

HP NetServer Common Tray Ultra3 Hard Disk Drive Installation Guide



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Hewlett-Packard Company
Network Server Division
Technical Communications/MS 45SLE
10955 Tantau Avenue
Cupertino, CA 95014 USA

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Audience Assumptions

This guide is for the person who installs, administers, and troubleshoots LAN servers. Hewlett-Packard Company assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

Contents

1 Prepare Drive for Installation	1
Introduction	1
General Installation Steps.....	1
Step 1: Prepare for Installation	2
Tools You Need.....	2
Setup Information You Need	2
Unpack the Drive.....	3
Step 2: Determine the Drive Type	3
Step 3: Set the SCSI Address.....	6
Step 4: Connect SCSI Cable Adapter (if required)	10
Step 5: Continue Installation	10
2 Mount the Drive in the NetServer L Series	11
Step 1: Mount the Drive in the System	11
Step 2: Connect the Drive Activity Light	12
Step 3: Connect the Drive	14
Step 4: Configure the Drive	15
3 Mount the Drive in the NetServer E 45 or E 50	17
Step 1: Determine the Drive Location	17
Step 2: Mount the Drive in the System	19
Mount the Drive in Shelf 5 or 6.....	19
Mount the Drive in Shelf 3 or 4.....	19
Step 3: Connect the Drive	20
Step 4: Configure the Drive	21
A Jumper Settings	23
Jumper Legend	23
B Disk Drive Characteristics	25
C Returning HP Hard Disk Drives	27
D Warranty and Support	29
Hardware Warranty	29
HP Repair and Telephone Support	29
E Regulatory Information	31

Index..... 33

1 Prepare Drive for Installation

Introduction

This chapter describes the tools, setup information and the steps necessary to install a SCSI hard disk drive into an HP NetServer. The drives documented in this guide are listed in Table 1-1.

Table 1-1. Hard Disk Drive Product Numbers

HP Product Number	Capacity	RPM
P1213A	9.10 GB	7200
P1214A	9.10 GB	10000
P1215A	18.2 GB	7200
P1167A	18.2 GB	10000
P1169A	36.4 GB	10000

¹If you are using a narrow 50-pin cable (part number 5182-4551) when connecting to a HP NetServer E45, a 68-50 pin adapter will also be needed

These HP Ultra3 drives can operate in either Single-Ended (SE) mode as Ultra drives with a maximum bus data rate of 40 MB or in Low-Voltage Differential (LVD) mode as Ultra3 drives with a maximum bus data rate of 160 MB. The terminator on the cable, other drives on the bus, and/or the host controller card, determines whether the drive runs in SE or LVD mode.

NOTE For any drive to run in LVD mode, all SCSI components on that bus must be in LVD mode.

General Installation Steps

In general, the steps for installing a hard drive are shown below. Please refer to the detailed instructions in each step before attempting to install your drive.

1. Prepare for Installation
2. Determine the Drive Type
3. Set the SCSI Address
4. Connect SCSI Cable Adapter (if required)
5. Mount the Drive in the System
6. Connect the Drive Activity Light (if appropriate)
7. Connect the Drive
8. Configure the Drive

CAUTION	In a few cases, drives with the same product number can be of different types and require different jumper settings. If your drive does not match the type in the figure, check the other figures for the matching type.
----------------	--

Step 1: Prepare for Installation

Gather the tools and the setup information you need to install the drive, before removing the drive from its packaging.

Tools You Need

To install the disk drive, you need the following tools:

- Tweezers, needle-nose pliers or a similar tool for setting configuration jumpers.
- A Torx™ T-15 screwdriver or a regular blade screwdriver.

Setup Information You Need

Before you begin, you need the following setup information:

- The *HP NetServer Installation Road Map* for your system or Information Assistant on the *HP NetServer Navigator CD-ROM*.
- The SCSI addresses available in your system. (Refer to your system in Information Assistant on the *HP NetServer Navigator CD-ROM* for information on determining available SCSI addresses.)

Unpack the Drive

CAUTION

Shock: Hard disk drives are very susceptible to mechanical shock and can be damaged by a drop as short as one-quarter of an inch (.64 cm). Take care when unpacking and handling the disk drive. If the drop would crack an egg, it will damage the drive.

Static: Protect the hard disk drive from static electricity by leaving it in its antistatic bag until you are ready to install it. Use an antistatic wrist strap and a grounding mat (3M[®] 8501/8502/8505 or equivalent). If an antistatic work area is not available, touch any unpainted metal surface to discharge static electricity before handling the drive.

When you remove the hard disk drive from the antistatic bag, handle it only by the frame. *Do not touch* the electrical components. Place the drive on the antistatic bag whenever you set it down.

After gathering the information and tools:

- Remove the drive from the packaging.

Step 2: Determine the Drive Type

The type of the drive varies and drives with the same part number may be of different types.

- Match the drive you unpacked with the type of drive shown in Figure 1-1.

