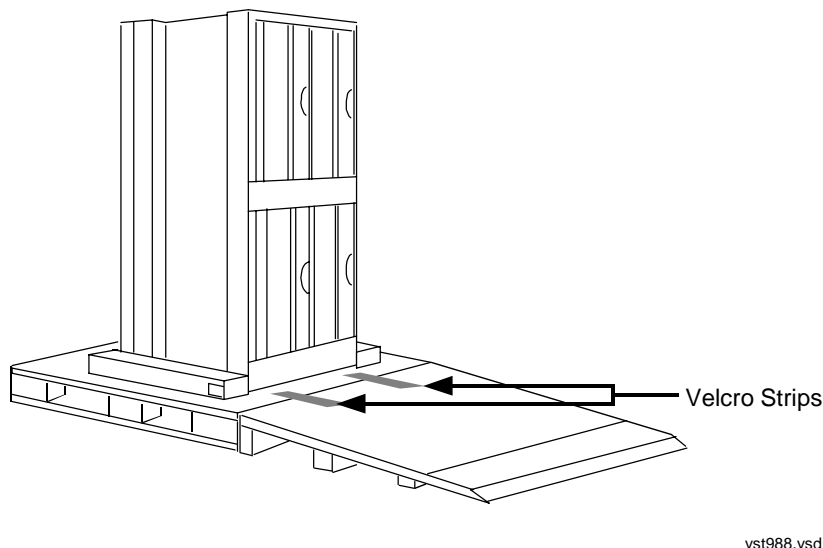
- b. Remove the end piece and set it aside:



VST706.vsd

- c. Position the unloading ramp against the pallet on the same side as the end piece.
- d. Position the Velcro strips. Ensure the Velcro strips hold the ramp firmly against the pallet:

Figure E-2. Velcro Strips on Loading Pallet

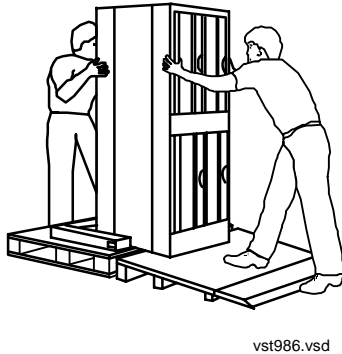


- e. To prevent snagging hazards, raise the leveling pads on the base enclosure fully before you move the enclosure stack.

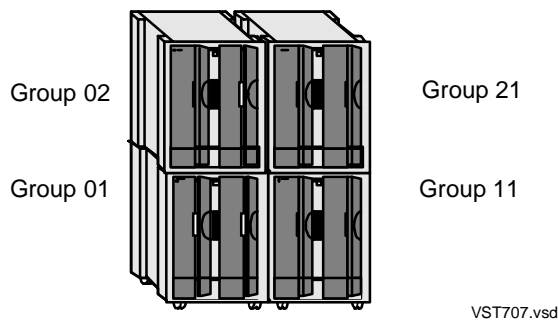
▲ WARNING. Before moving an enclosure stack:

- Always get at least one other person to help you move an enclosure stack. If the floor is uneven, use four people to move the enclosure stack, or contact a service provider.
 - Move each enclosure stack slowly and gently, avoiding all unnecessary shock.
 - When pushing the enclosure stack, push on the frame. Do not push or pull on a plastic enclosure door. Do not grasp the cable channels on the service side.
 - Casters on the appearance side of the enclosure swivel, but casters on the service side do not swivel. If you position the swiveling appearance side casters to go first, it is easier to move the enclosure stack over bumps in the floor.
 - A double-high enclosure stack tends to be top-heavy. When moving the enclosure stack off the pallet and down the ramp, do so carefully.
 - If you plan to stack single-high system enclosures, you need at least five trained people. Anyone who lifts a system enclosure to stack it must be at least five feet tall and capable of lifting and holding approximately 25 pounds (11 kilograms).
-

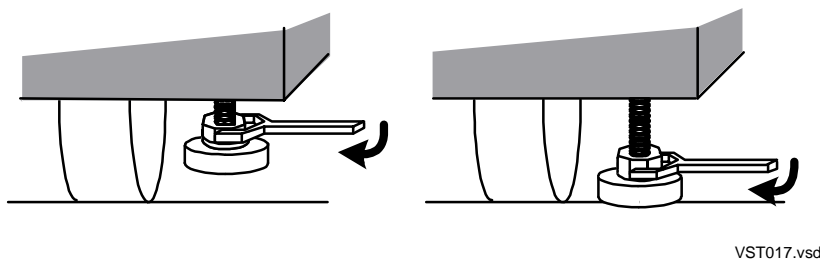
5. Roll the enclosure or stack off the pallet.
 - a. Using at least two people, grasp the frame of the stack and slowly roll the enclosure stack off the pallet, down the ramp, and to the installation area:

Figure E-3. Rolling the Stack to the Installation Area

-
6. Move the enclosure stack to its final position. Side frames can touch each other:

Figure E-4. Enclosure Stacks in Final Positions

-
7. With a 3/4-inch (19-mm) or a 9/16-inch (15-mm) open-end wrench, lower each leg on the base enclosure and tighten it against the floor:

Figure E-5. Lowering Legs of Base Enclosure

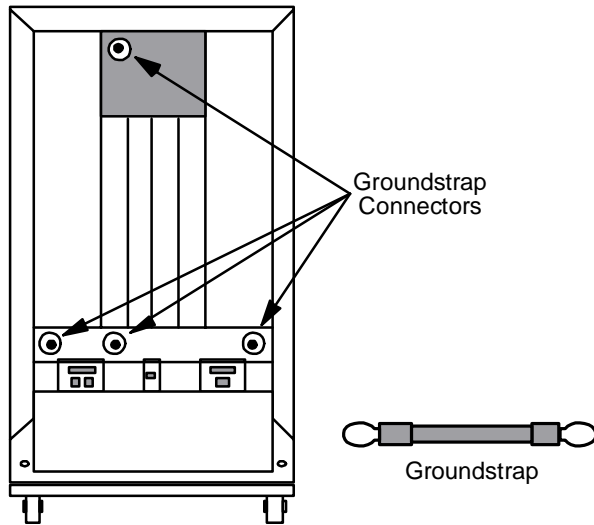
-
8. Repeat the unpacking and unloading tasks for all remaining system enclosures.

4. Connect Groundstraps

If the server consists of only one enclosure, skip to [5. Inventory and Inspect All Components](#) on page E-11.

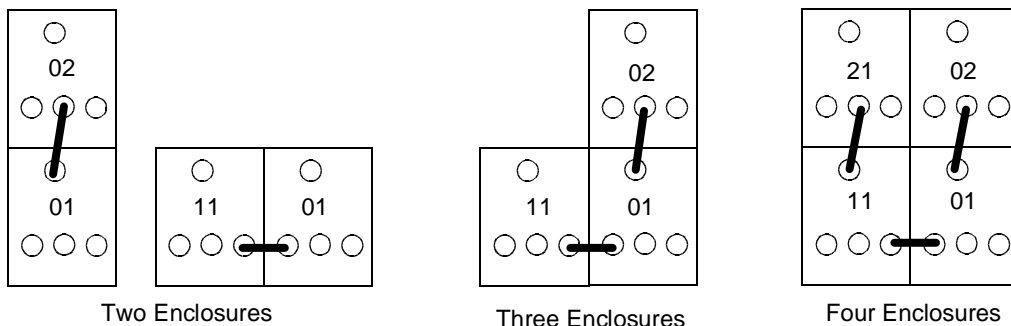
1. Find the groundstraps included with the system.
2. Find the four groundstrap connectors on the service side of each enclosure:

Figure E-6. Groundstrap Connector Locations



VST701.vsd

3. Connect the groundstraps:



VST709.vsd

5. Inventory and Inspect All Components

1. In each system enclosure, verify that all components ordered are present.

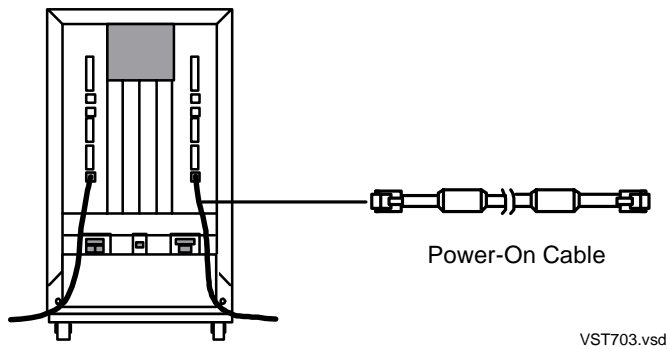
Note. The appearance side of the system enclosure is equipped with a door. If necessary, open the door with the 4-mm (5/32-inch) hex wrench that is located in the OPEN FIRST box or taped to the service side of the enclosure.

2. In each system enclosure, inspect the disk drives, PMF CRUs, IOMF CRUs, SEBs if present, MSEBs if present, and ServerNet adapters.
3. Reseat any CRU that appears to be improperly seated.

6. Connect the Power-On Cables

1. Find the power-on cables included in a box with the system.
2. Find the power-on cable connectors on the service side of each enclosure:

Figure E-7. Power-On Cable Connectors



3. Connect the power-on cables according to the appropriate diagram:

Figure E-8. Power-On Cables: One Processor Enclosure

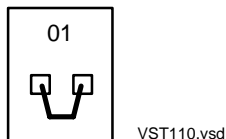


Figure E-9. Power-On Cables: One Processor Enclosure, One I/O Enclosure

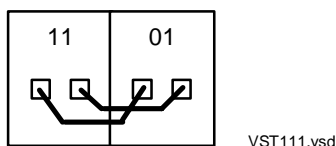
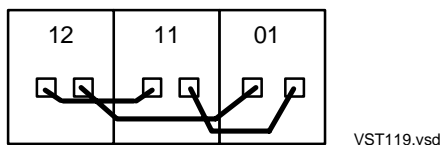
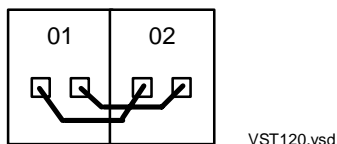
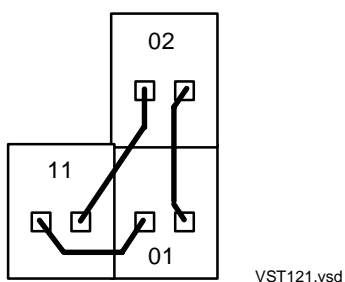
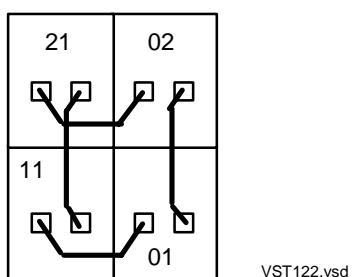


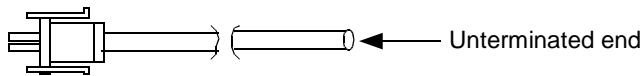
Figure E-10. Power-On Cables: One Processor Enclosure, Two I/O Enclosures**Figure E-11. Power-On Cables: Two Processor Enclosures****Figure E-12. Power-On Cables: Two Processor Enclosures, One I/O Enclosure****Figure E-13. Power-On Cables: Two Processor Enclosures, Two I/O Enclosures**

7. Connect Emergency Power-Off (EPO) Cables

Emergency power-off (EPO) cables are used only if the system is installed in a room designed to comply with special construction and fire-protection provisions. If no EPO function is needed, skip to [8. Connect ServerNet Cables](#) on page E-14.

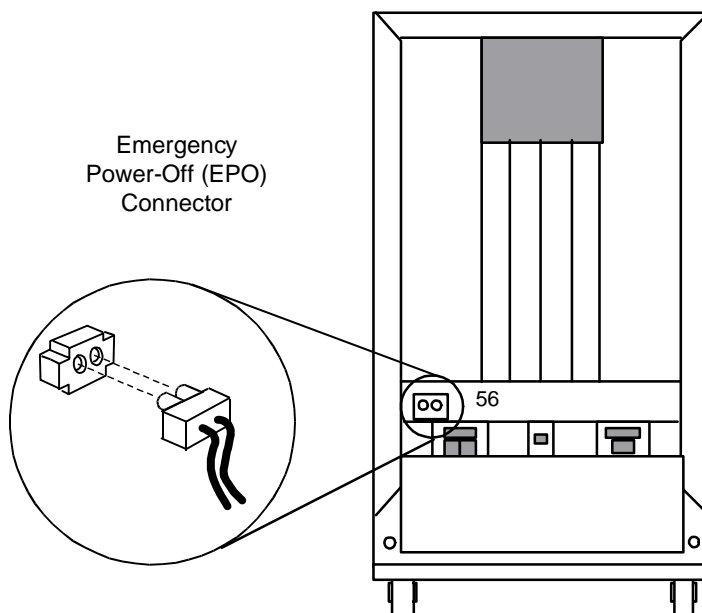
1. Find the EPO cables included in a box with the system (one cable per enclosure):

Figure E-14. EPO Cable



VST908.vsd

2. Connect the unterminated end of one EPO cable to the appropriate junction box or facility wiring for the EPO control circuit at the customer site.
3. Attach the two-pin connector end of the EPO cable to the EPO connector (slot 56) on the service side of the system enclosure:



VST700.vsd

4. Repeat Step 2 and Step 3 for all remaining system enclosures.

8. Connect ServerNet Cables

If the server consists of only one enclosure, skip to [9. Install Service-Side Enclosure Doors If Necessary](#) on page E-15.

- Find the ServerNet cables included with the system. These cables might be any of the following types:
 - SEB-to-SEB ECL
 - SEB-to-MSEB ECL
 - MSEB-to-MSEB ECL
 - Serial-copper
 - Fiber-optic

Most two-processor or four-processor NonStop S-series systems use ECL cables. However, if your server is part of a ServerNet cluster, it might be equipped with other cables. See the *NonStop S-Series Planning and Configuration Guide*, the *ServerNet Cluster Manual*, and the *ServerNet Cluster 6780 Planning and Installation Guide*.

