

DiskShelf14 Installation Flyer

Contents of this flyer

This flyer covers connecting your new disk shelf to nonclustered NetApp® storage appliances.

Note

For information about adding your new disk shelf to a cluster, see the cluster guide for your specific filer, which you can download from the NOW Web page at <http://now.netapp.com>.

Required installation procedures

Installing your new disk shelf requires the following procedures:

1. Reviewing the safety information
2. Installing your disk shelf in the rack
3. Connecting your disk shelf to an existing loop

Note

For a complete description and set of installation instructions for the DiskShelf14 (DS14) disk shelf, see the *DiskShelf14 Hardware Guide*.

Topics in this flyer

This flyer describes the following topics:

- ◆ “[Safety Information \(Sicherheitshinweise\)](#)” on page 2
- ◆ “[Installing your new disk shelf in a rack](#)” on page 4
- ◆ “[Installing a DS14 disk shelf in an existing mixed shelf loop](#)” on page 12
- ◆ “[Hot-adding a DS14 disk shelf to an existing loop](#)” on page 17

Safety Information (Sicherheitshinweise)

Safety rules

All products are Class 1 laser devices. You must follow these safety rules when working with this equipment:

WARNING

Failure to follow these directions could result in bodily harm or loss of life.

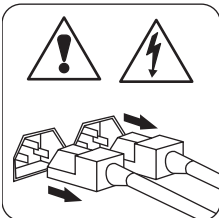
- ◆ When installing disk shelves and a storage appliance into a movable cabinet or rack, install from the bottom up for best stability.
- ◆ DC-based systems must be installed in a restricted access location and the two input power terminals for the DC power supply must be connected to separate isolated branch circuits.
- ◆ To reduce the risk of personal injury or equipment damage, allow internal components time to cool before touching them and ensure that the equipment is properly supported or braced when installing options.
- ◆ This equipment is designed for connection to a grounded outlet. The grounding type plug is an important safety feature. To avoid the risk of electrical shock or damage to the equipment, do not disable this feature.
- ◆ This equipment is furnished with one or more replaceable batteries. There is danger of explosion if the battery is incorrectly replaced. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Warning for units with multiple power cords

If your storage appliance or disk shelf has multiple power cords and you need to turn the unit off, heed the following warning:

WARNING

This unit has more than one power supply cord. To reduce the risk of electrical shock, disconnect all power supply cords before servicing.



Sicherheitsvorgaben

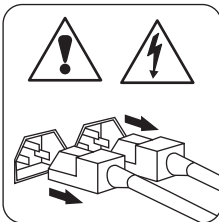
Alle Produkte sind Lasergeräte der Klasse 1. Die folgenden Sicherheitshinweise sind beim Betreiben des Geräts unbedingt zu beachten:

Vorsicht

Nichtbeachtung dieser Anweisungen kann zu schweren Körperschäden führen oder tödlich sein.

- ◆ Bei der Montage der Diskettenregale und Archivierungsgeräte, des NetCache™ -Geräts oder des NearStore™ -Systems in bewegliche Schränke oder Regale sind die Geräte von unten nach oben einzubauen, um optimale Stabilität zu gewährleisten.
- ◆ Gleichstrom-Systeme müssen an Betriebsstätte mit beschränktem Zutritt installiert sein und die beiden Eingangsstromklemmen für das Gleichstrom-Netzteil müssen an separate und isolierte Abzweigungen angeschlossen sein.
- ◆ Zum Schutz vor Körperverletzung oder Sachschäden am Gerät lassen Sie die inneren Bauteile stets vor dem Berühren abkühlen. Sorgen Sie dafür, dass das Gerät richtig abgestützt ist oder fest aufrecht steht, bevor Sie neues Zubehör einbauen.
- ◆ Dieses Gerät ist für die Einspeisung aus einer geerdeten Netzverbindung ausgelegt. Der Netzstecker mit Erdungsvorrichtung ist ein wichtiger Sicherheitsschutz. Zum Schutz vor elektrischem Schlag oder Sachschäden am Gerät die Erdung nicht abschalten.
- ◆ Das Gerät ist mit einer oder mehreren auswechselbaren Batterien ausgestattet. Bei unsachgemäßem Auswechseln der Batterie besteht Explosionsgefahr. Batterien nur mit dem vom Hersteller empfohlenen Typ oder entsprechenden Typen ersetzen. Gebrauchte Batterien sind gemäß den Anweisungen des Herstellers zu entsorgen.