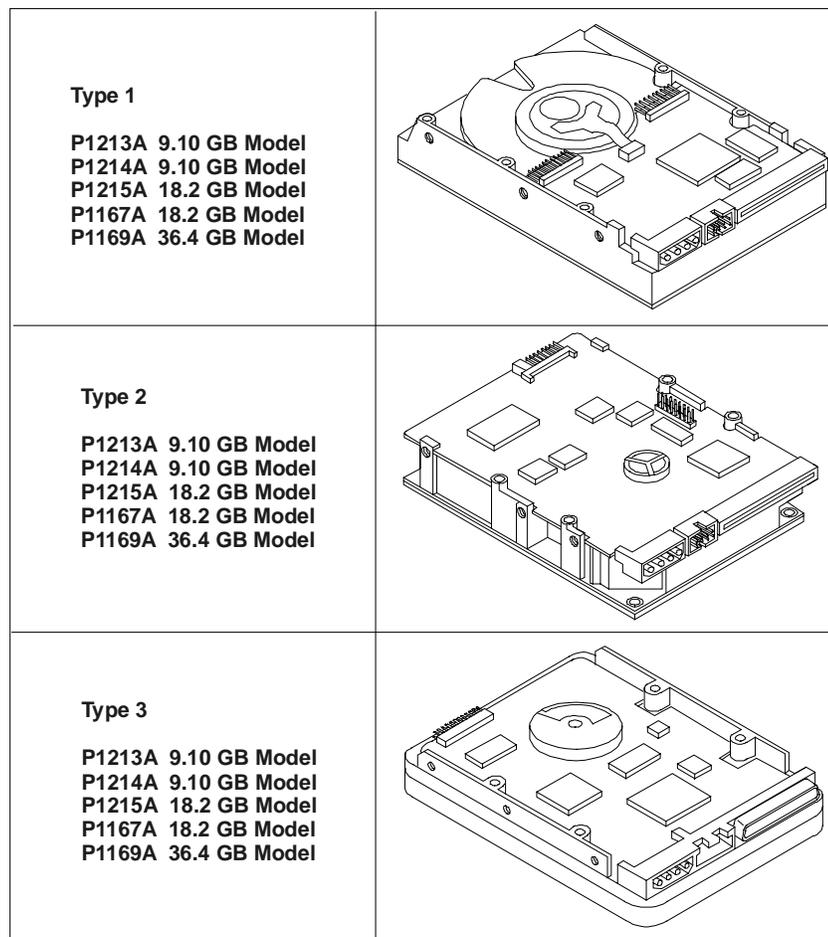


Figure 1-1. Identification of the Three Different Types of Drives

NOTE Some of the product numbers are duplicated, because the type of drive shipped is not always the same. Therefore, it is important that you match your drive to the correct type.

The types of drives differ in that the jumpers are in different locations. Refer to the appropriate illustration (Figure 1-2, 1-3, or 1-4) for your type of drive, and note the location of the jumpers.

The "Disk Drive Characteristics" appendix shows a legend of the drive control settings and the jumper control settings for the individual drives.

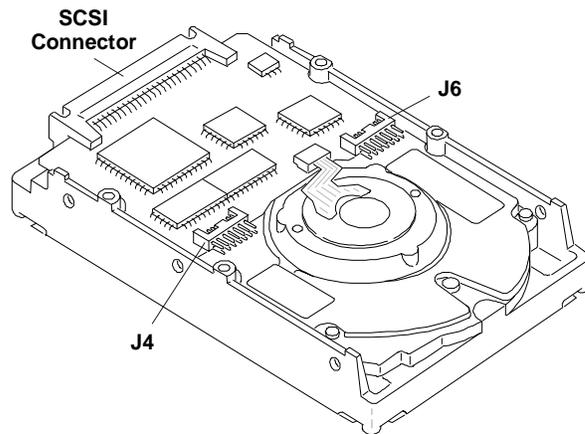


Figure 1-2. Component Identification, Type 1 Drives

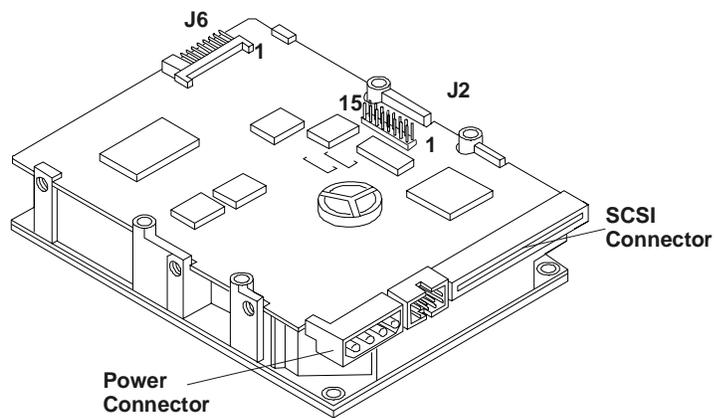


Figure 1-3. Component Identification, Type 2 Drives

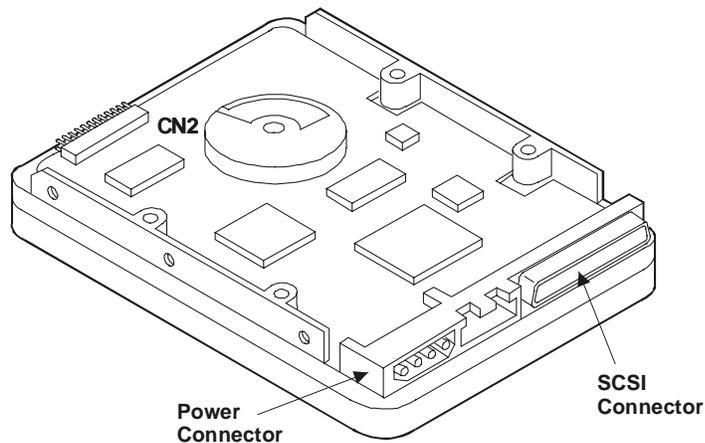


Figure 1-4. Component Identification, Type 3 Drives

Step 3: Set the SCSI Address

The SCSI address is set using jumpers located on the drive. SCSI addresses range from 0 to 15.

- Each drive is preset to SCSI address 3.
- Address 7 is reserved for communications with the SCSI host bus adapter.

Set the drive to the lowest available SCSI address. Address 0 should be used for the first drive in the system. Typically, address 1 is assigned to the second hard disk drive, address 2 is assigned to the third drive, and so forth.

This step assumes the jumpers are accessible. If they are not accessible, it may be necessary to remove the mounting tray or bracket to adjust the settings.

