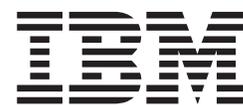
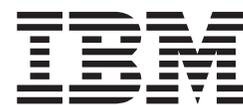


IBM TotalStorage® DS6000



Installing

IBM TotalStorage® DS6000



Installing

Note:

Before using this information and the product it supports, read the information in "Notices" on page 101.

Twenty-fifth Edition (April 2007)

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Notices and publication information

This section contains information about safety notices that are used in this guide, environmental notices for this product, publication information, and information about sending your comments to IBM.

Safety notices

Complete this task to find information about safety notices.

To find the translated text for a danger or caution notice:

1. Look for the identification number at the end of each danger notice or each caution notice. In the following examples, the numbers **1000** and **1001** are the identification numbers.

DANGER

A danger notice indicates the presence of a hazard that has the potential of causing death or serious personal injury.

1000

CAUTION:

A caution notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury.

1001

2. Find the number that matches in the *IBM System Storage Solutions Safety Notices for IBM Versatile Storage Server and IBM System Storage Enterprise Storage Server, GC26-7229*.

Environmental notices

This section identifies the environmental guidelines that pertain to this product.

Product recycling and disposal

This unit contains recyclable materials.

This unit must be recycled or discarded according to applicable local and national regulations. IBM® encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/prp.shtml>.



Notice: This mark applies only to countries within the European Union (EU) and Norway.

Appliances are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

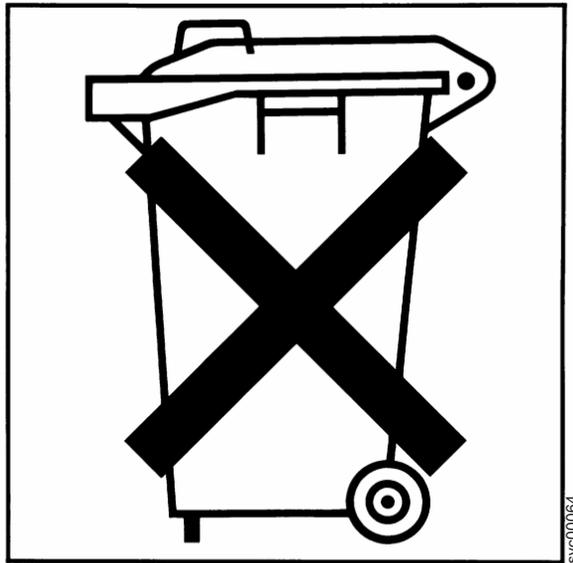
In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

Battery return program

This product may contain sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to <http://www.ibm.com/ibm/environment/products/index.shtml> or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and other battery packs from IBM Equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Please have the IBM part number listed on the battery available prior to your call.

In the Netherlands the following applies:



For Taiwan:



Please recycle batteries.

廢電池請回收

How to send your comments

Your feedback is important to help us provide the highest quality information. If you have any comments about this information or any other DS6000™ series documentation, you can submit them in the following ways:

- e-mail

Submit your comments electronically to the following e-mail address:

starpubs@us.ibm.com

Be sure to include the name and order number of the book and, if applicable, the specific location of the text you are commenting on, such as a page number or table number.

- Mail

Fill out the Readers' Comments form (RCF) at the back of this book. Return it by mail or give it to an IBM representative. If the RCF has been removed, you can address your comments to:

International Business Machines Corporation
RCF Processing Department
Department 61C
9032 South Rita Road
TUCSON AZ 85775-4401

Chapter 1. DS6000 series installation overview

The topics in this section provide installation information related to your DS6000. Topics covered include preparing for installation, installing the hardware, installing the DS Storage Manager, and installing the DS command-line interface.

This section contains the high-level process that you must complete to install and configure your IBM System Storage™ DS6000 series.

The following steps outline, at a very high level, the tasks that you must complete to install and initially configure your DS6000 series. Each step below involves its own set of steps.

1. Prepare your system for installation and familiarize yourself with the safety requirements.
2. Install the hardware.
3. Install the DS Storage Manager.
4. (Optional) Install the DS CLI.
5. Set up support capabilities and options.
6. Create the initial logical configuration using either the DS Storage Manager or the DS CLI.

Chapter 2. Preparing your system for installation

This section provides information that you need to prepare the DS6000 for installation into a rack.

Preinstallation planning and verification

Use this information to prepare the DS6000 for installation into a rack.

Prior to installation, ensure that you complete the following steps to prepare the DS6000 for installation into a rack. See the *IBM System Storage DS6000 Introduction and Planning Guide* for more detailed information.

1. Prepare the site to meet all safety and environmental requirements.
2. Prepare the site to meet all space and floor load requirements.
3. Prepare the site to meet all power requirements.
4. Prepare the site to meet all network and communications requirements.
5. Plan your storage complex setup with the DS6000 customization worksheets. These worksheets are available in the *IBM System Storage DS6000 Introduction and Planning Guide*.

Notices and publication information

This section contains information about safety notices that are used in this guide, environmental notices for this product, publication information, and information about sending your comments to IBM.

Safety notices

Complete this task to find information about safety notices.

To find the translated text for a danger or caution notice:

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Product recycling and disposal:

This unit contains recyclable materials.

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/prp.shtml>.



Notice: This mark applies only to countries within the European Union (EU) and Norway.

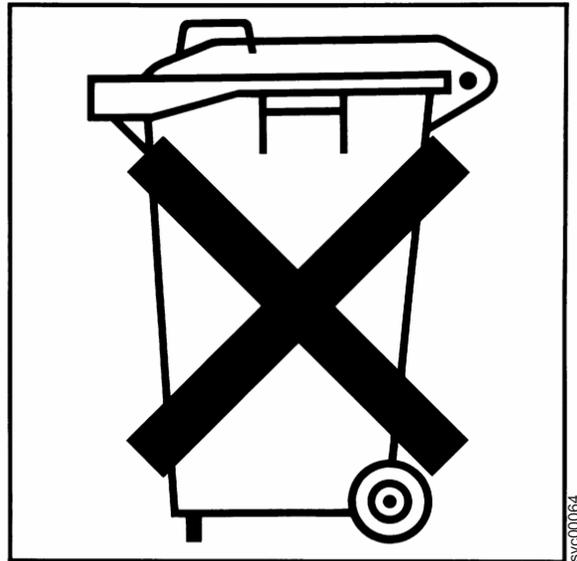
Appliances are labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

Battery return program: This product may contain sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to <http://www.ibm.com/ibm/environment/products/index.shtml> or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and other battery packs from IBM Equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Please have the IBM part number listed on the battery available prior to your call.

In the Netherlands the following applies:



For Taiwan:



Please recycle batteries.

廢電池請回收

Service-clearance and floor-load requirements

For each DS6000 series model or expansion unit, service personnel must be able to open the front and rear covers to perform service.

Service clearance refers to the empty space in front of, next to, or behind a storage unit that a service person needs in order to access the unit. The service clearance of adjacent units can overlap. Weight distribution areas that are required to handle floor loading do not overlap.

Use the following minimum service clearances as you plan the placement of your system.

- At the front of the unit, allow a minimum of 121.9 cm (48-in.)
- At the rear of the unit, allow a minimum of 76.2 cm (30-in.)
- At each side of the unit, allow a minimum of 5.1 cm (2-in.)

Power outlet requirements

Plan for the required power outlets when planning for the installation of your storage units.

The following power outlets are required:

- Two independent power outlets for the two DS6000 power line cords needed by each base model and expansion model.

Important: To eliminate a single point of failure, the outlets must be independent. This means that each outlet must use a separate power source and each power source must have its own wall circuit breaker.

- Two outlets that are within 3.1 m (10 ft) of the external management console. Typically, these outlets will be in a rack that you provide.

Power connector requirements

Ensure that the site where you plan to install the DS6000 series meets the power connector requirements.

Table 1 provides the power line cords and the inline connectors and receptacle types that they support. Find the power line cord row that is appropriate for your site and ensure that the site where you plan to install the DS6000 series meets the power connector requirements that are shown in that row.

Phase rotation on three-phase power-cable connectors is counterclockwise as you look at the power line cord plug. Phase rotation is clockwise as you look at the face of the power receptacle at your installation site.

Table 1. DS6000 series power connectors

Power Line Cord Feature Code	Power Line Cord Description	Inline Connector	Receptacle
Models 511 and EX1			

Table 1. DS6000 series power connectors (continued)

Power Line Cord Feature Code	Power Line Cord Description	Inline Connector	Receptacle
9820	Line cord for Afghanistan, Angola, Antilles, Arab Republic, Armenia, Austria, Belgium, Belarus, Bosnia, Botswana, Bulgaria, Burundi, Cameroon, Cape Verde Islands, Central African Republic, Congo, Czech Republic, Democratic Republic of Congo, Egypt, Estonia, Finland, France, French Polynesia, Germany, Greece, Guinea, Hungary, Iceland, Indonesia, Kazakhstan, Kyrgyzstan, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Luxembourg, Macedonia, Mali, Mauritania, Moldavia, Morocco, Mozambique, Netherlands, Norway, Poland, Portugal, Republic of Djibouti, Romania, Russia, Rwanda, Sao Tome and Principe, Senegal, Serbia, Slovakia, Slovenia, Spain, Sudan, Swaziland, Sweden, Syria, Tunisia, Turkey, Ukraine, Uzbekistan, Zimbabwe	IEC 320 C13	plug type 18 (CEE7 VII)
9821	Line cord for Denmark	IEC 320 C13	plug type 19 (CEE)
9825	Line cord for Abu Dhabi, Bahrain, Brunei, Cyprus, Fiji, Gambia, Ghana, Hong Kong S.A.R. of China, Iraq, Ireland, Jordan, Kenya, Kuwait, Macao S.A.R of China, Malawi, Malaysia, Nepal, Nigeria, North Yemen, Oman, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Arab Emirates, United Kingdom (UK), Zambia	IEC 320 C13	plug type 23 (BS1364A)
9827	Line cord for Israel	IEC 320 C13	plug type 32 (SII 32)
9829	Line cord for Bangladesh, India, Myanmar, Pakistan, South Africa, Sri Lanka	IEC 320 C13	plug type 22 (SABS 164)
9830	Line cord for Chile, Ethiopia, Italy, Libya, Malta, Somalia	IEC 320 C13	plug type 25 (CEI)
9834	Line cord for Argentina, Paraguay, Uruguay	IEC 320 C13	plug type 2 (IRAM) plug type 62
9840	Line cord for People's Republic of China	IEC 320 C13	plug type 62 (GB1053)
Models 522 and EX2			

Table 1. DS6000 series power connectors (continued)

Power Line Cord Feature Code	Power Line Cord Description	Inline Connector	Receptacle
9870	Line cord for Afghanistan, Angola, Antilles, Arab Republic, Armenia, Austria, Belgium, Belarus, Bosnia, Botswana, Bulgaria, Burundi, Cameroon, Cape Verde Islands, Central African Republic, Congo, Czech Republic, Democratic Republic of Congo, Egypt, Estonia, Finland, France, French Polynesia, Germany, Greece, Guinea, Hungary, Iceland, Indonesia, Kazakhstan, Kyrgyzstan, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Luxembourg, Macedonia, Mali, Mauritania, Moldavia, Morocco, Mozambique, Netherlands, Norway, Poland, Portugal, Republic of Djibouti, Romania, Russia, Rwanda, Sao Tome and Principe, Senegal, Serbia, Slovakia, Slovenia, Spain, Sudan, Swaziland, Sweden, Syria, Tunisia, Turkey, Ukraine, Uzbekistan, Zimbabwe	IEC 320 C13	plug type 18 (CEE7 VII)
9871	Line cord for Denmark	IEC 320 C13	plug type 19 (CEE)
9875	Line cord for Abu Dhabi, Bahrain, Brunei, Cyprus, Fiji, Gambia, Ghana, Hong Kong S.A.R. of China, Iraq, Ireland, Jordan, Kenya, Kuwait, Macao S.A.R of China, Malawi, Malaysia, Nepal, Nigeria, North Yemen, Oman, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Arab Emirates, United Kingdom (UK), Zambia	IEC 320 C13	plug type 23 (BS1364A)
9877	Line cord for Israel	IEC 320 C13	plug type 32 (SII 32)
9879	Line cord for Bangladesh, India, Myanmar, Pakistan, South Africa, Sri Lanka	IEC 320 C13	plug type 22 (SABS 164)
9880	Line cord for Chile, Ethiopia, Italy, Libya, Malta, Somalia	IEC 320 C13	plug type 25 (CEI)
9884	Line cord for Argentina, Paraguay, Uruguay	IEC 320 C13	plug type 2 (IRAM) plug type 62
9890	Line cord for People's Republic of China	IEC 320 C13	plug type 62 (GB1053)

Planning for network and communications requirements

You must locate your DS6000 series in a location that meets the network and communications requirements.

Keep in mind the following network and communications issues when you plan the location and interoperability of your storage complex:

- Management console network configuration
- Host attachment requirements

- Remote support connection requirements
- SAN considerations
- Dial-up modem connections

Host attachment communication requirements

This list describes requirements and other considerations for connecting host attachments in your network.

- You must use worldwide port names to uniquely identify fibre-channel adapter cards that are installed in your host system.
- For open-system hosts with fibre-channel adapters, keep in mind that fibre channel architecture provides a variety of communication protocols. Each interconnected storage unit within the architecture is referred to as a *node*, and each host is also a node. Each node corresponds to one or more ports. (In the case of fibre-channel I/O adapters, these ports are fibre-channel ports.) Each port attaches to a serial-transmission medium that provides duplex communication with the node at the other end of the medium. You can configure your network structure based on one of three basic interconnection topologies (network structures):
 - Point-to-point
 - Switched fabric
 - Arbitrated loop

See the *IBM System Storage DS6000 Host Systems Attachment Guide* for more information about these supported topologies.

- The maximum distance between a host fibre-channel port and the following network components is 300 meters (984 ft) with a shortwave adapter and 10 km (6.2 miles) with a longwave adapter.
 - Fabric switches
 - Fabric hubs
 - Link extenders
 - Storage unit fibre-channel port

The maximum distance might be greater than 10 km (6.2 miles) when a link extender provides target initiator functions or controller emulation functions.

Note: Do not use link extenders with emulation functions on links over which Remote Mirror and Copy operations are performed. This is because of the additional path delay that is introduced by these units.

- Because the fibre channel architecture allows any fibre-channel initiator to access any fibre-channel device, without access restrictions, this can represent a security exposure. You must set the fibre-channel access modes to the proper setting. See the *IBM System Storage DS6000 Host Systems Attachment Guide*, for more information about fibre-channel access modes.

SAN requirements and considerations

These requirements and considerations can help you plan for a DS6000 series that attaches to a SAN.

A fibre-channel storage area network (SAN) is a specialized, high-speed network that attaches servers and storage devices. With a SAN, you can perform an any-to-any connection across the network using interconnect elements such as routers, gateways, hubs, and switches.

When you connect your DS6000 storage units to a SAN, you must meet the following requirements:

- Fibre-channel I/O adapters must be configured to operate in a point-to-point mode fabric topology. See the *IBM System Storage DS6000 Host Systems Attachment Guide* for more information.

Also keep the following considerations in mind:

- Fibre-channel SANs can provide the capability to interconnect open systems and storage in the same network as S/390 and zSeries host systems and storage.
- A single fibre-channel I/O adapter can have physical access to multiple fibre-channel ports on the storage unit.

Remote support and Call Home connection requirements

You must meet these requirements if you will use remote support or the Call Home feature.

You must provide an outside connection, such as one of the following:

- A virtual private network (VPN) connection over your local area network or over a dial-up connection through a modem that is connected to the management console. If you initiate a VPN connection over a modem, you must have an analog phone line that is available for the modem to connect to.
- An Internet connection through your firewall that allows IBM to connect to your storage management system.

Gathering installation information

Use the table in this section to gather the information that you will need to complete the installation of your IBM System Storage DS6000.

Table 2 on page 11 provides a place for you to gather vital information for your DS6000 installation. You will enter this information while you install and configure your DS6000. Not all of the items that are listed in this table are required for all types of installations. Your data requirements might differ slightly from those that are listed here.

Note: You might have already gathered some of this information while reviewing the *IBM System Storage DS6000 Introduction and Planning Guide*. If so, you can reuse that information here.

Important: When you configure the Call Home feature, you must provide complete, accurate, up-to-date contact information, including the correct telephone number. Incomplete or incorrect contact information can cause a delay in IBM's ability to respond to a Call Home event. If your contact information changes after you initially configure Call Home (for example, if you move the DS6000 to a new location) be sure to update your customer contact information.

Each processor card must have access to the SMTP server to allow the Call Home feature to work properly, but the management console does not require access to the SMTP server.

Table 2. Preparing installation information

What you need	Value
Management console IP address	
IP address for processor card 1	
IP address for processor card 2	
Network mask for processor card 1	
Network mask for processor card 2	
DNS server for processor card 1	
DNS server for processor card 2	
Gateway address for processor card 1	
Gateway address for processor card 2	
Operating Environment Licenses	
Machine type	
Machine model number	
Machine serial number	
Primary DNS for the management console	
Secondary DNS for the management console	
Customer business name	
Customer service account number	
Country	
Country code (for telephone number)	
Area or city code (for telephone number)	
Primary telephone number	
Primary telephone number extension	
Alternate telephone number	
Alternate telephone number extension	
Mailing address	
Building, floor, room location	
City	
State or province	
Zip code or postal code	

Table 2. Preparing installation information (continued)

What you need	Value
Primary country code	
Primary area or city code	
Alternate country code	
Alternate area or city code	
SMTP Call Home server host name	
SMTP Call Home server IP address	
SMTP Call Home port numbers	
SNMP Call Home server host name	
SNMP Call Home server IP address	
SNMP (Call Home) destination port number	
SNMP (Call Home) community name	
SNMP (Call Home) system contact name	
Host system worldwide port names	

Chapter 3. Installing the DS6000 series hardware

This section directs you through the steps of installing the hardware for your IBM System Storage DS6000 series enclosures.

Follow these steps to install the hardware for the server or expansion enclosure:

1. Verify the ship group. You can find additional steps in “Verifying the ship group.”
2. Assemble your tools and equipment. You can find additional steps in “Assembling tools and equipment” on page 14.
3. Position the rack. You can find additional steps in “Positioning the rack” on page 15.
4. Remove the hardware resources. You can find additional steps in “Removing the hardware resources” on page 15.
5. Install the support rails. You can find additional steps in “Installing the support rails” on page 22.
6. Install the server enclosure in the rack. You can find additional steps in “Installing the server enclosure in the rack” on page 24.
7. Install the expansion enclosures in the rack. You can find additional steps in “Installing expansion enclosures in the rack” on page 26.
8. Replace the hardware resources. You can find additional steps in “Replacing the hardware resources” on page 27.
9. Install the host systems and I/O adapters. You can find additional information in “Installing the host systems and I/O adapters” on page 33.
10. Connect all cables. You can find additional steps in “Routing the cables” on page 33.
11. Power on the enclosures. You can find additional steps in “Powering on” on page 44.
12. Verify the status of the enclosure. You can find additional information in “Verifying status through LEDs” on page 45.
13. Set the IP addresses of the processor cards. You can find additional steps in “Setting the IP address” on page 46.
14. Install the modem on the management console. You can find additional steps in “Installing a modem on the management console” on page 49.

Verifying the ship group

Complete this task to verify the ship group.

1. Move the DS6000 to the site.
2. Remove the DS6000 from its shipping container and check the contents.
Ensure that the DS6000 has shipped with the following standard ship group items:
 - The enclosure, including:
 - Two server enclosure processor cards or two expansion enclosure processor cards
 - Two power supplies/fan assemblies

- Two battery backup units (server enclosure only) or two battery blanks (expansion enclosure only)
 - 16 blank trays (your server enclosure might come with up to 16 disk drive modules in place of blank trays)
 - One service information card tray (installed in the rear of the server enclosure, which is located below the lower processor card)
 - Rack-mounting hardware kit, including:
 - Two rails (right and left assembly)
 - Two M5 flathead screws (installed in the rail assembly)
 - Four M5 hex screws
 - Cables, including:
 - Two standard power cords
 - Two 1-meter inline power cords
 - One Ethernet crossover cable (server enclosure only)
 - One serial conversion cable (server enclosure only)
 - Two 13-meter Ethernet cables (server enclosure only)
 - Modem kit
 - Software, including:
 - Microcode CD
 - CLI CD
 - Management Console software CD (SDD is included)
 - License Machine Code Agreement
 - License Function Authorization document
 - Statement of Limited Warranty
 - Code Reference Flyer
 - Electrostatic discharge (ESD) wrist strap
3. Ensure that the items that are listed in your packing slip match what is in the box and that any optional items that you ordered are included in the list. For example, if you ordered fibre-channel cables, Small-form Factor Pluggables (SFPs), or optional power cords, ensure that you received them. If any items are missing or damaged, contact IBM customer support before proceeding.

Assembling tools and equipment

Complete this task to assemble tools and equipment.

1. Assemble the tools and equipment that you will need for installation. These might include:
 - A flat-head screwdriver
 - A holding cart on which to place the hardware resources.
2. When you are ready, begin to prepare the rack.

Understanding ESD requirements

Always wear an electrostatic discharge (ESD) wrist strap that is properly connected to the ESD ground bracket when you service this machine. This prevents possible damage to the hardware and decreases any possible impact to your operations.

Purpose

To prevent damage when you work with ESD-sensitive parts, perform these instructions carefully.

- Never touch or work on any electronic circuits without wearing the ESD wrist strap.
- Keep the ESD-sensitive part in a special ESD bag until you are ready to install the part into the machine.
- Make the fewest possible movements with your body to prevent an increase of static electricity from clothing, fibers, carpets, and furniture.
- If you are instructed to do so, switch off the machine power before you remove ESD-sensitive parts.
- Just before you touch the ESD-sensitive part, discharge to the machine any static electricity in your body by touching the metal frame or the cover of the machine. If possible, keep one hand on the frame when you install or remove an ESD-sensitive part.
- Do not place any ESD-sensitive parts on the machine cover or on a metal table because large metal objects can become discharge paths if they are not grounded. If you must set aside an ESD-sensitive part, first place it into the special ESD bag.
- Prevent ESD-sensitive parts from being accidentally touched by others.
- Be very careful when you work with ESD-sensitive parts in cold weather. Low humidity and heating increase static electricity.

Positioning the rack

Before you install the DS6000 in a rack, keep in mind the following considerations:

- Review the safety considerations.
 - Install the DS6000 in a recommended 10 - 40°C (50 - 104°F) environment.
 - To ensure proper airflow, do not block the front or rear of the rack.
 - To ensure rack stability, load the rack starting at the bottom.
 - If you install multiple components in the rack, do not overload the power outlets.
 - Always connect the server or expansion enclosure to a properly grounded outlet.
 - It is recommended that the rack power be connected to at least two different power circuits or sources. Connecting the rack power to at least two different power circuits or sources allows the enclosure to continue to operate if one of the power sources fails.
1. Move, unpack, and level the rack at the installation site (if needed).
 2. Remove the external rack panels.
 3. Install any additional interface cables and power cables.

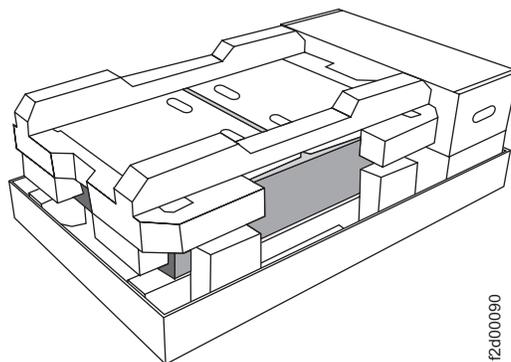
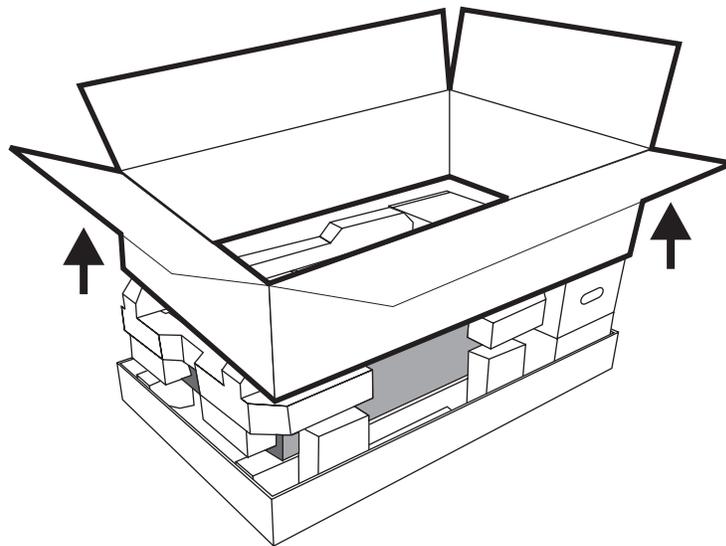
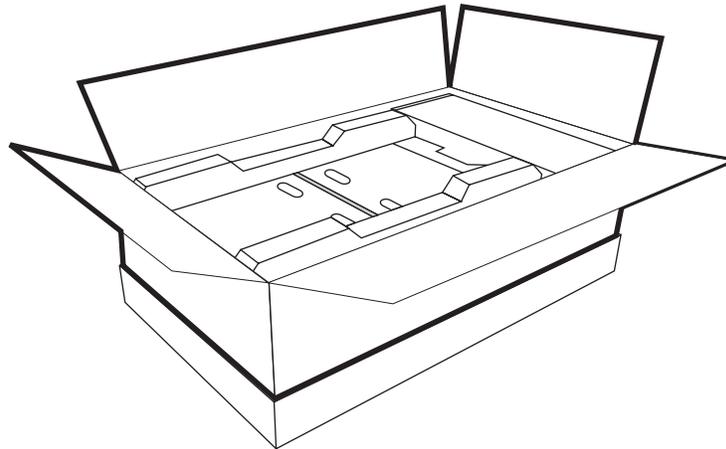
Removing the hardware resources

Complete this task to remove the hardware resources from the enclosure to minimize the weight of the DS6000 before you install it in the rack.