- Connect the ServerNet cables according to the appropriate tables:

Table E-1. ServerNet Cables for One Processor Enclosure, One I/O Enclosure

Attach Cable From Group	Slot	Connector	To Group	Slot
01	51	5	11	50
01	52	5	11	55

Table E-2. ServerNet Cables for Two Processor Enclosures, No I/O Enclosures

Attach Cable From Group	Slot	Connector	To Group	Slot	Connector
01	51	1	02	51	1
01	52	1	02	52	1

Table E-3. ServerNet Cables for Two Processor Enclosures, One I/O Enclosure

Attach Cable From Group	Slot	Connector	To Group	Slot	Connector
01	51	1	02	51	1
01	52	1	02	52	1
01	51	5	11	50	N.A.
01	52	5	11	55	N.A.

Table E-4. ServerNet Cables for Two Processor Enclosures, Two I/O Enclosures

Attach Cable From Group	Slot	Connector	To Group	Slot	Connector
01	51	1	02	51	1
01	52	1	02	52	1
01	51	5	11	50	N.A.
01	52	5	11	55	N.A.
02	51	5	21	50	N.A.
02	52	5	21	55	N.A.

3. Route the cables between the enclosures.
4. Connect and tighten the thumbscrews on the cable connectors.

9. Install Service-Side Enclosure Doors If Necessary

If you need to install service-side doors on any enclosures, follow the instructions in the Read Me document included in the service-side door add-on package.

10. Install Primary System Console

1. Locate and unpack the system console. If your system includes multiple consoles, unpack only one console at a time:

Box	Contents	
System unit box	Keyboard box	
	Accessories box	
	System unit	
Accessories bag (in system unit box)	System unit power cord	
	Mouse with attached cable	
	Quick setup reference card	
	HP Restore CD	
	Windows XP Professional Workstation CD	
	Windows XP Professional Workstation Manual	
	Documentation	
Keyboard box (in system unit box)	Keyboard with attached cable	
PC accessory box	50-foot (15-meter) Ethernet cable	
	NonStop S-series system console binder	
	Assorted software media and documentation	
Display monitor box	Display monitor with attached interface cable	
	Display monitor power cord	
	Documentation for the display monitor	
Ethernet switch box	(Rack-mountable Ethernet switch packed in OPEN FIRST box)	
	Documentation for the Ethernet switch	
Modem box	Serial Modem	USB Modem
	(Serial modem is packaged in the OPEN FIRST box)	USB modem
	Wall-to-modem telephone cable	Wall-to-modem telephone cable
	Modem power converter with integral power cord	USB cable
	Modem documentation	Modem documentation

You might also receive a kit to adapt the modem to your local telephone service.

2. Store the backup software packaged with the workstation in a safe place.
3. Set the system console on a table or other hard surface. Connect the remaining components such as the monitor, mouse, and keyboard.

To identify the various connectors on the workstation, see the quick setup reference card in the system console binder.

4. Connect the power cords for the workstation and monitor to a grounded outlet.

△ **Caution.** You should plan for the possibility of power outages. It is recommended that you prevent data corruption and equipment failure by providing surge suppression or backup power facilities for the system console, modem, and Ethernet switch.

5. Determine whether your modem is a serial modem or a USB modem:

Serial Modem	USB Modem
Shipped with the EVO D500 PC workstation	Shipped with the EVO 510 PC workstation
Connects to the workstation with the Legacy module	Does not require the Legacy module
Requires a power converter with integral power cord to adapt it to local power	Powered through the USB connection, so it requires no converter

6. Connect the modem.

For a serial modem:

- a. Connect the modem RS-232-C port to a serial port on the workstation.
- b. Connect the modem to a telephone line.
- c. Connect the modem power supply to a grounded outlet.

For a USB modem:

- a. Connect the modem to the USB port on the front of the workstation.
- b. Connect the modem to the telephone line.
- c. If necessary, connect the telephone adapter kit.

7. Power on the following components:

- a. Modem
- b. Display monitor
- c. Workstation

8. Test the operation of the system console.

- a. Verify operation of the display monitor.
- b. Verify operation of the keyboard and mouse.
- c. Verify operation of the Windows operating system.

9. Ensure the workstation can be powered down and restarted in the same condition.

11. Create Emergency Repair Disk or Automated System Recovery Disk

Much of your system configuration is saved to the Windows registry. If your Windows system files become corrupted, an emergency repair disk or automated system recovery disk can reconstruct them.

Use the backup procedure described in the Windows XP Professional documentation shipped with your system console.

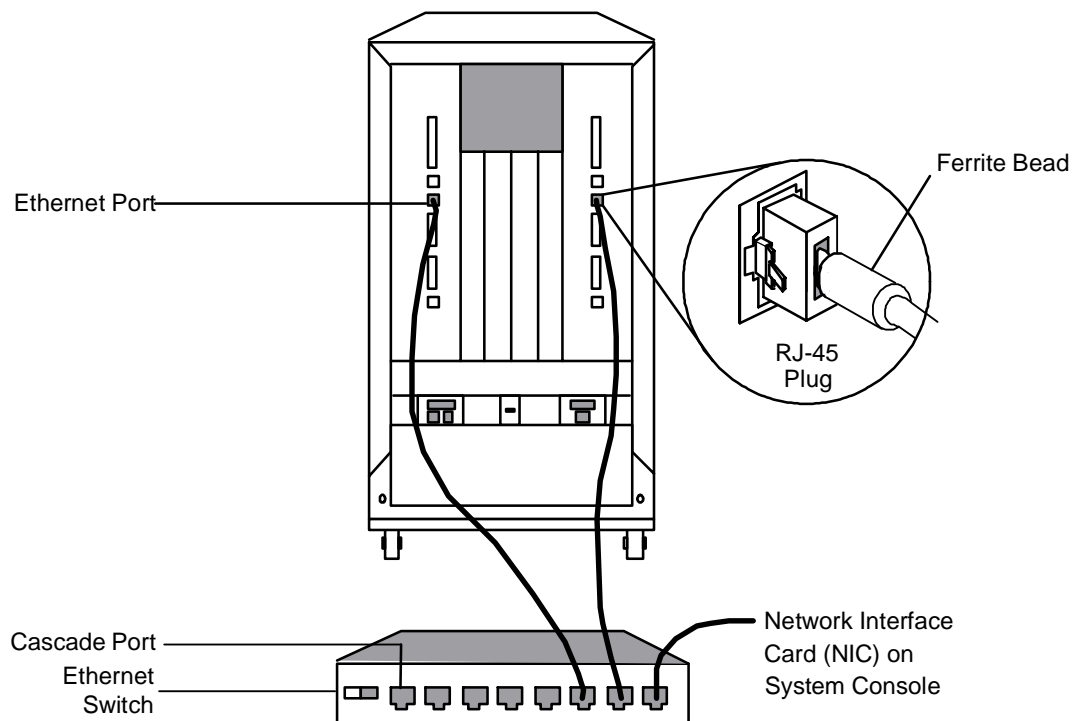
12. Install Ethernet Switch

Unpack and install Ethernet switch 1 using the documentation that came with the switch.

13. Connect Ethernet Switch to Group 01

1. Connect any port (except the cascade port) on the switch to the Ethernet port on the PMF CRU in group 01, slot 50.
2. Connect the switch to the Ethernet port on the PMF CRU in group 01, slot 55.

Figure E-15. Connecting an Ethernet Switch to Group 01



VST519.vsd

14. Connect Primary System Console to Ethernet Switch

-
- △ **Caution.** System consoles are shipped with identical IP addresses. To avoid software errors, specify a unique IP address for the backup system console before you connect the console to the Ethernet switch or NonStop S-series server.
-

1. Connect a cable from Ethernet switch 1 to the network interface card behind the console.

Note. Do not connect this cable to the cascade port on switch 1.

2. Set the medium-dependent interface (MDI) switch on Ethernet switch 1 to MDI mode. To set this switch, see the documentation provided with the Ethernet switch.

15. Install Tape Drive

Title	Page
Installing a 5175 Tape Drive	E-19
Installing a 519x Tape Drive	E-21

Note. To perform a tape dump, connect the tape drive to a PMF CRU in groups 01 or 02.

Installing a 5175 Tape Drive

1. Determine which PMF CRU, IOMF CRU, or 6760 ServerNet device adapter (ServerNet/DA) should be connected to the tape drive.
2. Unpack the tape drive module using the scissors or cutters.
3. Unload the tape drive module using the unloading ramp included with the unit.
4. Move the tape drive module into place.
5. Lower the legs on the pedestal using a 15/16-inch (24-mm) wrench.
6. Install the pedestal top panel and red corner caps.
7. Open the back panel of the 5175 tape drive.

Note. Ensure the tape drive CRU AC power switch is in the OFF (0) position.

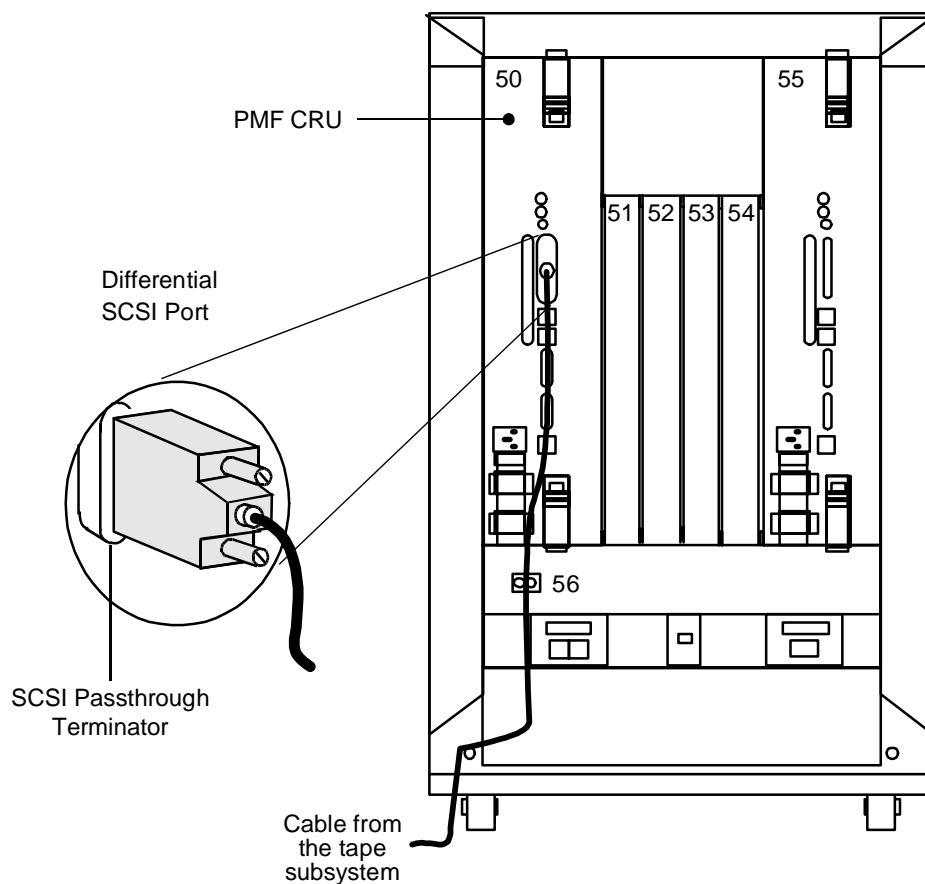
8. Find the copper SCSI cable for the tape drive.
9. Connect the SCSI cable to the uncapped SCSI port at the rear of the tape drive. Latch the clips.

10. Depending on the model of your PMF CRU, attach the other end of the SCSI cable either to the SCSI terminator covering the SCSI port on the PMF CRU as shown, or to the SCSI port itself:

- S7000, S7400, S70000, and S72000 PMF CRUs have an external SCSI terminator.
- All other PMF CRUs contain an internal terminator, so you can attach the SCSI cable to the SCSI port directly.

△ **Caution.** On a S7000, S7400, S70000, or S72000 PMF CRU, do not remove the external SCSI passthrough terminator from the differential SCSI port.

Figure E-16. Attaching SCSI Cable to PMF CRU



VST016.vsd

11. Connect the AC power cord for the tape subsystem.

12. Reinstall and close the back panel of the 5175 module.

Installing a 519x Tape Drive

1. Determine which PMF CRU, IOMF CRU, or 6760 ServerNet/DA should be connected to each tape drive.
2. Unpack the 519x tape drive module using scissors or cutters.
3. Unload the 519x tape drive module using the unloading ramp included with the unit.
4. Move the tape subsystem into place and lower the legs on the pedestal using a 15/16-inch (24-mm) wrench.
5. Remove foam packing from tape drives with an automatic cartridge loader (ACL).
6. If necessary, install the ACL and the cleaning cartridge.
7. Open and remove the rear bezel door of the tape drive module.

Note. Make sure the tape drive CRU AC power switch is in the OFF (0) position.

8. Find the copper tape subsystem SCSI cable:
9. Attach one end of the SCSI cable to the uncapped SCSI port at the rear of the tape drive.
10. Depending on the model of your PMF CRU, attach the other end of the SCSI cable either to the SCSI terminator covering the SCSI port on the PMF CRU as shown in Step 10 on page [E-20](#), or to the SCSI port itself:
 - S7000, S7400, S70000, and S72000 PMF CRUs have an external SCSI terminator.
 - All other PMF CRUs contain an internal terminator, so you can attach the SCSI cable to the SCSI port directly.

△ **Caution.** On a S7000, S7400, S70000, or S72000 PMF CRU, do not remove the external SCSI passthrough terminator from the differential SCSI port.