Each device on the channel needs a different SCSI address. If this is the first hard drive in the system, complete this step to verify the jumper is set correctly. If this is one of two or more SCSI devices in the system (and not the first drive), you must change the SCSI address for the drive.

- If you are connecting an Ultra3 SCSI drive to a narrow SCSI cable¹ and narrow SCSI controller, set the SCSI address to 0, 1, 2, or 3.
- If you are connecting an Ultra3 SCSI drive to a wide SCSI cable and wide SCSI controller, set the SCSI address to 0, 1, 2, 3, 4, 5, or 6.

Detailed descriptions of all the jumpers are provided in the "Jumper Settings" appendix. Figures 1-7, 1-8, 1-9, 1-10 and 1-11 show the default SCSI address settings for each drive.

¹When connecting to a HP NetServer E45, a 68-50 pin adapter will also be needed.

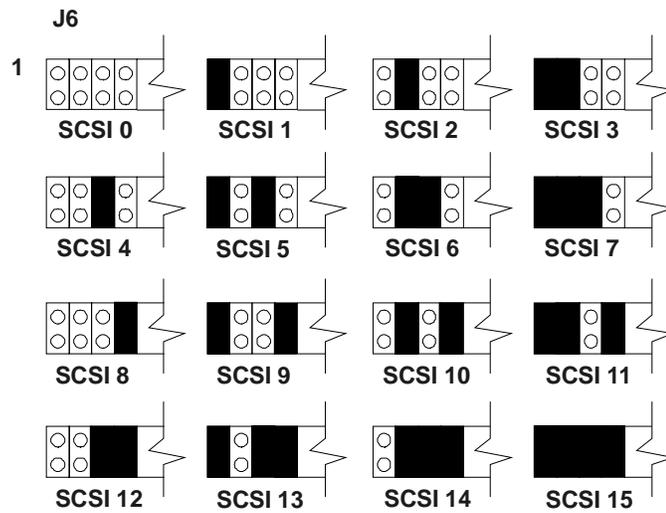
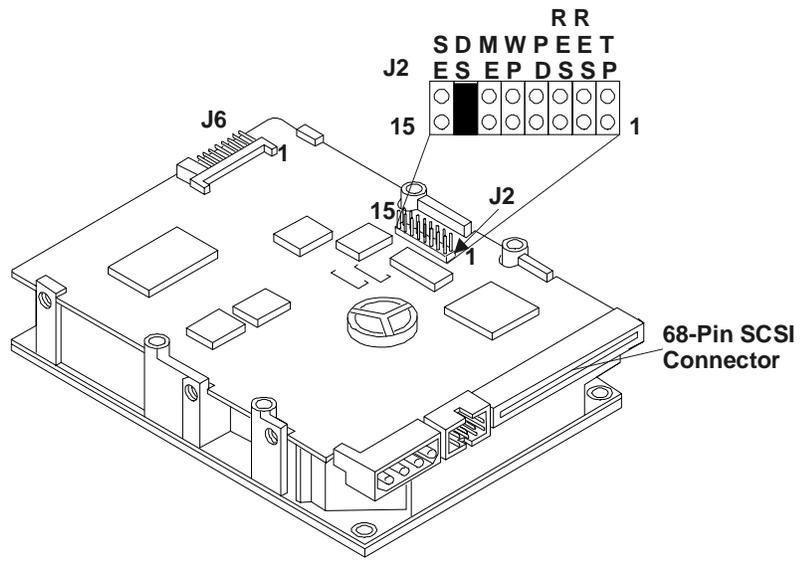


Figure 1-6. SCSI Address Settings, Type 2 Drives

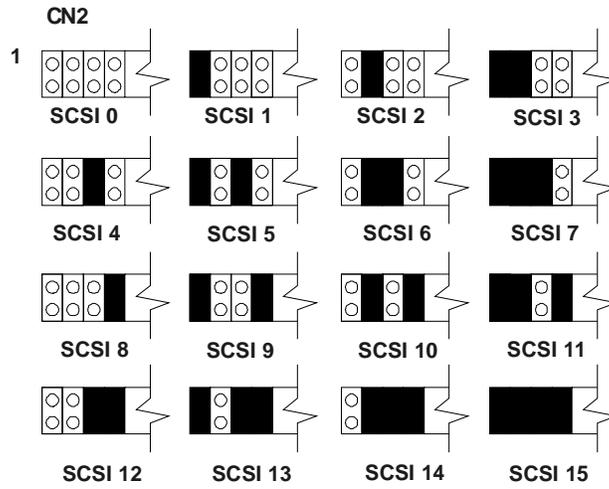
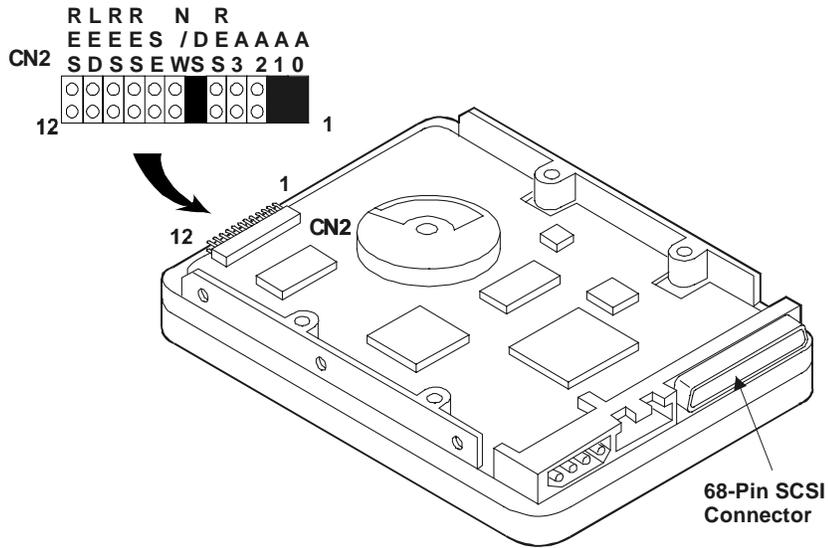


Figure 1-7. SCSI Address Settings, Type 3 Drives

Step 4: Connect SCSI Cable Adapter (if required)

The SCSI cable adapter, HP part number 5182-4551 (see Figure 1-8), allows you to connect an Ultra3 SCSI drive to a narrow SCSI cable and narrow SCSI controller (9.10 GB only). If you are not connecting your drive to a narrow cable, continue with Step 5.