Warnhinweis für Geräte mit mehrfachen Netzanschlussleitungen



Sollte Ihr Archiviergerät, NetCache-Gerät, NearStore-System oder Diskettenregal mehrfache Netzanschlussleitungen aufweisen und Sie wollen das Gerät abschalten, bitte folgenden Warnhinweis beachten.

ACHTUNG

Gerät besitzt zwei Netzanschlussleitungen. Vor Wartung alle Anschlüsse vom Netz trennen.

Installing your new disk shelf in a rack

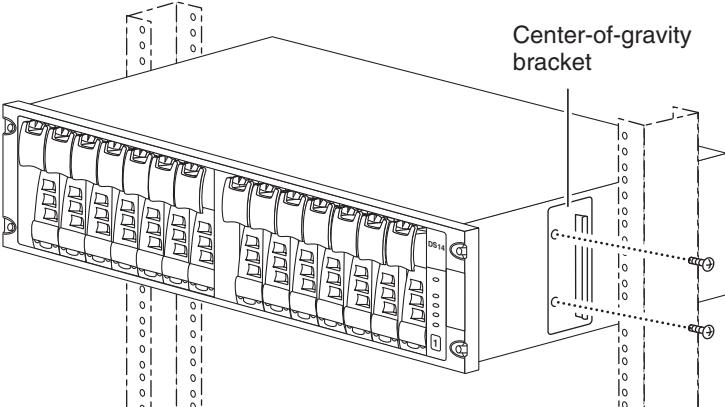
Installing the disk shelf

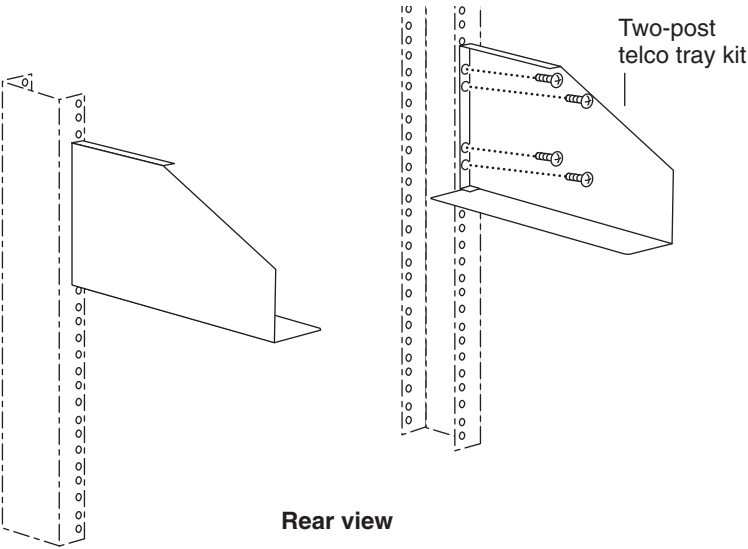
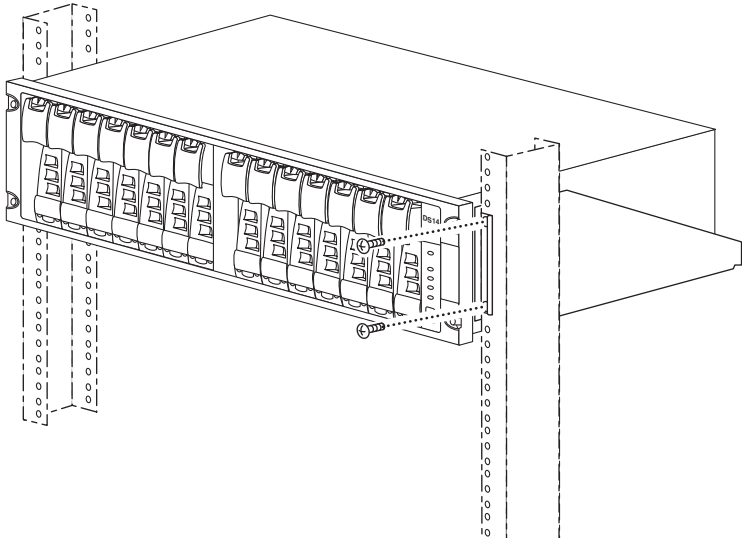
To install the disk shelf in a rack, complete the following steps.