The fully populated enclosure weighs more than 109 lbs (49.5 kg). You need at least three people to lift and install a fully populated DS6000 into the rack. If you do not have three people that are available to lift the DS6000 into the rack, you must remove the hardware resources from the enclosure to reduce the weight

before you lift it. If you have three people to lift and install the DS6000, you might not find it necessary to remove the resources before installation. If this is the case, you can skip this section.

The following images show how to remove the cardboard sides of the shipping box from around the enclosure.



12d00090

1. Make sure to follow ESD procedures by using an anti-static wrist strap. You will also need a cart or level surface to hold the resources.

2. Remove all the resources in the DS6000 storage and server enclosures to minimize the weight.

Removing the front display panel

Complete this task to remove the front display panel from an enclosure.

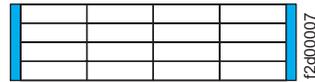


Use approved ESD procedures to prevent damage.

System alerts and LED indicators cannot display properly while the front display panel is removed or nonfunctional.

Important: When you remove the front display panel from an enclosure, ensure that all resources from a particular server or expansion enclosure are reinstalled into the same physical enclosure and in the same location inside that enclosure.

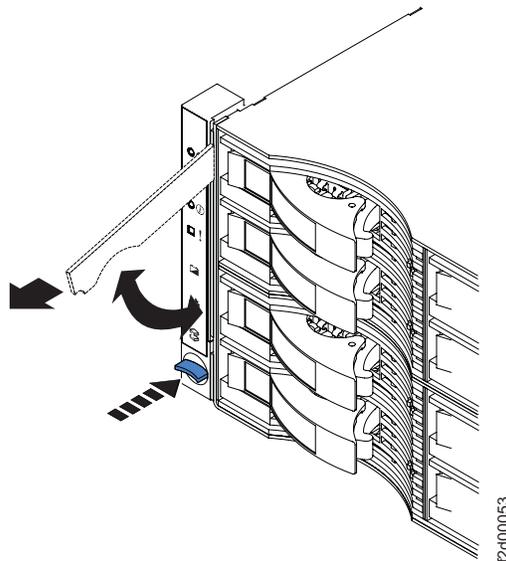
The front display panels are located on the left and right of the front of the enclosure.



To remove the front panel display, perform the following steps:

1. Press the blue release button. This releases the handle.
2. Pull the handle up. This action partially ejects the bottom of the display panel.
3. Use the handle to pull the bottom of the panel up and release the top portion of the panel. This completely removes the display panel.

This image show a front display panel removal procedure.

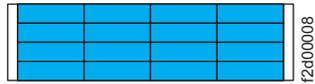


Removing the disk drive module

Complete this task to remove the disk drive modules from the enclosure to reduce the weight of the enclosure during installation.

 Use approved ESD procedures to prevent damage.

The disk drive modules are located in rows and columns on the front of the storage unit.

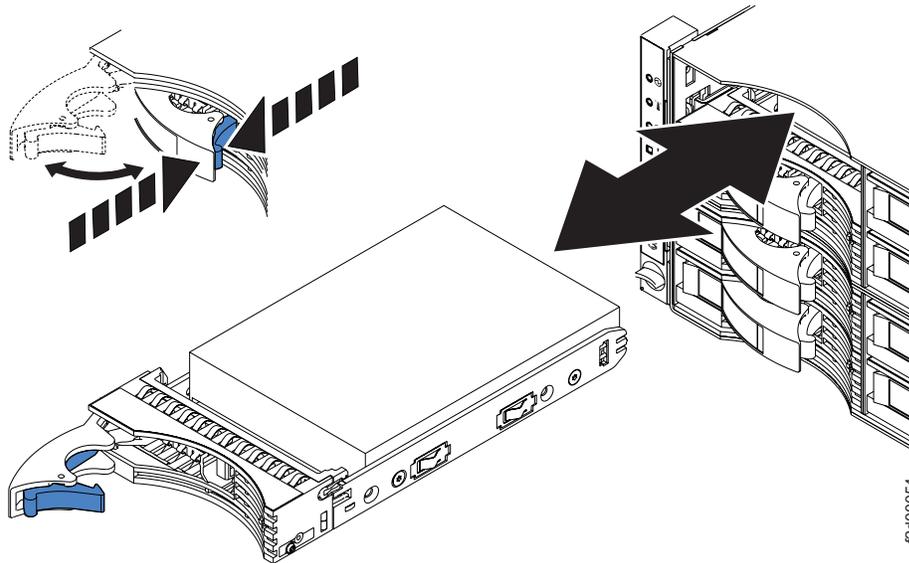


Note: If you are removing a defective disk drive module to replace it, be sure to handle the defective disk drive module carefully. Damage to defective disk drive modules can have a negative effect on failure analysis and warranty recovery.

To remove a disk drive module, perform the following steps:

1. Press the blue latch to release the disk drive module handle and pull the handle out and to your left. This action partially ejects the disk drive module out of its slot. Wait 30 seconds for the disk drive to spin down.
2. Grip the disk drive module with both hands to pull it toward you and completely out of the slot. Ensure that the disk drive is properly aligned in a horizontal position until the drive is clear of the enclosure. Failure to do so can result in physical damage to the drive or the drive component.

These images show a disk drive module removal procedure.



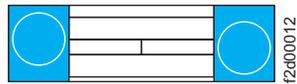
Important: All disk drive module slots must be filled to prevent overheating the storage unit. If necessary, insert a disk drive module blank in the empty slot.

Removing the power supply

Complete this task to remove the power supplies from the enclosure to reduce the weight of the enclosure during installation.

 Use approved ESD procedures to prevent damage.

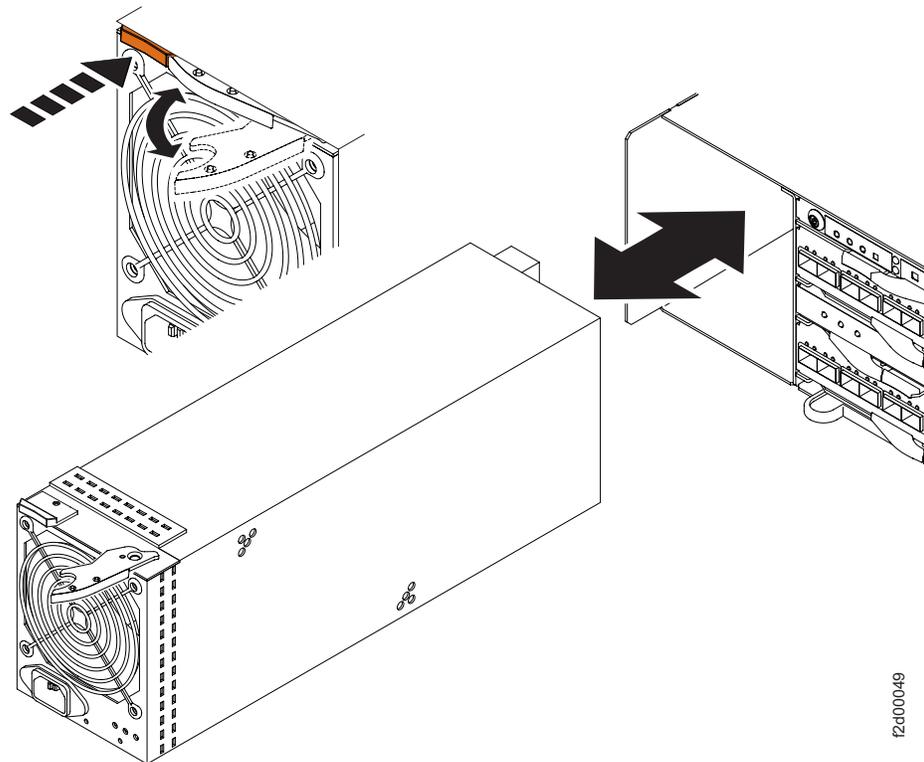
The power supplies are located on right and left sides of the rear of the enclosure.



To remove the power supplies, perform the following steps:

1. Press the release button. This releases the handle.
2. Pull the handle out and towards the middle of the enclosure. This action partially ejects the power supply from the slot.
3. Use the handle to pull the power supply partially out of the slot.
4. Grip the power supply with both hands to pull the unit completely from the slot.

These images show a power supply removal procedure.



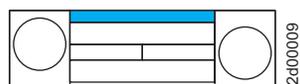
Removing the rear display panel

Complete this task to remove the rear panel display from the enclosure to reduce the weight of the enclosure during installation.



Use approved ESD procedures to prevent damage.

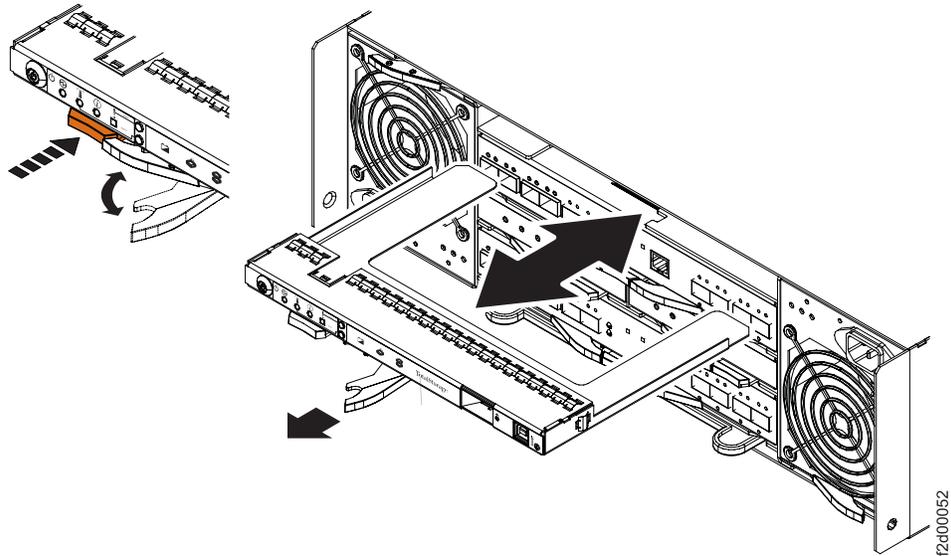
The rear operator panel is located at the rear of the expansion enclosure, on the top of the resource section.



To remove the rear panel display, perform the following steps:

1. Press the orange release button. This releases the handle.
2. Pull the handle out and to the right. This action partially ejects the display panel from the slot.
3. Use the handle to pull the rear display panel partially from the slot.
4. Grip the rear display panel with both hands to pull the unit completely from the slot.

These images show a rear display panel removal procedure.

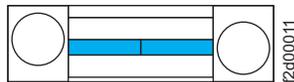


Removing the battery backup units

Complete this task to remove the battery backup units from the enclosure to reduce the weight of the enclosure during installation.

 Use approved ESD procedures to prevent damage.

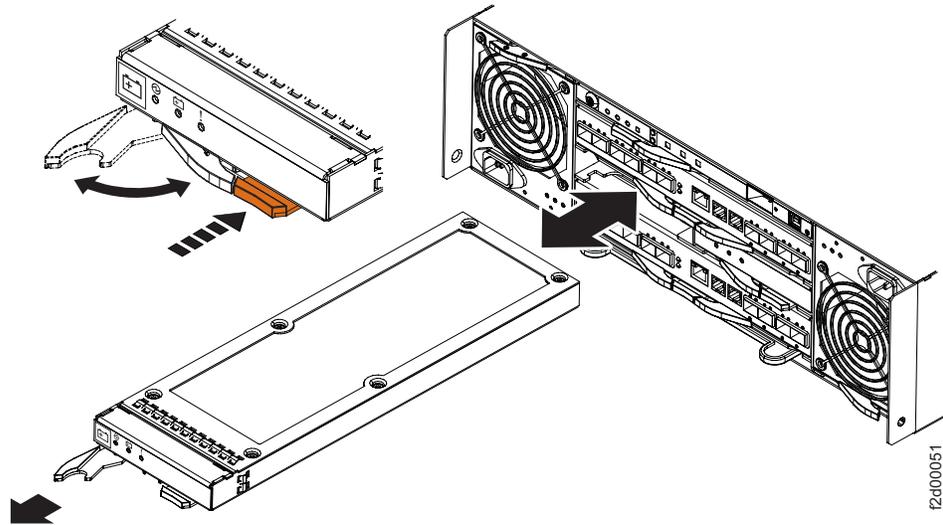
The battery backup units are located horizontally in the middle of the expansion enclosure.



To remove the battery backup units, perform the following steps:

1. Press the orange release button. This releases the handle.
2. Pull the handle out and to the left. This partially ejects the battery backup unit from the slot.
3. Use the handle to pull the battery backup unit partially out of the slot.
4. Grip the battery backup unit with both hands to pull it completely from the slot.

These images show a battery backup unit removal procedure.



Removing the processor cards

Complete this task to remove the processor cards from the enclosure to reduce the weight of the enclosure during installation.



Use approved ESD procedures to prevent damage.

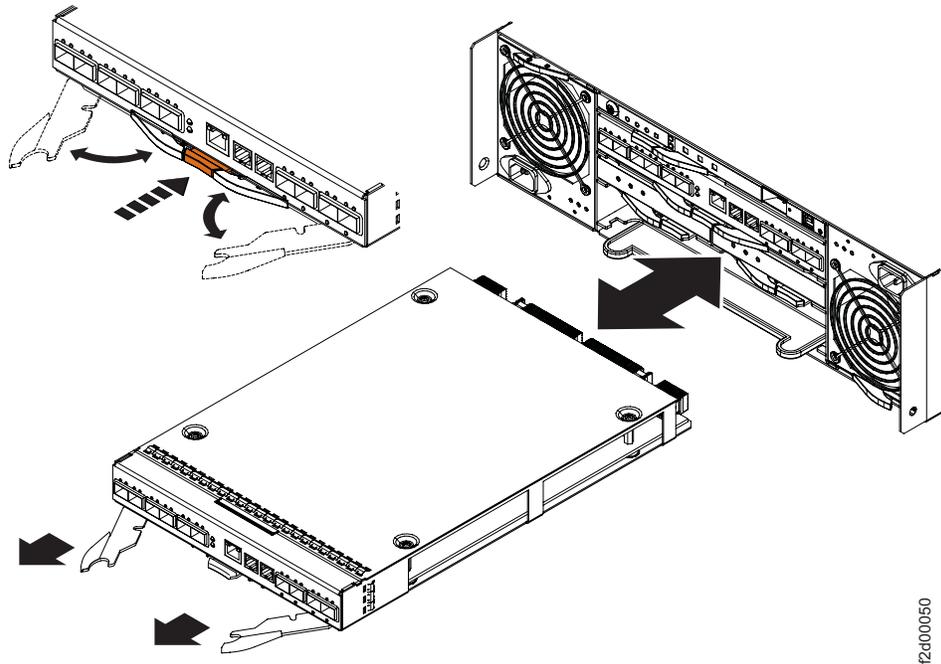
The processor cards are located in the rear of the expansion enclosure. One of the cards is located below the rear operator panel and above the battery backup units. The other card is located below the battery backup units and above the system service card.



To remove the processor cards, perform the following steps:

1. Press the orange release button. This releases both handles.
2. Grip both handles, one with each hand.
3. Pull both handles out and towards the outside of the enclosure. The right handle pulls out and to the right of the enclosure. The left handle pulls out and to the left of the enclosure. This partially ejects the processor card from the slot.
4. Use the handles to pull the processor card partially out of the slot.
5. Grip the processor card with both hands to pull the resource completely from the slot.

These images show a processor card removal procedure.



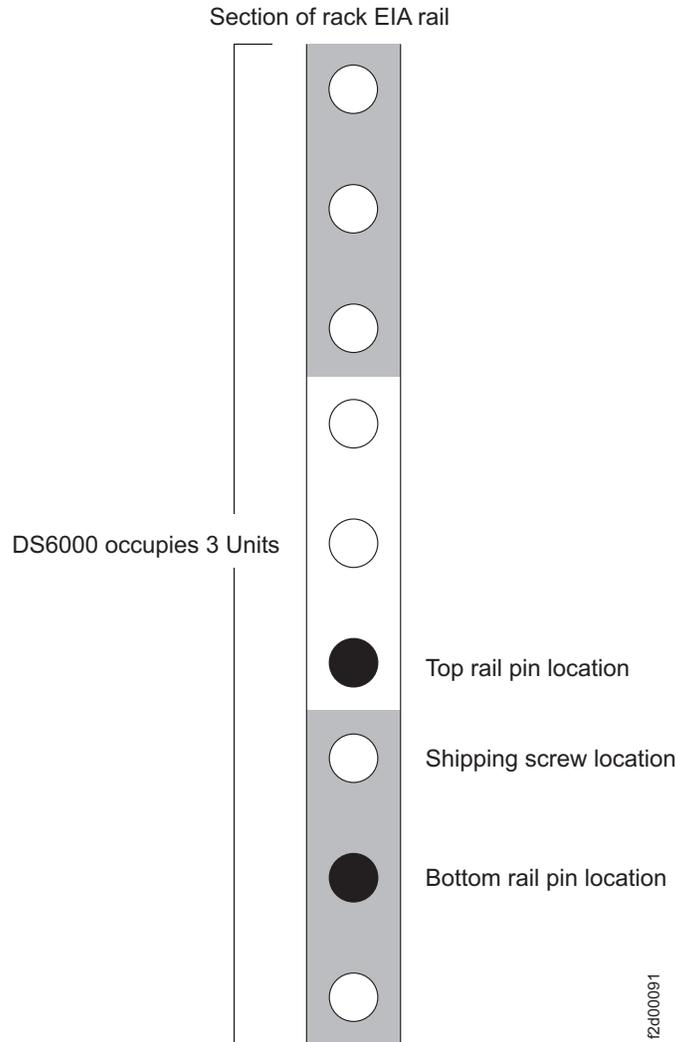
Installing the support rails

Complete this task to install the support rails in the rack.

The DS6000 requires one of the following supported IBM racks:

- 2101-200
- 7014
- 9308 (Netbay)
- Compatible Electronic Industries Association (EIA) 310-D Section 1 19-inch rack cabinet.

Use the following rack mounting template to identify the proper locations for inserting the slide rail pins.

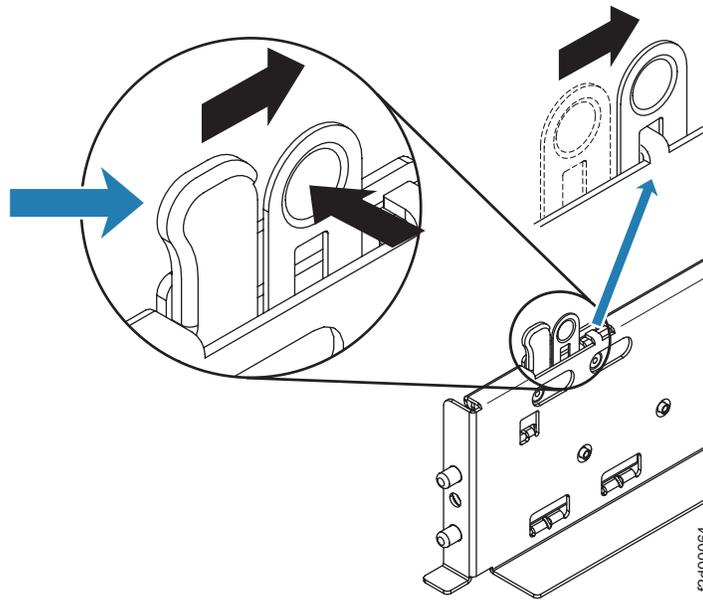


The distance between EIA rails, from the front to the rear of the rack, is 69.5 centimeters (27.36 inches) minimum to 76.5 centimeters (30.12 inches) maximum. This rack conforms to the EIA standard. Where you place the support rails in the rack depends on where you intend to position the server or expansion enclosure.

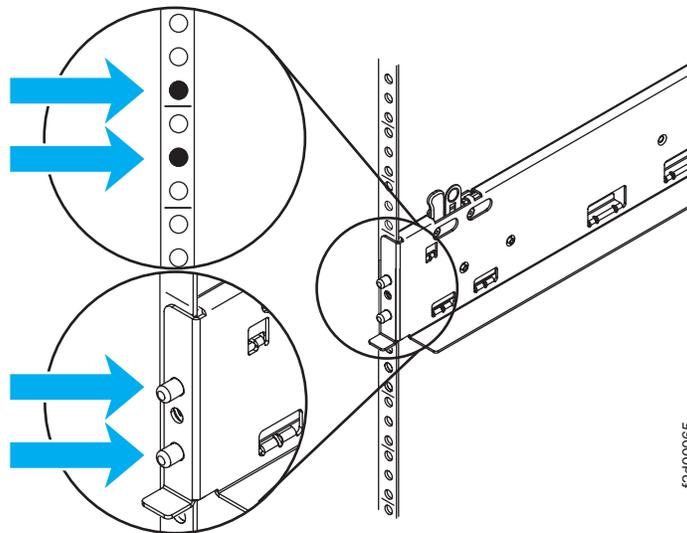
To install the support rails, perform the following steps:

Note: A set of rail pins and a mounting flange are on each end of the rail.

1. To set the rail pins in the open position, press firmly in on the slide-rail latch (right tab) while steadily pushing back on the finger pull (left tab) until the slide-rail latch is locked into position.



2. With rail pins open, fit the mounting flange around the rack cabinet rail. Align the rail pins with the holes in the rack cabinet rail and release the rail pins.



3. Repeat steps one and two with the other end of the rail, aligning with the rear mounting flange.
4. Repeat steps two and three with the left slide rail.

Installing the server enclosure in the rack

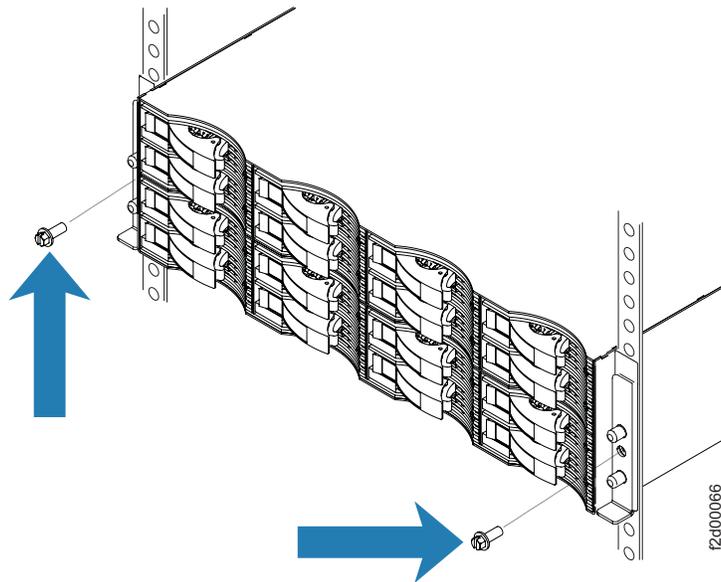
Complete this task to install the server enclosure in the rack.

Note: Screws are bagged and taped to the inside flange of the rail. Remove the bag prior to installing the server enclosures in the rack.

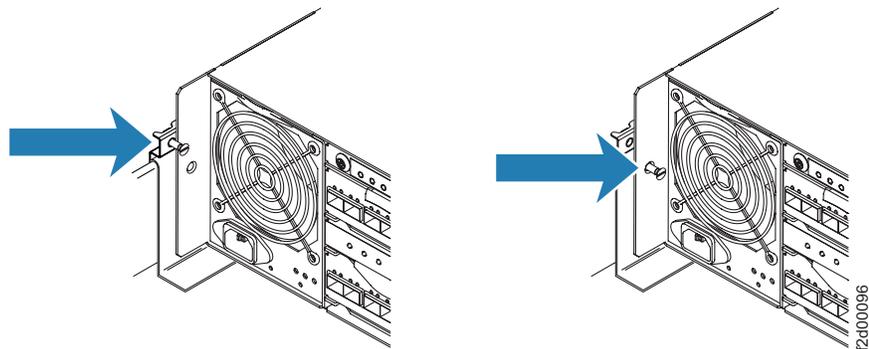
1. Place the server enclosure in the rack.

Note: If you removed the resources, you should be able to lift the unit into the cabinet with the help of one other person. If you did not remove the resources before installation, you need three people to lift the unit into the rack.