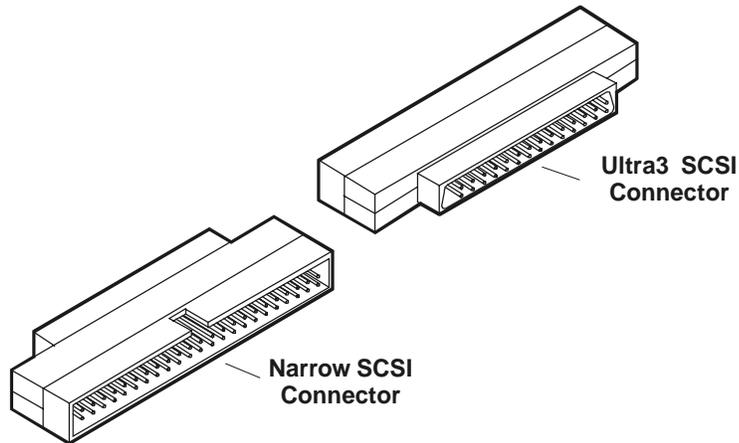


Figure 1-8. Narrow to Ultra/Wide SCSI Adapter

- Plug the narrow SCSI cable into the adapter, aligning the notch in the connector with the slot in the adapter.
- Plug the other end of the adapter into the drive. The shape of the connector prevents it from being plugged into the drive incorrectly.

Step 5: Continue Installation

If you are installing the drive in an HP NetServer L Series, continue with Chapter 2. If you are installing the drive in an HP NetServer E 45 or E 50, continue with Chapter 3. If you are installing the drive in an HP NetServer E 60, refer to the *HP NetServer E 60 Installation Guide*.

2 Mount the Drive in the NetServer L Series

This chapter describes the installation of a drive in the NetServer L Series.

Step 1: Mount the Drive in the System

Use the tray with the drive activity light for mounting a drive in the front of a NetServer. The drives are shipped already mounted on this tray. To purchase the tray separately, order Product Number D2198B (multipack).

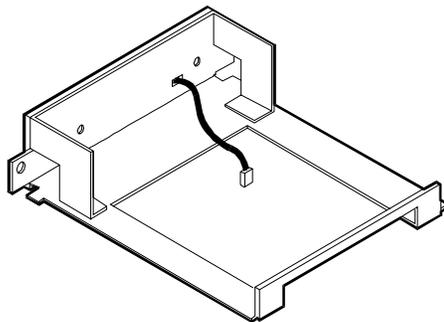


Figure 2-1. Tray

Consult Information Assistant on the *HP NetServer Navigator CD-ROM* for your system for additional information regarding the tray or bracket.

Attach a tray to a drive or change a factory-supplied tray (if needed) as follows:

- Place the drive on a flat surface, free of static electricity, with the circuit board of the drive facing up.
- If your drive is on a tray that is not appropriate for your server, remove the four screws attaching the drive to the tray and remove the tray. These screws can be used to mount the drive on the tray or bracket.
- Place the new tray or bracket on the drive.
- Align the mounting holes on the tray or bracket with those on the drive.
- Attach the tray or bracket to the drive using the four screws.

Step 2: Connect the Drive Activity Light

The mounting tray (D2198B) has a drive activity light on the front-panel. The drive activity light flashes during data access and the drive power-on self-test.

Connect the drive activity light for your drive as shown in Figures 2-2, 2-3, and 2-4.