WARNING — You must install each disk shelf with either the rack mount kit, the center-of-gravity brackets, or the four-post rail kit that came in your shipment package. Do not ear-mount the DS14 disk shelf into a telco-type rack; the DS14 disk shelf will collapse from the rack under its own weight.

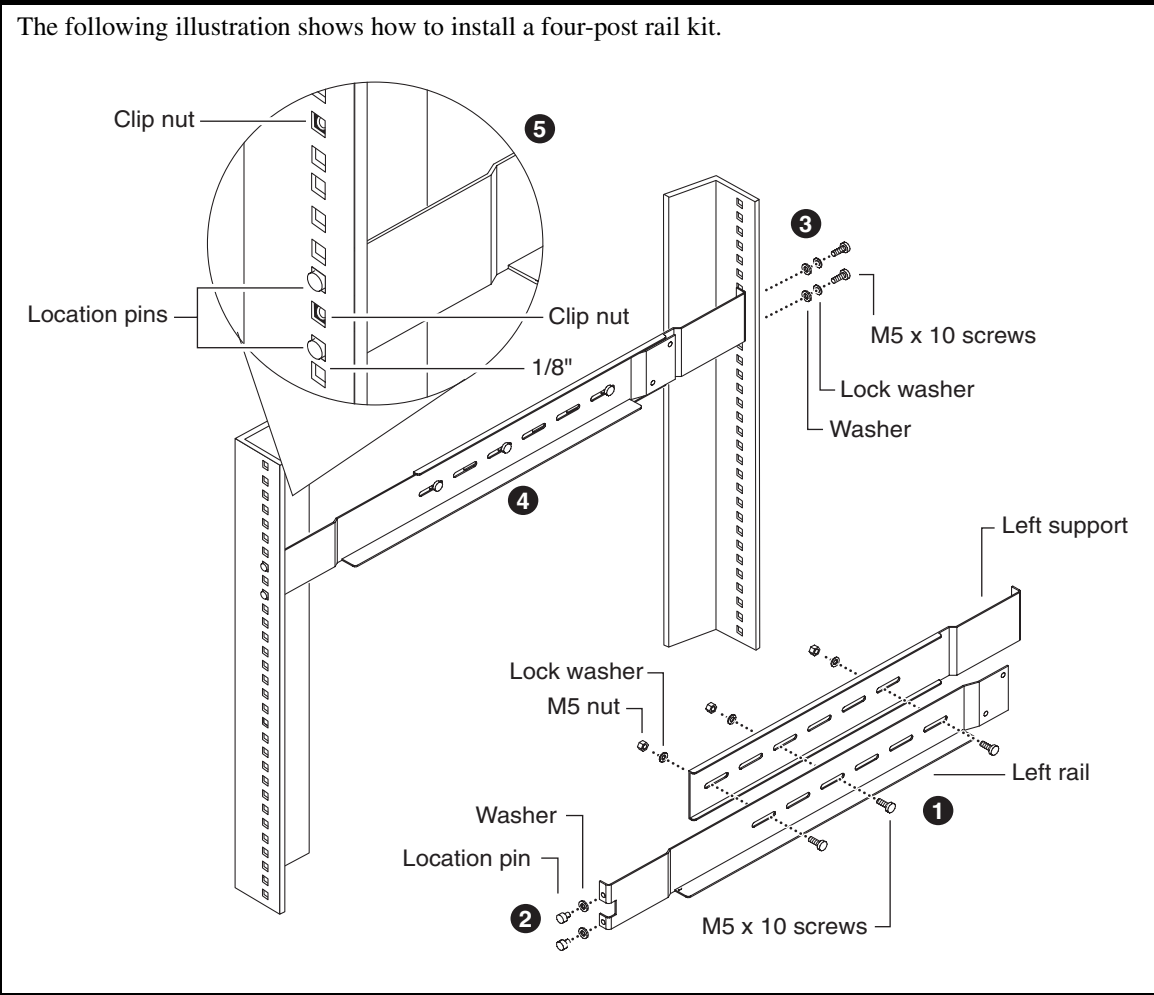
WARNING — The disk shelf is extremely heavy. To avoid injuring yourself or damaging the disk shelf, you must work with at least one other person when you install the disk shelf in the rack.