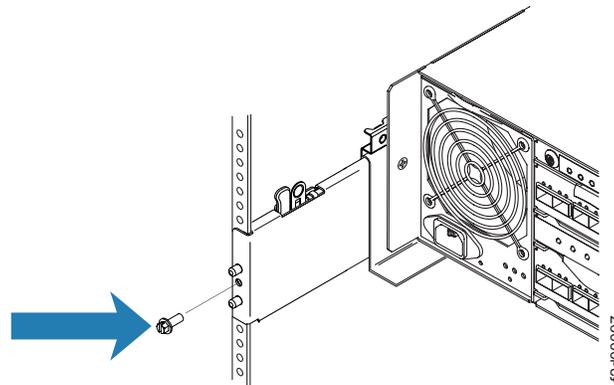
- a. Move the server enclosure to the front of the rack-mount cabinet.
- b. Slide the unit into the rack.
2. Secure the server enclosure to the rack.
 - a. Align the front mounting holes on each side of the server with the mounting holes on the front of the support rails.
 - b. Insert an M5 hex screw into the mounting holes between the two pins on both sides of the front of the unit. Tighten the screws to secure the front of the server enclosure to both of the front cabinet rails.



- c. Ensure the rear screw mounting bracket is pushed up against the rear of the chassis. Remove the M5 countersunk screw from the bracket and insert it into the hole in the rear of the chassis. Tighten the screws. Repeat for the opposite side.



- d. Insert an M5 hex screw into the mounting hole between the two pins on both sides of the rear of the chassis. Tighten the screws to secure the rear of the support rails to both of the rear cabinet rails.



Installing expansion enclosures in the rack

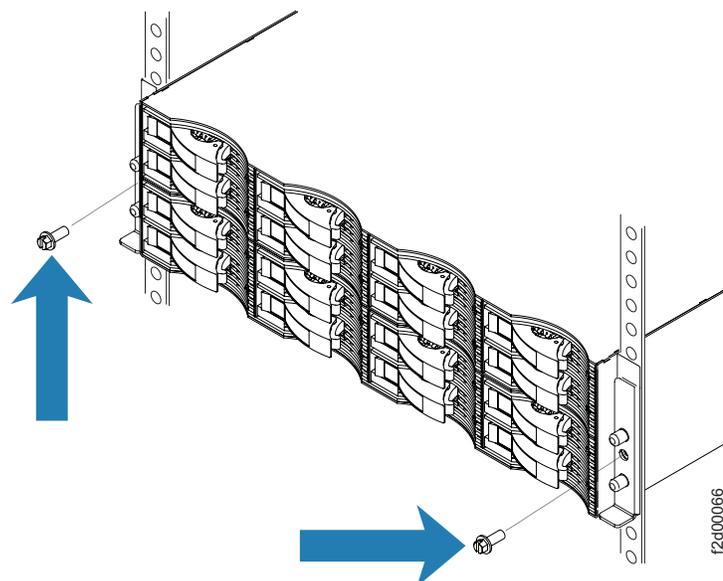
Complete this task to install the expansion enclosures in the rack.

Note: Screws are bagged and taped to the inside flange of the rail. Remove the bag prior to installing the expansion enclosures in the rack.

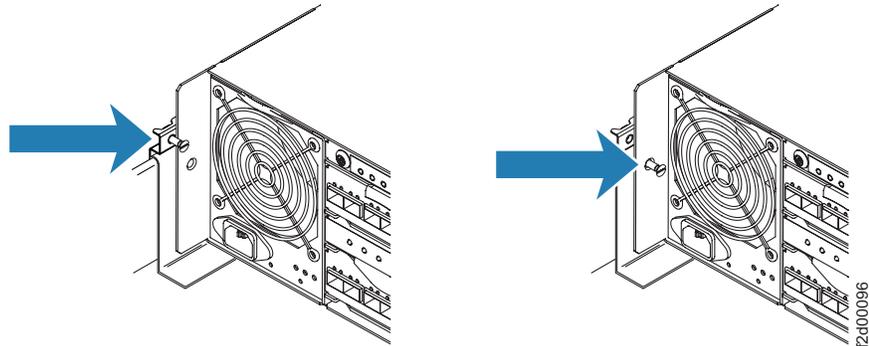
1. Place the expansion enclosure in the rack.

Note: If you removed the resources, you should be able to lift the unit into the cabinet. If you did not remove the resources before installation, you should have three people that are available to lift the unit into the rack.

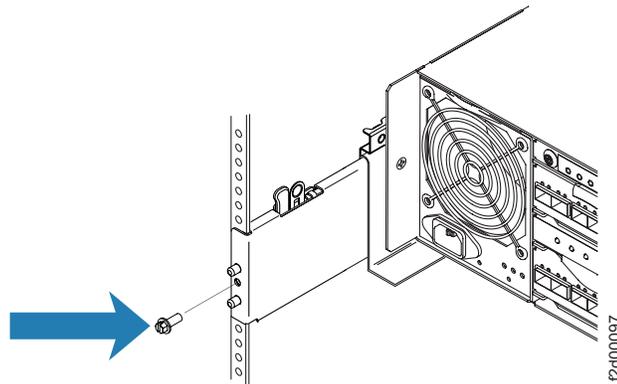
- a. Move the expansion enclosure to the front of the rack-mount cabinet.
 - b. Slide the unit into the rack.
2. Secure the expansion enclosure to the rack.
 - a. Align the front mounting holes on each side of the server with the mounting holes on the front of the support rails.
 - b. Insert an M5 hex screw into the mounting hole between the two pins on both sides of the front of the unit. Tighten the screws to secure the front of the expansion enclosure to both of the front cabinet rails.



- c. Ensure the rear screw mounting bracket is pushed up against the rear of the chassis. Remove the M5 countersunk screw from the bracket and insert it into the hole in the rear of the chassis. Tighten the screw. Repeat for the opposite side.



- d. Insert an M5 hex screw into the mounting holes between the two pins on both sides of the rear of the chassis. Tighten the screws to secure the rear of the support rails to both of the rear cabinet rails.



Replacing the hardware resources

This section contains information that helps you replace the hardware resources in the enclosure after installing the enclosure in the rack. If you did not remove the hardware resources before installation, you can skip this section.

1. Make sure to follow ESD procedures by using an anti-static wrist strap.
2. Replace all the hardware resources in the DS6000 expansion and server enclosures that were previously removed.

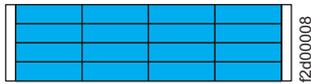
Replacing the disk drive module

If you removed the disk drive modules from the enclosure to reduce the weight of the enclosure before installation, complete this task to replace the disk drive modules in the enclosure.



Use approved ESD procedures to prevent damage.

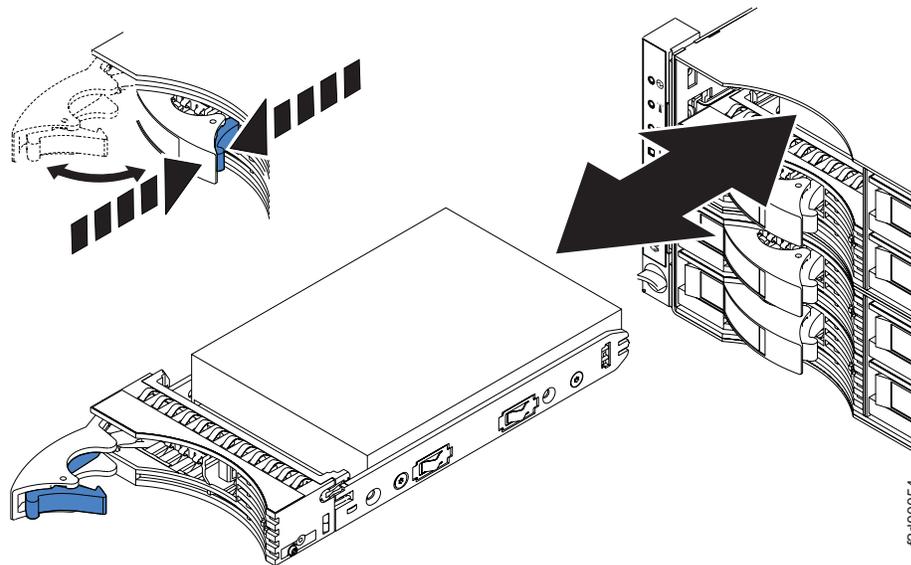
The disk drive modules are located in rows and columns on the front of the storage unit.



To replace the disk drive modules, perform the following steps:

1. Before installing the disk drive module, open the disk drive module handle by pressing the blue latch and pulling the handle open.
2. Align the disk drive module with the groove on the disk drive module bay and push it into its slot. The drive stops before it is fully seated. Ensure that the disk drive is properly aligned in a horizontal position. Failure to do so could result in physical damage to the drive or the drive component.
3. Push the disk drive module handle to the right until it is latched closed.
4. Verify that the front of the disk drive module is aligned with the other disk drive modules.

These images show a disk drive module replacement procedure.



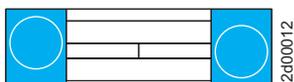
Important: All disk drive module slots must be filled to prevent overheating the storage unit. If necessary, insert a disk drive module blank in an empty slot.

Replacing the power supply

If you removed the power supplies to reduce the weight of the enclosure before installation, complete this task to replace the power supplies.

 Use approved ESD procedures to prevent damage.

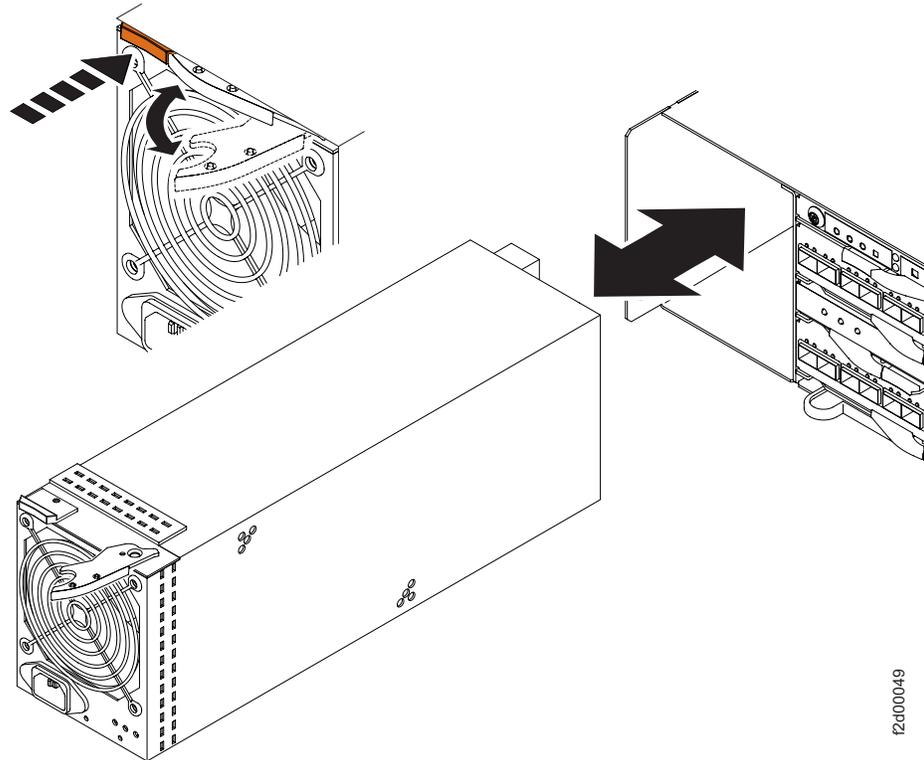
The power supplies are located on the right and left sides of the rear of the enclosure.



1. Grip the power supply with both hands and align the resource with the slot.

- Using both hands, push the power supply into the slot until the handle mechanism stops the forward movement.
- Push the handle in and toward the outer edge of the enclosure until the release button clicks. This inserts the remaining portion of the power supply into the slot.

These images show a power supply replacement procedure.



f2d00049

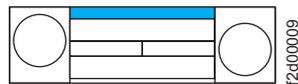
Replacing the rear display panel

If you removed the rear display panel to reduce the weight of the enclosure before installation, complete this task to replace the rear display panel.



Use approved ESD procedures to prevent damage.

The rear display panel is located at the top of the rear of the enclosure.

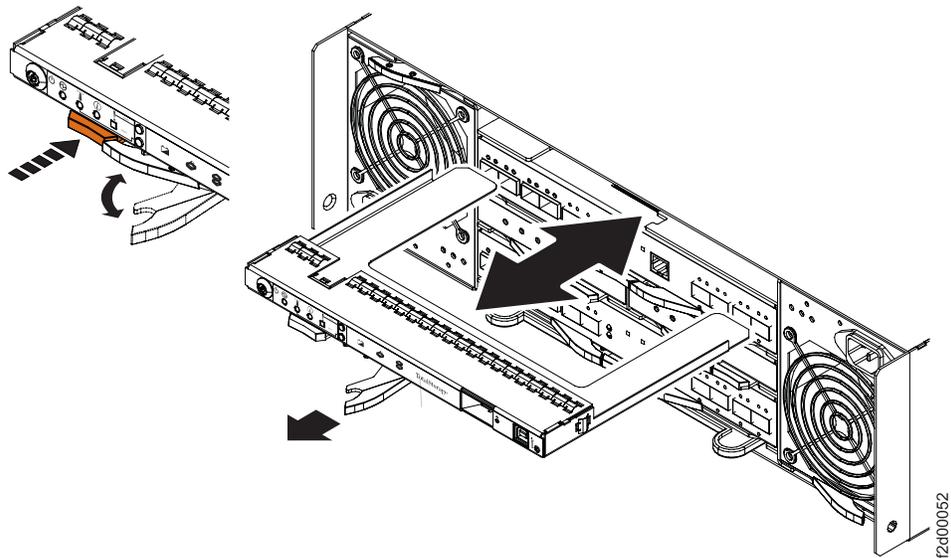


f2d00009

To replace the rear display panel, perform the following steps:

- Grip the rear operator panel with both hands and align the resource with the slot.
- Using both hands, push the rear operator panel into the slot until the handle mechanism stops the forward movement.
- Push the handle in and to the left until the release button clicks. This inserts the remaining portion of the rear operator panel into the slot.

These images show a rear operator panel replacement procedure.



Replacing the battery backup unit

If you removed the battery backup units to reduce the weight of the enclosure before installation, complete this task to replace the battery backup units.

 Use approved ESD procedures to prevent damage.

The battery backup units are located horizontally in the middle of the rear of the enclosure.

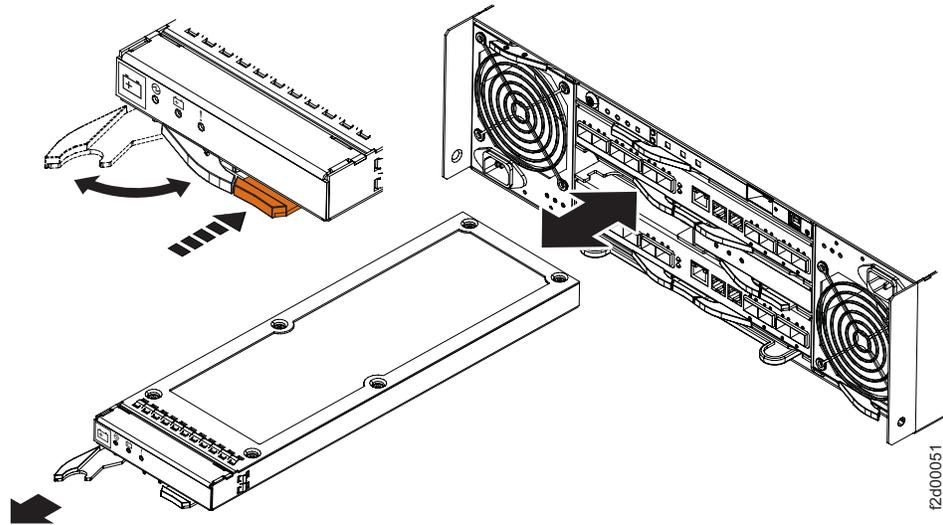


To replace the battery backup unit, perform the following steps:

1. Grip the battery backup unit with both hands and align the resource with the slot.
2. Using both hands, push the battery backup unit into the slot until the handle mechanism stops the forward movement.
3. Push the handle in and to the right until the release button clicks. This inserts the remaining portion of the battery backup unit into the slot.

The battery backup unit automatically resumes its function after the batteries are fully charged.

These images show a battery backup unit replacement procedure.



Replacing the processor cards

If you removed the processor cards to reduce the weight of the enclosure before installation, complete this task to replace the processor cards.

 Use approved ESD procedures to prevent damage.

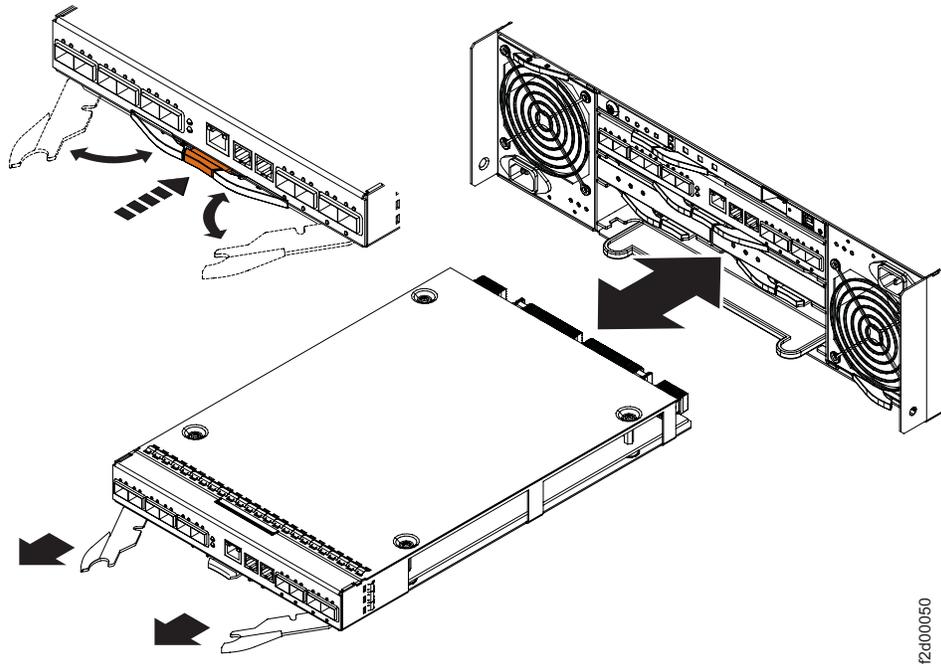
The processor cards are located in the rear of the enclosure. One of the cards is below the rear operator panel and above the battery backup units. The other card is located below the battery backup units and above the system service card.



To replace the processor cards, perform the following steps:

1. Grip the processor card with both hands to align the resource with the slot.
2. Using both hands, push the processor card into the slot until the handle mechanism stops the forward movement.
3. Push both handles in and towards the center of the enclosure at the same time until the release button clicks. This inserts the remaining portion of the processor card into the slot.

These images show a processor card replacement procedure.



12d00050

Installing the front display panel

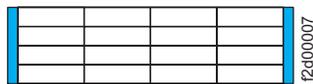
Complete this task to install or replace the front display panel or the right front bezel. If you are installing the front panel display after removing it for a servicing procedure, you can install it whether the system is powered off or powered on.



Use approved ESD procedures to prevent damage.

Important: When you replace the front display panel in an enclosure, ensure that all resources from a particular server or expansion enclosure are reinstalled into the same physical enclosure and in the same location inside that enclosure.

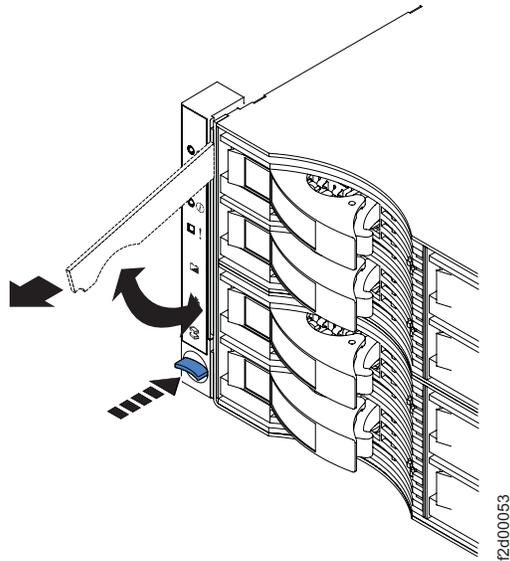
The front display panel and right front bezel are located on the left and right of the front of the enclosure, respectively.



To install the front panel display, perform the following steps:

1. Use the handle to align the top of the display panel with the empty slot. The top of the front display panel must fit over the metal support at the top of the slot at the same time that the back of the handle fits under the metal catch on the side of the slot.
2. Push the handle down and into the recessed slot so that it is flush with the front of the enclosure. This will lock the front display panel into position.

This image shows a front display panel replacement procedure.



Installing the host systems and I/O adapters

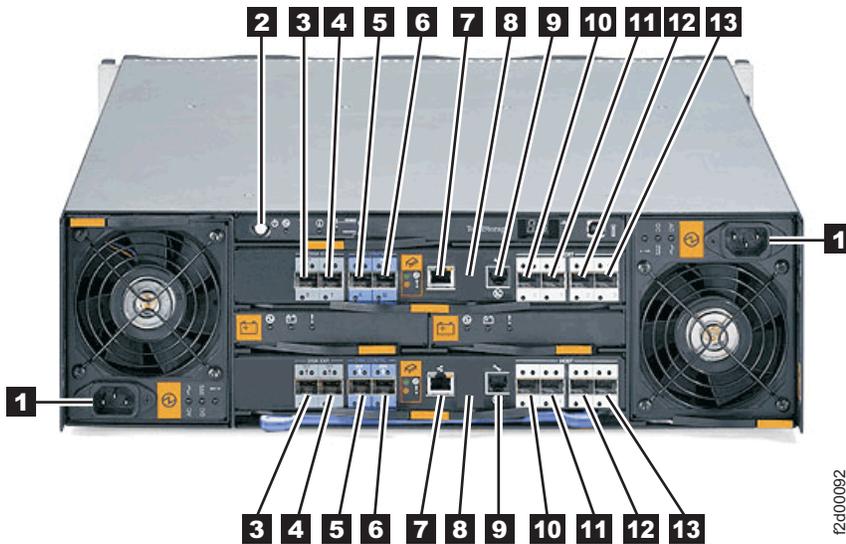
Complete this task to install the host systems and I/O adapters.

Note: See the *IBM System Storage DS6000 Host Systems Attachment Guide* and the documentation provided with your I/O adapters for installation requirements and procedures.

1. Use the correct I/O adapter driver. For the latest supported I/O adapters and drivers, go to the interoperability matrix at the following Web site: <http://www.ibm.com/servers/storage/disk/ds6000/>.
2. A list of supported host bus adapters (HBAs), firmware, and device driver information for your host system and host adapter at <http://www.ibm.com/servers/storage/support/config/hba/index.wss>
3. Attach fiber optic interface cables to each I/O adapter. You will connect the other end of the cables to the server enclosure later in the installation process.

Routing the cables

This section provides information on routing cables. The following figure shows an overview of all of the connections in the server enclosure.



1. Power supply connector
2. Power button
3. Server enclosure processor card Disk Exp Port 0
4. Server enclosure processor card Disk Exp Port 1
5. Server enclosure processor card Disk Ctlr Port 0
6. Server enclosure processor card Disk Ctlr Port 1
7. Server enclosure processor card Ethernet port
8. Server enclosure processor card SCSI Enclosure Services (SES) serial port
9. Server enclosure processor card symmetric multiprocessing (SMP) serial port
10. Server enclosure processor card Host Port 0
11. Server enclosure processor card Host Port 1
12. Server enclosure processor card Host Port 2
13. Server enclosure processor card Host Port 3

DS6000 fabric zoning

Creating zones for your host attachment port connections enables you to manage traffic and establish redundancy that eliminates single points of hardware failure.

Depending on your environment, you can benefit from isolating traffic as much as possible in your storage area network. Networks with a large amount of volumes and heavy host traffic can benefit the most. Implementing single-initiator, single-target zoning allows you to isolate traffic for each port. Single-initiator, single-target zoning creates small zones within the fabric with only two zone members (ports). The zone consists of one target (a storage unit port), and one initiator (a host system port). The key benefit of single-initiator, single-target zoning is traffic isolation or masking.

Figure 1 on page 35 displays two host systems that are attached to a DS6800 through two fabric switches. Through the switches, each of the host systems is connected to both of the DS6800 processor cards (PC-0 and PC-1) using two host adapters in each host system (HA-1 and HA-2). Traffic isolation and masking occur by creating a zone for each host system port.