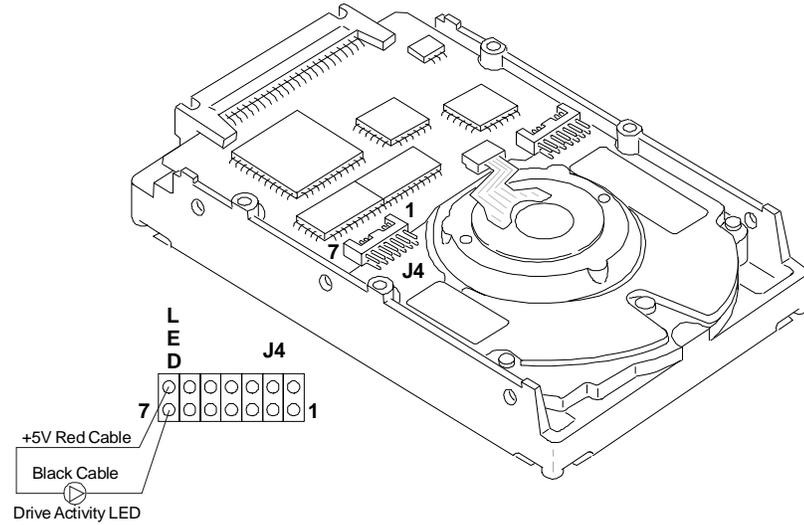


Figure 2-2. Activity Light Connection, Type 1 Drives

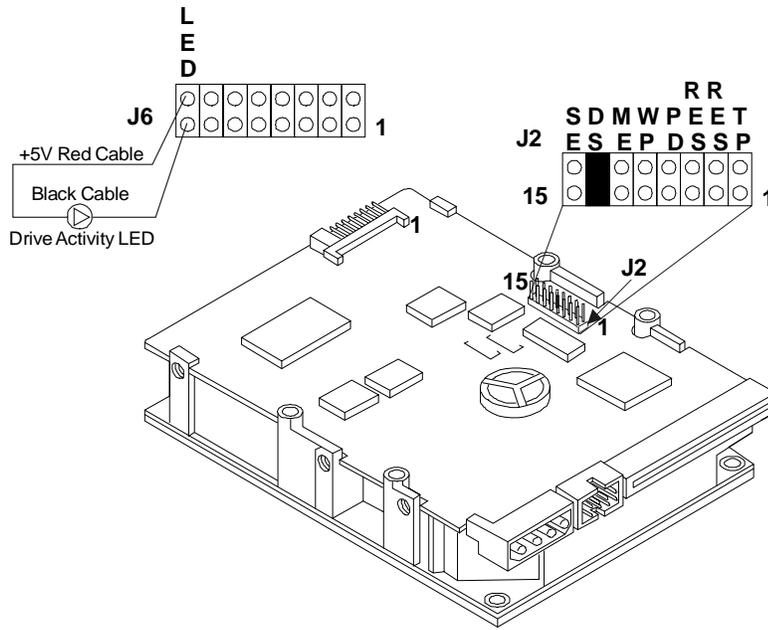


Figure 2-3. Activity Light Connection, Type 2 Drives

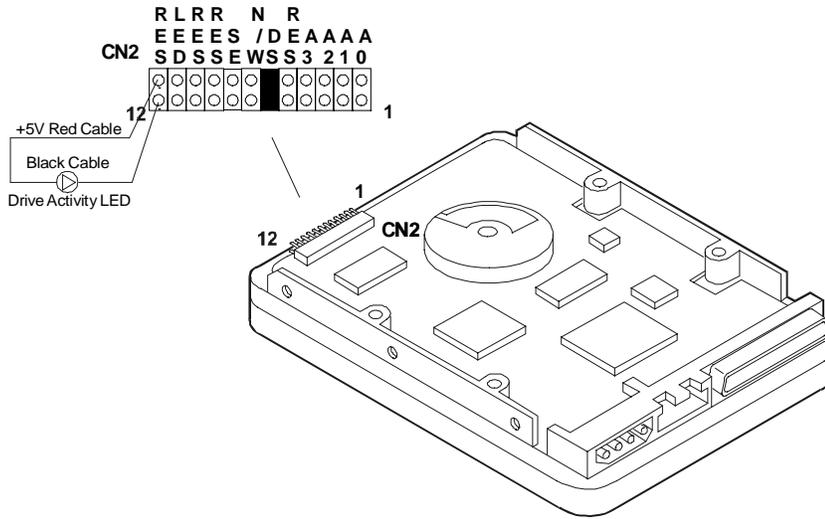


Figure 2-4. Activity Light Connection, Type 3 Drives

Step 3: Connect the Drive

In this step, you install the drive in the system, and connect the SCSI data cable and the drive power cable. The SCSI cable is connected to the SCSI connector on the system board or to a SCSI host bus adapter board.

In order to run in LVD mode, the term "LVD" must also appear on the termination module. (Not all NetServer L Series have LVD 68-pin cables. Some NetServers have cables with a single-ended (SE) *active termination* module on one end of the cable. The SE active termination module is easy to recognize, because it looks different from the other connectors on the cable, and the word "active" should appear on the active termination module.)

NOTE HP Ultra3 SCSI drives must connect to the actively terminated cable. Using an incorrect cable (or not using an active termination module) will cause data transmission errors. *Do not* use passively terminated cables with Ultra3 SCSI hard disk drives.

CAUTION	The active termination module belongs on the last connector on the cable, opposite the system board or host bus SCSI adapter. <i>Do not remove this module.</i>
----------------	---

- Turn off your system and the display.
- Disconnect the power cords.
- Detach any external cables.
- Remove the cover from the HP NetServer.
- Remove any hardware necessary to reach the cables or insert the drive. Consult Information Assistant on the *HP NetServer Navigator CD-ROM* for your system for instructions.
- Insert the mounted hard drive in your HP NetServer.
- Connect the internal power supply cable to the hard disk drive with one of the unused cables from the power supply unit.
- Select an available connector on the SCSI cable and connect it to the disk drive.

CAUTION	The connector is keyed. Do not force the connector in the slot. (The red stripe on the edge of the cable denotes the position of Pin 1 on the cable.)
----------------	---

- Record information about the new hard disk setup, including: model number, capacity, and SCSI address.
- Reassemble your HP NetServer.
- Connect all the cables and power cords.
- Power up your HP NetServer.

NOTE If a drive recognition error displays during system startup, press **Ctrl+Alt+Del** to restart the system. Do not power cycle the system because the drive recognition error will likely repeat.

Step 4: Configure the Drive

The SCSI controller is configured for the drive using a configuration utility.

- If the SCSI controller is not yet configured, run the appropriate configuration utility, included with your system.
- Consult your operating system documentation for information on formatting the disk drive for use in the system. Typically, you create one or more partitions on your new hard drive, using the guidelines in Appendix B, "Disk Drive Characteristics."
- Initialize the file system, using the operating system format utility.

CAUTION	No low-level format is needed. HP performs the low-level format at the factory.
----------------	---

NOTE If you are experiencing problems with the drive, watch the messages on your monitor while the system boots. A message appears if a drive is not recognized by the HP NetServer (which happens when the HP NetServer attempts to communicate with a drive before the drive has finished spinning up).

If the system did not recognize a hard drive:

- Wait until all drives reach full speed.
- Press the **Reset** button on the system or press the **Ctrl+Alt+Del** hot-key combination to restart the HP NetServer without powering it down.

Do not power-down (power-cycle) the system to restart it, as this causes all the drives to stop spinning.