11. Connect the AC power cord for the tape drive.
12. Reinstall and close the rear bezel door of the tape drive.

2. Start the System

Task	Page
1. Prepare for System Startup	E-28
2. Power On External System Devices	E-23
3. Connect AC Power Cords	E-24
Enclosures Without Power Shelves	E-24
Enclosures With Power Shelves	E-25
4. Apply Power to Server	E-26
5. Verify Topology	E-27
6. Verify System Components	E-28
7. Start System	E-28

1. Prepare for System Startup

1. If your system has multiple enclosures, verify that the ServerNet cables are connected.
2. Verify that the following components are installed:

Component	Notes
All system enclosures	N.A.
Power-on cables	Not the same as the AC power cords. AC power cords are not installed until you are ready to apply power to the system.
Service-side enclosure doors	Included with new system
Ethernet switch	Must be connected to both the server and to the system console
OSM or TSM	Verify that the system console on which OSM or TSM is installed is properly connected to the system
Emergency power-off (EPO) cables	<p>Within the United States, an EPO disconnect is required in a system if the system is installed in a computer or data processing room that is designed to comply with the construction and fire-protection provisions of the following:</p> <ul style="list-style-type: none"> ● NFPA-75, Protection of Electronic Computer/Data Processor Equipment ● Article 645, NFPA-70 (National Electric Code) <p>Outside the United States, an EPO disconnect is usually not required unless specified by local authorities.</p>
Tape drive	Used for processor memory dumps

2. Power On External System Devices

1. If necessary, power on the system consoles:
 - a. System unit
 - b. Display monitor
 - c. Modem
2. Power on the tape drive:
 - To power on a 5175 tape drive:
 - a. Make sure the AC power cord is plugged into a dedicated power receptacle.
 - b. On the lower left side of the front panel of the tape drive, make sure the standby push-button switch is in the out (OFF) position.
 - c. Open the back panel of the 5175 module.
 - d. At the rear of the tape drive CRU, press the top part of the AC power switch ("I" on the rocker switch) to apply power to the tape drive.
 - e. Close the back panel of the 5175 module.
 - f. On the lower left side of the front panel of the tape drive, press the standby push-button switch so that it is in the in (ON) position.
 - To power on a 519x tape drive:
 - a. Make sure the AC power cord is plugged into a dedicated power receptacle.
 - b. Open the rear bezel door.
 - c. At the rear of the tape drive CRU, set the AC power switch to the ON position to apply power to the tape drive.
 - d. Close the rear bezel door of the 519x module.
 - e. If the tape drive includes an automatic cartridge loader (ACL), install the cleaning cartridge in the ACL.
 - f. Check the tape drive SCSI ID using the operator buttons on the drive or ACL front panel. If necessary, reset the SCSI ID with the operator buttons.
 - If your system has another type of tape drive, see the documentation for that tape drive.

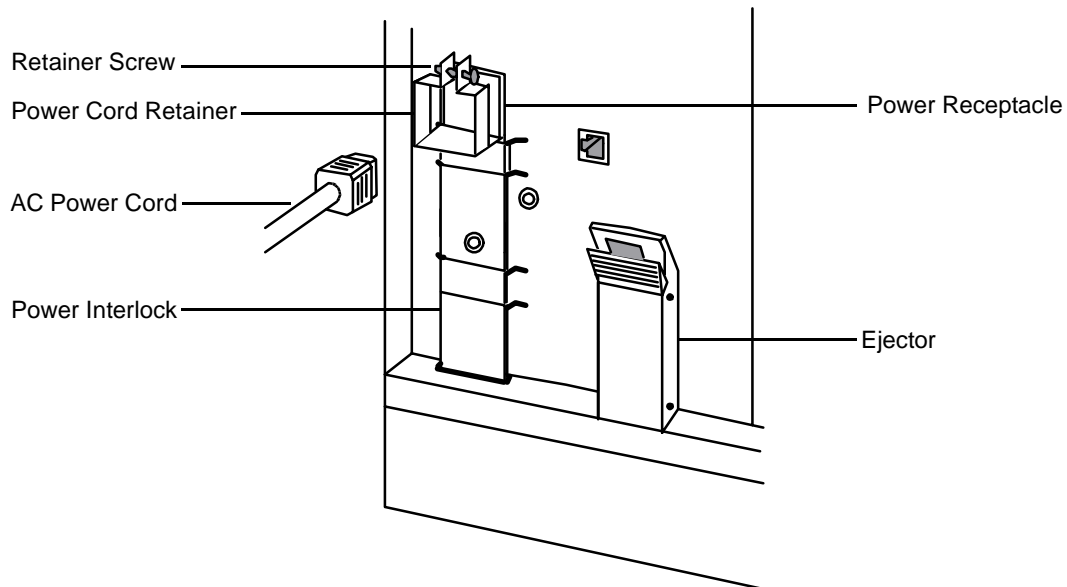
3. Connect AC Power Cords

Enclosures Without Power Shelves

1. Find the detachable AC power cords included with your system.

△ **Caution.** Do not plug the other end of the AC power cord into the dedicated outlet at this time. Doing so immediately powers on the PMF CRU or IOMF CRU.

2. Start with the group 01 processor enclosure.
3. Make sure the power interlock on the PMF CRU or IOMF CRU in slot 50 or 55 is fully engaged so that the power cord retainer is aligned with the power receptacle.
4. Connect the AC power cord to the power receptacle on the PMF CRU or IOMF CRU.
5. Using a stubby Phillips screwdriver, secure the power cord plug in the power cord retainer by tightening the retainer screw.
6. Repeat Steps 3 through 5 for the other AC power cord for this enclosure and for all remaining enclosures without power shelves.



VST708.vsd

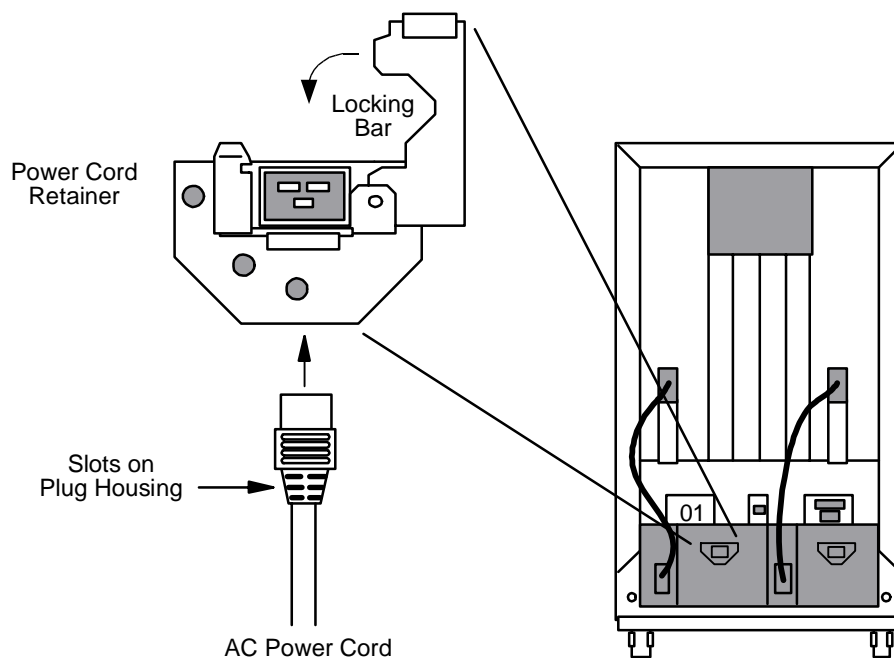
Enclosures With Power Shelves

For these enclosures, the DC power cords are shipped already connected to the power shelves. Use the following procedure only if these cables are not connected:

1. Find the detachable AC power cords included with your system.

△ **Caution.** Do not plug the other end of the AC power cord into the dedicated outlet at this time. Doing so immediately powers on the PMF CRU or IOMF CRU.

2. Start with the group 01 processor enclosure.
3. Select either of the power supplies. Orient the molded end of the AC power cord with the single contact on the bottom. Insert the plug into the retainer until it is fully seated:



VST983.vsd

4. Swing the locking bar down until it engages one of the slots on the plug housing and snaps into place.

▲ **WARNING.** The underside of the locking bar is sharp. Placing your fingers under the locking bar can result in injury. Failure to fully seat the plug in the retainer can result in cord damage from the locking bar.

5. Repeat Steps 3 and 4 for the remaining power cord for this enclosure and for all remaining enclosures that have power shelves.

4. Apply Power to Server

1. Start with the highest-numbered group. Switch on its circuit breaker or plug the power shelf AC power cords into the designated AC receptacles.
2. On the service side of the enclosure, check that the fans are operating by placing your hand over the exhaust grill. The fans should be turning, and you should hear air circulating through the enclosure.

After a few seconds, if the fans do not operate, shut the system down quickly. See [Power Is Applied to Enclosure But Fans Are Not Turning](#) on page D-6.

3. Repeat Step 1 and Step 2 for all remaining enclosures without power shelves. Work in descending order of group number, ending with group 01.
4. During system startup, status LEDs on the various enclosures and CRUs light during a series of power-on self-tests (POSTs), which can take up to 10 minutes. All LEDs are lit briefly during POSTs, but only the green power-on LEDs should remain lit after the POSTs finish.

Before you start the system, ensure that POSTs have finished successfully. If the green power-on LED does not light or other LEDs remain lit, see [Appendix D, Troubleshooting](#).

5. Verify Topology

1. Log on to the OSM or TSM Low-Level Link.
 - a. In the Log On dialog box, select system **WNONAME**.
 - b. Type `root` as the user name, with no password.
 - c. Click **Log on**. When the logon is successful, an empty window appears, and the message “logged on” appears in the status bar.
2. Verify that the topology is Tetra 8:
 - a. From the toolbar, select **System Actions**.
 - b. If the topology is Tetra 8, close the dialog box and skip to Step 8.

If the topology is Tetra 16, perform the following steps:

1. Select **Show Actions**.
 2. In the Available Actions list, select **Set Topology to Tetra 8**.
 3. Select **Perform Action**. Wait for the action to finish.
3. Return to the main screen and select **Power off** from the toolbar.
4. Push the Power-on push button on one of the PMF CRUs in group 01.
5. During system startup, status LEDs on the various enclosures and CRUs light during a series of power-on self-tests (POSTs), which can take up to 10 minutes. All LEDs are lit briefly during POSTs, but only the green power-on LEDs should remain lit after the POSTs finish.

You must ensure that POSTs have finished successfully before you start the system. If the green power-on LED does not light or other LEDs remain lit, see [Appendix D, Troubleshooting](#) before proceeding.

6. When system is powered on, log on as in Step 1.
7. When logon finishes, verify that Tetra 8 topology appears in the Attribute Value column. If the Topology attribute is Tetra 16 or an error, reset the topology to Tetra 8 before loading the system.
8. Click the **System Discovery** button on the toolbar. The Management window appears.
9. Verify that all system enclosures are visible in the Physical view.

If your server contains I/O enclosures but the Physical view does not show them, the Topology attribute value might be inconsistent with the topology of your system.

When you use the cabling tables in [8. Connect ServerNet Cables](#) on page E-14, your system is connected as a Tetra 8 system.

6. Verify System Components

Follow the instructions given in [Verifying Topology and System Components](#) on page 8-14.

Ensure that the value for each attribute is as listed in [Table 8-3, Checking the Attributes of Selected System Components](#), on page 8-16.

Note. If the Power State attribute for a PMF CRU does not have a value of On, contact your service provider.

7. Start System

1. After POSTs finish, green power-on LEDs should remain lit. No amber LEDs should be lit. If any LEDs exhibit abnormal behavior, see [Appendix D, Troubleshooting](#).
2. Verify processor status:
 - a. On the menu bar, select **Summary > Processor Status**.
 - b. Verify that all processors have passed POST.
 - c. Close the Processor Status window.
3. From the toolbar, click **Start System**. The System Startup dialog box appears.
4. In the System Startup dialog box:
 - a. In the SYS_{nn} field, enter **00** as the number of the SYS_{nn} subvolume containing the version of the operating system to be loaded.
 - b. In the Configuration File box, select **Current (CONFIG)**.
 - c. Ensure the **CIIN disabled** option has no check mark in the selection box.
5. Click **Start system**. The system load begins.

Note. To stop startup, click **Abort**. Up to 30 seconds might pass before the abort takes effect.

△ **Caution.** Do not close the System Startup dialog box while startup is in progress. If you attempt to do so, a message box indicates that the system startup process will stop if you continue. If you stop a system startup before it has finished, results are unpredictable. You might need to start the system again to enable it to resume normal operation.

The event stream and TACL windows open on the console where the START SYSTEM was performed. If the workstation is not configured in the access list of authorized workstations, the windows are blank.

The startup TACL window for the primary fabric contains a TACL prompt. The startup event stream window for the primary fabric contains event messages. The other two windows are blank.

Note. The startup TACL windows and startup event stream windows launch directly on top of each other. You must move or minimize some of the window to see the active windows.

The operating system is loaded into the memory of processor 0 or processor 1. The remaining processors are reloaded by commands in the CIIN file.

6. Monitor the system startup process.

Messages indicating the progress and completion of the system load and the reload of the processors appear in the following locations on the system console:

- System Startup dialog box
 - System Status box (initial high-level messages that are not logged to a file)
 - Detailed Status box (low-level messages that you can save to a file)
- Startup event stream window (startup event stream messages)
- Startup TACL window (startup messages)

7. When the operating system is loaded successfully into the memory of processor 0 or processor 1, the System Status box on the System Startup dialog box displays:

```
SYSTEM STARTUP COMPLETE, NSK RUNNING ON Processor n
```

8. Close the System Startup dialog box.

9. Check processor status:

- a. From the toolbar, click **Processor Status**.
- b. Verify that the NonStop operating system is running for all processors.
- c. Close the Processor Status dialog box.

10. Log on to the OSM Service Connection or TSM Service Application.

11. In the tree pane, select System Object.

12. In the Attributes tab, verify that the Current Topology in OSM or the Topology attribute in TSM, has a value of Tetra 8.

3. Verify the System

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1. Verify Components

1. Log on to the OSM Service Connection or TSM Service Application.
2. Use the tree pane to check for any enclosures that have yellow or red icons over them.
3. Double-click to expand the enclosure or Group object further to identify components that require attention (yellow) or service (red).

△ **Caution.** If a red triangle appears over an enclosure diagram, or if any component is highlighted in red, contact your service provider.

4. Double-click the PMF CRU in slot 50.
5. Select the Processor object.
6. In the Attributes tab, verify that the Halt Code attribute has a value of 0 and that the Halt Flag has a value of False in OSM, or 0 in TSM.

Note. If the Halt Code or Halt Flag attributes do not match these values, see the *Processor Halt Codes Manual*.