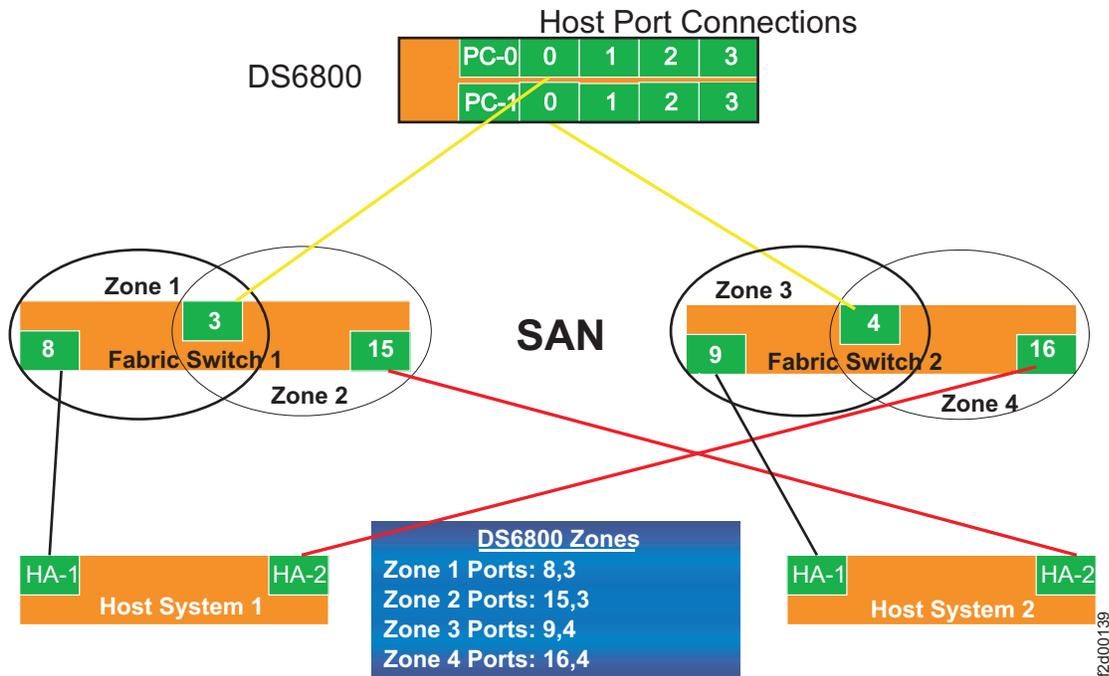


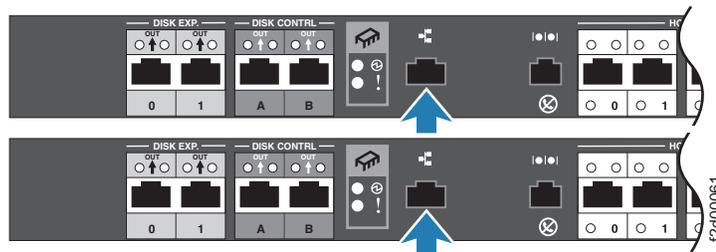
Figure 1. DS6000 zoning example

Connecting network cables

Complete this task to either connect your server enclosure to your local area network or connect your processor cards to each other. This enables communication between the processor cards that is essential for correct operation.

To connect the network cables, perform the following steps:

1. Use the Ethernet interface port on the back of the enclosure to connect the processor cards to your external Ethernet network (Ethernet switch) for direct management of the server enclosure.



2. The serial interface ports are intended to be used by service technicians to perform diagnostic operations on the server enclosure. Incorrect use of the serial port can result in loss of data access and, in some cases, in loss of data. The processor cards must be able to communicate with each other when the server enclosure is powered on. If you do not connect the server enclosure to the local area network, you must enable communication between the two processor cards and the management console. Use an Ethernet crossover cable to connect the two processor cards to each other and the serial cable that was shipped with the enclosure to connect one of the processor cards to the management console. You can use this temporary connection to set the IP address on each of the processor cards.

Installing the fiber optic cables and SFPs

Complete this task to complete the initial installation of fiber optic cables and small form factor pluggables (SFPs).

 Use approved ESD procedures to prevent damage.

Before you install the fiber optic cables, you must install either a shortwave or longwave SFP in each port that you use to create an interenclosure or host connection.

The fiber optic ports are located on the processor card in the enclosure.



1. Lift the wire or plastic tab and remove the protective cap from the SFP module.
2. Remove the protective cap from the SFP module port on the server enclosure.
3. Insert the SFP module into the SFP module port on the server enclosure.
4. Remove the protective caps from the fiber optic cable.
5. Insert the fiber optic cable into the SFP module.
6. Check to ensure that both the SFP module and fiber optic cable are properly seated in the port.

Connecting expansion enclosures

Complete this task to connect expansion enclosures for the DS6000.

Use the following procedures to connect your expansion enclosures during a new installation. When expansion enclosures are connected during a new installation, these procedures are nonconcurrent (the DS6000 is turned off). If you are adding an expansion enclosure to an existing storage unit, see "Adding an expansion enclosure" in the Information Center at <http://publib.boulder.ibm.com/infocenter/ds6000ic/index.jsp>.

Note: You can add multiple expansion enclosures at one time. However, you must use the following steps to maintain proper loop balancing.

The recommended sequence for adding up to seven expansion enclosures is as follows:

1. Connect the first and second enclosures on Loop 1.
2. Connect the third enclosure on Loop 0.
3. Alternate each additional expansion enclosure between Loop 1 and Loop 0, starting with Loop 1.

For example, the first two expansion enclosures are on Loop 1, the third expansion enclosure is on Loop 0, and so on. You can connect up to four expansion enclosures on Loop 1 and up to three on Loop 0, for a total of seven expansion enclosures.

Expansion enclosure	Loop
1	1
2	1

Expansion enclosure	Loop
3	0
4	1
5	0
6	1
7	0

Figure 2 provides a logical view of the loop configuration for attached expansion enclosures.

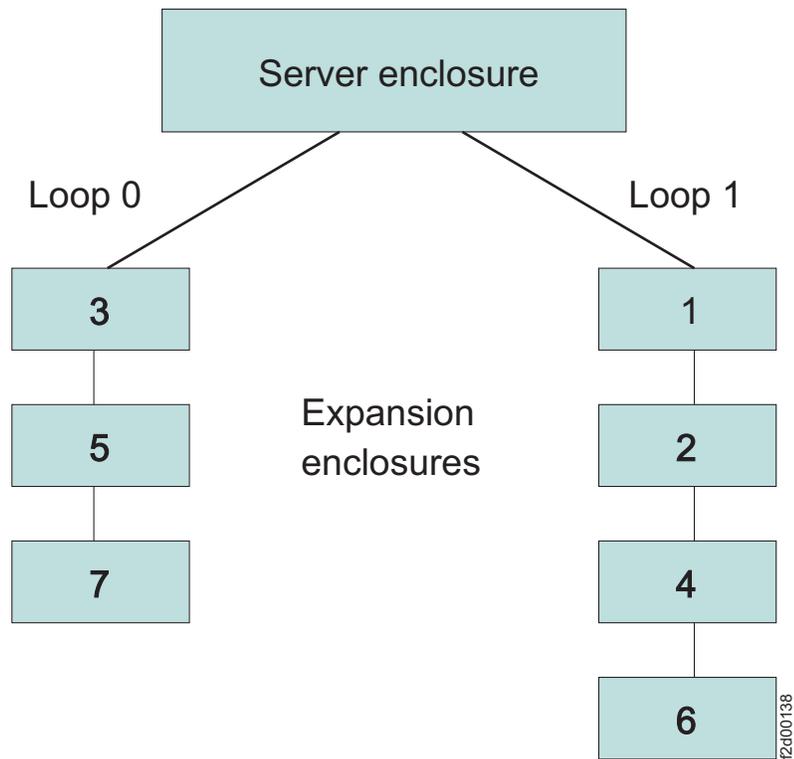


Figure 2. Connecting expansion enclosures

Figure 3 on page 38 shows a recommended rack configuration for a server enclosure, management console (MC), and seven expansion enclosures (labeled EXP) on Loop 1 and Loop 0. The server enclosure is located in the middle of the rack, with the management console immediately above it. The expansion enclosures for Loop 1 are installed above the management console, in descending order from the top down, with expansion enclosure 6 at the top of the rack and expansion enclosure 1 immediately above the management console. The expansion enclosures for Loop 0 are installed below the server enclosure, in ascending order, with expansion enclosure 3 immediately below the server enclosure and expansion enclosure 7 at the bottom of the rack.

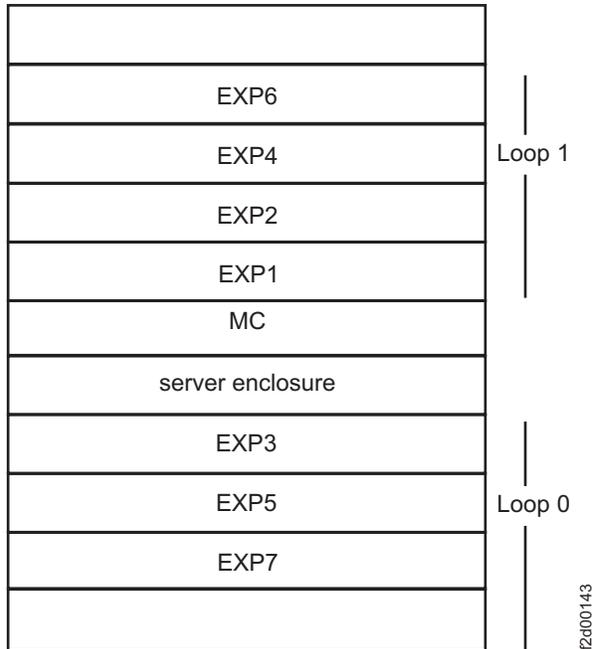


Figure 3. Recommended rack configuration

Attention: Ensure that you have planned the layout and have installed all your expansion enclosures before you start connecting them to their appropriate loops. Because Loop 1 and Loop 0 have different physical cabling connections, you must follow each step exactly.

1. Connect the expansion enclosures to a server enclosure on Loop 1, using the following tables.

The following tables provide a step-by-step outline that you can use to properly connect your expansion enclosures to the server enclosure. Table 3 provides an outline of the initial connection between the server enclosure and expansion enclosure 1 on Loop 1. Table 4 on page 39 outlines a single connection between two expansion enclosures on Loop 1, such as the connection that occurs between expansion enclosures 1 and 2, expansion enclosures 2 and 4, or expansion enclosures 4 and 6. You must complete the connection in Table 4 on page 39 for each expansion enclosure after expansion enclosure 1. Each row in a table requires a single fiber-optic cable and represents a single physical connection between two ports.

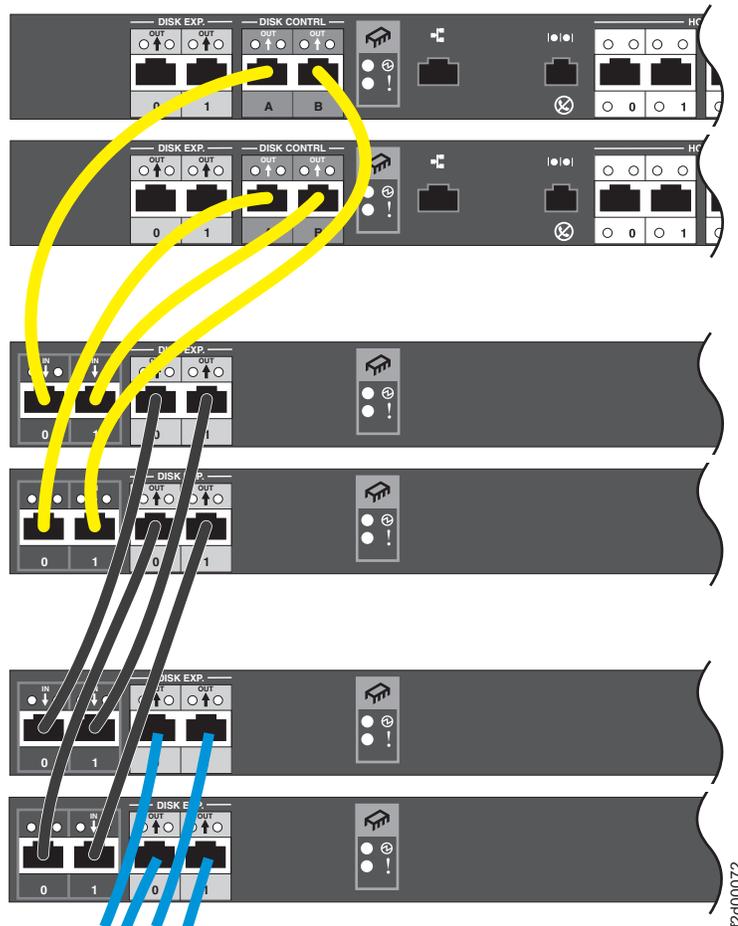
Table 3. Loop 1 initial connection between the server enclosure and expansion enclosure 1

From	On	To	On
left Disk Contrl OUT port	upper server enclosure processor card	left IN port	upper expansion enclosure processor card
right Disk Contrl OUT port	upper server enclosure processor card	right IN port	lower expansion enclosure processor card
left Disk Contrl OUT port	lower server enclosure processor card	left IN port	lower expansion enclosure processor card
right Disk Contrl OUT port	lower server enclosure processor card	right IN port	upper expansion enclosure processor card

Table 4. Loop 1 connection between expansion enclosure 1 and expansion enclosure 2 and subsequent connections between expansion enclosures 2, 4, and 6

From	On	To	On
left OUT port	upper expansion enclosure processor card of the first expansion enclosure	left IN port	upper expansion enclosure processor card of the second expansion enclosure
right OUT port	upper expansion enclosure processor card of the first expansion enclosure	right IN port	upper expansion enclosure processor card of the second expansion enclosure
left OUT port	lower expansion enclosure processor card of the first expansion enclosure	left IN port	lower expansion enclosure processor card of the second expansion enclosure
right OUT port	lower expansion enclosure processor card of the first expansion enclosure	right IN port	lower expansion enclosure processor card of the second expansion enclosure

Attention: Expansion enclosures that are not cabled correctly can cause problems at initialization and can cause unexpected error log entries. Check the following figure carefully when you are connecting the cables.



2. Connect the expansion enclosures to a server enclosure on Loop 0, using the following tables.

The following tables provide a step-by-step outline that you can use to properly connect your expansion enclosures to the server enclosure. Table 5 provides an outline of the initial connection between the server enclosure and expansion enclosure 3 on Loop 0. Table 6 outlines a single connection between two expansion enclosures on Loop 0, such as the connection that occurs between expansion enclosures 3 and 5 or expansion enclosures 5 and 7. You must complete the connection in Table 6 for each expansion enclosure after expansion enclosure 3. Each row in a table requires a single fiber-optic cable and represents a single physical connection between two ports.

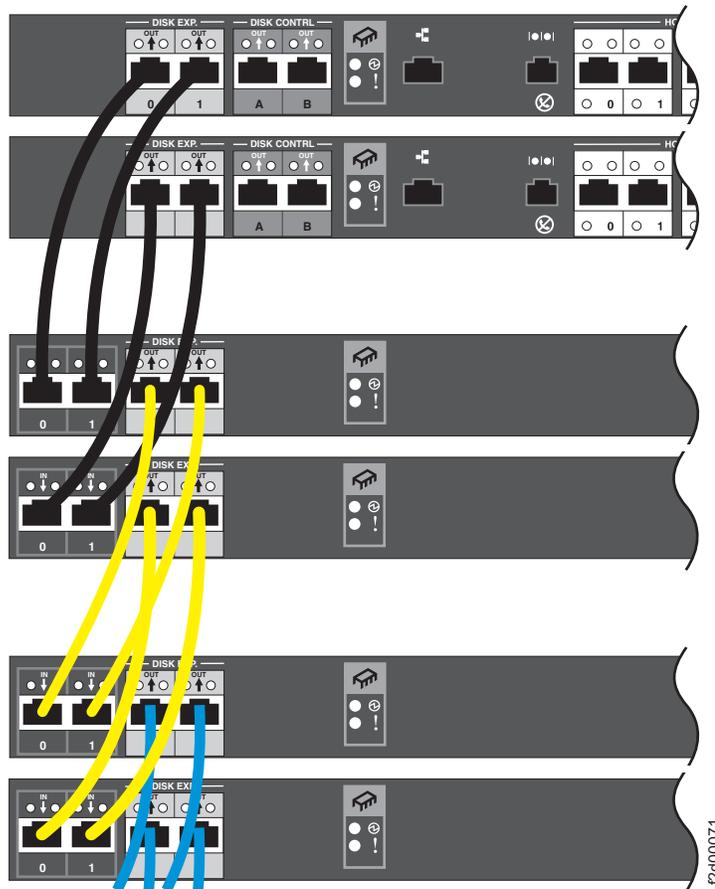
Table 5. Loop 0 initial connection between the server enclosure and expansion enclosure 3

From	On	To	On
left Disk Exp OUT port	upper server enclosure processor card	left IN port	upper expansion enclosure processor card
right Disk Exp OUT port	upper server enclosure processor card	right IN port	upper expansion enclosure processor card
left Disk Exp OUT port	lower server enclosure processor card	left IN port	lower expansion enclosure processor card
right Disk Exp OUT port	lower server enclosure processor card	right IN port	lower expansion enclosure processor card

Table 6. Loop 0 connection between expansion enclosure 3 and expansion enclosure 5 and subsequent connections between expansion enclosures 5 and 7

From	On	To	On
left OUT port	upper expansion enclosure processor card of the first expansion enclosure	left IN port	upper expansion enclosure processor card of the second expansion enclosure
right OUT port	upper expansion enclosure processor card of the first expansion enclosure	right IN port	upper expansion enclosure processor card of the second expansion enclosure
left OUT port	lower expansion enclosure processor card of the first expansion enclosure	left IN port	lower expansion enclosure processor card of the second expansion enclosure
right OUT port	lower expansion enclosure processor card of the first expansion enclosure	right IN port	lower expansion enclosure processor card of the second expansion enclosure

Attention: Expansion enclosures that are not cabled correctly can cause problems at initialization and cause unexpected error log entries. Check the following figure carefully when you are connecting the cables.



Connecting hosts to server enclosure processor cards

Complete this task to connect the host adapter to the server enclosure processor cards.

1. Install an SFP in a host port on the server enclosure processor card.
2. Connect the host system cables to the server enclosure processor card or to switches. Figure 4 shows the location on the processor cards where the host system cables connect.

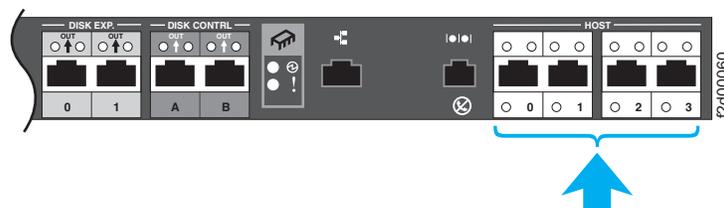


Figure 4. Connecting host system cables to processor cards

3. Repeat steps 1 and 2 as necessary.

Use the examples in the following diagrams to connect hosts to the DS6000 using switches. When you use external fibre-channel switches, the DS6000 supports up to 1040 host attachments.

Figure 5 shows an example of a dual path configuration using fibre-channel switches. Host 1 contains two host bus adapters that are connected to the server enclosure processor cards. To configure a host with dual path redundancy, connect the first host bus adapter (HA1) to SW1 and connect the second host bus adapter (HA2) to SW2. Then, connect SW1 to the upper server enclosure processor card and SW2 to the lower server enclosure processor card.

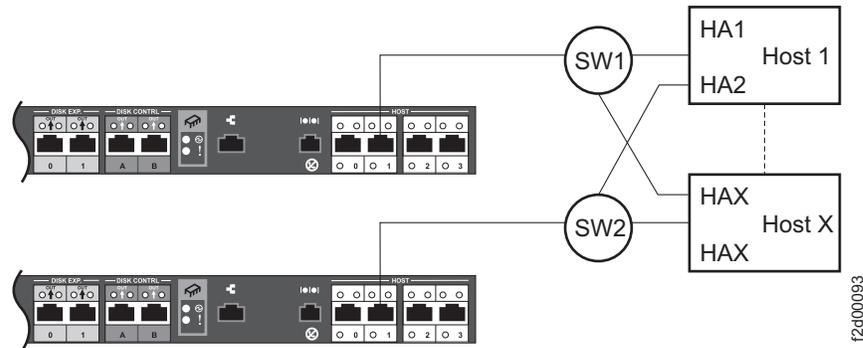


Figure 5. Dual fibre-channel switched path configuration

You can directly attach up to four fibre-channel switches to a DS6000. Figure 6 shows an example of attaching four fibre-channel switches.

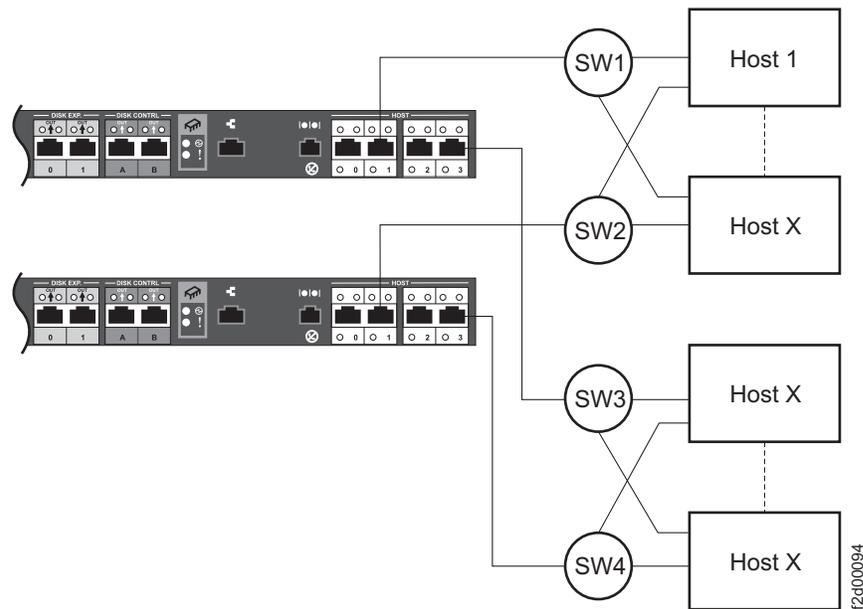


Figure 6. Dual path configuration with four fibre-channel switches

If the configuration requires more hosts than four fibre-channel switches can support, you must add cascading switches, as shown in Figure 7 on page 43.

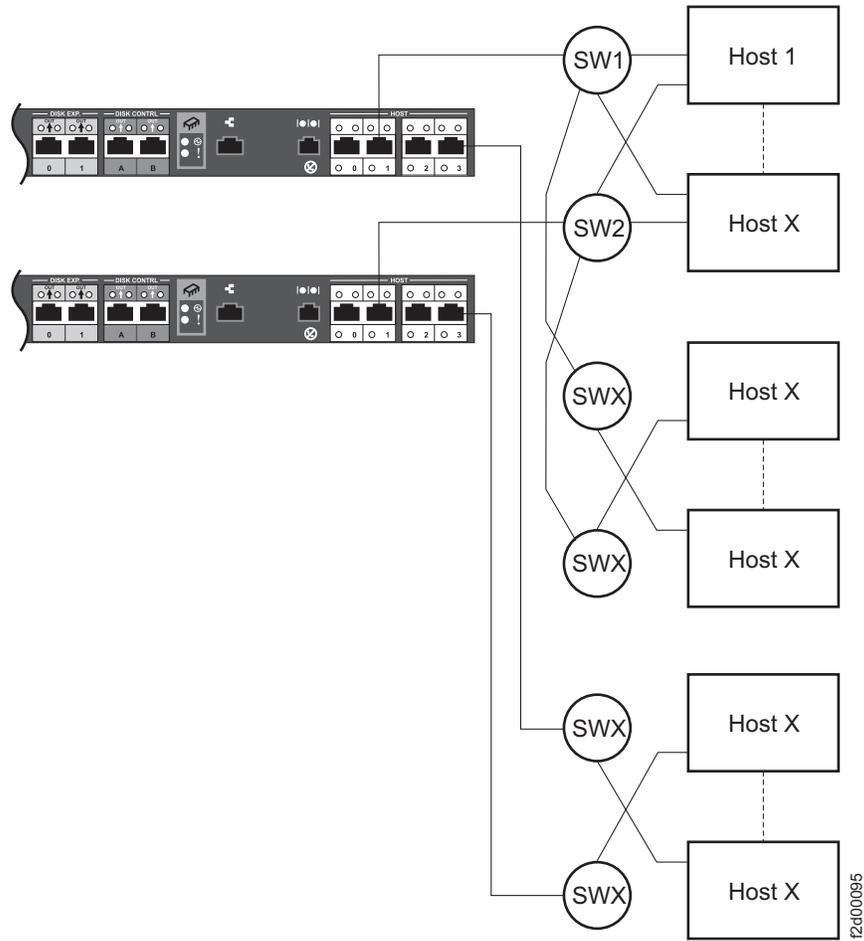


Figure 7. Cascading fibre-channel switched configuration

Connecting power cords

Complete this task to connect the power cords. You can connect the power cords to a primary power unit inside the rack, such as a properly grounded ac distribution unit, or to an external source, such as a properly grounded electrical outlet.

Each server or expansion enclosure uses two standard power cords.