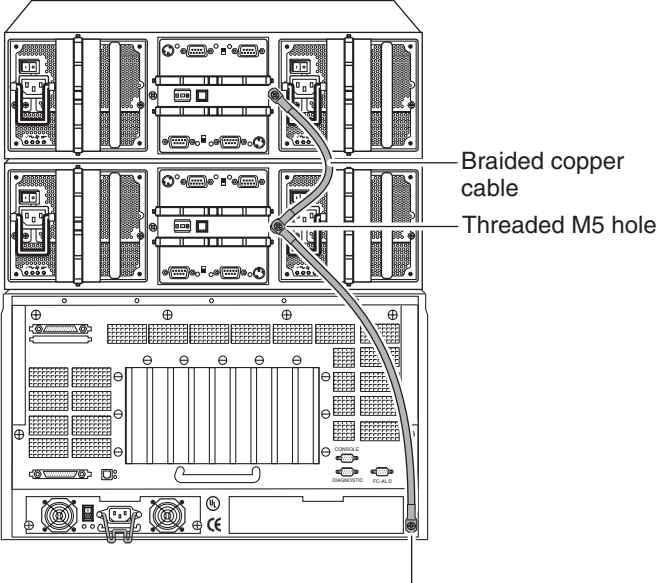
Step	Action	
1	Verify that you received the envelope with the ID labels for the disk shelves.	
2	Put on the antistatic wrist strap and grounding leash.	
3	Select two holes on each side of the rack for the installation.	
4	If you are using the...	Then...
	Center-of-gravity bracket kit	1. Align each bracket with the chosen holes on the rack and secure the bracket with the #10 Phillips head screws.

Step	Action
5	2. Select two holes in the middle of each side of the DS14 disk shelf to which you want to attach the brackets. 3. Align the holes on the DS14 disk shelf with the holes on the bracket and secure the disk shelf with the #10 Phillips head screws. The following illustration shows a DS14 disk shelf installed in a rack using a center-of-gravity bracket. 
Two-post telco tray kit	1. Align the left post screw holes on the two-post rack with the screw holes on the left half of the telco tray, then secure it to the post with four M5 screws. 2. Align the right half of the telco tray with the left half and repeat Step 1 to secure it to the post. 3. Install the DS14 disk shelf onto the rack mount kit and retain it with the mounting screws to secure the DS14 disk shelf mounting flanges to the telco-type rack. 4. Conceal the mounting screws with the provided bezel mounting screw covers.

Step	Action
6	The following illustration shows the rack mount kit being installed.  Rear view The following illustration shows a DS14 disk shelf being installed in a rack mount kit. 

Step	Action
7	Four-post rail kit For Step 1 through Step 5, see the accompanying illustration. 1. Connect the left support with the left rail, using three M5 nuts, three lock washers, and three M5 x 10 screws. Leave them loose enough so that you can adjust the length of the rail. 2. Align the holes in the front of the assembled rail with the front post of the four-post rack, and secure it to the post with two location pins and washers. 3. Attach the rear of the assembled rail to the rear post using two M5 x 10 screws, washers, and lock washers, then tighten the rail and support. 4. Repeat Step 1 through Step 3 for the right support rail. 5. Install the clip nuts for the disk shelf into the equipment rack posts. The bottom-most clip nut should be directly above the bottom locator pin and the top clip nut should be six holes above the bottom clip nut. 6. Install the DS14 disk shelf onto the rack mount kit and retain it with the mounting screws to secure the DS14 disk shelf mounting flanges to the front posts of the rack. 7. Conceal the mounting screws with the provided bezel mounting screw covers.

Step	Action
The following illustration shows how to install a four-post rail kit. 	
8	Overlay the hole on one end of the provided .25m copper cable to the unused lug end of the copper cable connected to preceding disk shelf.
9	Using the provided M5 x 0.5 inch shelf screw, connect both copper cables to the threaded hole adjacent to the power supply receptacles on the next disk shelf.