7. For the Processor object in the PMF CRU in slot 55, repeat Steps 4 through 6.

2. Verify Critical System Processes

1. At the startup TACL window, log on to TACL:
 > SUPER.SUPER
2. Enter the LISTDEV command:
 > SCF LISTDEV
3. Verify that the LISTDEV display includes all processes shown in this example. If any of these processes are not listed in the display, call your service provider.

LDev	Name	PPID	BPID	Type	RSize	Pri	Program
0	\$0	0,5	1,5	(1,0)	102	201	\NONAME.\$SYSTEM.SYS00.OSIMAGE
3	\$YMIOP	0,256	1,256	(6,4)	80	205	\NONAME.\$SYSTEM.SYS00.OSIMAGE
5	\$Z0	0,7	1,7	(1,2)	102	200	\NONAME.\$SYSTEM.SYS00.OSIMAGE
6	\$SYSTEM	0,257	1,257	(3,41)	4096	220	\NONAME.\$SYSTEM.SYS00.OSIMAGE
7	\$ZOPR	0,8	1,8	(1,0)	102	201	\NONAME.\$SYSTEM.SYS00.OSIMAGE
38	\$ZZKRN	0,15	1,12	(66,0)	132	180	\NONAME.\$SYSTEM.SYS00.OZKRN
39	\$ZZWAN	0,271	1,275	(50,3)	132	180	\NONAME.\$SYSTEM.SYS00.WANMGR
40	\$ZZSTO	0,272	1,282	(65,0)	4096	180	\NONAME.\$SYSTEM.SYS00.TZSTO
41	\$ZZLAN	0,14	1,15	(43,0)	132	180	\NONAME.\$SYSTEM.SYS00.LANMAN
45	\$ZSNET	0,15	1,12	(66,0)	132	180	\NONAME.\$SYSTEM.SYS00.OZKRN
46	\$ZNET	0,16	1,14	(50,63)	3900	175	\NONAME.\$SYSTEM.SYS00.SCP
61	\$ZM01	1,11		(45,0)	132	201	\NONAME.\$SYSTEM.SYS00.QIOMON
62	\$ZM00	0,13		(45,0)	132	201	\NONAME.\$SYSTEM.SYS00.QIOMON
63	\$ZLOG	0,286		(1,0)	4024	150	\NONAME.\$SYSTEM.SYS00.EMSACOLL
72	\$DSMSCM	0,280	1,261	(3,41)	4096	220	\NONAME.\$SYSTEM.SYS00.TSYSDP2
79	\$AUDIT	0,273	1,271	(3,41)	4096	220	\NONAME.\$SYSTEM.SYS00.TSYSDP2
85	\$ZTCP0	0,299	1,280	(48,0)	32000	200	\NONAME.\$SYSTEM.SYS00.TCPIP
88	\$ZTNP0	0,301	1,276	(46,0)	6144	170	\NONAME.\$SYSTEM.SYS00.TELSERV
98	\$ZTCP1	1,283	0,304	(48,0)	32000	200	\NONAME.\$SYSTEM.SYS00.TCPIP
100	\$ZTNP1	1,285	0,305	(46,0)	6144	170	\NONAME.\$SYSTEM.SYS00.TELSERV

3. Verify Disk Drives

1. Enter the SCF STATUS DISK command:
 > SCF STATUS DISK \$*
2. Verify that the STATUS DISK display includes all disk drives in this example. If any of these drives are not listed in the display, contact your service provider.

STORAGE - Status DISK \NONAME.\$AUDIT						
LDev	Primary	Backup	Mirror	MirrorBackup	Primary PID	Backup PID
79	*STARTED	STARTED	*STARTED	STARTED	0,273	1,271
STORAGE - Status DISK \NONAME.\$DSMSCM						
LDev	Primary	Backup	Mirror	MirrorBackup	Primary PID	Backup PID
72	*STARTED	STARTED	*STARTED	STARTED	0,280	1,261
STORAGE - Status DISK \NONAME.\$SYSTEM						
LDev	Primary	Backup	Mirror	MirrorBackup	Primary PID	Backup PID
6	*STARTED	STARTED	*STARTED	STARTED	0,257	1,257

3. Verify that the primary, backup, mirror, and mirror backup paths are all STARTED. If any paths are STOPPED, restart the disks.

4. Verify Tape Drive

1. Enter the SCF STATUS TAPE command:

```
> SCF STATUS TAPE $*
```
2. Verify that the STATUS TAPE display includes a least one tape drive configured and running, as shown in the following example. If no tape drive is listed in the display, call your service provider.

STORAGE - Status TAPE \$T0150							
LDev	State	Sub State	Primary PID	Backup PID	Device	Status	
71	STARTED	UP	0,282	1,273	READY		

3. Verify the following:
 - The state of the tape drive is STARTED
 - The substate is UP
 - The device status is READY
4. If the state, substate, or status of the tape drive is not as listed here, restart the tape drive.

5. Verify Firmware

Use the OSM Service Connection or TSM Service Application to verify that all updatable firmware is at the proper revision level.

For more information, see the *OSM User's Guide* or the *TSM Online User Guide*.

6. Verify State of the Internal ServerNet Fabric

To verify that the paths and connections within the ServerNet system area network (ServerNet SAN) are properly configured and functional:

1. Log on to the OSM Service Connection or TSM Service Application or.
2. In the tree pane, check for alarms on the Internal ServerNet X and Y Fabric objects.
3. If an alarm exists:
 - a. Select the fabric object displaying the alarm.
 - b. Select the Alarms tab of the details pane.
 - c. Select the individual alarm.
 - d. Select **Detail**.
4. Diagnose and resolve any problems that are causing the alarm. If necessary, contact your service provider.

4. Configure the System

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Use this section, regardless of the number of processors in your system, after verifying system operations. You must configure kernel-managed swap files, the OSM or TSM package, the system attributes, and DSM/SCM in the order specified in these procedures.

1. Configure Passwords

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1a. Configure Super ID and Null User Passwords

1. Log on to TACL using the super ID (255,255):

```
> logon super.super  
> password: newpassword
```
2. Assign a password to the super ID (255,255):

```
> password newpassword
```
3. If you need the 0,0 (NULL.NULL) user ID, assign a password to it:

```
> logon null.null  
> password newpassword
```

If you do not need the 0,0 (NULL.NULL) user ID, delete it:

```
> deluser null.null
```

1b. Configure Root User Password

1. Log on to the OSM or TSM Low-Level Link.
2. Complete a System Discovery.
3. From the File menu, select **Add/Remove User IDs**.
4. In the MSP Users dialog box:
 - a. Select the root user. (Predefined for the low-level link on new systems.)
 - b. Click **Modify**.
5. In the Change Low-Level Link Password dialog box:
 - a. Type a new password for the root user. Changing the password is strongly recommended for security.
 - b. Type the new password again to confirm it.
 - c. Click **Change**.
6. Click **OK**.
7. Click **OK**.
8. In the MSP Users dialog box, click **OK**.

2. Configure Kernel-Managed Swap Files

1. Log on to TACL using the super ID (255,255):

```
> logon super.super  
> password: password
```

2. At the TACL prompt, type NSKCOM.
3. Use the NSKCOM ADD command to create swap files for each processor. For example:

```
NSK- ADD SWAPFILE $volume.subvolume.filename, CPU nn, SIZE  
nnn MB
```

Note. When naming configured swap files, do not use the naming convention for default swap files, \$SYSTEM.ZSYSSSWAP.SWAP_{nn}.

4. Start the swap files. For example:

```
NSK- START SWAPFILE $volume.subvolume.filename
```

5. Confirm the amount of configured swap space for each processor. For example:

```
NSK- INFO SWAPFILE *
```

The minimum recommended file size of the swap file for each processor is approximately twice the size of the processor memory.

For more information, see the *Kernel-Managed Swap Facility (KMSF) Manual*.

3. Configure OSM or TSM Environment

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3b. Update Emergency Repair Disk or Automated System Recovery Disk	E-36

The following procedure configures the default OSM or TSM environment on your system. You must have the latest OSM or TSM software.

Accepting the default values might not provide the configuration you want. For example, dial-in and dial-out capability are not configured by default. However, you can change your configuration later.

To change your OSM or TSM configuration, or to complete the initial configuration without using the OSM or TSM default configuration values, see the *OSM User's Guide* or the *TSM Configuration Guide*.

3a. Configure Dial-Out Workstation

1. Start the OSM or TSM Notification Director.
2. In the Systems menu, select the system to be configured.
3. In the Licensing dialog box, click **Continue**.
4. In the Logon dialog box:
 - a. Type a valid user ID and password for the NonStop Kernel operating system.
 - b. Click **Log on**.
5. In the System Configuration dialog box, click the **Preferences** tab.
6. In the Preferences tab, select the following in the Dial-out Point Definition box:
 - Select **Primary Dial-out Point** when configuring the primary system console.
 - Select **Backup Dial-out Point** when configuring the backup system console.
7. Click **OK** to close the System Configuration dialog box.

3b. Update Emergency Repair Disk or Automated System Recovery Disk

Update your Windows 2000 ERD or Windows XP ASR disk using the same procedure you used for creating an emergency repair disk or automated system recovery disk. See [11. Create Emergency Repair Disk or Automated System Recovery Disk](#) on page E-18. Follow the applicable online help. Update the emergency repair disk or automated system recovery disk any time you change the configuration of your workstation in a way that changes the registry.

4. Configure System Attributes

- △ **Caution.** On a new system, you must complete these procedures before you run DSM/SCM or any other program that uses NonStop SQL/MP. Otherwise you might corrupt your SQL database.

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4a. Save Current Configuration Database

- Log on to TACL using the super ID (255,255) and a valid password.
- List the saved configuration files. At the SCF prompt:


```
-> FUP INFO $SYSTEM.ZSYSCONF.CONF*
```
- Save the current configuration using a unique file name. At the SCF prompt:


```
-> SAVE CONFIGURATION xx.yy
```

 where *xx.yy* is a number in the range 0.0 through 99.99.

A display appears in the terminal-emulation window as shown in the following example. This example saves the fourth minor change to the current system configuration to the file \$SYSTEM.ZSYSCONF.CONF0104.

```
-> SAVE CONFIGURATION 1.4
The configuration file $SYSTEM.ZSYSCONF.CONF0104 has been created.
```

4b. Set System Name, Number, and Time

1. Start SCF:

```
> SCF
```

2. Specify the Kernel subsystem and display the current settings:

```
-> ASSUME SUBSYS $ZZKRN
```

```
-> INFO, DETAIL
```

3. Type a unique (within your Expand network) system name and system number:

```
-> ALTER, SYSTEM_NAME \sys-name , SYSTEM_NUMBER sys-number
```

4. Type system time attributes:

```
-> ALTER, DAYLIGHT_SAVING_TIME time , TIME_ZONE_OFFSET offset
time is { TABLE | USA66 | NONE }; NONE is the default value.
```

```
offset is { [ + | - ] [ h ] h [ :mm ] }; 0:00 is the default value.
```

For more information on *time* and *offset*, see the SCF ALTER command in the *SCF Reference Manual for the Kernel Subsystem*.

5. Confirm the changes.

```
-> INFO
```

6. From a TACL prompt, verify that the \$SYSTEM alternate key file does not point to \NONAME.\$SYSTEM.SYSTEM.USERIDAK.

```
-> FUP INFO $SYSTEM.SYSTEM.USERID,DETAIL
```

Look for the Alt File parameter, which should not point to the system name.

7. Exit SCF.

8. If your system arrived with Open System Services (OSS) preconfigured, then after you change the system number (Step 3), you might experience a problem. The Enscribe key-sequenced database file \$SYSTEM.ZXOSSMON.ZOSSFSET, which defines OSS filesets in the OSS file system, might refer to the old system number.

If it does, the OSS Monitor cannot open the database and the OSS file system cannot be started. Any product that ships with an Enscribe key-sequenced file might have this problem.

To prevent this situation, enter the following SCF commands after changing the system number:

```
-> VOLUME $SYSTEM.ZXOSSMON
```

```
-> ALTER ZOSSFSET, ALTFILE (0,ZOSSFS00)
```

```
-> ALTER ZOSSFSET, ALTFILE (1,ZOSSFS01)
```

```
-> EXIT
```

4c. Restart System

1. Log on to the OSM or TSM Low-Level Link.
2. In the tool bar, click **Processor Status**. The Processor Status dialog box appears.
3. Select all processors.
4. From the Processor Actions drop-down menu, select **Halt**.
5. Click **Perform action**.
6. In the Processor Status dialog box, monitor the progress of the action. Wait for the processors to halt before proceeding.
7. From the toolbar, click **Start System**. The System Startup dialog box appears.
8. In the System Startup dialog box:
 - a. Type **00** as the number of the SYS_{nn} subvolume containing the system image to be loaded.
 - b. Select **Current** as configuration file.
 - c. Ensure that the CIIN disabled option has no check mark in the checkbox.
9. Click **Start system**.
Four windows are launched: two startup event stream and two startup TACL windows. It might take a few seconds before the windows open.
10. When the system load is complete, the System Status portion of the System Startup dialog box displays:

SYSTEM STARTUP COMPLETE, NSK RUNNING ON PROCESSOR *n*
11. In the toolbar, click **Processor Status**.
12. Verify that the NonStop Kernel operating system is running for all processors.
13. Close the Processor Status dialog box.

Note. The Start system function automatically resets the processor with the new attributes you defined. If you do not use the Start system function to reload the processors, you must first halt the processors, and then reset them by selecting Reset from the Processor Actions menu on the Processor Status dialog box.

4d. Check and Reset System Time If Necessary

Check the system time, log on to TACL, and reset the system time if the time is wrong:

```
> SETTIME month day year time
```

4e. Invoke STARTCOM and STARTSCF Startup Files

1. If necessary, log on to a TACL prompt.
2. At the TACL prompt, invoke the STARTCOM file:

```
> OBEY $SYSTEM.ZSYSCONF.STARTCOM
```

The STARTCOM file:

- Invokes the \$SYSTEM.ZSYSCONF.STARTSCF command file to configure standard NonStop TCP/IP objects
- Starts NonStop TCP/IP services using the LAN devices configured in the CONFIG file

The STARTCOM and STARTSCF startup files configure objects that are not stored in the CONFIG file and therefore must be reconfigured by invoking their command files after a system load.