3 Mount the Drive in the NetServer E 45 or E 50

This chapter provides instructions for installing a hard disk drive in the HP NetServer E 45 or E 50.

Consider the following when installing a drive in an HP NetServer E Series system.

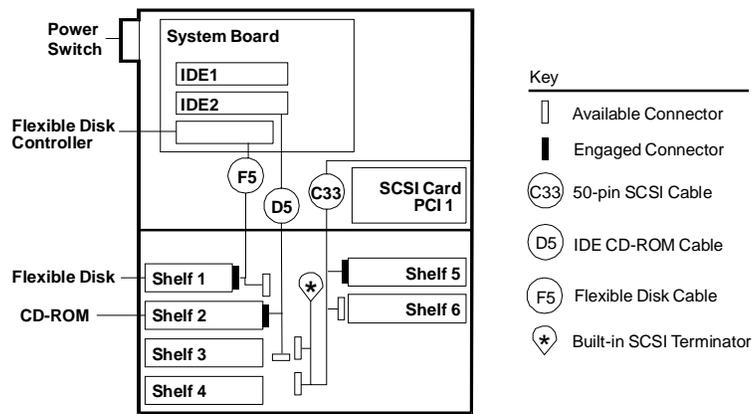
- The HP NetServer E 45 supports up to four 9-GB Ultra3 SCSI 7200-RPM drives.
- Only drive type P1213A is supported in the HP NetServer E 45.
- All Ultra3 SCSI drives are not supported in the HP NetServer E 40 or the HP NetServer E 30.

NOTE The HP NetServer E 45 ships with drive mounting trays installed in shelves 3 and 4. Drives shipped as accessories usually come installed on a factory tray, which must be removed. The drive must be put on an HP NetServer E 45 tray (See Figure 3-2).

Step 1: Determine the Drive Location

The drive can be mounted in one of several possible locations in the system. If you decide to mount the drive on shelf 5 or 6 (recommended), you will fasten the drive to the chassis. If you decide to install the drive on shelf 3 or 4, you will mount the drive onto a tray, which is installed in one of the shelves.

- Decide whether to mount the drive on shelf 5 or 6 (recommended) or on shelf 3 or 4. See Figure 3-1 for the locations of shelves in the system, and some of the cabling options.



For cabling options and connector locations, see the Technical Reference Label inside your HP NetServer chassis.

Figure 3-1. NetServer E 45 Shelf Positions and Cabling Options

- Use the guidelines in Table 3-1 to determine the proper location within your HP NetServer E 45 to install your hard disk drive.

Table 3-1. Mass Storage Device Locations and SCSI ID Settings

Device	Location	SCSI Address
Standard Hard Drive (in models that include one)	Shelf 5	0 (default)
HP Accessory 9 GB HD (P1213A)	Shelf 3, 4, 5 or 6	0, if it is the first hard drive; for subsequent drives, use address 1, 2 or 3
HP SureStore T4i	Shelf 3 or 4	4 (default)
HP SureStore 8i, 5000i, 2000i	Shelf 3 or 4	2 (default) (can be set to any unused address)
Standard SCSI Controller	PCI 1 Slot	7

- If the drive is in a factory-provided tray, place the drive on a flat surface free from static electricity with the circuit board on the drive facing up. Remove the four screws that attach the drive to the tray and remove the drive. (These screws can be used to mount the drive in the HP NetServer E 45.)

Step 2: Mount the Drive in the System

To prepare to install the drive:

- Turn off your system and the display.
- Disconnect the power cords.
- Detach any external cables.
- Remove the cover from the HP NetServer.
- Remove any hardware necessary to reach the cables or insert the drive.
Consult Information Assistant on the *HP NetServer Navigator CD-ROM* for your system for specific instructions for removing components.

If you are mounting the drive in shelf 5 or 6, continue with "Mount the Drive in Shelf 5 or 6" If you are mounting the drive in shelf 3 or 4, continue with "Mount the Drive in Shelf 3 or 4."

Mount the Drive in Shelf 5 or 6

- Remove the rear-cooling fan. Confirm that the fan is operational. Replace it if necessary.
- Align the four screw holes of the rear shelf with the four screw holes of the drive.
- Loosely install all of the screws (provided with the drive), then tighten the screws to no more than eight inch-pounds (0.9 Newton meters).
- Carefully insert the fan wire fully into the drive bay.
- Replace the rear cooling fan.

Continue with Step 3.

Mount the Drive in Shelf 3 or 4

- Remove the drive mounting tray from the system. (See Figure 3-2.)

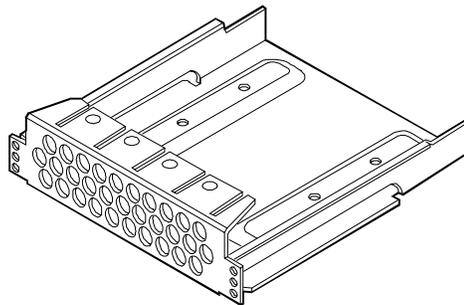


Figure 3-2. E 45 Hard Disk Drive Mounting Tray

- Align the four screw holes in the bottom of the NetServer E 45 tray with the four screw holes in the bottom of the drive.
- Loosely install all of the screws, then tighten the screws to no more than eight inch-pounds (0.9 Newton-meter).
- Place the tray in the shelf opening and slide the tray into the shelf.
- Align the screw holes at the front of the tray with the holes in the front of the chassis.
- Loosely install all screws, then tighten each screw to no more than eight inch-pounds (0.9 Newton-meter).

Step 3: Connect the Drive

Connect the SCSI data cable and power cable and complete the drive installation. The SCSI cable is connected to the SCSI connector on the SCSI host bus adapter board. (If you are using a narrow 50-pin cable (part number 5182-4551) when connecting to a HP NetServer E45, a 68-50 pin adapter will also be needed.)