To connect the power cords, perform the following steps:

1. If you have not already done so, attach the power cords to the server and expansion enclosures. Figure 8 on page 44 shows the power cord locations.

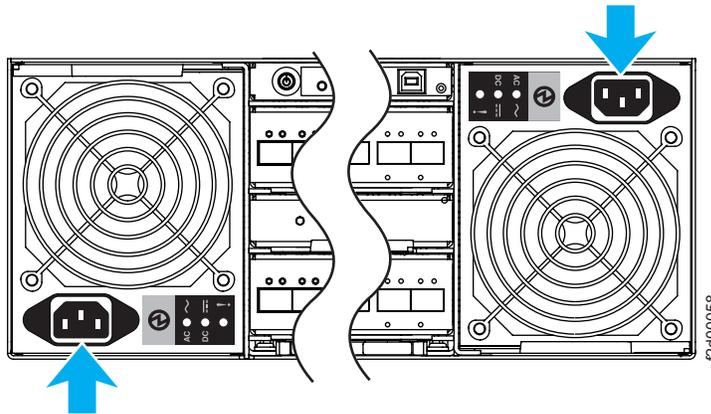


Figure 8. Power cord locations for the server and expansion enclosures

2. Connect the other end of the right server enclosure power cord to a power supply, by plugging it into a properly grounded electrical outlet.
3. Connect the other end of the left server enclosure power cord to a power supply, by plugging it into a properly grounded electrical outlet. To maintain power redundancy, plug it into a separate independent external power circuit.
4. If you have expansion enclosures, repeat the above steps for each expansion enclosure. Remember to plug the right and left power supplies expansion enclosures into the same two independent external power circuits.

Powering on

Complete this task to power on a storage unit.

Before powering on a storage unit, ensure that the management console has been installed. See Chapter 4, “Installing the DS6000 Storage Manager,” on page 53.

Perform the following steps to turn on the power for the initial startup of the storage unit:

1. Verify that all communication, interenclosure connections, and power cables are plugged into the back of the enclosures and into properly grounded ac electrical outlets.
2. Verify that all disk drive modules are locked securely in place.

Note: Ensure that at least four disk drive modules are present before you start the storage unit.

3. Check the system documentation for the external hardware devices that you intend to power on, and then determine the proper startup sequence. Use the following power-on sequence, where it is applicable:
 - a. Turn on the power to the supporting devices (for example, Ethernet switches and management stations) before turning on the server enclosure.
 - b. Turn on the server enclosure by pressing the power button that is located on the left side of the rear operator panel.

Notes:

- 1) The unit powers on the server enclosure and then automatically powers on the attached expansion enclosures in the necessary sequence. After the server enclosure has completely powered on, the power-on sequence continues down the line of attached

expansion enclosures. Each expansion enclosure powers on the enclosed resources in the necessary order before the power-on sequence continues to the next attached expansion enclosure. Enclosures on loop 1 might power on after the enclosures that are connected to loop 0, and they can take several minutes to power on.

- 2) If you are powering on a new enclosure or if the enclosure has been powered down long enough for the battery backup unit (BBU) to lose its charge, the BBU must build at least a 50% charge before the storage unit is fully functional. This can take up to two and one-half hours. The storage unit might not be able to communicate with the DS Storage Manager and host systems until the BBUs have accumulated a sufficient charge.
- 3) After powering on the enclosure, the information indicator flashes to indicate that the system is initializing and is not yet ready to be accessed by either the management console or host systems. Once the flashing amber light turns off, initialization is complete and the system is ready for I/O.

CAUTION:

Upon power on, a discovery process is initiated to detect all hardware. This process can take an extensive amount of time, depending on the number and type of attachments. You must wait until this process is complete before initiating any other processes.

Verifying status through LEDs

The LEDs display the status of the expansion server and components. Green LEDs indicate a normal operating status; amber LEDs indicate a possible failure.

Note: The green drive active LED and amber drive fault LED might flash intermittently as the drives spin-up. Wait until the DS6000 is finished powering up before you check the LEDs on the front of the storage unit.

After you power on the enclosure, the information indicator flashes to indicate that the system is initializing and is not yet ready to be accessed by either the management console or host systems. Initialization is complete, and the system is ready for I/O, once the flashing amber light turns off.

To verify the status of the server and expansion enclosures, perform the following steps:

1. At the front and rear of the server and expansion enclosures, verify that the LEDs are displaying the appropriate state. Table 7 provides a list of LED information. Additional LED information is available from inside the DS6000 Information Center.

Table 7. LED status after successful installation

LED Icon	LED Name	Appropriate state
	Power-on	Solid Green
	Location	Solid Blue

Table 7. LED status after successful installation (continued)

LED Icon	LED Name	Appropriate state
	Information	Unlit
	System alert	Unlit

- If all LEDs are not displaying the appropriate state, see the light path information to diagnose the problem.

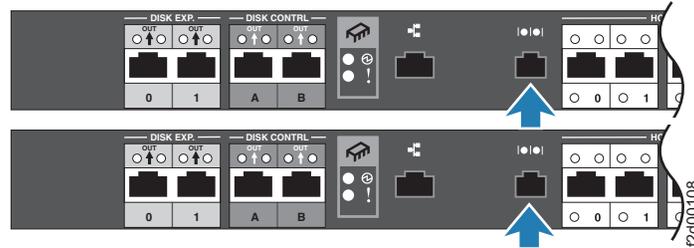
Setting the IP address

Complete this task to set the IP addresses and other network information for the processor cards.

You can create a direct connection from your computer to either of the processor cards on the DS6000. You can use the direct connection to set IP addresses, network masks, gateway IP addresses, and other network settings for one or both of the processor cards.

To set the IP address, perform the following steps:

- Use the serial conversion cable that was shipped with the enclosure to attach your computer to the serial port on the enclosure.



- Use a terminal emulator, such as NetTerm or Windows[®] HyperTerminal to connect to the server enclosure through the serial port that is located on the processor card. If you are using Windows HyperTerminal, you might need to provide a connection name and icon before you can specify the connection settings.

Choose a communications port, such as COM1 or COM3, and connect to the processor card using the following settings:

Remote connection setting	Remote connection value
Bits per second	38400
Data bits	8
Parity	None
Stop bits	1
Flow control	Hardware

- Use the default user ID **guest** and the default password **guest** to access the processor card. Press Enter to get the command prompt.
- If this is your first time setting the IP address, change the default **guest** password to one that you select.

- a. Select Change 'guest' password from the Main Menu options.
- b. Enter the current password. This is guest if you are changing it for the first time.
- c. Enter the new password that you have chosen. You will receive a message stating that the password has been changed successfully.

Passwords must meet the following criteria:

- Be six to 16 characters long.
- Must contain five or more letters, and it must begin and end with a letter.
- Must contain one or more numbers.
- Cannot contain the user's user ID.
- Is case-sensitive.
- Four unique new passwords must be issued before an old password can be reused.

Note: You must use the serial conversion cable to connect your computer to the second processor card to change the password on that processor card. You cannot change the password for the second processor card while you are still connected to the first processor card.

5. Select Configure network parameters from the Main Menu options.
6. Select Use static IP addresses from the Network configuration menu options. Set the IP addresses and network masks for both processor cards by performing the following steps:
 - a. Change the IP address for the processor card to which you are connected. Select IP address for this node from the Static IP addresses configuration menu options, enter the new IP address for the current processor card, and press Enter.
 - b. Change the IP address for the other processor card. Select IP address for other node from the Static IP addresses configuration menu options, enter the new IP address for the other processor card, and press Enter.
 - c. Change the network mask for the processor card to which you are connected. Choose Network mask for this node from the Static IP addresses configuration menu options, enter the new network mask for the current processor card, and press Enter.
 - d. Change the network mask for the other processor card. Choose Network mask for other node from the Static IP addresses configuration menu options, enter the new network mask for the other processor card, and press Enter.
 - e. Select Gateway for this node from the Static IP addresses configuration menu options, enter the new Gateway IP address for the current processor card, and press Enter.

Note: To assign a storage unit without a gateway, enter the address 0.0.0.0.
 - f. Select Gateway for other node from the Static IP addresses configuration menu options, enter the new Gateway IP address for the other processor card, and press Enter.

Note: To assign a storage unit without a gateway, enter the address 0.0.0.0.
 - g. Select Back to Network Configuration to return to the Network configuration menu.
7. Select Advanced Configuration Options to set the domain name server and the gateway settings.

- a. Select First DNS server from the Advanced network configuration options, enter the new DNS server address for the current processor card, and press Enter.
 - b. Select Second DNS server from the Advanced network configuration options, enter the new DNS server address for the other processor card, and press Enter.
 - c. Select Back to Network Configuration.
8. Select Back to Main Menu to return to the Main Menu.
 9. Select Apply changes and exit from the options in the main menu to save your changes and exit the application. You can then disconnect the serial conversion cable from your computer to the processor card.

Ensure that you set the IP address on the management console and that it is cabled to the same subnet as the DS6000. Change the default **guest** password for the second processor card. This processor card might appear to already be set, but you must still change the default **guest** password.

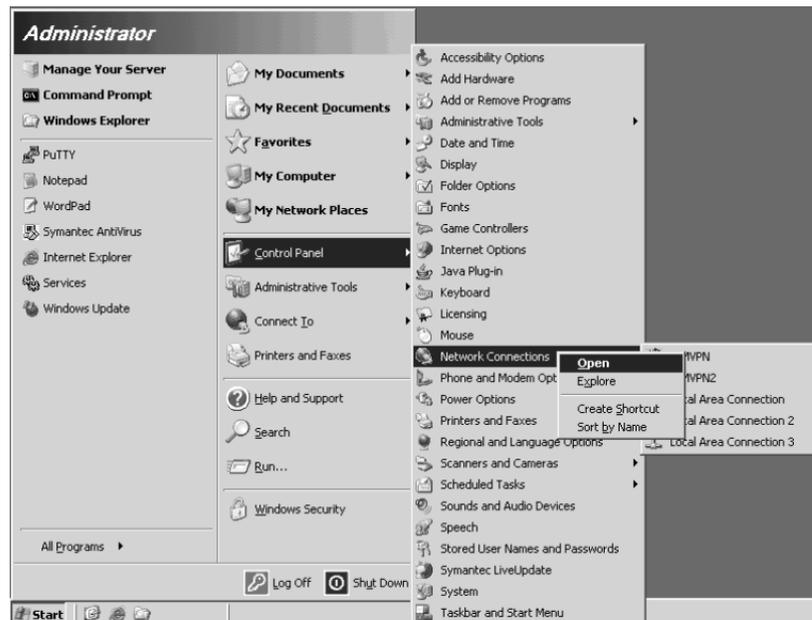
Enabling multiple IP addresses on the DS6000 Storage Manager

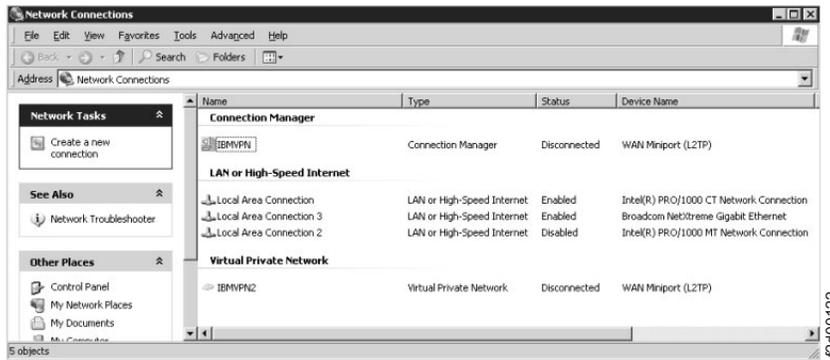
Complete this task to allow multiple IP addresses on the Storage Manager.

If you have multiple IP address on the DS6000 Storage Manager, ensure that the first network adapter is the adapter that is on the same subnet network as the DS6000. If this is not the case, the binding order must be changed so that the IP address on the same subnet (private) as the DS6000 is listed first in the binding order.

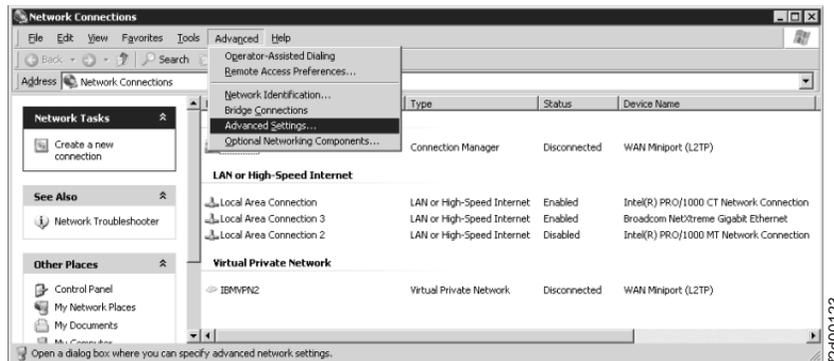
To change the binding order for the IP address, perform the following steps:

1. From the **Control Panel**, select **Network Connections** → **Open**.

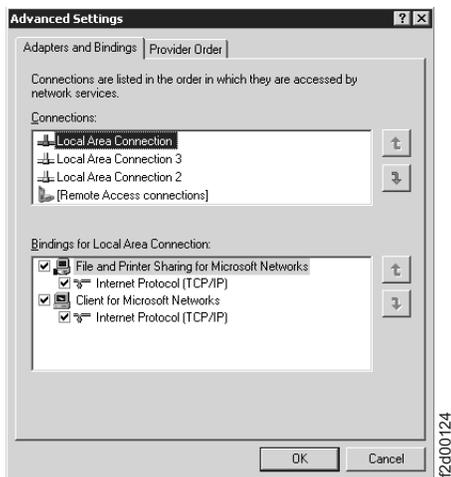




- From the **Network Connections** window, select **Advanced** → **Advanced Settings**.



- In the **Adapters and Bindings** tab, check the list of the network adapters to ensure that the first network adapter is the adapter that is on the same subnet network as the DS6000. If this is not the case, you must change the binding order so that the IP address on the same subnet (private) as the DS6000 is listed first in the binding order.



Installing a modem on the management console

Complete this task to install the modem on the management console.

You must have prepared a dedicated analog telephone line before you install the modem.

You must use this modem or a network VPN connection during remote support situations. A modem must be installed on the management console to enable the Call Home feature. You can use the modem to initiate a virtual private network (VPN) connection to IBM during remote support situations. However, if one or more phone numbers are stored on this page, remote support connections cannot initiate a VPN connection over the Internet. You must delete all phone numbers on this page before you can initiate an Internet VPN connection.

To install the modem on the management console, perform the following steps:

1. Remove the modem and accompanying cables from the package. Save the CD and any documentation that came with the modem for future use.
2. Perform the following steps to connect the power cable from the modem to the power outlet in the wall:
 - a. Connect the power cable to the power adapter.
 - b. Connect the power adapter to the modem.
 - c. Connect the ac power cable to the wall power outlet.
3. Connect the analog telephone line into the port on the modem that is labeled, "line".
4. Plug the other end of the analog telephone line into the appropriate telephone outlet.
5. Connect the modem to the management console. You can connect the modem to the management console in one of two ways:
 - Connect the modem to the management console directly through a serial port on the management console. The 9-pin serial connector connects to the management console while the 25-pin serial connector connects to the modem.
 - Connect the modem to the management console through the USB port on the management console. The USB-to-serial-port converter connects to the USB port on the management console while the 9-pin serial connector connects to the USB-to-serial-port converter and the 25-pin serial connector connects to the modem.

Note: Use the instructions that were provided with the USB-to-serial-port converter to install the converter.

6. Ensure that the management console is turned on.
7. Use the front power switch to turn on the modem.
8. Perform the following steps to install the modem on the management console:
 - a. Open the Phone and Modem Options settings for your operating system. In Windows 2000, Windows 2003, and Windows XP, click **Start** → **Settings** → **Control Panel** → **Phone and Modem Options**.
 - b. In the Dialing Rules tab, either click **New** to create a new dialing location, or click **Edit** to modify a previously selected dialing location.
 - c. Move through the General, Area Codes, and Calling Card tabs and enter the required dialing information for your location, and then click **OK**.
 - d. Select the Modems tab.
 - e. Select **Add**.
 - f. In the Install New Modem panel, ensure that the **Don't detect my modem; I will select it from a list** box is checked, and then click **Next**.
 - g. Click the **Have Disk...** button.

- h. Insert the CD that came with the modem into the CD-ROM drive on your management console. On the Install From Disk panel, navigate to the CD-ROM directory, and then click **OK**.
 - i. Select **MultiTech MT5600BA V9** from the Models list, and then click **Next**.
 - j. Select the communications port where you installed the modem, and then click **Next**. If a hardware error indicates that compatibility testing did not pass, click **Yes** to continue.
 - k. When a message appears that confirms that the installation is successful, click **Finish**.
 - l. Click **OK** to close the Phone and Modems Options window.
9. Configure modem phone numbers.
- a. In the navigation, under Real-time manager, select **Manage hardware** and then select **Storage complexes**. Select **Configure Modem Remote Support** in the **Select Actions** list and click **Go**.
 - b. Select the appropriate country. If applicable, select the appropriate state. A list of appropriate phone numbers is displayed.
 - c. Select the phone number that you want to use.
 - d. If necessary, specify the prefix that the modem must dial to reach an external phone line.
 - e. Click the **Populate** button next to an empty Phone# field. This places the phone number that you selected into the empty field.
 - f. If necessary, manually modify the phone number to work with dialing protocol for your location.
 - g. Click the **Test** button next to the phone number. This creates a modem connection.
 - h. Verify that the connection was created successfully. You can use the Test connection status field to view the current state of the connection.
 - i. Click the **Cancel test** button to end the test connection before the test is completed.
 - j. Select another phone number from the available list and use the **Populate** button to add additional phone numbers.
 - k. Click **OK** to store the modem phone numbers. Click **Cancel** to exit the page without saving any changes.

Chapter 4. Installing the DS6000 Storage Manager

The DS Storage Manager is installed using graphical or unattended (silent) mode for Windows operating systems. It can be accessed remotely from any location that has network access using a Web browser. The result of the installation is access to a configuration tool that can be used in offline or online settings. In addition, you can access licensed functions, such as FlashCopy, that have been activated on your storage unit.

Ensure that you complete and have available the following planning work sheets. They can be found in the *IBM System Storage DS6000 Introduction and Planning Guide*, Chapters 5 and 6.

- Host attachment work sheet
- Activation codes work sheet

You can also use the table in “Gathering installation information” on page 10 to gather information that you will need during installation.

Perform the following steps to install the DS Storage Manager:

1. Install the DS Storage Manager from the CD-ROM that came with your DS6000 series. See “Installing the DS Storage Manager on the Windows operating system using the graphical mode” on page 57 for information about installing the DS Storage Manager in graphical mode or “Installing the IBM System Storage DS Storage Manager on the Windows operating system using unattended (silent) mode” on page 63 for installing in unattended mode.
2. Restart your management console.
3. Start the IBM System Storage DS Storage Manager. See “Starting the DS Storage Manager on a Windows operating system” on page 66 for information on how to start the DS Storage Manager.
4. Set up the DS Storage Manager for use with your DS6000. See Chapter 5, “Setting up the DS Storage Manager,” on page 69 for information about setting up the DS Storage Manager.

Terminal Server:

Use these procedures if your Windows PC has the Terminal Server enabled and the session that you are logged in to is set to the “Execute” mode. You must change the mode to “Install” using the following instructions:

- For Windows 2000: Use the **Add New Programs** option of the Add/Remove Programs utility. This utility automatically changes the Terminal Server session to “Install” mode before you start the installation, and changes it back to the initial mode after you finish the installation.
- For Windows 2003: Double-click on the executable file that has the standard name of `setup.exe` to automatically change the Terminal Server session to “Install” mode before you start the installation. Windows considers `setup.exe` as an installation program. This utility automatically changes it back to the initial mode after you finish the installation.

Note: This behavior applies only to double-clicking on the `setup.exe`. It does not apply to invoking the `setup.exe` from a command line or launching it from an executable of a script file.

Internet browser support

The DS Storage Manager can be used on different versions of Internet browsers.

The following list shows the Internet browser versions that support the use of the DS Storage Manager. Unless otherwise noted, these browsers work with the DS Storage Manager installed on the supported operating systems.

- Internet Explorer 6.x and 7.x

Notes:

1. You must select the appropriate browser security settings to open DS Storage Manager in a browser. In Internet Explorer, on the Tools menu, click Internet Options. On the Security tab, select Internet and click Custom level. Under Miscellaneous, enable **Allow META REFRESH**. Under Scripting, enable **Active scripting**.
2. When running the DS8000 Element Manager from the IBM System Storage Productivity Center, with a combination of Internet Explorer 6 and SSL (HTTPS) mode, intermittent connection problems are seen. These problems can cause some usability inconveniences as well as commands not being run successfully.

If you access IBM TotalStorage Productivity Center through Java Web Start, TotalStorage Productivity Center will use your default Internet Explorer on your local machine as the embedded browser. If your default browser is Internet Explorer 6, this can cause problems.

If you log in remotely into IBM System Storage Productivity Center, the TotalStorage Productivity Center Element Manager will use Internet Explorer 6 by default as the embedded browser.

There are two work arounds identified:

- Upgrade to Internet Explorer 7. Internet Explorer 7 has improved performance, security, and has this problem fixed.
- Adjust Internet Explorer 6 to not force an HTTP 1.1 connection. Follow these steps:
 1. Open Internet Explorer 6.
 2. Click **Tools > Internet Options**. Click on the **Advanced tab**.
 3. Scroll down to HTTP 1.1 settings, and uncheck the following two items:
 - Use HTTP 1.1.
 - Use HTTP 1.1 through proxy connections.
 4. Click **ApplyApply**.
 5. Close and then reopen the browser.
 6. You will now be able to access the IBM TotalStorage Productivity Center GUI.

Management console

A management console is the configuration, service, and management portal for the DS6800.

A management console is required for your DS6800. You must either provide a computer to use as your management console or you can optionally order a computer from IBM. This computer must meet a minimum set of hardware and

operating system compatibility requirements. If you order a management console, it is placed as a separate order from the DS6800.

The management console requires the DS Storage Manager software that is provided with your DS6800.

You use the management system to perform the following tasks:

- Logically configure your DS6000 series
- Manage the following functions:
 - Local maintenance
 - Copy services
 - Remote service support and call home
 - Event notification messaging

Management console requirements

The DS6000 Storage Manager requires that the system that is used as the management console be continuously available for customer operation, configuration, and problem management.

It is best to load the DS6000 Storage Manager on a dedicated system. If you must install the DS6000 Storage Manager on a nondedicated system, contact your account sales representative to contract locally delivered services to install and set up the DS6000 Storage Manager. Do not use a laptop for the management console, because communication with the DS6000 is lost if the laptop is shut down or moved.

Before you can install the DS Storage Manager software on the computer that you will use to manage your storage system, you must ensure that your computer meets a minimum set of hardware and operating system compatibility requirements:

- IBM Personal Computer compatible with the following components:
 - 1.4 GHz Pentium® 4 processor
 - 256 KB cache
 - 1 GB memory
 - 1 GB disk space for the DS Storage Manager software
 - 1 GB work space per managed server enclosure
 - Ethernet IP connectivity to each processor card
 - Ethernet IP connectivity to external network (for call home and remote support)
 - USB port or serial port for modem connection
 - CD connectivity

If you want to order a management console, consider the IBM 8143 ThinkCentre™ M51 Model 34U (8143-34U) Desktop system with a 3.2 GHz/800 MHz Intel® Pentium 4 Processor. If a monitor also is required, IBM suggests the IBM 6737 ThinkVision C170 (6737-P6N) 17-inch full flat shadow mask CRT color monitor with a flat screen (16-inch viewable-image).

Ensure that your Windows PC is using one of the supported operating systems that are listed in Table 8 on page 56.

Note: The DS Storage Manager is not supported on any Windows 64-bit operating system.

Table 8. Supported operating systems

Operating System	Full management console install
Windows Server 2003 Enterprise Edition	X
Windows Server 2003 Standard Edition	X
Windows 2000 Advanced Server SP4	X (English only) See Note.
Windows 2000 Server SP4	X (English only) See Note.
Windows 2000 Professional SP4	X (English only) See Note.
Windows XP Professional SP1	
Windows XP Professional SP1a	
Windows XP Professional SP2	X
Note: Windows 2000 Advanced Server SP4, Windows 2000 Server SP4, and Windows 2000 Professional SP4, require update 818043.	

Ensure that your Windows PC has the regional settings option that is specified to your language and country or region.

Ensure that animation is turned on in your browser if you want to observe the installation progress bars that are associated with the DS Storage Manager installation. Use the following instructions for your specific browser:

- Internet Explorer
 1. From the **Tools** menu, select **Internet Options**.
 2. Select the **Advanced** tab and scroll down to the **Multimedia** section.
 3. Check **Play animations in web pages**.
- Netscape
 1. From the **Edit** menu, select **Preferences**.
 2. Double-click on **Privacy and Security**.
 3. Select **Images** and select **as many times as the image specifies** in the **Animated image should loop** section.

To allow your browser to display the DS Storage Manager and the Information Center in separate windows, ensure that the Internet options are not set to reuse windows for launching shortcuts.