4f. Reconfigure Processes That Use SNMP

1. At a TACL prompt, start SCF:

```
> SCF
```

2. List each process that uses SNMP:

```
-> LISTDEV SNMP
```

3. Type the following commands for each process that uses SNMP:

```
-> ASSUME PROCESS $ process-name
```

```
-> INFO ENDPOINT *
```

```
-> STOP ENDPOINT endpoint-name
```

```
-> ALTER ENDPOINT endpoint-name, network, $ tcpip
```

```
-> START ENDPOINT endpoint-name
```

```
-> INFO TRAPDEST *
```

```
-> STOP TRAPDEST trapdest-name
```

```
-> ALTER TRAPDEST trapdest-name, network, $ tcpip
```

```
-> START TRAPDEST trapdest-name
```


5. Configure DSM/SCM

Perform this procedure before installing any new software (SPRs or SUTs) on your system.

Note. These basic DSM/SCM procedures configure the server as a stand-alone host system. For more information on these procedures and other DSM/SCM procedures, including configuring the system as a remote target system, see the *DSM/SCM User's Guide*.

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5a Change System Name Parameter in DSM/SCM Client

1. Double-click the **SETUP.EXE** file in the DSMSCM program group.
DSM/SCM displays the Setup Logon screen, followed by licensing information and a series of dialog boxes.
2. Click **OK** in each dialog box until the dialog box asking for the system name appears.
3. Type the host system name. Click **OK**.
SETUP updates the DSMSCM.INI file on your workstation with the information you entered.
4. A dialog box appears
5. saying that SETUP is finished and asking if you want to start the Planner Interface. Click **No**.
6. Close the DSM/SCM program group.

5b. Configure DSM/SCM System Environment

1. Log on to TACL using the super ID (255,255).
2. Start the Transaction Management Facility (TMF) subsystem:

```
> TMFCOM START TMF
```

3. Run INITENV from the ZDSMSCM subvolume:

```
> VOLUME $DSMSCM.ZDSMSCM  
> RUN INITENV
```

INITENV displays a series of questions. Answer them as described in the following steps.

4. To change the default settings, enter **C**.

Note. You can use the Change option only once. An Initialization Build/Apply is not necessary when you use the Change option. However, if you change the system name and number again, you must use the Reinitialize option to reinitialize DSM/SCM, and then perform an Initialization Build/Apply before you can use DSM/SCM to manage software

5. INITENV displays the current system name and system number. Indicate that the information is correct.

This step confirms the system name and system number for DSM/SCM. It does not change the system name and number. Changing the system name and system number was performed in [4b. Set System Name, Number, and Time](#) on page E-38.

6. Indicate that the system is a host system.
7. Type the database/Pathway owner user ID if you want to change the default value from being the super ID.
8. Type the name of a hometerm for DSM/SCM to use.

5c. Configure Host Information for Host Database

1. Run ZPHIHMI from the ZDSMSCM subvolume:

```
> VOLUME $DSMSCM.ZDSMSCM  
> RUN STARTSCM  
> RUN ZPHIHMI
```

2. Log on to the host Maintenance Interface using the super ID.
3. Add planners and their security as follows:

Note. The super ID is already set up as a planner.

- a. In the Maintenance Interface main menu, select **3** (Security Maintenance Menu). Press **F1**.
 - b. In the Security Maintenance Menu, select **1** (Planner Security Maintenance). Press **F1**.
 - c. In the Planner Security Maintenance screen, add the appropriate planners as instructed by the interface, specifying which DSM/SCM tasks each planner can perform.
 - d. When all planners are added, press **F16** twice to return to the main menu.
4. Modify the Configuration Manager Profile:
 - a. In the main menu, select **7** (Configuration Manager Profile Maintenance) and press **F1**.
 - b. In the Configuration Manager Profile Maintenance screen, review the information, and change the default values if necessary.
-
- Note.** If necessary, use the SCF command LISTDEV TYPE 4 or SCF NAMES \$ZZSTO, SUB TAPE to determine the name of the tape drive connected to the system.
-
- c. Press **Shift-F2** to enter changes. Press **F16** to return to the main menu.
5. Press **Shift-F16** to exit the host Maintenance Interface.

5d. Configure Target Information for Host's Logical Target

1. Run ZPHITMI from the ZDSMSCM subvolume.


```
> VOLUME $DSMSCM.ZDSMSCM
> RUN ZPHITMI
```
2. Log on to the target Maintenance Interface using the super ID.
3. Add operators and their security:

Note. The super ID is already set up as an operator.

- a. In the Maintenance Interface main menu, select **3** (Security Maintenance Menu). Press **F1**.
 - b. In the Security Maintenance Menu, select **1** (Operator Security Maintenance).
 - c. In the Operator Security Maintenance screen, add the appropriate operators as instructed by the interface, specifying which DSM/SCM tasks each operator can perform. When all operators are added, press **F16** twice to return to the main menu.
4. Press **Shift-F16** to exit the target Maintenance Interface.

5e. Restart Inspect Monitor Process

If Visual Inspect is installed on your system, for the G05 and later RVUs, \$ZPM provides Inspect debugging and saveabend file capability by automatically starting the Inspect Monitor process \$IMON early in the system startup sequence. However, Visual Inspect requires that \$IMON be started after the TCP/IP and Port Mapper processes.

After \$ZPM has started all processes specified in the CONFIG file, and you start all other TCP/IP and Port Mapper processes, stop and restart \$IMON as follows:

1. Log on as the super ID.
2. At the TACL prompt, stop \$IMON by entering:


```
> Stop $IMON
```
3. At the TACL prompt, restart \$IMON by entering:


```
> IMON /name $IMON, term $YMIOP.#CNSL, cpu p, nowait /b
```

where *p* and *b* are the primary and backup processors, respectively, where \$IMON is to run.

5. Install the Backup System Console

Your system might not include a backup system console. If you received two system consoles, the second one is the backup console.

△ **Caution.** All system consoles are shipped with the same IP address. To permit the primary and backup system consoles to operate simultaneously, specify a unique IP address for the backup system console before you connect that console to the Ethernet switch or hub and server.

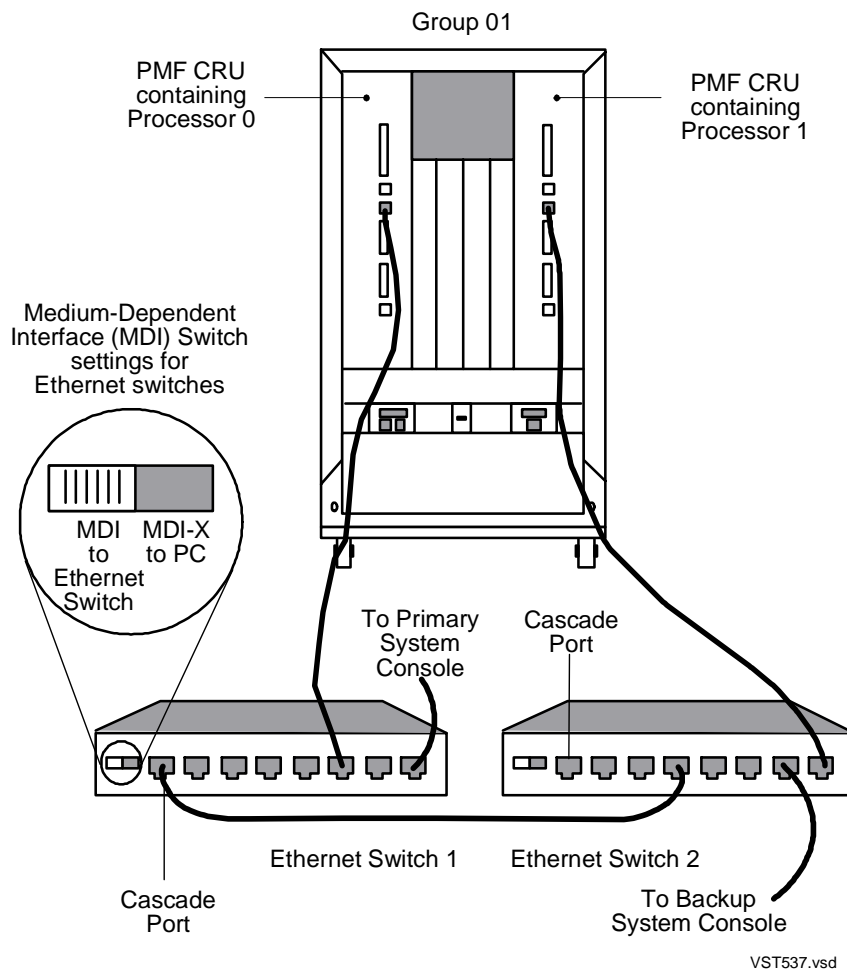
1. Unpack and assemble the backup console. See [10. Install Primary System Console](#) on page E-16.
2. Select **Start > Setting > Network Dial-up Connection > Local Area Connection**. The Local Area Connection dialog box appears.
3. From the general tab, click **properties**. The Local Area Connection properties dialog box appears.
4. From the displayed list:
 - a. Click **Internet Protocol (TCP/IP)**.
 - b. Click **properties**.
 - c. Click **Specify an IP address**.
 - d. Enter the following values:

IP Address	192.231.36.4
Subnet Mask	255.255.255.0
Default Gateway	192.231.36.9
 - e. Click **OK** to close all the windows.
5. Close all dialog boxes.
6. Click **Start**.
7. Click **Setting > Control Panel > System**. The system properties dialog box appears.
8. Click the **Network Identification** tab.
9. Click **Properties**.
10. Change the computer name to **TANDEM2**.
11. Click **OK** to close the window.
12. Unpack and install the Ethernet switch 2 using documentation that came with the switch.
13. Connect the backup system console to switch 2:
 - a. Connect an Ethernet cable to the network interface card behind the console.
 - b. Connect the other end of this Ethernet cable to a port on switch 2.

14. Connect an Ethernet cable from the cascade port of switch 1 to a port on switch 2, as shown following. Do not use the cascade port on switch 2.
15. Disconnect the cable between switch 1 and the Ethernet port on the PMF CRU in slot 55, group 01.
16. Connect the cable between switch 2 and the Ethernet port on the PMF CRU in slot 55, group 01 as shown:

Note. The connections shown are only examples. Actual connections might vary.

Figure E-17. Adding a System Console to the Operating Configuration



17. Perform [3. Configure OSM or TSM Environment](#) on page E-36.

Note. The backup system console might display the following message: Unable to establish a TCP/IP connection to:0.0.0.0 23. To fix this problem, do not modify the default parameter file TDMTSM.PRM. See the TSM Low-Level Link online help.

FastPath Tasks: Optional

This appendix contains all optional configuration tasks for a two-processor or four-processor NonStop S-series server in the Tetra 8 topology.

If your server contains more than four processors or must be configured in the Tetra 16 topology, do not use this appendix. See the rest of this manual.

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1. Prerequisites

Before you change the system configuration, complete the following tasks.

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1a. Verify Required Configuration Changes

Verify that the procedures in [Appendix E, FastPath Tasks: Required](#) are complete.

1b. Review Initial System Configuration

The following initial system configuration is shipped in the OPEN FIRST box:

- CONFTEXT configuration file list
- SCF initial configuration file list: \$SYSTEM. ZSYSCONF. SCF0000.

The SCF0000 file is an input file to the initial \$SYSTEM. ZSYSCONF.CONFIG file.

Verify how the system is initially configured:

- Which processes and devices are already configured in the initial system configuration database and started automatically during system load?
- Which processes do not start automatically and therefore require startup files?
- Which processes and devices must not be renamed?

For information about default values for OSM or TSM, see the *OSM User's Guide* or the *TSM Configuration Guide* as appropriate.

1c. Start Required Processes

Before you perform some system configuration procedures, such as configuring Expand-over-IP, certain processes must be started. Some of these processes do not start automatically when the system is loaded. Examples of such processes include:

- NonStop TCP/IP processes (except \$ZTCP0 and \$ZTCP1)
- Parallel Library TCP/IP processes and associated routes and subnets

For information about the standard configuration and startup files for NonStop TCP/IP processes that are shipped with your system, see [Preloaded and Supported Hardware and Software](#) on page 1-49.

To modify the standard startup files or create startup files for required processes, see [3. Automate System Startup](#) on page F-7.

1d. Save Current System Configuration

Save the current system configuration (CONFIG) before making any changes. This practice allows you to undo changes if necessary. If the most recent change results in a problem, you can restore the previous system configuration by loading the system from the saved system configuration file.

Save the current CONFIG file as follows:

1. List the saved configuration files. At the SCF prompt:

```
-> FUP INFO $SYSTEM.ZSYSCONF.CONF*
```

2. Save the current configuration using a unique file name. At the SCF prompt:

```
-> SAVE CONFIGURATION xx.yy
```

where *xx.yy* is a number in the range 0.0 through 99.99.

1e. If Your Server Will Be Part of a ServerNet Cluster

The NonStop ServerNet Cluster product connects multiple servers in a cluster (up to 24 servers using the star topologies and up to 64 servers using the layered topology) and passes information from one server to any other server in the cluster. This product extends the ServerNet fabrics outside the system boundary and allows the ServerNet protocol to be used for intersystem messaging.

A ServerNet cluster consists of individual servers, each containing internal ServerNet fabrics, connected through fiber-optic cables and cluster switches to other servers. Only NonStop S-series servers can belong to a ServerNet cluster.

For information about configuring a server as part of a ServerNet cluster, see the *ServerNet Cluster Manual* (for star topologies) or the *ServerNet Cluster 6780 Planning and Installation Guide* (for layered topologies).

2. Customize the System Configuration

Adapt the CONFIG file to your system. Some of the ways you can customize the CONFIG file include:

- Renaming SCF objects that are not part of the standard configuration
- Adding SCF objects that are not part of the initial system configuration

[2a. Change SCF](#)

[F-4](#)

[2b. Rename SCF Objects in the CONFIG File](#)

[F-5](#)

[2c. Add SCF Objects to the CONFIG File](#)

[F-6](#)

2a. Change SCF

1. Create a command file containing the SCF commands to change the configuration:

- a. Copy the SCF0000, STARTCOM, and STARTSCF files as templates for SCF command files.