The correct cable for the E 45 or E50 must have an *active termination* module on one end of the cable. The active termination module is easy to recognize, because it looks different from the other connectors on the cable. The cable bundled with your system is actively terminated, and is singled ended.

NOTE	HP Ultra3 SCSI drives must connect to the actively terminated cable. Using an incorrect cable (or not using an active termination module) will cause data transmission errors. <i>Do not</i> use passively terminated cables with Ultra3 SCSI hard disk drives.
-------------	---

CAUTION	The active termination module belongs on the last connector on the cable. <i>Do not remove this terminator.</i>
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- Connect the internal power supply cable to the hard disk drive with one of the unused cables from the power supply unit.
- Select an available connector on the SCSI cable and connect it to the disk drive.

CAUTION	The connector is keyed. Do not force the connector in the slot. (The red stripe on the edge of the cable denotes the position of Pin 1 on the cable.)
----------------	---

- Record information about the new hard disk setup, including: model number, capacity, and SCSI.
- Reassemble the HP NetServer.
- Connect all the cables and power cords.
- Turn on power to the HP NetServer.

Step 4: Configure the Drive

Configure the SCSI controller for the drive using the SCSI Select™ utility.

- If the SCSI controller is not yet configured, run the SCSI Select utility, included with your system.
- Consult your operating system documentation for information on how best to format the disk drive for this HP NetServer. Typically, you create one or more partitions on your new hard drive, using the guidelines in Appendix B, "Disk Drive Characteristics."

CAUTION	No low level format is needed. HP performs the low-level format at the factory.
----------------	---

- Initialize the file system, using the operating system format utility.

NOTE If you are experiencing problems with the drive, watch the messages on your monitor while the system boots. A message appears if a drive is not recognized by the HP NetServer (which happens when the HP NetServer attempts to communicate with a drive before the drive has finished spinning up).

If the system did not recognize a hard drive:

- Wait until all drives reach full speed.
- Press the **Reset** button on the system or press the **Ctrl+Alt+Del** hot-key combination to restart the HP NetServer without powering it down.

Do not power-down (power-cycle) the system to restart it, as this causes all the drives to stop spinning.

A Jumper Settings

The hard disk drives are shipped without SCSI terminators. These drives are ready to use on a SCSI cable with a built-in active terminator.

Each hard disk drive is configured at the factory for optimum performance on most systems. With the possible exception of setting the SCSI address, you should not change default settings. Changing the disk drive configuration can cause unexpected or undesirable results.

Jumper Legend

Table A-1 shows the jumper descriptions for all drives. All jumper-controlled features are not available on all drives. (An * indicates a factory default setting.)

Table A-1. General Jumper Description

ID	Description
Ax	SCSI Addresses (A0, A1, A2 and A3) See the "Set the SCSI Address" step in the chapter "Prepare Drive for Installation" for detailed information.
LED	Light Emitting Diode Drive Activity Light Not a jumper in the traditional sense. This is where the drive activity light connects to the drive.
DS	Delay Spin-Up On* Motor start up is delayed by the sum of the SCSI ID times 6 seconds after power is applied; i.e., Drives 0 and 8 spindles start immediately, drives 1 and 9 start after a 6 second delay, drives 2 and 10 start after a 12 second delay, and so forth. Off Motor start up begins immediately after system power up, unless Motor Start Enable is on. If Motor Start Enable is on, it overrides this setting.
ME	Motor Start Enable On Drive spindle starts when the Start Unit command is received from the host system. If the Delay Spin-Up feature is on, the Delay Spin-Up feature is overridden.

ID	Description
Off*	Spindle starts immediately after power up. If Delay Spin-Up is on, it overrides this setting.
PD	Parity Disable
On	Parity checking and parity error reporting by the drive is disabled.
Off*	Parity checking and parity error reporting by the drive is enabled. The drive checks for parity and reports the results of parity checking to the host system.
RES	Reserved
	This pin set is not used and must remain as set at the factory.
SE	Force Single-ended
On	Forces Ultra/single-ended operation.
Off*	Drive and controller (and terminator) determines whether to operate as Ultra3, Ultra2, or Ultra.
WP	Write Protect
On	The drive is write protected.
Off*	The drive is not write protected.

* Default

NOTE Jumpers are "off," when the jumper is not installed (no electrical connection) or "on," when the jumper is in place (completing the electrical connection).

B Disk Drive Characteristics

The proper settings for the following items depend on the operating system (NetWare, MS-DOS, OS/2, Windows NT, UNIX, Banyan Vines, Windows 2000, or Linux) and corresponding version number:

- Extended Translation setting for the controller
- Partitions, logical drives or divisions for the hot swap hard disk drive

For non-UNIX systems, partition and logical hot swap hard disk drive sizes also depend on:

- Partition type (Bootable or Non-bootable)
- File system (FAT, HPFS or NTFS)

To determine the appropriate controller and disk drive configuration, consult the SPU section for your operating system.

C Returning HP Hard Disk Drives

When returning a drive for service, repair, or replacement, use the packaging supplied with the exchange drive.