1. Select **Start, Settings, Control panel**, then **Internet Options**.
2. On the **Advanced** tab, ensure the **Reuse windows for launching shortcuts** checkbox is not selected.
3. Click **Apply**.

Installing the DS Storage Manager on the Windows operating system

This section contains information for DS Storage Manager installation on the Windows operating system.

The DS Storage Manager is installed using a graphical or unattended (silent) mode for the Windows operating systems. It can be accessed remotely using a Web browser from any location that has network access.

You can choose to install the IBM System Storage DS Storage Manager on the Windows operating system using either of the following modes:

- Graphical mode – allows you to use an online wizard that guides you through the installation process providing prompts and information needed to complete the installation.
- Unattended (silent) mode – allows you to customize a response file and issue a command to complete the installation process.

After you have installed the DS Storage Manager, the following results occur:

- Activation of the IBM System Storage DS Storage Manager server and the IBM System Storage DS Network Interface server. These servers are set to automatic startup so that when you start your computer these servers are automatically activated.
- Activation of the DS Storage Manager application, which includes the real-time and simulated manager components. These components are designed to help you create and manage the physical and logical configurations of your storage complexes and storage units. Plus, the real-time manager application provides you the opportunity to use the Copy Services features that you have purchased.

Installing the DS Storage Manager on the Windows operating system using the graphical mode

Complete this task to install the simulated IBM System Storage DS Storage Manager in your Windows environment using the graphical mode.

Before you install the simulated IBM System Storage DS Storage Manager, verify that the prerequisite software and hardware are installed on your system. The installation program checks for prerequisites and cancels the installation if any prerequisites are missing. If you have the correct level of Java code, but Java errors appear during installation, request a new installation CD from your IBM representative.

Notes:

1. The name of the user who logs on and performs the installation must not contain any non-ASCII or special characters. It could cause the installation to fail.
2. The DS Storage Manager is not supported on any Windows 64-bit operating system.

To install the DS Storage Manager on the Windows operating system using graphical mode, perform the following steps:

1. Log on as a user with administrator authority.

2. Insert the IBM System Storage DS6000 Series Storage Manager CD into the CD-ROM drive. The IBM System Storage DS Storage Manager program starts within 15 - 30 seconds if you have autorun mode set on your system. The LaunchPad window is displayed.

If the LaunchPad window does not display, go to the CD-ROM drive using Windows Explorer or a command prompt and perform one of the following steps:

- Type *LaunchPad* at the command prompt and press **Enter**. The LaunchPad window is displayed.
- Locate and double-click the **LaunchPad.bat** reference in Windows Explorer.

Note: If you are viewing the folder with Windows Explorer with the option selected to hide the extensions for unknown file types, find the LaunchPad file with the file type of MS-DOS Batch file.

The following options are available in the Launchpad window:

DS6000 Storage Manager overview

Provides information about the IBM System Storage DS Storage Manager software.

Readme file (recommended selection)

Provides updated product information that was not provided in these installation instructions.

User's guide

Provides specific installation instructions.

DS6000 Storage Manager Web site

Provides information from the product Web site.

Installation wizard

Starts the IBM System Storage DS Storage Manager installation program.

Exit

Exits the IBM System Storage DS Storage Manager LaunchPad program.

3. Click the **Readme file** selection on the LaunchPad to check for information that might supersede the information in this guide.
4. Click the **Installation wizard** selection on the LaunchPad to start the installation program.

Note: The LaunchPad window remains open behind the installation wizard so that you can access product information during the installation process.

There might be a slight delay while the software loads on your system. After the software loads, a DOS prompt window opens to display the following message:

```
Initializing InstallShield Wizard...
Preparing Java (tm) Virtual Machine .....
. ....
```

The Welcome window of the IBM System Storage DS Storage Manager installation program displays if no problems are discovered during the initial system check. If an error is discovered (for example, the operating system does not match the prerequisite), an error message is displayed and the installation program exits.

5. Click **Next** to continue, or click **Cancel** to exit the installation. When you click **Next**, the License Agreement window displays.

Note: Anytime you click **Cancel** on any of the installation windows, a message asking for you to confirm that you want to exit is displayed.

6. Read the license agreement and click your acceptance or nonacceptance of the agreement. If you accept, the **Next** button is highlighted. Click **Next** to continue or click **Cancel** to exit the installation. When you click **Next**, the Destination Directory window is displayed.
7. Choose the directory on the Destination Directory window where you want to install the application by using one of the following options. Clicking **Next** causes the server installation checking window (a window for each server) to display if the DS Storage Manager Server or the DS Network Interface Server is installed on your system. If the two servers are not installed on your system, then the Server Parameters window is displayed.
 - Click the **Next** button to accept the default (recommended) directory that is shown in the window.
 - Type a fully qualified directory path into the Directory Name path to designate your own directory. Then click the **Next** button.
 - Click the **Browse** button and a directory window is displayed. Scroll to the directory that you want to use for the application. Click it and click **OK**. The directory path is displayed in the Directory Name field.
8. Click **Next** . One of the following is displayed:
 - The Server Parameters window is displayed with default values shown for all the fields.
 - If the DS Storage Manager Server is already installed on your system, the DS Storage Manager Server Installation Checking window is displayed. A message is displayed on the window that indicates which version of the server is installed and whether the installation process will install a newer version of the server. To continue the installation process, click **Next**.

When you click **Next**, if the DS Network Interface Server is installed on the system, the DS Network Interface Server Installation Checking window appears. This indicates the version of the DS Network Interface server that is installed on your system and whether the installation process will install a newer version of the server. To continue the installation process, click **Next**.

When you click **Next**, the Installation Confirmation window is displayed if the two servers are already installed on your system. If your installation process has taken you through these two checking windows, go to Step 15 on page 62.
9. Click **Next** to accept the default values that are displayed on the Server Parameters window. All fields must contain a value before you can proceed to the next step.

You can change the default values by supplying the following information:

 - **Host Name** — The host name of the physical machine where the DS Storage Manager Server is installed. The host name must resolve to a physical network node on the server. When multiple network cards exist in the server, the host name or IP address must resolve to one of the network cards. The value that you specify for the host name is used as the value of the `hostName` property in WebSphere Application Server configuration files. Specify the host name value in one of the following formats:
 - The fully qualified domain name servers (DNS) host name string; for example, *xmachine.manhattan.ibm.com*.
 - The default short DNS host name string; for example, *xmachine*.
 - The numeric IP address; for example, *9.127.255.3*.

- The generic name *localhost* or its equivalent IP address; for example, *127.0.0.1*.

Note: The specified value for the host name is stored by WebSphere Application Server into its internal configuration files. If you specified the host name in the fully qualified form or the short host name string, do not change the host name after the DS Storage Manager Server installation. If you do, the host name and the name that you specified for the configuration file no longer match. If you do change the host name, you must manually edit all the WebSphere Application Server configuration files that contain references to the old name to reflect the new name. If you specified the host name in the form of the numeric IP address, you must use a fixed IP address for the computer (you cannot use DHCP to obtain a dynamic IP address for it). The above restrictions do not exist if you specified the host name in the form as *localhost*.

- **HTTP Port** — The port number that the DS Storage Manager Server uses. It is recommend that the port numbers specified in this section not be changed from the defaults. Doing so, may compromise remote support. The port number must be a port that is not being used by another process on the system. After the DS Storage Manager Server is installed, you must include this port number in the URL to access the console. That URL is the protocol name, plus the fully qualified host name, plus the port, plus DS6000/Console; for example, <http://myhost.com:8451/DS6000/Console>.
- **HTTPS Port** — The port that the DS Storage Manager Server uses for secure HTTP transport (HTTPS).
- **Bootstrap/RMI Port** — The port that the DS Storage Manager Server uses for the bootstrap port.
- **SOAP Port** — The port that the DS Storage Manager Server uses for Simple Object Access Protocol (SOAP).
- **Server help Port** — The port for the Eclipse help Server. This port is the one that the help system (based on Eclipse technology) uses to receive requests for help files.

Note: The values that are used in the Server Parameters window fields must not conflict with existing port assignments that are already on the system or reserved for use by another application.

10. Click **Next** after you have ensured that all the input fields on the Server Parameters window are complete. The SSL Configuration window is displayed. This window allows you to supply the fully qualified name of the two server key files generated before or during the DS Storage Manager installation.
11. Follow the instructions on the SSL Configuration window.
 - a. Designate whether you want to generate a new SSL certificate by selecting **Generate the self-signed certificates during installation**. This is the most likely selection when you are installing DS Storage Manager for the first time. You can also select **Use existing SSL certificates**. This choice is most likely made when the key files already exist and you do not want to generate new key files.
 - b. Complete the rest of the fields on the window. Provide the fully qualified path to the key file and trust file by using the **Browse** button. The key file and trust file are identified by an extension of *.jks*.

- c. If you are creating new certificates, create a password for each file. The password must be a minimum of six characters and it cannot contain any blanks. Allowable characters are letters A - Z and a - z, digits 1 - 9, and special characters - and _ (hyphen and underscore). Supply the existing password if you are using an existing SSL certificate.

Record the location and passwords for the SSL certificates so that you can refer to them in the future if necessary.

12. Click **Next** to continue the installation process. If you have selected **Generate the self-signed certificates during installation**, the Generate Self-Signed Certificate window is displayed. If you selected **Use existing SSL certificates**, the Installation Confirmation window is displayed.

Note: When you select **Generate self-signed certificates during installation** and the key files already exist on the system at the specified location, clicking **Next** causes a message to display. It asks you to designate whether you want to have the system keep existing application server certificates if they exist on the location. The default is **YES** which keeps the existing application server certificates.

13. Complete each of the input fields with the required information. Use the following as a guide to provide the needed information.

Keystore alias

This is the alias for the self-signed certificate. It uniquely identifies the certificate within the keystore file. It is a good practice to use a unique name related to the server name.

Key size

Two key sizes are available, 512 and 1024. 1024 is the default.

Common name

This name is the primary, universal identity for the certificate. If your system contains the secured WebSphere environment, this name must be valid in the configured user registry.

Organization name

The name of your company.

Organization unit (optional)

The name of a department or division within your company. Remember that you are building a profile for the certificate. As a security measure the more specific the information the more secure your system.

Locality (optional)

The city or location where your company resides.

State (optional)

The state or province where your company resides.

Country or region

The two-character designator that identifies the country where your company is located. Use the pull-down menu to make this selection.

Validity period (days)

Specifies the lifetime of the certificate in days.

The information that you provide is used to build a profile for the certificate. This information is used during identity processing to ensure validation of any processing that is occurring. It is part of the security measures that are used during SSL connectivity.

Click **Next** to continue, or click **Cancel** to exit the installation.

14. Click **Next**. The Installation Confirmation window is displayed. This window displays both the location where the product will be installed and the total size needed for the installation.

Note: The total size required for installation may vary, depending on your installation environment.

15. Click the **Install** button on the Installation Confirmation window to begin the installation process. There are several progress windows that are displayed. There is no required interaction on your part for each of the progress windows that are displayed. However, you can choose to cancel (not recommended) the installation on any of the progress windows with varying consequences.

The installation process performs the following actions:

- a. If the two servers (DS Storage Manager Server and DS Network Interface Server) are already installed on your system, they are stopped in the following order:
 - 1) The Embedded IBM WebSphere Application Server - Express server (part of the DS Storage Manager Server)
 - 2) The DS Network Interface Server
 - 3) The WS Help System (part of the DS Storage Manager Server), if it was not stopped before by the Embedded IBM WebSphere Application Server
- b. If one or both of the servers are not installed, or must be upgraded on your system, they are installed or upgraded in the following order (the progress of the installation is indicated on the associated progress window):
 - 1) DS Storage Manager Server Installation Progress window
 - 2) DS Network Interface Server Installation Progress window

Note: You can click **Cancel** (not recommended) during the DS Network Interface Server installation process. The process does not stop immediately when the **Cancel** button is clicked. Rather, the process continues to install all the files that are associated with this part of the installation. These files remain installed and are not reinstalled upon reactivation of the installation process.

A confirmation message is displayed that asks you to confirm that you want to cancel the installation.

- c. The Components Installation Progress (displaying the installation or upgrade progress of the DS Storage Manager product applications) is displayed after the servers have been installed or upgraded.

Note: You can click **Cancel** (not recommended) during the components installation process. The installation process stops immediately when the **Cancel** button is clicked. A window with a confirmation message is displayed. For a new installation, when you confirm that you want to stop the process, all of the component files that have been copied up to the point that the **Cancel** button was clicked are uninstalled and the installation process is cancelled.

When this part of the installation is completed, if no system restart is required, the system starts both servers: first the DS Network Interface Server and then the DS Storage Manager Server. Wait for the servers to be started

before going to the next step. When the servers have been started, the Installer Finish window is displayed with the result of the installation process (successful or unsuccessful).

If a system restart is required, the Installer Finish window is displayed, which asks you to restart the system. Click **Next** on the Finish window. The Installer Reboot window is displayed. Choose the default selection **Yes, restart my computer** on the Reboot window, and then click **Finish**. Both servers, first the DS Network Interface Server and then the DS Storage Manager Server, start automatically after the restart.

16. Click **Finish** to exit the installation process. You can find details for the post installation tasks in Chapter 5, "Setting up the DS Storage Manager," on page 69. Use these instructions to complete the setup tasks.

Note: If the Finish window indicates that the installation fails, you must exit the installation process and check the installation log for error messages. The installation log is located in *xxx\logs\install.log*, where *xxx* is the destination directory where the IBM System Storage DS Storage Manager is installed (for example, *c:\Program Files\IBM\DS6000 Storage Manager*).

Errors fall into two categories: system problems or incorrect values that are designated during the installation process. Use the following guidelines to correct these errors.

- If the error is due to a system problem, correct it and reinstall the DS Storage Manager using either the interactive or unattended (silent) mode of installation.
- If the error is due to a wrong installation parameter value, restart the installation using the steps that are described in this procedure or the steps that are described in the unattended (silent) mode of installation. Navigate to the Server Parameters window and insert the correct values. Then finish the installation process.

17. If a restart is not required, exit the LaunchPad program by clicking **Exit** on the LaunchPad window.
18. Verify that the DS Storage Manager server and IBM System Storage DS Network server are operating. From the Windows Control Panel, select Administrative Tools, then Services. Both servers should have a "Started" status. You cannot start the DS Storage Manager until after both of the servers are started.
19. Start the DS Storage Manager. See "Starting the DS Storage Manager on a Windows operating system" on page 66.
20. Complete the postinstallation tasks. You can find details for the postinstallation tasks in Chapter 5, "Setting up the DS Storage Manager," on page 69.

Installing the IBM System Storage DS Storage Manager on the Windows operating system using unattended (silent) mode

Complete this task to install the simulated IBM System Storage DS Storage Manager in your Windows environment using the unattended (silent) mode.

Note: Skip this topic if you have already installed the simulated DS Storage Manager on the Windows operating system using the graphical mode.

Before you install the IBM System Storage DS Storage Manager, verify that the prerequisite software and hardware are installed on your system. The installation program checks for prerequisites and stops if any prerequisites are missing. If you have the correct level of Java code, but Java errors appear during installation, request a new installation CD from your IBM representative.

Notes:

1. The name of the user who logs on and performs the installation must not contain any non-ASCII or special characters. It could cause the installation to fail.
2. The DS Storage Manager is not supported on any Windows 64-bit operating system.

Using the unattended (silent) mode installation option allows you to run the installation program unattended. Use this method of installation to customize a response file and to issue a command from a command prompt window. The response file is a template on the IBM System Storage DS Storage Manager CD.

Perform the following steps to install the IBM System Storage DS Storage Manager in your Windows environment using the unattended (silent) mode:

1. Log on to your Windows system as an administrator.
2. Insert the IBM System Storage DS Storage Manager installation CD into the CD-ROM drive. If the interactive mode starts, click the **Exit** selection on the LaunchPad window to exit.
3. Locate the response file (responsefile.txt) in the root directory of your CD and copy it to a directory of your choosing on your system, or open a command prompt window and generate the template response file.
To generate the template response file, perform the following steps:
 - a. Ensure that your command prompt is located at the root directory of the CD-ROM drive.
 - b. Type `setup.exe -options-template <responsefile-path>\<responsefile>`, where *responsefile-path* is the path where you want the response file to be created, and *responsefile* is the name of the response file that you want to create.
 - c. Press the **Enter** key and wait for the program to create the response file.
4. Open the response file using a text editor and modify the default options with the values that you want.

Follow these guidelines when you modify the default options:

- Remove the three # characters from the beginning of each line that contains a parameter (if you generated the response file as shown before). Change the parameter default value to the value that you want for that option. You *must* enclose all values in double quotation marks ("*<value>*").
- Verify that all paths generated or modified in the response file are correct. There are some cases when the generated file displays an incorrect string representing the path of the installation location. For example, the parameter `"-P installLocation = "C:\Program Files\My Product"` is wrong and must be `"-P product.installLocation = "<directory where you want the DS Storage Manager installed>"`
- Ensure that the entered values for the ports values are available and not used by other applications on your system. Use the command `"netstat -a"` to verify the ports in use on your system.

- Specify two passwords for the SSL keys files. These passwords must observe the following criteria:
 - The password must be a minimum of six characters and it cannot contain any blanks.
 - Allowable characters are letters A - Z and a - z, digits 1 - 9, and special characters - and _ (hyphen and underscore).
 - Use the following options within the responsefile.txt file to set these options:
 - For the keystore file use:

```
-W wasSslConfiguration.keystorePassword="your_keystore_password"
```

- For the truststore file use:

```
-W wasSslConfiguration.truststorePassword="<your_truststore_password>"
```

Note: These options do not have default values. If you do not set these values, the installation process fails.

5. Save the modifications to the response file.
6. Type the following command at the command prompt and press the **Enter** key on your keyboard to start the installation process in unattended (silent) mode: `setup.exe -options <responsefile-path>\<responsefile> -silent` where
 - *responsefile-path* — represents the path where the response file resides.
 - *responsefile* — represents the relative name of the response file that you used or created (for example, responsefile.rsp or responsefile.txt).
7. Wait for the installation program to install the product. This can take 5 - 10 minutes.

Note: During this processing, the installation process checks to see if the DS Storage Manager server and DS Network Interface Server are already installed and if they are the current version or have to be upgraded. If they are already installed and need to be upgraded, the installation process performs this function using the already set values from the previous server installation, found on the system in the server configuration files, for all the associated values. The specified values in the response file are ignored.

8. If required, perform a system restart to complete the installation. After the system has restarted, the two servers (DS Storage Manager server and DS Network Interface Server) are automatically started by the system.
9. Verify that the DS Storage Manager server and IBM System Storage DS Network server are operating. From the Windows Control Panel, select **Administrative Tools**, and then **Services**. Both servers must show a "Started" status. You cannot start the DS Storage Manager until both of the servers are started.
10. Check the install log file for any possible error messages. This file is located in the `xxx\logs\install.log` directory, where *xxx* is the destination directory where the IBM System Storage DS Storage Manager is installed.
11. Start the IBM System Storage DS Storage Manager, if no errors are evident.
12. Perform the post installation tasks when the DS Storage Manager has been installed successfully.

Starting the DS Storage Manager on a Windows operating system

You can open the DS Storage Manager using the Programs list. The DS Storage Manager opens in your default browser.

If you recently restarted the management console, before starting the DS Storage Manager, verify that the DS Storage Manager server and IBM System Storage DS Network server are running. From the Windows Control Panel, select Administrative Tools, then Services.

Note: The DS Storage Manager times out after a 2 hour period of inactivity (no page requests or refreshes) or when you turn off your computer. If your session is inactive for 2 hours, the session will expire and you will be required to sign on again. Any open pages will be closed, and any wizards that have not been submitted will need to be restarted from the beginning.

Log on to your Windows operating system and use the following steps to access the DS Storage Manager.

Note: If you have not already done so, you must select the appropriate browser security settings to open DS Storage Manager in a browser. In Internet Explorer, on the Tools menu, click Internet Options. On the Security tab, select Internet and click Custom level. Under Miscellaneous, enable Allow META REFRESH. Under Scripting, enable Active scripting.

1. Click **Start**.
2. Click **Programs**.
3. Click **IBM System Storage DS6000 Storage Manager** and then click **Open DS Storage Manager**. The DS6000 Storage Manager is opened in the browser that you have set as your default.
4. If you are prompted to install the security SSL certificate. Click **Yes**. The IBM System Storage DS6000 Signon window is displayed when the DS6000 Storage Manager starts.

Note: If a firewall exists between the management console and the storage unit, ports 1700 through 1799 must be enabled. If the ports are not enabled, communication between the management console and the storage unit will fail.

5. Enter the user name and password to access the program. The default user name is **admin**, and the default password is **admin**.

Note: The first time you log on using the default user name and password, a second login screen appears. Change your password on the second login screen. Choose a password that you can readily remember because the password is not available to your administrator nor is it retrievable from the system.

Passwords must meet the following criteria:

- Be six to 16 characters long.
- Must contain five or more letters, and it must begin and end with a letter.
- Must contain one or more numbers.
- Cannot contain the user's user ID.
- Is case-sensitive.

- Four unique new passwords must be issued before an old password can be reused.

Chapter 5. Setting up the DS Storage Manager

Complete this task to complete the initial steps that are required after you install the DS Storage Manager.

You must have completed installing the DS Storage Manager and have restarted your management console before you can complete these steps.

If you are working in simulated mode, you must have completed each of the following subtasks before you can complete this task:

- Create a configuration file using simulated mode.
- Create the storage unit using simulated mode.
- Create a storage complex using simulated mode.

This task contains high-level steps that you must complete before you can create an initial logical storage configuration. Each of these steps contains links to individual sets of substeps. If you are completing this process in simulated mode, you must return and complete the real-time steps on the management console that is connected to your server enclosure before you can apply your simulated configuration.

Return to the next step of this task after completing each of the subtasks below.

1. Assign the storage unit to a storage complex. To assign the storage unit to a storage complex, you must complete the subtask in “Assigning a storage unit to a storage complex (real-time only)” on page 72.
2. Verify, and if necessary, upgrade the code level on the DS6000. You must complete the subtasks in “Verifying the current code level” on page 73 and Chapter 7, “Upgrading the DS6000 code level,” on page 89 to check your current level of code and apply any available updates.
3. Activate your licensed functions. You must complete the subtasks in “Activating licensed functions” on page 73. This includes obtaining your feature activation codes, importing your feature activation codes, and applying the feature activation codes to your storage unit.
4. (Optional) Define a peer management console. To define a peer management console, you must complete the subtask in “Defining multiple management consoles (real-time only)” on page 76.
5. Specify the storage unit day and time. To specify the storage unit day and time, you must complete the subtask in “Specifying storage unit day and time (real-time only)” on page 77.
6. Specify the storage unit network settings. To specify the storage unit network settings, you must complete the subtask in “Reviewing storage unit network settings (real-time only)” on page 77.
7. Define customer contact information. To define customer contact information, you must complete the subtask in “Defining customer contacts (real-time only)” on page 78.
8. Configure your Call Home, SNMP, and zSeries Service Information Message (SIM) notifications. To configure your notifications, you must complete the subtask in “Setting up Call Home, SNMP, and SIM notifications (real-time only)” on page 78.

9. Configure the I/O ports. To configure the I/O ports, you must complete the subtask in “Configuring I/O ports” on page 80.
10. Create the host systems. To create the host system, you must complete the subtask in “Creating host systems” on page 80.

Creating a configuration file (simulated only)

Complete this task to create a simulated configuration file.

A simulated configuration file allows you to store management console and logical storage configuration settings to be applied to the DS6000 at a later time. The configuration file contains information for one or more storage units (including both physical and logical) and one or more host systems.

1. In the navigation, select **Simulated manager** → **Manage configuration files**. From the **Select Action** menu, select **Create new...**, and then click **Go** to create a new enterprise file for offline configuration. A default simulated configuration file is available to use if you do not want to create a new file.
2. If you have another file open when you select the **Create new...** action, a message prompts you to save your current work before you create a new file. If you click **Ok** after you receive the message, the new configuration file opens after it is created. If you click **Continue**, you must open the newly created configuration file before you can start working in it.

Once you create a simulated configuration file, you must either import a storage unit instance or create a new storage unit instance from the Create storage unit page.

The configuration file that you create has a default name until you save it using the **Save** action. The default name for the enterprise files is “Enterprise 1,” incremented by one for each existing default file name that you do not change.

If you are creating a new logical storage configuration, return to Creating a custom logical storage configuration and complete the rest of the steps.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Creating a storage unit (simulated only)

Complete this task to create a simulated storage unit and to specify its attributes and properties.

1. In the navigation, select **Simulated manager** → **Manage hardware** → **Storage units**.
2. From the **Select Action** menu, select **Create...**, and then click **Go**. The Create Storage Unit — General storage unit information page is displayed.
3. In the General storage unit information page, you must specify the machine type and nickname. The other fields are optional. You can enter the **Select storage complex** value now or modify the storage unit properties later. If you want to create a new storage complex, click the **Create new storage complex** button. The new complex is listed for your selection after you finish the creation wizard process.
4. Click **Next** to continue.