Changing these files directly is not recommended.

- b. Configure important processes as persistent generic processes.

Persistent processes start automatically at system load and restart automatically if stopped.

- c. Place commands that change the CONFIG file in a command file that is separate from the commands that do not change the CONFIG file.

Commands that change the CONFIG file use the SCF interface to the WAN, Kernel, storage, LAN, ServerNet/FX, and ATM subsystems. Commands that do not change the CONFIG file use the SCF interface to all other subsystems.

2. For fallback purposes, save the current system configuration database CONFIG file. See [1d. Save Current System Configuration](#) on page F-3.

3. Invoke the SCF command file created in Step 1. For example:

```
-> SCF/ IN SCF0000/
```

For more information, see the SCF subsystem documentation.

2b. Rename SCF Objects in the CONFIG File

The naming convention for SCF objects usually suggests the physical location of the object in the enclosure. Most SCF objects can be renamed. The SCF objects that cannot be renamed include:

- \$SYSTEM disks
- The following processes and devices used by OSM or TSM:

LANX	\$ZCVP0	\$ZPRP0	\$ZSPE	\$ZCMOM
LANY	\$ZCVP1	\$ZPRP1	\$ZTSM	\$ZOEV
MIOE0	\$ZTCP0	\$ZTNP0	\$ZTSMS	\$ZOLHI
MIOE1	\$ZTCP1	\$ZTNP1	\$ZOSM	
- The following generic processes:

\$ZZKRN.#CEV-SERVER-MANAGER-P0	\$ZZKRN.#CEV-SERVER-MANAGER-P1
\$ZZKRN.#CLCI-TACL	\$ZZKRN.#IMON
\$ZZKRN.#QIOMON-0	\$ZZKRN.#QIOMON-1
\$ZZKRN.#QIOMON-2	\$ZZKRN.#QIOMON-3
\$ZZKRN.#ROUTING-DIST	\$ZZKRN.#SCP
\$ZZKRN.#TSM-SNMP	\$ZZKRN.#SP-EVENT
\$ZZKRN.#TSM-SRM	\$ZZKRN.#ZLOG
\$ZZKRN.#ZTCP0	\$ZZKRN.#ZTCP1
\$ZZKRN.#ZHOME	\$ZZKRN.#ZZKRN
\$ZZKRN.#ZZLAN	\$ZZKRN.#ZZSTO
\$ZZKRN.#ZZWAN	

You can display the names of these generic processes by entering the following SCF command:

```
-> NAMES $ZZKRN
```

- \$DSMSCM and \$AUDIT disks (strongly discouraged)

2c. Add SCF Objects to the CONFIG File

You can customize your system configuration by adding SCF objects that are not part of the initial system configuration. For example, you can:

- Add devices that were not included in the initial system configuration.
- Configure important system processes as generic processes.

Only processes that can be started from a TACL prompt and do not require PARAM or ASSIGN messages can be configured as generic processes. For more information about configuring generic processes, see the *SCF Reference Manual for the Kernel Subsystem*.

For example, to make an important system process, such as the Expand manager process, start automatically at system load and have persistence (that is, to restart automatically if stopped abnormally), create it as a generic process in the system configuration database:

1. Create an SCF command file containing the correct commands. For example, you can configure the Expand manager process as follows:

```
=====
== Expand manager process ==
=====
ADD PROCESS $ZZKRN.#ZEXP, NAME $ZEXP, PRIORITY 180, AUTORESTART 10, &
    PROGRAM $SYSTEM.SYSTEM.OZEXP, PRIMARYCPU 0, BACKUPCPU 1, TYPE OTHER, &
    STARTMODE SYSTEM, HOMETERM $ZHOME, OUTFILE $ZHOME, &
    STARTUPMSG "<BCKP-CPU>"
```

2. Save the current configuration database file. See [1d. Save Current System Configuration](#) on page F-3.
3. Invoke the command file created in Step 1. For example:


```
> SCF / IN GPADD /
```
4. Start the process.

3. Automate System Startup

Some system applications and subsystems are not configured to start automatically in the initial CONFIG file. Startup command files can automate the starting of devices and processes on the system. Automating system startup minimizes the possibility of operator errors caused by forgotten or incorrectly typed commands.

To automate system startup, you can [Modify Provided Startup Files](#) or [Create Startup Files](#).

Modify Provided Startup Files

For a description of the startup files shipped with the server, see [Preloaded and Supported Hardware and Software](#) on page 1-49. Consider modifying the RELOAD command in the CIIN file to reload only a minimal set of processors (such as processor 1). This strategy allows you to test for successful startup of a minimal system environment before you bring up the remainder of the system.

Create Startup Files

You can implement the system startup sequence with a collection of startup files, each with a specific purpose. Startup files can be created for:

- System software
- Subsystems
- Communications lines
- Applications

Tips for Startup Files

- Copy the STARTCOM and STARTSCF files on the \$SYSTEM.ZSYSCONF subvolume and make changes to these copies to create your own command files. Do not alter these files directly.
- The sequence in which you invoke startup files can be important. Some processes require other processes to be running before they can be started. Be sure to indicate the order in which startup files are to be run.
- You must configure a line-handler process for a data communications line in the CONFIG file before you can invoke a startup file for that line, if one is required.
- You do not need to create startup files for processes in the CONFIG file that are configured to start automatically.
- It is recommended that you specify “N” for the read access portion of the file security attribute (RWEF) for your startup files to allow the file to be read by any user on the network. For example, you might secure these files “NCCC.”

4. Automate System Shutdown

Automating system shutdown aids the operator in bringing the system to an orderly halt. You can implement the system shutdown sequence with a collection of shutdown files, each with a specific purpose.

Be sure to indicate the order in which shutdown files are to be run; the sequence in which you invoke shutdown files is important. The shutdown file sequence reverses the order of commands in the startup file sequence. Some processes require that other processes be stopped before they can be stopped. Shut down your system by invoking the shutdown files in this order:

1. Shutdown files for the applications
2. Shutdown files for the communications lines
3. Shutdown files for the subsystems
4. Shutdown files for the system software
5. Shutdown file for the system

Tips for Shutdown Files

It is recommended that you specify “N” for the read access portion of the file security attribute (RWEF) for your shutdown files to allow the file to be read by any user on the network. For example, you might secure these files “NCCC.”

5. Configure a SWAN or SWAN 2 Concentrator

The ServerNet wide area network (SWAN) concentrator and the SWAN 2 concentrator are communications devices that connect to a NonStop S-series server through dual Ethernet ports and provide WAN connections. They support both synchronous and asynchronous data using EIA-232, EIA-449, V.35, and X.21 electrical and physical interfaces.

The SWAN concentrator or SWAN 2 concentrator connects to your NonStop S-series server through Ethernet ports on one or two Ethernet 4 ServerNet adapters (E4SAs).

To configure a SWAN concentrator or SWAN 2 concentrator, you can use the WAN Wizard Pro configuration tool, a graphical user interface (GUI) that eliminates using multiple Subsystem Control Facility (SCF) commands.

Access the WAN Wizard Pro

From the task bar on your system console, click:

Start > Programs > HP WAN Wizard Pro > WAN Wizard Pro

6. Configure an Expand-Over-IP Line

This section describes how to configure an Expand-over-IP connection to a network through a NonStop K-series server.

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3a. Configure and Start an Expand-Over-IP Line-Handler Process	F-18
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4a. Configure and Start an Expand-Over-IP Line-Handler Process	F-19
5. On Either NonStop Server	F-21
5a. Start the Expand-Over-IP Line	F-21

To help you create an Expand connection quickly, this procedure describes how to configure a single Expand-over-IP line with default configuration values. To customize the Expand configuration described in this section, see the *Expand Configuration and Management Manual*.

Prerequisites

The NonStop S-series and K-series servers should be in the following states.

NonStop S-Series Server

State	Notes
The default system configuration with which the system was shipped is complete.	
The initial OSM or TSM configuration is complete.	See 3. Configure OSM or TSM Environment on page E-36.
The system name and system number are defined.	See 4b. Set System Name, Number, and Time on page E-38.
The NonStop Kernel subsystem is configured and started.	This function is automatic.
The QIO subsystem is configured and started.	This function is automatic.
The WAN subsystem manager process (\$ZZWAN) is configured and started.	This process should start automatically.
The ServerNet LAN Systems Access (SLSA) subsystem is configured and started.	This subsystem should start automatically.
An Ethernet 4 ServerNet adapter (E4SA) is installed, configured, and started.	This adapter should start automatically.
A NonStop TCP/IP process and its associated routes and subnets are defined and started.	To start the NonStop TCP/IP process, use the STARTCOM and STARTSCF files.

NonStop K-Series Server

State
The default system configuration with which the system was shipped is complete.
The initial SYSGENR/Install software configuration is complete.
The following subsystems are configured and started: <ul style="list-style-type: none"> ● HP Tandem LAN Access Method (TLAM) ● QIO
An Ethernet controller is installed, configured, and started.
The system name and system number are defined.
The following processes are configured and started: <ul style="list-style-type: none"> ● A NonStop TCP/IP process and associated routes and subnets ● The Expand network control process (\$NCP)
The server is running the D40 product version of the Expand subsystem.
A dummy controller is configured and has available unit numbers.

1. On the NonStop S-Series Server

1a. Save the Current Configuration

At the SCF prompt:

```
-> SAVE CONFIGURATION xx.yy
```

where *xx.yy* is a number in the range 0.0 through 99.99.

A display appears in the terminal-emulation window as shown in the following example. In this example, the operator saves the fourth minor change to a current system configuration to the file \$SYSTEM.ZSYSCONF.CONF0104.

```
-> SAVE CONFIGURATION 1.4
The configuration file $SYSTEM.ZSYSCONF.CONF0104 has been created.
```

1b. Configure \$ZEXP

Note. Do not log off or exit SCF on the NonStop S-series server after finishing this task. The remaining tasks in this section that you must perform on the NonStop S-series server require the use of SCF commands and super ID privileges.

1. Log on to the NonStop S-series server using the super ID (255.255) and enter the correct password at the Password prompt:

```
> logon super.super
```

```
Password: password
```

2. At the TACL prompt, start the Subsystem Control Facility (SCF):

```
> SCF
```

3. Add the Expand manager process (\$ZEXP) as a generic process. At the SCF prompt:

```
-> ADD PROCESS $ZZKRN.#ZEXP, NAME $ZEXP, PRIORITY 180, &
    AUTORESTART 10, PROGRAM $SYSTEM.SYSTEM.OZEXP, &
    PRIMARYCPU 0, BACKUPCPU 1, TYPE OTHER, STARTMODE SYSTEM, &
    HOMETERM $ZHOME, OUTFILE $ZHOME, STARTUPMSG "<BCKP-CPU>"
```

4. Start the Expand manager process (\$ZEXP):

```
-> START PROCESS $ZZKRN.#ZEXP
```

Note. Use this command to start \$ZEXP for the first time. Thereafter, the persistence monitor \$ZPM automatically:

- Starts \$ZEXP during a system load or processor reload
 - Restarts \$ZEXP if it stops while the system is running
-

1c. Configure \$NCP

1. From an SCF prompt, create a profile for the network control process:

```
-> ADD PROFILE $zzwan.#pexpncp, file $system.sys00.pexpncp
```

2. Confirm that the profile has been created:

```
-> INFO PROFILE $zzwan.#pexpncp
```

3. Create the network control process:

```
-> ADD DEVICE $zzwan.#ncp, iopobject $system.sys00.ncpobj, &
-> PROFILE pexpncp, cpu 0, altcpu 1, type (62,6), rsize 1
```

4. Start the network control process:

```
-> START DEVICE $zzwan.#ncp
```

1d. Obtain TCP/IP Information

1. Determine the name of the NonStop TCP/IP, Parallel Library TCP/IP (TCPSAM), or NonStop TCP/IPv6 (TCP6SAM) process you want to associate with the Expand-over-IP line-handler process.

To list all TCP/IP transport service providers:

```
> LISTDEV TCPIP
```

The SCF LISTDEV program displays process types as follows:

Type of process	Program field ends in ...
Conventional NonStop TCP/IP	TCPIP
Parallel Library TCP/IP	TCPSAM
NonStop TCP/IPv6	TCP6SAM

The following example output shows both TCPSAM and NonStop TCP/IP processes because NonStop TCP/IP and Parallel Library TCP/IP are both running on this system. (Parallel Library TCP/IP and NonStop TCP/IPv6 cannot run on the same system.)

Example F-1. SCF LISTDEV TCPIP Display

LDev	Name	PPID	BPID	Type	RSize	Pri	Program
124	\$ZTC02	0,301	1,287	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCPSAM
125	\$ZTCP0	0,304	1,282	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCPIP
129	\$ZTCP1	1,285	0,308	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCPIP
160	\$ZTC21	2,292	3,276	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCPIP
161	\$ZTC01	0,313	1,292	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCPIP
165	\$ZTC03	0,316	1,293	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCPIP

To list all NonStop TCP/IP and TCP6SAM transport service providers:

```
> LISTDEV TCPIP
```

The following output shows both TCP6SAM and NonStop TCP/IP processes because NonStop TCP/IP and NonStop TCP/IPv6 are both running on this system. (Parallel Library TCP/IP and NonStop TCP/IPv6 cannot run on the same system.)

Example F-2. SCF LISTDEV TCP6SAM Display

LDev	Name	PPID	BPID	Type	RSize	Pri	Program
124	\$ZTC02	0,301	1,287	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCP6SAM
125	\$ZTCP0	0,304	1,282	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCPIP
129	\$ZTCP1	1,285	0,308	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCPIP
160	\$ZTC21	2,292	3,276	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCPIP
161	\$ZTC01	0,313	1,292	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCPIP
165	\$ZTC03	0,316	1,293	(48,0)	32000	200	\MYSYS.\$SYSTEM.SYS00.TCPIP

- The NonStop TCP/IP, TCPSAM, or TCP6SAM process you select must have an Ethernet subnet configured.