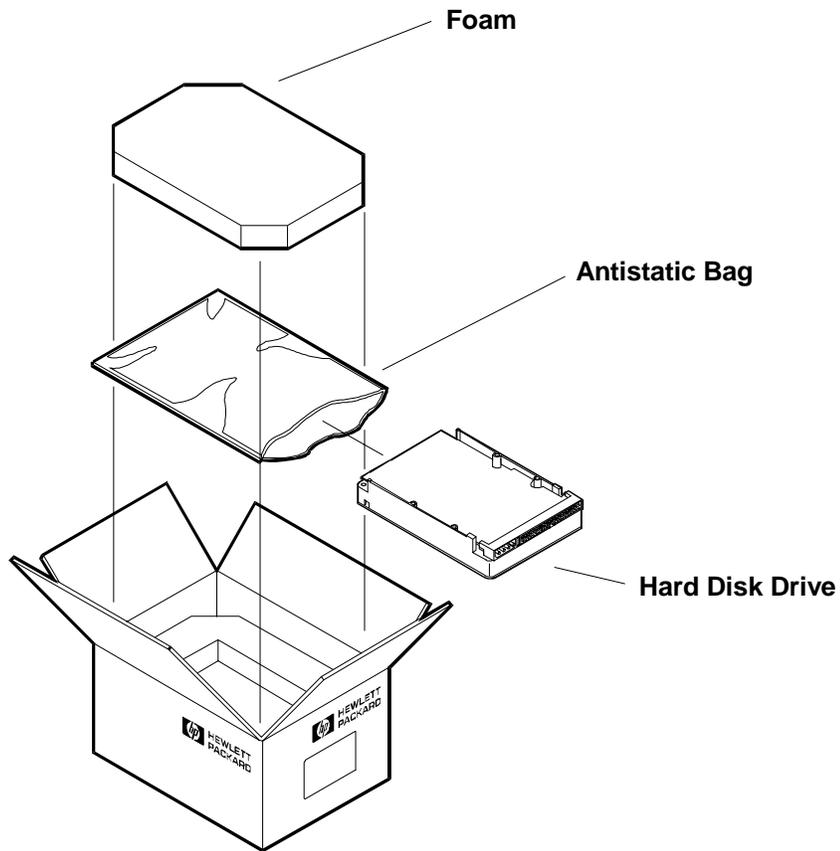


Figure C-1. Drive Repackaging

D Warranty and Support

The hardware warranty below applies to components purchased as accessories. If your component was factory installed as part of an HP NetServer model, refer to the warranty statement provided with your system documentation.

Hardware Warranty

This HP NetServer accessory is covered by a limited hardware warranty for a period of one year from receipt by the original end-user purchaser.

Once installed in an HP NetServer, this accessory may carry the longer of either a one-year warranty or the remainder of the warranty period for the HP NetServer in which it is installed.

This accessory may be serviced through expedited part shipment. In this event, HP will prepay shipping charges, duty, and taxes; provide telephone assistance on replacement of the component; and pay shipping charges, duty, and taxes for any part that HP asks to be returned.

The customer may be required to run HP-supplied configuration and diagnostic programs before a replacement will be dispatched or an on-site visit is authorized.

Refer to the warranty statement provided with your original HP NetServer system documentation for the warranty limitations, customer responsibilities, and other terms and conditions.

HP Repair and Telephone Support

Refer to the *HP Warranty and Service/Support Booklet* section of your HP NetServer system documentation for instructions on how to obtain HP repair and telephone support.

E Regulatory Information

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: Hewlett-Packard Company
Address: 10955 Tantau Avenue
Cupertino, CA 95014
USA

declares, that the product

Product Name: 9-GB, 18-GB, and 36-GB Ultra3 SCSI Disk Drives
Model Number(s): HP P1213A, HP P1214A, HP P1215A, HP P1167A, and HP P1169A
Product Options: N/A

conforms to the following Product Specifications:

Safety: IEC 950:1991 + A1, A2 / EN 60950 (1992) + A1, A2
EMC: CISPR 22:1985 / EN 55022 (1988) - Class B ¹
EN 50082-1:1992 - Generic Immunity
IEC 801-2:1991, 4 kV CD, 8 kV AD
IEC 801-3:1984, 3V/m
IEC 801-4:1988, 0.5 kV Signal Lines, 1 kV Power Lines
FCC Title 47 CFR, Part 15

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

- 1) This product was tested in a typical configuration with a Hewlett-Packard NetServer computer and peripherals.

Cupertino, February, 2000



Quality Manager

North American Contact: Hewlett-Packard Company Product Regulations Manager/ 3000 Hanover Street/Palo Alto, CA 94304 (650) 857-1501

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department ZQ / Standards Europe, Herrenberger Straße 130, D-7030 Böblingen (FAX: + 49-7031-143143)

Index

A

active termination, 14, 20
adapter, SCSI cable, 10

D

delay spin-up, 23
Delay Spin-Up, 23
disk drive
 configuration, 23
drive
 format, 15, 21
 logical partition, 15, 21
 NetServer tray, 11
 product number, 1
drive activity light, 12, 23
 D4910A, 12
 D4911A, 12, 13
drive style
 D4910A, 6
 D4911A, 5, 6

F

file system initialization, 15, 21
front mounting tray, 12

H

hardware warranty, 29
HP Information Assistant CD-ROM, 2
HP NetServer Road Map, 2

I

installation
 general procedure, 1
 NetServer E 45, 17
internal power supply cable, 14, 20

J

jumper descriptions, 23
jumper locations

D4910A, 6
D4911A, 5, 6

M

mounted tray, 11

N

narrow SCSI adapter, 10
NetServer E 30, 17
NetServer E 40, 17
NetServer E 45, 17

O

operating system format utility, 15, 21

P

parity, 24
passively terminated
 cables, 14, 20

R

restart system, 16, 22
returning a drive, 27

S

SCSI address, 23
 default, 6
 range, 6
 typical settings, 6
SCSI address settings
 D4910A, 7
 D4911A, 8, 9
SCSI addresses, 2
SCSI cable, 14, 20
SCSI cable adapter, 10
SCSI connector, 14, 20
SCSI controller, 15, 21
SCSI drive power cable, 14, 20
SCSI hard drives
 multiple, 6

SCSI host bus adapter, 6, 14, 20
SCSI Select utility, 15, 21
SCSI terminators, 23
setup information, 2
shock, 3
start unit command, 24
static electricity, 3
support, 29
system board, 14, 20
system boot, 15, 21

T
tools, 2

U
Ultra Wide SCSI connector, 10

W
write protect, 24