Step	Action	
10	Ground the disk shelves to each other and the filer. The following illustration shows disk shelves grounded to an F700 series filer. Any NetApp storage appliance can be grounded in the same manner.  The diagram illustrates the grounding process. It shows three disk shelves stacked vertically, each with a threaded M5 hole. A braided copper cable is connected from these holes to a threaded 8-32 hole on the filer. Labels indicate 'Braided copper cable' and 'Threaded M5 hole' for the shelves, and 'Threaded 8-32 hole for all filers except the F630 filer. Threaded 8-32 hole for all NetCache appliances.' for the filer.	
11	If you are connecting to...	Then...
	AC power	1. Plug the power cord for PSU1 into the power receptacle on the left connector (rear view). 2. Plug the power cord for PSU2 into the power receptacle on the right connector (rear view). 3. Fasten the power cords with the clamps.

Step	Action	
12		4. Plug the other end of each power cord into a grounded AC power source. Caution _____ Do not turn on the power to the DS14 disk shelf yet. 5. Go to Step 13.
	DC power	1. Remove the cover over the DC input connector. 2. Fabricate a three-way cable: a. Use wire-strippers to strip an inch of the protective sheathing from the copper wire. b. Identify the positive, negative, and ground wires. c. Crimp and solder a connector to the end of the positive, negative, and ground wires. 3. Connect the ground, positive, and negative wires to the power supply. 4. Place the terminal cover over the DC input connector to avoid shorting the power supply cables. Caution _____ Do not turn on the power to the DS14 disk shelf yet. 5. Go to Step 13.

Step	Action	
13	You must change the disk shelf ID with the following procedure: 1. Press the thumbwheel switch on the rear of the disk shelf to the proper ID, using the + button to increase the number and the - button to lower the number. Note _____ A valid shelf ID ranges between 1 through 7. Network Appliance recommends using disk shelf ID 7 only if it is the last ID available. A shelf ID that is not from 1 through 7 causes the drive addresses to default to those of a shelf with the ID switch set to 7 even though the Shelf ID indicator in the front operation panel will display a dash (-). _____ 2. Select the correct ID label from the envelope that came with your equipment and attach it to the right flange of the new disk shelf.	
14	If you are adding your new disk shelf to an existing loop where the last disk shelf...	Then...
	For the storage appliance is not a DS14 disk shelf	Go to “ Installing a DS14 disk shelf in an existing mixed shelf loop ” on page 12.
	For the storage appliance is a DS14 disk shelf	Go to “ Hot-adding a DS14 disk shelf to an existing loop ” on page 17.

Installing a DS14 disk shelf in an existing mixed shelf loop

Assumptions about the existing mixed shelf loop

This section is based on the assumption that the last disk shelf in the existing mixed shelf loop connected to your storage appliance is not a DS14 disk shelf.

Note—————
If the last disk shelf in your storage appliance system is a DS14, you can add the DS14 disk shelf to the loop without shutting down the system. Go to “[Hot-adding a DS14 disk shelf to an existing loop](#)” on page 17.

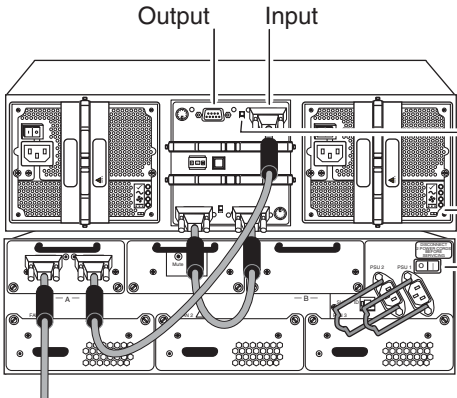
Installing a DS14 disk shelf in an existing mixed shelf loop

To install a DS14 disk shelf into an existing mixed shelf loop on a storage appliance, complete the following steps.

Caution—————
If you are installing the DS14 disk shelf into a loop that contains FC7, FC8, or FC9 disk shelves, the DS14 must be the last disk shelf in the loop and must have the highest disk shelf ID in the loop to avoid address conflicts.

Step	Action	
1	Put on the antistatic wrist strap and grounding leash.	
2	If the disk shelf connects to a...	Then...
	Filer system	Shut down the filer by entering the following command at the console: halt Caution ————— Always use the <code>halt</code> command to perform a clean shutdown.

Step	Action	
3	NetCache appliance system	1. From the NetCache Manager home page, select Maintenance tab > System Control > Halt/Reboot. 2. Select Halt NetCache.
4	Verify that the LCD display at the front of your storage appliance displays the following message: Halted	
5	Turn off the power to your storage appliance and the disk shelves.	
6	If the last disk shelf in the loop to which you are adding the DS14 is...	Then...
	An FC7 or FC8 disk shelf	1. Remove the terminator from the Output/Terminator connector. 2. Go to Step 9.
	An FC9 disk shelf	Go to Step 9 .
7	Connect one end of the provided cable to the Output/Terminator connector of the LRC A on the last disk shelf in the loop.	