To list the subnets configured for a particular TCP/IP process:

```
-> INFO SUBNET $tcip-process-name.*
```

[Example F-3](#) shows an SCF INFO SUBNET display. Ethernet subnets are identified by the word ETHERNET in the TYPE field.

Example F-3. SCF INFO SUBNET Display

```
TCPIP Info SUBNET \MYSIS.$ZTC21.*
```

Name	Devicename	*IPADDRESS	TYPE	*SUBNETMASK	SuName	QIO	*R
#LOOP0	\NOSYS.\$NOIOP	127.0.0.1	LOOP-BACK	%HFF000000		OFF	N
#SN1	\MYSIS.LANX	172.16.35.16	ETHERNET	%HFFFFFFF00		ON	N

- Record the name of the NonStop TCP/IP, TCPSAM, or TCP6SAM process you selected (shown in the Name field of the SCF LISTDEV display) in the *tcip_process* field in the [SCF ADD DEVICE Command Worksheet](#) on page F-18.
- Locate the first numbers in the PPID and BPID fields in the SCF LISTDEV display. These are the primary and backup processor numbers for the NonStop TCP/IP, TCPSAM, or TCP6SAM process. Record them in the *cpunum* and *altcpunum* fields in the [SCF ADD DEVICE Command Worksheet](#) on page F-18.
- Record the IP address of the subnet you want to use in the *src_ipaddr* field in the [SCF ADD DEVICE Command Worksheet](#) on page F-18 and in the *dest_ipaddr* field in the [COUP Worksheet](#) on page F-20.

6. Determine a User Datagram Protocol (UDP) port number to be used by the Expand-over-IP process:

-> STATUS PROCESS *\$tcpip-process-name*

[Example F-4](#) shows an SCF STATUS PROCESS display. UDP port numbers are identified by UDP in the Proto field.

Example F-4. SCF STATUS PROCESS Display

```
TCPIP Status PROCESS \MYSYS.$ZTC21
Status:   STARTED
PPID..... ( 2,293)      BPID..... ( 3,277)
Proto State  Laddr      Lport   Faddr   Fport   SendQ RecvQ
TCP    LISTEN   0.0.0.0      9000     0.0.0.0   *         0       0
TCP    LISTEN   0.0.0.0      telnet   0.0.0.0   *         0       0
TCP    LISTEN   0.0.0.0      ftp      0.0.0.0   *         0       0
TCP    LISTEN   0.0.0.0      finger   0.0.0.0   *         0       0
TCP    LISTEN   0.0.0.0      echo     0.0.0.0   *         0       0
UDP    172.16.35.16 5705     0.0.0.0   *         0       0
UDP    172.16.35.16 5706     0.0.0.0   *         0       0
UDP    172.16.35.16 5703     0.0.0.0   *         0       0
UDP    172.16.35.16 5704     0.0.0.0   *         0       0
UDP    0.0.0.0      1030     0.0.0.0   *         0       0
UDP    0.0.0.0      69       0.0.0.0   *         0       0
UDP    0.0.0.0      68       0.0.0.0   *         0       0
UDP    0.0.0.0      67       0.0.0.0   *         0       0
```

UDP port numbers in use are shown in the LPort field. Choose any valid unused UDP port number. Do not use well-known port numbers in the range 0 through 1023.

7. Record the UDP port number to use in the *src_ipport* field in the [SCF ADD DEVICE Command Worksheet](#) on page F-18 and in the *dest_ipport* field in [COUP Worksheet](#) on page F-20.

2. On the NonStop K-Series Server

2a. Obtain TCP/IP Information

1. Log on to the NonStop K-series server using the super ID and enter the correct password at the Password prompt:

```
> logon super.super
Password: password
```

2. At the TACL prompt, start SCF:

```
> SCF
```

3. Determine the name of the NonStop TCP/IP process you associated with the Expand-over-IP line-handler process on the NonStop K-series server:

```
-> LISTDEV TCPIP
```

[Example F-5](#) shows an SCF LISTDEV TCPIP display. Important information is highlighted in boldface type.

Example F-5. SCF LISTDEV TCPIP Display

LDev	Name	PPID	BPID	Type	RSize	Pri	Program
124	\$ZTC2	4,43	7,28	(48,0)	32000	200	\JOHN.\$SYSTEM.ZTCPIP.TCPIP
716	\$ZTC0	4,39	7,36	(48,0)	32000	150	\JOHN.\$SYSTEM.ZTCPIP.TCPIP
723	\$ZTC1	9,28	8,33	(48,0)	32000	150	\JOHN.\$SYSTEM.ZTCPIP.TCPIP
740	\$ZTC3	5,12	6,33	(48,0)	32000	150	\JOHN.\$SYSTEM.ZTCPIP.TCPIP
749	\$ZTC10	4,45	5,38	(48,0)	32000	150	\JOHN.\$SYSTEM.ZTCPIP.TCPIP
1148	\$ZTCS0	12,46	13,71	(48,0)	32000	150	\JOHN.\$SYSTEM.ZTCPIP.TCPIP
1633	\$ZTCS2	12,79	13,70	(48,0)	32000	150	\JOHN.\$SYSTEM.ZTCPIP.TCPIP

4. The NonStop TCP/IP process you select must have an Ethernet subnet configured. List the subnets configured for a particular NonStop TCP/IP process:

```
-> INFO SUBNET $tcpip-process-name.*
```

[Example F-6](#) shows an SCF INFO SUBNET display. Ethernet subnets are identified by the word ETHERNET in the TYPE field. Important information is highlighted in boldface type.

Example F-6. SCF INFO SUBNET Display

```
TCPIP Info SUBNET \JOHN.$ZTC10.*
```

Name	Devicename	*IPADDRESS	TYPE	*SUBNETMASK	SuName	QIO	*R
#LOOP0	\NOSYS.\$NOIOP	127.0.0.1	LOOP-BACK	%HFF000000		OFF	N
#EN0	\JOHN.\$LAM12	155.186.70.123	ETHERNET	%HFFFFFFC00		ON	N

5. Record the name of the NonStop TCP/IP process you selected (shown in the Name field in the SCF LISTDEV display) in the *tcpip_process* field in the [COUP Worksheet](#).

6. Record the primary and backup processor numbers (the first number in the PPID and BPID fields in the SCF LISTDEV display) in the *cpunum* and *altcpunum* fields in the [COUP Worksheet](#).
7. Record the IP address of the subnet you want to use (shown in the IPADDRESS field in the SCF INFO SUBNET display) in the *dest_ipaddr* field in the [SCF ADD DEVICE Command Worksheet](#) and in the *src_ipaddr* field in the [COUP Worksheet](#).
8. Determine a UDP port number to be used by the Expand-over-IP line-handler process:

```
-> STATUS PROCESS $tcpip-process-name
```

[Example F-7](#) shows an SCF STATUS PROCESS command. UDP port numbers are identified by UDP in the Proto field.

Example F-7. SCF STATUS PROCESS Display

```
TCPIP Status PROCESS \JOHN.$ZTC10
```

```
Status:   STARTED
```

```
PPID..... ( 4, 45)
```

```
BPID..... ( 5, 38)
```

Proto	State	Laddr	Lport	Faddr	Fport	SendQ	RecvQ
TCP	ESTAB	172.16.10.50	110	155.186.68.169	1128	0	0
TCP	ESTAB	127.0.0.1	1101	127.0.0.1	smtp	0	0
TCP	ESTAB	127.0.0.1	1100	127.0.0.1	smtp	0	0
TCP	ESTAB	127.0.0.1	smtp	127.0.0.1	1100	0	0
TCP	ESTAB	127.0.0.1	smtp	127.0.0.1	1101	0	0
TCP	LISTEN	0.0.0.0	110	0.0.0.0	*	0	0
TCP	LISTEN	0.0.0.0	6006	0.0.0.0	*	0	0
TCP	LISTEN	0.0.0.0	smtp	0.0.0.0	*	0	0
TCP	LISTEN	0.0.0.0	ftp	0.0.0.0	*	0	0
TCP	LISTEN	0.0.0.0	finger	0.0.0.0	*	0	0
UDP		172.16.10.50	11221	0.0.0.0	*	0	0
UDP		172.16.10.50	11222	0.0.0.0	*	0	0

UDP port numbers in use appear in the LPort field. You can choose any valid UDP port number that is not in use. It is recommended that you do not use well-known port numbers in the range 0 through 1023.

9. Record the UDP port number you want to use in the *dest_ipport* field in the [SCF ADD DEVICE Command Worksheet](#) and in the *src_ipport* field in [COUP Worksheet](#).
10. Exit SCF:

```
-> EXIT
```

Note. Do not log off after completing this task.

3. On the NonStop S-Series Server

3a. Configure and Start an Expand-Over-IP Line-Handler Process

1. Return to the SCF prompt at the NonStop S-series server.
2. Create a profile for the Expand-over-IP line-handler process by entering the following SCF command:

```
-> ADD PROFILE $zzwan.#pexpsip, file system.sys00.pexpsip
```
3. Add the Expand-over-IP line-handler process as a device to the WAN subsystem using the values you record in [Table F-1](#). Fields that must be replaced by values you record in the worksheet are highlighted in boldface italic type.

```
-> ADD DEVICE $zzwan.$sline, profile pexpsip, &
-> IOOBJECT $system.sys00.lhobj, &
-> ASSOCIATEDEV $tcpip_process, &
-> CPU cpunum, ALTCPU altcpunum, &
-> TYPE (63,0), RSIZE 3, &
-> SRCIPADDR src_ipaddr, SRCIPPORT src_ipport, &
-> DESTIPADDR dest_ipaddr, DESTIPPORT dest_ipport, &
-> NEXTSYS sysnum
```

Table F-1. SCF ADD DEVICE Command Worksheet

Field	Value
<i>tcpip_process</i>	_____ (Step 3 on page F-14)
<i>cpunum</i>	_____ (Step 4 on page F-14)
<i>altcpunum</i>	_____ (Step 4 on page F-14)
<i>src_ipaddr</i>	_____ (Step 5 on page F-14)
<i>src_ipport</i>	_____ (Step 7 on page F-15)
<i>dest_ipaddr</i>	_____ (Step 7 on page F-17)
<i>dest_ipport</i>	_____ (Step 9 on page F-17)
<i>sysnum</i>	This is the system number of the NonStop K-series server that will be connected to the other end of the line. NonStop S-Series system numbers can be displayed using the SCF INFO PROCESS \$NCP, LINESET command. However, you cannot display the system number for a system before the line has been configured. NonStop K-series system numbers are defined in the CONFTEXT file.

4. Start the Expand-over-IP line-handler process:

```
-> START DEVICE $zzwan.#sline
```

5. Exit SCF:

```
-> EXIT
```


4. On the NonStop K-Series Server

4a. Configure and Start an Expand-Over-IP Line-Handler Process

1. Return to the TACL prompt at the NonStop K-series server.
2. Start COUP:


```
> COUP
```
3. Determine the name of a dummy controller that the Expand-over-IP line-handler process can use. To list all the dummy controllers with product number 6999 on the NonStop K-series server:

```
1) INFO CONTROLLER *, PRODUCT 6999
```

Note. Dummy controllers can also have product numbers of 6997 or 6998.

[Example F-8](#) shows a COUP INFO CONTROLLER display.

Example F-8. COUP INFO CONTROLLER Display

NAME	PRODUCT	ADDRESS/CPU	ADDRESS/CPU	FLAGS
DUMMY0	6999	0-%300/01	0-%300/00	
DUMMYC	6999	0-%300/04	0-%300/05	
DUMMYD	6999	0-%330/03	0-%330/00	
DUMMYE	6999	0-%300/06	0-%300/07	
DUMMYF	6999	0-%310/07	0-%310/06	

The dummy controller must have two unit numbers available, one for writing and one for reading data. List the unit numbers configured for a particular controller:

```
2) INFO DEVICE *, CONTROLLERNAME dummy_name
```

[Example F-9](#) shows a COUP INFO DEVICE command. Configured unit numbers appear in the UNITS field.

Example F-9. COUP INFO DEVICE Display

```
2) info device *, controllername dummye
```

NAME	PRODUCT/MACRO	CONTROLLERNAME	UNITS	FLAGS
\$FXPRU	NETCLUSTER	DUMMYE	00,01	S

Choose two valid, unconfigured unit numbers. The first must be even, and the second must be odd.

- The 6999 dummy controller has unit numbers in the range 0 through 7.
- The 6997 dummy controller has unit numbers in the range 0 through 255.
- The 6998 dummy controller has unit numbers in the range 0 through 63.

4. In [Table F-2, COUP Worksheet](#):
 - a. The dummy controller name appears in the NAME field of the COUP INFO CONTROLLER display. Record the name in the *dummy_name* field.
 - b. Record the write and read unit numbers you want to use in the *write_unit* and *read_unit* fields.
5. Add the Expand-over-IP line-handler process to the system using the values you record in Step 4. Fields that must be replaced by values you record in the worksheet appear here in boldface italics.

```

3) ASSUME DEVICE
4) SET MACRO NETIP
5) SET CONTROLLERNAME dummy_name
6) SET SUBTYPE 0
7) SET UNIT (write_unit,read_unit)
8) SET RSIZE 3
9) SET DESTIPADDR dest_ipaddr
10) SET DESTIPPORT dest_ipport
11) SET ASSOCIATEDEV $tcpip_process
12) SET NAME #qio
13) SET SRCIPADDR src_ipaddr
14) SET SRCIPPORT src_ipport
15) SET NEXTSYS sysnum
16) ADD $kline

```

Table F-2. COUP Worksheet

Field	Value
<i>dummy_name</i>	_____ (Step a on page F-20)
<i>write_unit</i>	_____ (Step b on page F-20)
<i>read_unit</i>	_____ (Step b on page F-20)
<i>dest_ipaddr</i>	_____ (Step 5 on page F-14)
<i>dest_ipport</i>	_____ (Step 7 on page F-15)
<i>tcpip_process</i>	_____ (Step 5 on page F-16)
<i>cpunum</i>	_____ (Step 6 on page F-17)
<i>altcpunum</i>	_____ (Step 6 on page F-17)
<i>src_ipaddr</i>	_____ (Step 7 on page F-17)
<i>src_ipport</i>	_____ (Step 9 on page F-17)
<i>sysnum</i>	The system number of the server to be connected to the other end of the line. Display system numbers with SCF INFO PROCESS \$NCP, LINESET.