5. The Create Storage Unit — Specify DDM packs page is displayed. You must specify the **Quantity of DDM packs** and the **DDM type**. Click **Add**, and then click **Next** to continue. The Define licensed function page is displayed.
6. In the Define licensed function page, you must specify a value in the **Operating Environment License (TB)** field. You can optionally specify values in the remaining four fields as appropriate. After you enter the necessary values, click **Next** to continue.
The **Operating Environment License (TB)** value is the total amount of capacity in the box. If you specify more than one storage unit, the license is split equally between the two storage units.
7. If you specified a license for the FlashCopy or Remote Mirror and Copy functions, you must specify the storage type (FB, CKD, or All types) for each of the Copy Services functions. Once you have defined the storage type, click **Next**.
8. The Verification page is displayed. Use this page to review the established attributes and verify that they are correct. If the attributes and values are not correct, click **Back** as appropriate to return and specify the correct values. Otherwise, click **Finish** to complete the storage unit creation process.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Creating a storage complex (simulated only)

Complete this task to create a simulated storage complex and to specify its nickname and storage unit assignments.

1. In the navigation, select **Simulated manager** → **Manage hardware** → **Storage complexes**.
2. From the **Select Action** menu, select **Create...**, and then click **Go**. The Create Storage Complex — Define properties page is displayed.
3. If a storage unit is not already defined, you must specify a nickname, which is limited to 16 characters. The other fields are optional.
 - a. The **Available and Selected Storage units** fields are not required when you create the storage complex. You can enter this value now or modify the storage complex properties later. Additionally, you can select this storage complex when you create a storage unit. You must, however, create an association between a storage complex and a storage unit at some point before you download or upload configurations to or from the storage unit.
 - b. If you select the **Create new storage unit** button, the new storage unit is available for selection after you complete the create storage unit process.
4. After you have defined the properties, click **Next** to continue. The Verification page is displayed.
5. Use the Verification page to review the established attributes and verify that they are correct. If the attributes and values are not correct, click **Back** to return and specify the correct values. Otherwise, click **Finish** to complete the storage complex creation process.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Locating the serial number, model, and signature

You will need to record your machine's serial number, model, and signature so that this information is available when you are required to enter it to obtain your feature activation codes.

To locate the serial number, model, and signature, perform the following steps:

1. Locate the MTMS label on the flange on the front right side of the enclosure at the right front bezel. The MTMS label is a black label with white lettering.
2. From the MTMS label, record the model and serial number in the table below. The Machine Type - Model Number - Serial Number (MTMS) is a string that contains the machine type, model number, and serial number. Only the last seven characters of the string are the machine serial number. For example, if the MTMS is IBM.1750.511.75FA120, then the machine type is 1750, the model is 511, and the serial number is 75FA120.
3. Start the DS Storage Manager application.
4. In the navigation panel select, **Real-time Manager** → **Manage Hardware** → **Storage Units**. On the storage unit main page, select the storage unit, click **Properties** in the **Select Action** list, and then click **Go**. The properties page displays for the storage unit.
5. From the **Machine signature** column, note the machine signature in the table below.

Property	Your Storage Unit's Information
Model	
Serial number	
Machine signature	

Assigning a storage unit to a storage complex (real-time only)

Complete this task to assign a storage unit to the selected storage complex and specify the appropriate network settings.

This process must be done from the primary management console. You must make a selection in the table to enable this option.

To complete this task, you must know your machine's serial number. See "Locating the serial number, model, and signature."

Note: Before you configure, disable any firewalls, as they might interfere with DS6000 communication.

1. In the navigation, select **Real-time manager** → **Manage hardware** → **Storage complexes**. On the storage complexes main page, select the appropriate storage complex from the table.
2. From the **Select Action** menu, select **Assign Storage Unit**, and then click **Go**. The Assign Storage unit — Storage unit properties page is displayed.
 - a. Enter a Nickname.
 - b. Optionally, enter a description.
 - c. Enter the IP address of processor cards 1 and 2.

- d. The machine type is already generated, but you must enter the 7-digit serial number, without hyphens, from the MTMS label on the flange on the front right side of the enclosure at the right front bezel. See “Locating the serial number, model, and signature” on page 72.
3. Click **Next**. The Network settings page is displayed.
4. Specify the appropriate network settings and then click **Next**. The Verification page is displayed.
 - a. Enter a gateway.
 - b. Enter a subnet mask.
 - c. Enter the primary DNS address.
 - d. Enter the secondary DNS address.
 - e. If necessary, enter a different Max transmission units value. This is the maximum rate for transmission. The valid range is 1 to 9000 bytes. The default is 1500 bytes, which is appropriate in most cases.
5. Verify the attributes and values for the newly configured Storage unit. Click **Finish** if the settings are correct.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Verifying the current code level

Complete this task to verify the current level of code on your DS6000.

1. In the navigation, select **Real-time manager** → **Manage hardware** → **Storage units**. On the Storage units - Main Page, select the appropriate storage unit.
2. From the **Select Action** list, select **Apply firmware update**, and then click **Go**. The Apply firmware update page is displayed.
3. Locate the Current firmware level row in the table to view your current level of code.
4. Compare your current code level with the latest available code level. Follow the instructions in Chapter 7, “Upgrading the DS6000 code level,” on page 89.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Activating licensed functions

This section contains information to help you activate your licensed functions.

To activate your licensed functions, you must perform the following actions:

- Obtain your feature activation codes.
- Apply the activation codes to your storage unit. You can apply the activation codes by importing a file that you download from the IBM Disk Storage Feature Activation (DSFA) Web site.

The initial enablement of any optional DS6000 licensed function is a concurrent activity (assuming the appropriate level of microcode is installed on the machine for the given function).

Obtaining activation codes

Complete this task to obtain your feature activation codes for the licensed features for each storage unit. To obtain your activation codes, you must connect to the IBM Disk Storage Feature Activation (DSFA) Web site.

Before you can connect to the site, ensure that you have the following items:

- The IBM License Function Authorization documents. If you are activating codes for a new storage unit, these documents are included in the shipment of the storage unit. If you are activating codes for an existing storage unit, IBM sends these documents to you in an envelope.
- A diskette for downloading your activation codes into a file. Use the diskette if you cannot access the IBM System Storage DS Storage Manager from the system that you are using to access the DSFA Web site. Instead of using a diskette, you can also write down the activation codes and then manually enter them into the system that runs the DS Storage Manager.
- The machine serial number, model, and signature.

To obtain your activation codes, perform the following steps:

1. At a computer with an Internet connection and a browser, connect to the IBM Disk Storage Feature Activation (DSFA) Web site at <http://www.ibm.com/storage/dsfa>.
2. The DSFA application displays in the browser. Use the application to obtain the activation codes and follow the instructions on the screen.

Note: In most situations, the DSFA application can locate your order confirmation code when you enter the DS6000 (1750) serial number and signature. However, if the order confirmation code is not attached to the 1750 record, you must assign it to the 1750 record in the DSFA application. In this situation, you will need the order confirmation code (which you can find on the License Function Authorization document).

Importing activation codes

Complete this task to import the activation codes that must be applied before you can begin configuring storage on a storage unit.

Notes:

1. Before you begin this task, you must resolve any current open problems. See the Troubleshooting section of the IBM System Storage DS6000 Information Center for additional information. If you need additional assistance to resolve these problems, contact IBM Support.
2. Before you configure, disable or provide paths through any firewalls, because they might interfere with DS6000 communication.

Perform the following steps to import your activation codes:

1. In the navigation, select **Real-time manager** → **Manage Hardware** → **Storage units**. On the Storage units main page, select the storage unit that you want to import the activation code for.
2. From the **Select Action** menu, select **Configure**, and then click **Go**. Select the **Activation codes** tab. The Apply activation codes page is displayed.
3. Click **Import key file**. The Import page is displayed.
4. In the **Select file to import** field, specify the target file. Use the **Browse** button to navigate to the appropriate directory.

5. After you have specified the code file, click **OK** to complete the process.

Applying activation codes

Complete this task to apply the activation codes that enable you to begin configuring storage on a storage unit.

Notes:

1. The initial enablement of any optional DS6000 licensed function is a concurrent activity (assuming that the appropriate level of microcode is installed on the machine for the given function). The following activating activities are disruptive and require a machine initialization or reboot:
 - Removal of a DS6000 licensed function to deactivate the function. Contact your IBM service representative to perform this operation.
 - A lateral change or reduction in the license scope. A lateral change is defined as changing the license scope from fixed block (FB) to count key data (CKD) or from CKD to FB. A reduction is defined as changing the license scope from all physical capacity (ALL) to only FB or only CKD capacity.
2. Before you begin this task, you must resolve any current open problems.
3. Before you configure, disable or provide paths through any firewalls, because they might interfere with DS6000 communication.

The easiest way to apply the feature activation codes is to download the activation codes from the IBM Disk Storage Feature Activation (DSFA) Web site to your local computer and then to import the file into the DS Storage Manager. If you cannot access the DS Storage Manager from the same computer that you used to access the DSFA Web site, you can download the file to a diskette or write down the information. If you are using either of these latter methods, ensure that you have your diskette containing the downloaded activation codes file or your paper that contains the written activation codes before you begin the following steps.

1. Ensure that the Import activation codes page is not open. You cannot have both the Apply activation codes page and the Import activation codes page open at the same time. You must close one in order to access the other.
2. In the navigation, select **Real-time manager** → **Manage Hardware** → **Storage units**. On the Storage units main page, select the storage unit that you want to import the activation code for.
3. From the **Select Action** menu, select **Configure...**, and then click **Go**. The Storage unit properties page is displayed. Click on the **Activation codes** tab. The Activation codes page is displayed.
 - a. If you already imported your activation codes from a file or retrieved existing codes from the storage unit, the values are displayed in the fields and you can modify or overwrite them, as appropriate.
 - b. If you are importing your activation codes from a file that you downloaded from the DSFA Web site, click **Import key file**. Once you complete the import process, the data from the file is displayed.
 - c. If you did not download your activation codes into a file, enter the codes into the appropriate fields.

Note: The **Capacity** and **Storage type** fields are populated based on the information that is contained within the activation codes.

4. Click **OK** to complete the process.

Defining multiple management consoles (real-time only)

Complete this task to create a storage complex domain by establishing a connection with a secondary management console (peer) for redundancy.

You can install a secondary management console (MC) for backup purposes. It is especially important if you use DS Copy Services. You install the secondary MC the same way that you installed the primary MC.

After the primary and secondary MCs are installed, perform this process from the primary MC. You must have the MC IP address and the appropriate user ID and password. To establish a peer-to-peer relationship, both user IDs and passwords must be the same for the primary and secondary MCs.

When you add a secondary MC, the secondary MC cannot have storage units that are associated with it. If you have two MCs that each have storage units that are associated with them, you must remove the storage units from the secondary MC that you want to use as the peer of the primary MC. After you remove the storage units, add the secondary MC to the primary MC. You can then add the previously removed storage units using either the primary or the secondary MC.

You must have the same administrator password set for both MCs before you can define multiple management consoles.

Perform the following steps to establish a connection with a secondary MC for the storage complex that is associated with the primary MC.

Note: When you use peer MCs, if one of the consoles fails, you cannot make changes to any user accounts. If the peer-to-peer relationship cannot be restored, you must remove the secondary MC using the Removing Peer Management Consoles function, using the primary MC.

1. In the navigation, select **Real-time manager** → **Manage hardware** → **Storage complexes**. On the Storage complexes – Main page, select a storage complex.
2. From the **Select Action** menu, select **Define peer**, and then click **Go**. The Define peer management console page is displayed.
3. Perform one of the following steps, but not both:
 - Specify the server host name for the secondary MC.
 - Specify the server IP address for the secondary MC.
4. Click **OK**. The storage complex domain is established.
5. Open a command prompt and navigate to the C:\Program Files\IBM\dsniserver\bin\ directory where the recovery tool (script) has been installed.
6. Type the script name, `securityRecoveryUtility.bat -s`

Note: This utility synchronizes all of the user account information between the primary and secondary MCs. After the user accounts have been synchronized, all changes to user accounts are automatically reflected on both peer MCs unless the peer-to-peer relationship is broken. If you remove a peer, and define a new peer, you must run the recovery tool script again after you determine the new peer.

Click on the **Storage Complexes** main page and you should see a second MC nickname that is defined with status on the right-most column.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Specifying storage unit day and time (real-time only)

Complete this task to specify date, time, time zone, and Daylight Saving time observation setting for the selected storage unit.

Important: The date and time on the storage unit must be set correctly and must match the date and time settings on the management console. If this information is not set correctly, the error logs for the storage unit will not be correct.

You must make a selection in the table to enable this option.

To specify storage unit day and time, perform the following steps:

1. In the navigation, select **Real-time manager** → **Manage hardware** → **Storage units**. Select the appropriate storage unit.
2. In the **Select Action** list, select **Configure**, and then click **Go**. The Storage unit properties page is displayed.
3. In the navigation on the left, click the **Date and time** tab. The Date and time zone page is displayed.
4. Specify the date, time, and time zone for the selected storage unit.
5. Click **OK** to save and close.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Reviewing storage unit network settings (real-time only)

Complete this task to view properties for the selected storage unit and optionally modify the nickname and description.

You must make a selection in the table to enable this option.

To review storage unit network settings, perform the following tasks:

1. In the navigation, select **Real-time manager** → **Manage hardware** → **Storage units**. On the Storage units — Main page, select the appropriate storage unit.
2. From the **Select Action** menu, select **Configure**, and then click **Go**. The Storage unit properties page is displayed.
3. In the navigation on the left, click the **Network settings** tab. The Network settings page is displayed.
4. Review the IP addresses and host names for the selected storage unit.
5. Optionally modify the nickname and description.
6. Click **OK** to save and close.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Defining customer contacts (real-time only)

Complete this task to add or modify shipping or contact information for a customer account.

Important: When you configure the Call Home feature, you must provide complete, accurate, up-to-date contact information, including the correct telephone number. Incomplete or incorrect contact information can cause a delay in the IBM response to a Call Home event. If your contact information changes after you initially configure Call Home (for example, if you move the DS6000 to a new location) be sure to update your customer contact information.

To define customer contacts, perform the following steps:

1. In the navigation, select **Real-time manager** or **Simulated manager** → **Manage hardware** → **Storage units**. On the Storage units — Main page, select the appropriate storage unit.
2. From the **Select Action** list, select **Customer contact**, and then click **Go**. The Customer account information tab is displayed.
3. Create or modify the customer account information. Required fields are indicated by an asterisk (*). Fill in all required fields or you will be unable to set up the SMTP server. You are required to enter information in the Business/company name field.
4. Click the Contact information tab and add or modify contact information for the customer.
5. Click the Shipping information tab and add or modify shipping information for the customer.
6. Click the **OK** button to complete the customer contact information.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Setting up Call Home, SNMP, and SIM notifications (real-time only)

Complete this task to configure your Call Home (SMTP or modem), SNMP, and zSeries Service Information Message (SIM) notifications.

You must define your customer contact information before configuring notifications, or you will be unable to set up the SMTP server.

The Call Home feature allows the transmission of operational and error-related data to IBM. It provides the ability for the storage unit to alert IBM support to machine conditions. The SNMP feature generates alert messages and sends them to your designated location.

Important: When you configure the Call Home feature, you must provide complete, accurate, up-to-date contact information, including the correct telephone number. Incomplete or incorrect contact information can cause a delay in the IBM response to a Call Home event. If your contact information changes after you initially configure Call Home (for example, if you move the DS6000 to a new location) be sure to update your customer contact information.

Notes:

1. The management console does not process SNMP messages. You are responsible for installing additional SNMP alert software to process these messages.
2. You must enable your SMTP server to relay SMTP messages from your DS6000.

To define Call Home (SMTP or modem), SNMP, and zSeries SIM (service information message) notifications for a storage unit, perform the following steps:

1. In the navigation, select **Real-time manager** → **Manage hardware** → **Storage units**.
2. From the **Select Action** menu, select **Configure notifications**, and then click **Go**. The Configure notifications — Define Call Home page is displayed.
3. Ensure that **Enable Call Home** is selected to activate the Call Home function. (This is checked by default.) You can also optionally check the **Enable Modem Call Home** box if you want to send Call Home notifications through your modem connection. You must have a modem installed and configured if you want to use this function. If both the **Enable Call Home** and **Enable Modem Call Home** boxes are selected, Call Home notifications are first sent through the modem connection and then through the SMTP connection if the modem connection is unsuccessful.
4. Complete the following SMTP information:
 - a. Enter the SMTP server host name (for example, server.company.com).
 - b. Enter the SMTP IP address (for example, 123.456.7.89). This must be an IP address that the storage unit can reach.
 - c. Enter the SMTP server port (for example, 25). It is recommended that this port not be changed from the default port (25). Changing the port number can cause the Call Home feature to not work.
 - d. Click **Apply**.
5. Click **Test Call Home connection** to send a connection test and generate a problem log entry. A confirmation message is displayed. Click **Ok**.
6. Click the **SNMP** tab. The Define SNMP connection page is displayed.
7. Select **Enable SNMP notification** to define the SNMP connection properties for the selected storage units.
8. Specify either an IP address, a Host name, or both under **SNMP trap destination**.
9. Specify an **SNMP community name** of up to 32 characters. This field is used to authenticate requests. 'public' is selected by default.
10. (Optional) Specify an **SNMP system contact name** of up to 32 characters.
11. Enter a **destination port**.
12. Click **Apply**.
13. Click the **zSeries** tab. The Define SIMs for zSeries page is displayed.
14. (Optional) Select a **SIM severity level** in the **Severity reporting level for DASD Service Information Messages (SIMs)** field.
 - **Acute**: An irrecoverable error with possible loss of data. Use this severity level only for DASD SIMs.
 - **Serious**: An irrecoverable error or a data check with loss of access to data.
 - **Moderate**: A system path is not operational and performance might be degraded. This severity level does not apply to media SIMs.
 - **Service**: A recoverable error, equipment checks, or data checks. You can defer repair.

- **None:** No messages will be sent.
15. (Optional) Select the Maximum number of additional times a DASD Service Information Message is to be sent [0-5].
 16. (Optional) Select a Media Service Information severity level in the Severity reporting level for Media Service Information Messages field.
 17. (Optional) Select the Maximum number of additional times a Media Service Information Message is to be sent [0-5].
 18. (Optional) Select a Service Information severity level in the Severity reporting level for a storage unit Service Information Messages field.
 19. (Optional) Select the Maximum number of additional times a storage unit Service Information Message is to be sent [0-5].
 20. Click **Ok**.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Configuring I/O ports

Complete this task to change the configuration for I/O ports that have host attachments that are assigned to them.

1. In the navigation, select **Real-time manager or Simulated manager** → **Manage hardware** → **Storage units**. On the Storage units — Main Page, select a Storage unit.
2. From the **Select Action** menu, select **Configure I/O Ports...**, and then click **Go**. The Configure I/O Ports page is displayed.
3. Use the check boxes to select one or more host attachments of the same type.
4. From the **Select Action** menu, select the I/O port type that you want to change to. You can change any I/O port to FcAl , FcSf , or FICON.

FICON

Select this if you plan to connect one or more S/390 hosts using a FICON S/390 channel to the DS6000 either directly or through a FICON switch.

FcSf Select this if you plan to connect one or more open systems hosts to the DS6000 through a fabric switch, or if you plan to connect one or more S/390 hosts running LINUX on an FCP S/390 channel.

FcAl Select this if you plan to connect an open systems host directly to the DS6000 without going through a fabric switch.

5. Click **Go**. The table will update with the attachment type that you selected.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Creating host systems

Complete this task to create host systems and define their parameters.

1. In the navigation, select **Real-time manager or Simulated manager** → **Manage hardware** → **Host systems**. In Host Systems — Main Page, select a storage complex (and possibly a storage unit). From the **Select Action** menu, select **Create...** Then click **Go**. The Create Host System — General host information page is displayed.

2. In the General host information page, specify the host type and nickname and optionally provide a description. Then click **Next**. If you specified an open systems host, the Create Host System — Define host ports page is displayed; go to the next step.
3. In the Define host ports page, you must specify the quantity and attachment port type and you must click **Add** to add at least one host port definition to the Defined host ports table. You can optionally check the **Group ports to share a common set of volumes** box, so the quantity of ports identified in the Quantity field becomes grouped together and treated as a single host attachment.
4. Select at least one host port from the Define host ports table, and then click **Next**. The Create Host System — Define Host WWPN page is displayed.
5. In the Define Host WWPN page, specify the host port WWPNs for open systems hosts. Then click **Next**. The Create Host Systems — Specify storage units page is displayed.
6. In the Select storage units page, select each storage unit you want to access from the server by selecting a it from the Available storage units list and clicking **Add**. Then click **Next**. If you select the **Create a Storage Unit** button (Simulated only), follow the process for creating the new storage unit. Once you have completed that process by clicking on the **Finish** button, the new storage unit is available for selection.
7. In the Create Host Systems — Specify storage unit parameters page, specify the parameter values. Select a host attachment ID. Select a volume group to which the host attachment needs access. (You can optionally choose **Select volume group later** if you do not want to select the volume group now.) Choose a login option to determine the FC adapter ports that the host can access. You can loop through this page for each host attachment identifier by selecting the **Apply assignment** button to commit the current transaction. You can start from the top to select another identifier. If you select an existing host attachment identifier from the table, you can click the **Create a new group** button to create a new volume group for selection. If you decide that this host attachment can log in to **the following specific storage unit I/O ports**, you must specify the specific ports in the available storage unit I/O ports table. When you are finished in the Specify storage unit parameters page, click **Apply assignment**, then click **OK**. The Create Host Systems — Verification page is displayed.

Note: You must click **Apply assignment** with at least one host attachment to the storage image before you can proceed to the Create Host Systems — Verification page.

8. In the Verification page, review the attributes and values to verify that they are correct.
9. If the attributes and values are not correct, click **Back** as appropriate to return and to specify the correct values. Otherwise, click **Finish** to complete the host system creation process.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Chapter 6. Enabling support options

This section lists the high-level steps that you must complete in order to enable the remote support, Call Home (SMTP) and SNMP alert options for your IBM System Storage DS6000 series.

You must install the IBM System Storage DS Storage Manager before you can complete these steps. Also, ensure that you meet the VPN connection requirements for remote support.

Each of these steps contains a link to the topic that contains the substeps for each individual task. Follow the link to complete the task and return to this topic to find the link for the next task.

1. Register for My Support. See “Registering for the My Support function” on page 84 for additional steps.
2. Install the modem on the management console. The modem is required for remote support. You previously installed the modem during hardware installation. If necessary, see “Installing a modem on the management console” on page 49 for instructions to install the modem on the management console.
3. Set up the Call Home connection. You initially configured your Call Home connection information during the setup procedures that you completed after installing the DS Storage Manager. You can verify, and if necessary, change your Call Home settings by following the steps in “Setting up Call Home, SNMP, and SIM notifications (real-time only)” on page 78. If you want the modem to be used, check the **Enable Modem Call Home** box on the Configure notifications — Call Home page.

If you are using the DS CLI, you can configure and verify your Call Home settings by following the steps in Setting up Call Home (SMTP) notifications using the DS CLI. You can activate the Call Home function from the DS CLI by following the steps in “Activating the Call Home function using the DS CLI” on page 85, Setting up contact information using the DS CLI and Setting up your account information using the DS CLI.

Note: You must use the DS Storage Manager to configure the modem call home feature. The DS CLI cannot be used to configure this feature.

4. Set up your SNMP alerts. You initially configured your SNMP alerts during the setup procedures that you completed after installing the DS Storage Manager. You can verify, and if necessary, change your SNMP settings by following the steps in “Setting up Call Home, SNMP, and SIM notifications (real-time only)” on page 78.

If you are using the DS CLI, you can configure and verify your SNMP settings by following the steps in Setting up SNMP notifications using the DS CLI.

5. Set up your zSeries service information messages (SIMs). You initially configured your SIMs during the setup procedures that you completed after you installed the DS Storage Manager. You can verify, and if necessary, change your SIM settings by following the steps in “Setting up Call Home, SNMP, and SIM notifications (real-time only)” on page 78.

If you are using the DS CLI, you can configure your SIM settings by following the steps in Setting up SIM notifications using the DS CLI.

6. Set up the remote support function. You initially configured your contact information during the setup procedures that you completed after you installed

the DS Storage Manager. You can verify, and if necessary change your contact information by following the steps in “Defining customer contacts (real-time only)” on page 78.

If you are using the DS CLI, you can configure and verify your contact information by following the steps in Setting up contact information using the DS CLI.

7. Initiate a remote support connection. You can initiate a remote support connection through your local area network or through the modem by following the instructions in “Activating remote support (real-time only)” on page 86. The modem is always used to initiate a VPN connection if there are phone numbers that are configured on the Configure modem remote support page. If you want to initiate a VPN connection through your local area network, you must unconfigure the modem phone numbers. Follow the steps in “Unconfiguring modem phone numbers (real-time only)” on page 86 to enable a local area network VPN connection.

Registering for the My Support function

Complete this task to register for the My Support function.

The My Support function provides proactive notification of code updates through an e-mail address that you specify. My Support automatically notifies you of the latest code updates and how to obtain them. It is highly recommended that you register for My Support.