Step	Action
8	Connect the other end of the cable to the LRC A Input on the DS14 disk shelf that you are adding. The following illustration shows a DS14 disk shelf installed above an FC9 disk shelf.  The diagram illustrates the physical connection between two disk shelves. The DS14 disk shelf is positioned above the FC9 disk shelf. A cable is connected from the 'Input' port on the DS14 shelf to the 'Output' port on the FC9 shelf. Labels indicate the 'Output' and 'Input' ports, the 'Terminate switch on' location, the 'DS14 disk shelf', and the 'FC9 disk shelf'.

Step	Action	
9	If the DS14 disk shelf...	Then...
	Is the only disk shelf in the loop	1. Connect one end of the provided cable to the LRC B Input on the DS14. 2. Connect the other end of the cable to the LRC B Output on the DS14. 3. Turn the terminate switches on LRCs A and B to the On position. LRC A active terminate position Note_____ Because LRC B on the DS14 disk shelf is inverted, the On terminate position on LRC B is up instead of down.
	Is the first of additional DS14 disk shelves being added to the loop	1. Turn the terminate switch on the first DS14 disk shelf in the mixed shelf loop to the Off position for LRC A (up) and LRC B (down). 2. Connect one end of the provided cable to the LRC Output on the first DS14 disk shelf in the mixed shelf loop.

Step	Action	
10		3. Connect the other end of the cable to the LRC Input on the next DS14 disk shelf that you added to the mixed shelf loop. 4. Verify that the terminate switch on all but the last DS14 disk shelf is in the Off position for LRC A (up) and LRC B (down). The terminate switch on the last DS14 disk shelf should be in the On position for LRC A(down) and LRC B (up).
11	Turn on the power first to the disk shelves and then to the storage appliance.	
12	Reboot the storage appliance.	

Hot-adding a DS14 disk shelf to an existing loop

About this section

This section provides information about how to hot-add a DS14 disk shelf to an existing loop. It also tabulates the error messages that appear on your storage appliance console if the attempt at hot-adding was unsuccessful.

Hot-adding a DS14 disk shelf to an existing loop

To hot-add a DS14 disk shelf to an existing loop on a storage appliance, complete the following steps.

Step	Action
1	Verify that the disk shelf ID is not being used in the loop by entering the following command at the console: fcstat device_map adaptername Caution _____An invalid disk shelf ID causes the storage appliance to panic._____
2	Turn on the power to the disk shelf.
3	Connect one end of the provided cable to the LRC A Output on the last DS14 disk shelf in the existing loop.
4	Connect the other end of the cable to the LRC A Input on the new DS14 disk shelf.
5	Connect one end of the provided cable to the LRC B Output on the last DS14 disk shelf in the existing loop.
6	Connect the other end of the cable to the LRC B Input on the new DS14 disk shelf.
7	Verify that all the cables are securely fastened. Caution _____Poorly secured cables cause the storage appliance to panic over an open loop._____

Step	Action
8	Turn the terminate switch of the newly added DS14 disk shelf to the On position for LRC (down) and LRC (up). Caution _____ Failure to place the terminate switches in the On position in a DS14 causes the storage appliance to panic over an open loop.
9	Turn the terminate switch of the now second-to-last DS14 disk shelf to the Off position for LRC A (up) and LRC (down). In 60 seconds, the storage appliance recognizes the hot-added disk shelf.

Error messages

The following error messages appear on your storage appliance console if your attempt at hot-adding the DS14 disk shelf is unsuccessful.

Error message	Explanation
Open loop panic	The terminate switch on LRC A and LRCB on the new DS14 disk shelf are not in the On position.
Open loop panic	The shelf-to-shelf cable between the now second-to-last DS14 disk shelf and the newly added DS14 disk shelf is defective or is not securely fastened.
Soft address panic	One of two reasons cause this error message to appear: ◆ There is an invalid disk shelf ID. ◆ The power was turned on before the disk shelf ID was changed and the disk shelf was not power-cycled after the disk shelf ID was changed.