6. Start the Expand-over-IP line-handler process:


```
17) START $kline
```
7. Exit COUP:


```
18) EXIT
```

5. On Either NonStop Server

5a. Start the Expand-Over-IP Line

Start the Expand-over-IP line from either the NonStop S-series server or the NonStop K-series server:

1. Start SCF at the TACL prompt:
-> SCF
2. Enter one of the following commands at the SCF prompt:
 - On the NonStop S-series server:
-> START LINE \$sline
 - On the NonStop K-series server:
-> START LINE \$kline
3. Exit SCF:
-> EXIT

7. Install Software

This section explains how to install software with the Distributed Systems Management/Software Configuration Manager (DSM/SCM), and how to install a software product revision (SPR) from tape.

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Installing a Software Product Revision (SPR)	F-25
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The SPR installation instructions assume that the installation does not require a system load or SP firmware update.

Configuring Software With DSM/SCM

This subsection summarizes the general procedure for configuring new software on a target. For more information on this process, see the *DSM/SCM User's Guide*.

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1. Receive New Software Into Archive

When you receive a SUT or SPR, you use DSM/SCM to receive its product files. Products received into DSM/SCM are stored as software inputs in the DSM/SCM archive, from which you can later use them to update the software configuration of your system.

2. Create Software Revision

A software revision is a list of products in the DSM/SCM archive that are used together to update the software configuration of a system. After you have received the products you need into the DSM/SCM archive, use DSM/SCM to create a software revision:

1. Review the softdocs and RVU documents for the products to determine if any conflicts might arise. These documents describe new features, corrected problems, remaining known problems, and other product information.
2. Create a new software revision by designating the specific products in the DSM/SCM archive that will be installed on the target system.

To create a new revision:

- a. Open the current revision of the software.
- b. Modify the current revision by copying new product versions or SPRs from various software inputs in the DSM/SCM archive.

3. Build and Apply New Configuration Revision

A new configuration revision is the package that DSM/SCM builds to transfer the products designated in a software revision from the DSM/SCM archive to the target system. After the configuration revision is built and transferred to the target system, it is applied to the target system, which places the product files on the system so they are ready for activation. Often the Build and Apply requests can be executed together in a few steps:

1. Perform a Build, in which you merge the distribution files into executable or usable formats. If necessary, include a new operating system image produced by SYSGEN.
2. Transfer the files to the target system. If the host and target are connected through a network, this transfer can occur automatically.
3. Perform an Apply, which places the merged files in target subvolumes (TSVs) on the target systems.

4. Activate New Software on Target System

Once a new configuration revision has been applied to a system, it can be activated. The activation procedure varies depending on the system and the products involved, but includes these steps:

1. Send a snapshot of the target system back to the host system database. This snapshot is then received into the host database, ensuring that the host system has an accurate record of the current software configuration on the target system.
2. Run ZPHIRNM to rename the temporary file names to their actual names. To minimize downtime for your applications, product files are placed on a target system using temporary file names so they do not interfere with any existing versions of the software.
3. Activate the new software on the target system. This task can involve a variety of steps including updating firmware, loading the system, and starting and stopping applications at certain times.

Installing a Software Product Revision (SPR)

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5. Build and Apply Configuration Revision	F-27
6. Activate Software	F-27

1. Save Current System Configuration Database

1. At the TACL prompt, run SCF:

```
-> SCF
```

2. List saved configuration files:

```
-> FUP INFO $SYSTEM.ZSYSCONF.CONF*
```

3. Save the current system configuration using a unique file name:

```
-> SAVE CONFIGURATION xx.yy
```

where *xx.yy* is a number in the range 0.0 through 99.99. The following message appears when the configuration has been saved:

```
The configuration file $SYSTEM.ZSYSCONF.CONFxxyy has been
created.
```

4. If you specify an existing configuration file *CONFxxyy*, SCF asks if you want to replace it. If you do not want to replace it, you must repeat the SAVE command with a different value for *xx.yy*.

2. Log On to DSM/SCM

1. Exit SCF.
2. To determine the current `SYSnn`, enter at the TACL prompt:

```
> status 0,0
```

Or use the `SYSINFO` command, which returns:

System name
EXPAND node number
Current `SYSnn`
System number
Software RVU ID
3. Record this `SYSnn` in case you must back out a revision later.
4. If the TMF subsystem is not already running, start it:

```
> TMF'COM START TMF
```
5. If DSM/SCM is not already running, start it:

```
> VOLUME $DSMSCM.ZDSMSCM  
> RUN STARTSCM
```
6. Log on to the Planner Interface with the super ID.
The Planner Interface displays Software in Archive and Configuration Revisions.

3. Receive SPR Into Archive

The Software in Archive window lists the software currently in the DSM/SCM archive.

1. In the Software in Archive window, click **Receive software**.
The Receive Software Request dialog box appears. DSM/SCM assigns the SPR name. The default is Determine from incoming data. For multiple SPRs, DSM/SCM uses the name of the first selected SPR.
2. In the Receive Software Request dialog box:
 - a. Click **Input Source**.
 - b. In the Request Source Options dialog box, select **Tape drive**.
 - c. Select a tape from the scrollable list.
 - d. Click **OK**.
3. To submit the request, in the Receive Software Request dialog box, click **OK**.
4. Check the status of the request in the status window. DSM/SCM updates this window regularly. Wait until the window indicates that the request has completed.
5. In the Window menu, click **Refresh**.

The Software in Archive window is updated to show the newly received SPR.

4. Create New Software Revision

1. In the Configuration Revisions window, select the configuration revision to be updated.
2. Click **New software revision**.

A New Software Revision window appears, showing the products in the last software revision that was built for the target.
3. In the New Software Revision window, edit the revision notes for the new revision:
 - a. Click **Edit Revision Notes**.
 - b. In the Revision Notes box, add a description of the changes.
 - c. Click **OK**.
4. In the Software in Archive window:
 - a. Select the SPR.
 - b. To add the SPR to the new revision, click **Copy**.
5. When the Confirmation dialog box appears, click **Continue**.

5. Build and Apply Configuration Revision

1. In New Software Revision window, click **Build/Apply**.

DSM/SCM displays the Build/Apply Request dialog box, which appears grayed out for several minutes while DSM/SCM assembles the build information.

DSM/SCM assigns a name to the Build/Apply request.
2. In the Build/Apply Request dialog box:
 - a. Use the default values for the following options:
 - Output options
 - Target subvolume (TSV) locations
 - SYSGEN options
 - Include only changed files in the activation package
 - b. In the Activation SYSnn box, specify the SYS00 subvolume name.
 - c. Click **Edit instructions**.
 - d. Add any necessary instructions to the instructions provided by DSM/SCM.
 - e. Click **OK**.

- f. To schedule a time for the Build/Apply request to run, click **Scheduling...**

- a. In the Request Scheduling Options dialog box, enter a time for the Build/Apply request to run.

To avoid disrupting other system activity, you can schedule the Build to run at night (based on the time on the host system), and the Apply to run immediately after the Build.

- b. Click **OK**.
- g. To submit the Build request, click **OK**.

DSM/SCM runs the Build and Apply requests as scheduled. A status window opens and is updated regularly. The activation package is created, and the new software is placed on the system's subvolumes. When the Apply request is completed, a snapshot is automatically created and returned to the host.

6. Activate Software

1. Print the operator instructions:
 - a. Log on to the Target Interface (ZPHITI) by using the super ID.
 - b. Select **3** (Perform target activities) from the main menu. Press **F1**.
 - c. In the list of targets, enter the number for the target (DEFAULT) on which the new software was applied. Press **F1**.
 - d. In the Target Menu - Select Action screen, select **3** (Review operator instructions for the last apply completed). Press **F1**.
 - e. Print the displayed operator instructions.
 - f. Verify the output location, and then press **F9**.
 - g. Press **Shift-F16** to exit the Target Interface.
2. Follow the operator instructions to activate the new software.

The following steps summarize a set of standard instructions if a system load and SYSGEN are not required. However, operator instructions vary depending on the new software. Use the instructions that come with your software.

- a. Stop all applications, including DSM/SCM.

To stop DSM/SCM and TMF, enter at a TACL prompt:

```
> VOLUME $DSMSCM.ZDSMSCM
> RUN STOPSCM
> TMFCOM STOP TMF
```

b. Run ZPHIRNM:

1. Start ZPHIRNM:

```
> RUN ZPHIRNM $SYSTEM.SYSnn
```

The following prompt appears:

```
Do you want to use a log file with this session? (Y/N)
```

2. Enter **Y** and press **Enter**. The following prompt appears:

```
You may use any file for logging. If you request to use  
a disk file that doesn't exist, it will be created as  
an entry-sequenced file.
```

```
Please enter a filename:
```

3. Enter a disk file name. The following message appears:

```
Log file, filename, was successfully created.
```

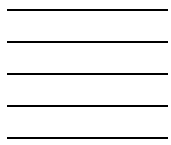
ZPHIRNM then renames the applied files. If ZPHIRNM notifies you of any errors, correct them and run ZPHIRNM again.

ZPHIRNM must run without errors to complete the software activation.

ZPHIRNM issues an EMS message when it has successfully completed.

c. Restart your applications:

```
> TMFCOM START TMF  
> RUN STARTSC
```

Safety and Compliance

This section contains three types of required safety and compliance statements:

- Regulatory compliance
- Waste Electrical and Electronic Equipment (WEEE)
- Safety

Regulatory Compliance Statements

The following regulatory compliance statements apply to the products documented by this manual.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by Hewlett-Packard Computer Corporation could void the user's authority to operate this equipment.

Canadian Compliance

This class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Korea MIC Compliance

A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Taiwan (BSMI) Compliance

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Japan (VCCI) Compliance

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may occur, in which case the user may be required to take corrective actions.

European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (the equivalent international standards are in parenthesis):

- EN55022 (CISPR 22)—Electromagnetic Interference
- EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11)—Electromagnetic Immunity
- EN61000-3-2 (IEC61000-3-2)—Power Line Harmonics
- EN61000-3-3 (IEC61000-3-3)—Power Line Flicker
- EN60950-1 (IEC60950-1)—Product Safety

Laser Compliance

This product may be provided with an optical storage device (that is, CD or DVD drive) and/or fiber optic transceiver. Each of these devices contains a laser that is classified as a Class 1 Laser Product in accordance with US FDA regulations and the IEC 60825-1. The product does not emit hazardous laser radiation.



WARNING: Use the controls or adjustments or performance of procedures other than those specified herein or in the laser product's installation guide may result in hazardous radiation exposure. To reduce the risk of exposure to hazardous radiation:

- **Do not try to open the module enclosure. There are no user-serviceable components inside.**
 - **Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.**
 - **Allow only HP Authorized Service technicians to repair the module.**
-

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States.

SAFETY CAUTION

The following icon or caution statements may be placed on equipment to indicate the presence of potentially hazardous conditions:



DUAL POWER CORDS CAUTION:

"THIS UNIT HAS MORE THAN ONE POWER SUPPLY CORD. DISCONNECT ALL POWER SUPPLY CORDS TO COMPLETELY REMOVE POWER FROM THIS UNIT."

"ATTENTION: CET APPAREIL COMPORTE PLUS D'UN CORDON D'ALIMENTATION. DÉBRANCHER TOUS LES CORDONS D'ALIMENTATION AFIN DE COUPER COMPLÈTEMENT L'ALIMENTATION DE CET ÉQUIPEMENT".

DIESES GERÄT HAT MEHR ALS EIN NETZKABEL. VOR DER WARTUNG BITTE ALLE NETZKABEL AUS DER STECKDOSE ZIEHEN.



Any surface or area of the equipment marked with these symbols indicates the presence of electric shock hazards. The enclosed area contains no operator-serviceable parts.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure.

DOUBLE POLE FUSING

CAUTION: DOUBLE-POLE /NEUTRAL FUSING.

ATTENTION: DOUBLE POLE/FUSIBLE SUR LE NEUTRE

NOT FOR EXTERNAL USE

CAUTION: NOT FOR EXTERNAL USE. ALL RECEPTACLES ARE FOR INTERNAL USE ONLY.

ATTENTION: NE PAS UTILISER A L'EXTERIEUR DE L'EQUIPEMENT

IMPORTANT: TOUS LES RECIPIENTS SONT DESTINES UNIQUEMENT A UN USAGE INTERNE.

VORSICHT: ALLE STECKDOSEN DIENEN NUR DEM INTERNEN GEBRAUCH.

HIGH LEAKAGE CURRENT

To reduce the risk of electric shock due to high leakage currents, a reliable grounded (earthed) connection should be checked before servicing the power distribution unit (PDU).

Observe the following limits when connecting the product to AC power distribution devices: For PDUs that have attached AC power cords or are directly wired to the building power, the total combined leakage current should not exceed 5 percent of the rated input current for the device.

“HIGH LEAKAGE CURRENT, EARTH CONNECTION ESSENTIAL BEFORE CONNECTING SUPPLY”

“HOHER ABLEITSTROM. VOR INBETRIEBNAHME UNBEDINGT ERDUNGSVERBINDUNG HERSTELLEN”

“COURANT DE FUITE E’LEVE’. RACCORDEMENT A LA TERRE INDISPENSABLE AVANT LE RACCORDEMENT AU RESEAU”

FUSE REPLACEMENT

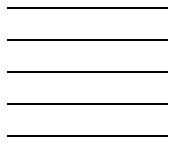
CAUTION – For continued protection against risk of fire, replace only with same fuse type TCF15, Rated 600V~, 15A. Disconnect power before changing fuses.

Waste Electrical and Electronic Equipment (WEEE)

Information about the Waste Electrical and Electronic Equipment (WEEE) directive can be accessed from the left navigation area of the NonStop Technical Library (NTL) home page. Select **Waste Electrical and Electronic Equipment (WEEE)**.

Safety

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For a glossary of NonStop S-series terms, see the *NonStop Server Glossary* in the NonStop Technical Library (NTL).

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