To access online technical support, go to the following Web site:

<http://www-1.ibm.com/servers/storage/support/disk/ds6800/>

My Support registration provides e-mail notification when new firmware levels have been updated and are available for download and installation. To register for My Support, perform the following steps:

1. Go to the following Web site: <http://www.ibm.com/support/mySupport> and click **register now**.
2. On the My IBM registration Step 1 of 2 page, fill in the required information. Items with an asterisk (*) are required fields. Click **Continue**.
3. On the My IBM registration Step 2 of 2 page, fill in the required information. Items with an asterisk (*) are required fields. Click **Submit**. Click **Continue**.
4. On the Sign in page, enter your IBM ID and password and click **Submit**.
5. On the My support page, click **Edit profile**. Select the information that is required for your profile in the **Products** section.
 - a. From the **Products** list, select **Storage**.
 - b. From the second list, select **Computer Storage**.
 - c. From the third list, select **Disk Storage Systems**.
 - d. From the fourth list, select **System Storage DS6000 series**.
 - e. Select the **System Storage DS6800** check box.
 - f. Click **Add products**.
 - g. Review your profile for accuracy.
6. Click **Subscribe to email**. In the **Documents** list, select **Storage**. Then select the **Please send these documents by weekly email** check box, select the **Downloads and drivers** check box, and select the **Flashes** check box. Click **Update**.

7. In the **Welcome** area, click **Sign out** to end your session.

Activating the Call Home function using the DS CLI

Complete this task to activate the Call Home function using the DS CLI. The Call Home function allows the transmission of operational and error-related data to IBM. It is the capability that allows the storage unit to alert IBM support of machine conditions.

Note: The Call Home function also has a modem call home feature. The DS CLI cannot be used to configure this feature. You must use the DS Storage Manager to configure the modem call home feature.

Before you can activate and test the Call Home function, ensure that the following tasks have been completed:

- You have supplied your required contact information using the **setcontactinfo** command. This consists of the following information:
 - Company name
 - Ship state
 - Ship location
 - Ship country
 - Primary contact phone number
 - Primary e-mail address (required if you are using the call home e-mail notification feature).
- You have supplied the location where e-mail notifications are sent by specifying the SMTP port and IP address through the **setsmtp** command.
- You have set up your account information using the **setplex** command.

Use the **setdialhome** command to enable the Call Home function. You can designate the machine and enable the function on the machine with this command. Use the **testcallhome** command to verify that the Call Home function is active.

Perform the following steps to activate and test the Call Home function for your storage unit. The example commands that are displayed in this task are shown in two formats. The first format provides the type of information that the command requires. The second format provides the command with declared values for the variables.

1. Issue the **setdialhome** command to activate the Call Home function. Enter the **setdialhome** command at the dscli command prompt with the following parameters and variables:

```
dscli>setdialhome -action enabled storage_image_ID
```

Example

```
dscli>setdialhome -action enabled IBM.1750-68FA120
```

2. Press Enter. The following message is displayed if the process is successful:

```
Date/Time: Sun Aug 11 02:23:49 PST 2004 DS CLI Version: 5.0.0.0  
DS: IBM.1750-68FA120
```

```
The dial home settings were successfully modified
```

3. Issue the **testcallhome** command to verify that the Call Home function is active. Enter the **testcallhome** command at the dscli command prompt with the following parameter:

```
dscli>testcallhome storage_image_ID
```

Example

```
dscli>testcallhome IBM.1750-68FA120
```

4. Press Enter. The following message is displayed if the process is successful:

```
Date/Time: Sun Aug 11 02:23:49 PST 2004 DS CLI Version: 5.0.0.0  
DS: IBM.1750-68FA120
```

A test problem record was successfully created.

Activating remote support (real-time only)

Complete this task to initiate a virtual private network (VPN) remote support connection through your local area network or through a dial-up modem.

This task enables you to connect to IBM for support. The modem always initiates the VPN connection if there are phone numbers that are configured on the Configure modem remote support page. If you want to initiate a VPN connection through your local area network, you must unconfigure the modem phone numbers. Follow the steps in “Unconfiguring modem phone numbers (real-time only)” to enable a local area network VPN connection.

Note: Prior to starting the VPN session, notify the support organization that a VPN connection will time out after a period of time with no activity.

Perform the following steps to active remote support:

1. In the navigation, select **Real-time Manager** → **Manage Hardware** → **Storage units**. Select the appropriate storage unit from the table. From the **Select Action** list, select **Activate remote support** and then click **Go**. The Activate remote support page is displayed.
2. Click **Connect**. The connection to IBM support is established. An IBMVPN connection icon is displayed in the system tray of the management console. When you are finished using the VPN connection, right-click on the system tray icon and select **Disconnect** to close the connection.

Note: If the IBMVPN connection icon is not in the system tray of the management console, contact IBM support.

Unconfiguring modem phone numbers (real-time only)

Complete this task to remove modem phone numbers to allow VPN connection through the Internet.

If a modem was previously configured but you now want to create a VPN connection through the Internet, you must first remove all previously completed fields from the Configure Modem Remote Support page. If the modem has been configured with phone numbers to dial, the DS Storage Manager only uses the modem to create a VPN connection. If the modem connection fails for any reason, there can be no IBM remote support connection. The program does not attempt to connect using VPN over the Internet.

Perform these steps to remove modem phone numbers to initiate a virtual private network (VPN) connection through the Internet. IBM can use this connection to perform remote support on your DS6000.

1. In the navigation, under **Real-time manager**, select **Manage hardware** and then select **Storage complexes**. Select **Configure Modem Remote Support** from the **Select Actions** list and click **Go**.

2. Clear all entries from the telephone number fields, leaving the fields empty.
3. Click **OK** to permanently remove the information. The next VPN connection that you initiate will use the Internet.

Chapter 7. Upgrading the DS6000 code level

Complete this group of tasks to locate, download, and install code upgrades for your storage unit, DS Storage Manager, and DS CLI. You can perform either a concurrent (DS6000 has current I/O activity) or nonconcurrent (no current I/O activity on the DS6000) code load.

If you are performing a concurrent code upgrade, you must first ensure that all host paths are available and operating correctly. During a concurrent code upgrade, the storage unit host ports temporarily lose their connections for each processor card when that card is upgraded. Before you begin a concurrent code upgrade, ensure that each host has a path to each processor card to prevent a lost connection between the host and the storage unit. If the host does not have a path to each processor card, the paths from the host to the storage unit are lost during the code upgrade.

Note: While each host port is temporarily unavailable during the code upgrade, I/O operations from a host can cause errors to be logged stating that the path is lost. Error message activity can make the host interface unavailable for other host system administration tasks during the code upgrade.

The DS6000 operates its various components with upgradeable code (or firmware). This code governs the operation of the various parts of the unit, such as the device adapters, host adapters, processor cards, and other advanced function features. As IBM continues to develop and improve this code, code updates will be available to you.

Perform the following steps for each storage unit that is connected to the DS Storage Manager.

1. Check for firmware updates. Follow the instructions in “Checking for code updates (real-time only)” on page 90. If you are not required to upgrade your code, stop here.
2. To upgrade the code successfully, before you proceed with the code upgrade you must ensure that no alert LEDs are illuminated and that there are no open problems in the problem logs. Correct any problems before you proceed with the firmware upgrade. You can correct problems by performing the steps in either Following a light path to perform unguided service or Performing guided service through the problem log.
3. Obtain the downloadable files from the DS6000 support Web site. Follow the instructions in “Downloading code updates” on page 91.
4. Install the code update on your storage unit. Follow the instructions in “Installing code upgrades (real-time only)” on page 92. You must perform this step for each storage unit that is managed by your DS Storage Manager before you proceed to the next step.
5. Upgrade the DS Storage Manager. Begin the installation of the new DS Storage Manager by completing one of the following sets of steps:
 - If you are installing from the ZIP file bundle, follow these steps:
 - a. Extract the DS Storage Manager ZIP folder that is located in the file path where you extracted the ZIP file bundle information.
 - b. Navigate to the folder that you just extracted and run setup.exe. You can perform the upgrade using either the graphical mode or silent mode. See

“Upgrading the DS Storage Manager on a Windows operating system using the graphical mode” on page 93 or “Upgrading the DS Storage Manager on the Windows operating system using unattended (silent) mode” on page 97 for the steps. When the installation is complete, a prompt to restart might be displayed. If possible, do not restart at this time. You will perform a restart after you install the DS CLI upgrade.

- If you are installing from the ISO image that you used to create an installation CD, insert the CD and navigate to the DS Storage Manager installation files and run setup.exe. You can perform the upgrade using either the graphical mode or silent mode. See “Upgrading the DS Storage Manager on a Windows operating system using the graphical mode” on page 93 or “Upgrading the DS Storage Manager on the Windows operating system using unattended (silent) mode” on page 97 for the steps. When the installation is complete, a prompt to restart might be displayed. If possible, do not restart at this time. You will perform a restart after you install the DS CLI upgrade.
6. Perform the following steps to upgrade the DS CLI:
 - a. Begin the installation of the new DS CLI by completing one of the following sets of steps:
 - If you are installing from the ZIP file bundle, follow these steps:
 - 1) Extract the DS CLI ZIP folder that is located in the file path where you extracted the ZIP file bundle information.
 - 2) Navigate to the folder that you just extracted. To install using graphical mode, run the file setupwin32.exe. To install using console mode, run the file setupwin32console.exe.
 - If you are installing from the ISO image that you used to create an installation CD, insert the CD and navigate to the DS CLI installation files. To install using graphical mode, run the file setupwin32.exe. To install using console mode, run the file setupwin32console.exe.
 - b. Follow the instructions for upgrading the DS CLI. See Installing the DS CLI application using the graphical mode or Installing the DS CLI using the console mode to perform the upgrade using either the graphical mode or console mode.
 7. If you have not already done so, restart your management console.
 8. After the DS Storage Manager is installed, use Storage units — Main page to verify that you can view the status of the storage complex and its associated logical configuration. In the navigation, select **Real-time manager** → **Manage hardware** → **Storage units**. On the Storage units - Main Page, select the appropriate storage unit.
 9. Ensure that no alert LEDs are illuminated and that there are no open problems in the problem logs. Correct any problems. You can correct problems by performing the steps in either Following a light path to perform unguided service or Performing guided service through the problem log.

If you are setting up the DS Storage Manager, return to Chapter 5, “Setting up the DS Storage Manager,” on page 69 and complete the rest of the steps.

Checking for code updates (real-time only)

Complete this task to view your current code level and determine if you need to upgrade to a newer level of code.

Perform the following steps to compare the firmware level that is currently installed on your storage unit with the available firmware updates to determine if you need to upgrade the code:

1. In the navigation, select **Real-time manager** → **Manage hardware** → **Storage units**. On the Storage units - Main Page, select the appropriate storage complex, then select the appropriate storage unit.

Note: You can select only one storage unit at a time. To upgrade more than one storage unit, you must complete this task for each storage unit.

2. From the **Select Action** list, select **Apply firmware update**. The Apply firmware update page is displayed.
3. Locate the Current firmware level row in the table to view your current level of code.
4. Click **Check for firmware updates**. The Check for firmware updates page is displayed.
5. Click the link that is provided on the Check for firmware updates page. The DS6000 support Web site is displayed.
6. View the downloadable files to find the highest level of code that is available.
7. Compare your current level of code with the available levels of code to determine if you must perform a code upgrade. You must upgrade your code if the available level of code is higher than your current level.

Downloading code updates

Complete this task to download the most recent code upgrade file as either a ZIP file bundle or an ISO CD-ROM image.

You must have an IBM user ID and password before you can download code updates. If you do not have a user account, you can create one at <http://www.storage.ibm.com/>.

To download code updates, perform the following steps:

1. From the Downloadable files section of the DS6000 support Web site, click the link for the highest level of code that is currently available. The DS6000 Microcode Release page for the selected code level is displayed.
2. On the DS6000 Microcode Release page, check the concurrent code load support chart to verify that your host types are supported.
3. Click the **Download** link to access the Code Download page. You must log in using your IBM user ID and password.
4. Select the version that you want to download, and click **Continue**.
5. Provide the required information, such as the target install date, the current code level, and the serial numbers of the storage units on which you are installing the code update, and then click **I agree**.
6. Read the release notes before you upgrade the code. Click **Download Now** to access the release notes.
7. Perform one of the following two sets of steps to download the code:
 - If you are installing the code update on a storage unit which is managed by the DS Storage Manager on which you are downloading code, perform the following steps:
 - a. Click **Download now** for the ZIP File Bundle. You can download through either http or the Download Director.
 - b. Save the ZIP bundle file.

- c. Extract the compressed files from the ZIP file bundle. Make a note of where you save the extracted files, because you will have to provide that location when you install the update.
- If you are downloading the code to create an installation CD that can be used for multiple upgrades, perform the following steps:
 - a. Click **Download now** for the ISO CD-ROM Image Bundle. You can download through either http or the Download Director.
 - b. Save the file. Make a note of where you save the file, because you will have to provide that location when you install the update.
 - c. Use the ISO CD-ROM image to create an installation CD.

Installing code upgrades (real-time only)

Complete this task to install upgraded code on your storage unit.

You must first download the code. You can download the code on your management console, or you can create an installation CD.

Perform the following steps to install code upgrades on the storage unit using the DS Storage Manager.

Important: You must upgrade all storage units that are managed by the same management console.

1. In the navigation, select **Real-time manager** → **Manage hardware** → **Storage units**. On the Storage units - Main Page, select the appropriate storage unit.
2. From the **Select Action** list, select **Apply firmware update**, and then click **Go**. The Apply firmware update page is displayed.
3. From the **Select a firmware application method** list, select either Concurrent or Non-Concurrent for the load method.

Note: For a noncurrent code load, ensure that there is no current I/O activity on the DS6000 before you proceed.

4. Under **Select firmware file to transfer to storage unit**, click **Select a file** to specify the code upgrade file. To search for the file, click **Browse**.
5. Locate and select the code upgrade file, and then click **OK**.
 - If you are installing from the ZIP file bundle, browse the files that you extracted from the bundle and select the SEA.jar file.
 - If you are installing from the ISO image that you used to create an installation CD, browse the files on the CD and select the SEA.jar file.
6. Before transferring the file, under **Current firmware level for selected storage unit**, ensure that the value displayed for **Uploaded firmware level from the selected file** is the correct level for the installation bundle.
7. Click **Transfer file**. The system performs a compatibility check. This process can require a significant amount of time, depending on your network. When the process is complete, a message is displayed that either confirms a successful transfer or notifies you that the transfer has failed. If the transfer fails, verify that you are pointing to the correct file and try again to transfer the file.
8. When the file transfer is completed successfully, click **Activate** to initiate the code upgrade process. One of the following results occurs:
 - For a concurrent firmware update, the firmware update process is activated.

- For a nonconcurrent firmware update, the Activate nonconcurrent firmware update page is displayed. Click **Proceed** to activate the firmware update process.

Note: The firmware update process can take 20 minutes to 2 hours, depending on your configuration.

Important: After you upgrade to the latest code level on all storage units, you must install the new DS Storage Manager and DS CLI software on the management console from the ISO image that you copied to the CD.

Upgrading the DS Storage Manager on a Windows operating system using the graphical mode

Complete this task to upgrade the DS Storage Manager to the latest level using the graphical mode for a Windows operating system.

You must have the latest DS Storage Manager CD-ROM or you must download the latest version from the Web site. It is recommended that you upgrade the level of code before you upgrade the DS Storage Manager.

Notes:

1. The name of the user who logs on and performs the installation must not contain any non-ASCII or special characters. It could cause the installation to fail.
2. The DS Storage Manager is not supported on any Windows 64-bit operating system.

To upgrade the DS Storage Manager on a Windows operating system using the graphical mode, perform the following steps:

1. Log on as a user with administrator authority.
2. If you are installing from a CD, insert the IBM System Storage DS Storage Manager CD into the CD-ROM drive. The IBM System Storage DS Storage Manager program starts within 15 - 30 seconds if you have autorun mode set on your system. The LaunchPad window opens.

If the LaunchPad window does not display, go to the CD-ROM drive using Windows Explorer or a command prompt and perform one of the following steps:

- a. Type *LaunchPad* at the command prompt and press **Enter**. The LaunchPad window opens.
- b. Locate and double-click the **LaunchPad.bat** reference in Windows Explorer.

Note: If you are viewing the folder with Windows Explorer with the option that hides the extensions for unknown file types, use the LaunchPad file with the file type of MS-DOS Batch file.

The following options are available in the Launchpad window:

DS6000 Storage Manager overview

Provides information about the IBM System Storage DS Storage Manager software.

Readme file (recommended selection)

Provides last minute product information that was not provided in these installation instructions.

User's guide

Provides specific installation instructions.

DS6000 Storage Manager Web site

Provides information from the product Web site.

Installation wizard

Starts the IBM System Storage DS Storage Manager installation program.

Exit

Exits the IBM System Storage DS Storage Manager LaunchPad program.

3. If you are installing from a CD, click the **Readme file** selection on the LaunchPad to check for updated information.
4. Click the **Installation wizard** selection on the LaunchPad to start the upgrade program.

Note: The LaunchPad window remains open behind the installation wizard so that you can access product information during the upgrade process.

There might be a slight delay while the software loads on your system. After the software loads, a DOS prompt window opens to display the following message:

```

Initializing InstallShield Wizard...
Preparing Java (tm) Virtual Machine .....
. ....

```

The Welcome window of the IBM System Storage DS Storage Manager upgrade program displays if no problems are discovered during the initial system check. If an error is discovered (for example, the operating system does not match the prerequisite), an error message is displayed and the upgrade program exits.

5. Click **Next** to continue, or click **Cancel** to exit the upgrade process. When you click Next, the License Agreement window opens.

Note: Anytime you click **Cancel** on any of the upgrade windows, a message asks you to confirm that you want to exit.

6. Read the license agreement and click your acceptance or nonacceptance of the agreement. If you accept, the **Next** button is highlighted. Click **Next** to continue or click **Cancel** to exit the upgrade process. When you click **Next**, the Product Version check window opens.
7. Observe the information that is displayed on the Product Version Check window regarding the version of the product that is already installed on your system and the action that the wizard will perform. If you agree, click **Next** or click **Cancel** to exit the upgrade process. When you click **Next**, the DS Storage Manager Server Installation Checking window opens if the DS Storage Manager service is installed on your system.
8. Observe the information that is displayed on the DS Storage Manager Server Installation Checking window regarding the version of the DS Storage Manager Server that is already installed on your system and the action that the wizard will perform. If you agree, click **Next** or click **Cancel** to exit the upgrade process. When you click **Next**, the DS Network Interface Server Installation Checking window opens if the DS Network Interface service is installed on your system.
9. Observe the information that is displayed on the DS Network Interface Server Installation Checking window regarding the version of the DS Network

Interface Server that is already installed on your system and the action that the wizard will perform. If you agree, click **Next** or click **Cancel** to exit the upgrade process. When you click **Next**, the Installation Confirmation window opens. This window displays both the location where the product will be installed and the total size that is required for the installation.

10. Click **Next**. The SSL Configuration window is displayed. Enter the fully qualified name of the two server key files generated before or during the DS Storage Manager installation.
11. Follow the instructions on the SSL Configuration window:
 - a. Select either Generate the Self-signed Certificates during installation or select Use Existing SSL Certificates. The most likely selection when you are installing for the first time is Generate the Self-signed Certificates. The selection Use Existing SSL Certificates is most likely made when the key files already exist and you do not want to generate new key files.
 - b. Complete the rest of the fields on the window. Use the Browse button to provide the fully qualified path to the key file and trust file. The key file and trust file are identified by an extension of .jks.
 - c. If you are creating new certificates, create a password for each file. The password must be a minimum of six characters and it cannot contain any blanks. Allowable characters are letters A - Z and a - z, digits 1 - 9, and special characters - and _ (hyphen and underscore). Supply the existing password if you are using an existing SSL certificate. Record the location and passwords for the SSL certificates so that you can refer to them in the future if necessary.
12. Click **Next** to continue the installation process. If you selected Generate the Self-signed Certificates during installation, the Generate Self-Signed Certificate window is displayed. If you selected Use Existing SSL certificates, the Installation Confirmation window is displayed. When you select Generate Self-signed Certificates during installation and the key files already exist on the system at the specified location, clicking **Next** causes a message to display. It asks you to designate whether you want to have the system keep existing application server certificates if they exist on the location. The default is YES which keeps the existing application server certificates.
13. Complete each of the input fields with the required information. Use the following as a guide to provide the needed information:

Keystore alias

This is the alias for the self-signed certificate. It uniquely identifies the certificate within the keystore file. It is a good practice to use a unique name related to the server name.

Key size

Two key sizes are available, 512 and 1024. 1024 is the default.

Common name

This name is the primary, universal identity for the certificate. If your system contains the secured WebSphere environment, this name must be valid in the configured user registry.

Organization name

The name of your company.

Organization unit (optional)

The name of a department or division within your company. Remember that you are building a profile for the certificate. As a security measure the more specific the information the more secure your system.

| **Locality (optional)**

| The city or location where your company resides.

| **State (optional)**

| The state or province where your company resides.

| **Country or region**

| The two-character designator that identifies the country where your
| company is located. Use the pull-down menu to make this selection.

| **Validity period (days)**

| Specifies the lifetime of the certificate in days.

| The information that you provide is used to build a profile for the certificate.
| This information is used during identity processing to ensure validation of
| any processing that is occurring. It is part of the security measures that are
| used during SSL connectivity.

- | 14. Click **Next** to continue, or click **Cancel** to exit the installation.
- | 15. Click the **Install** button on the Installation Confirmation window to begin the
| installation process. There are several progress windows that open. There is no
| required interaction on your part for each of the progress windows that are
| displayed. However, you can choose to cancel (not recommended) the
| installation on any of the progress windows with varying consequences.

| The installation process performs the following actions:

- | a. If the two servers (DS Storage Manager Server and DS Network Interface
| Server) are already installed on your system, they are stopped in the
| following order:
- | 1) The Embedded IBM WebSphere Application Server - Express server
| (part of the DS Storage Manager Server) is stopped first.
 - | 2) The DS Network Interface Server is stopped next.
 - | 3) The WS Help System (part of the DS Storage Manager Server) is
| stopped, if it was not stopped before by the Embedded IBM
| WebSphere Application Server.
- | b. If one or both of the servers are not installed or have to be upgraded on
| your system, they are installed or upgraded in the following order (the
| progress of the installation is indicated on the associated progress
| window):
- | 1) DS Storage Manager Server Installation Progress window
 - | 2) DS Network Interface Server Installation Progress window

| **Note:** You can click **Cancel** (not recommended) during the DS Network
| Interface Server installation process. The process does not stop
| immediately when the **Cancel** button is clicked. Rather, the process
| continues to install all the files that are associated with this part of
| the installation. These files remain installed and are not reinstalled
| upon reactivation of the installation process. A confirmation
| message is displayed asking you to affirm that you want to cancel
| the installation.

- | c. The Components Installation Progress (displaying the installation or
| upgrade progress of the DS Storage Manager product applications) is
| displayed after the servers have been installed or upgraded.

| **Note:** You can click **Cancel** (not recommended) during the components
| installation process. The installation process stops immediately when
| the **Cancel** button is clicked. A window with a confirmation

message opens. For a new installation, when you confirm that you want to stop the process, all the files that have been copied up to the point that the **Cancel** button was clicked are uninstalled.

When this part of the installation is completed, if no system restart is required, the system starts both servers: first the DS Network Interface Server and then the DS Storage Manager Server. Wait for the servers to be started before proceeding to the next step. When the servers have been started, the Installer Finish window opens with the result of the installation process (successful or unsuccessful).

16. Click **Finish** to exit the installation process.

Note: If the installation fails, you must end the installation process and check the install log for error messages.

17. If the Finish window indicates that the installation fails, check the installation log for error messages. The installation log is located in *xxx\logs\install.log*, where *xxx* is the destination directory where the IBM System Storage DS Storage Manager is installed (for example, *c:\Program Files\IBM\DS6000 Storage Manager*).

Errors fall into two categories: system or incorrect values that are designated during the installation process. Use the following guidelines to correct these errors.

- If the error is due to a system problem, correct it and reinstall the DS6000 Storage manager using either the interactive or unattended (silent) mode of installation.
 - If the error is due to a wrong installation parameter value, restart the installation using the steps that are described in this procedure or the steps that are described in the unattended (silent) mode installation process. Navigate to the Server Parameters window and insert the correct values. Finish the installation process.
18. End the LaunchPad program by clicking **Exit** on the LaunchPad window. Restart if instructed to do so.
 19. You have now completed the software upgrade portion of the DS6000. Continue to the post installation tasks.

Upgrading the DS Storage Manager on the Windows operating system using unattended (silent) mode

Complete this task to upgrade the IBM System Storage DS Storage Manager in your Windows environment using the unattended (silent) mode.

It is recommended that you upgrade the level of code before upgrading the DS Storage Manager.

Notes:

1. The name of the user who logs on and performs the installation must not contain any non-ASCII or special characters. It could cause the installation to fail.
2. The DS Storage Manager is not supported on any Windows 64-bit operating system.

| Using the unattended (silent) mode upgrade option allows you to run the upgrade
| program unattended. Use this method of upgrade to issue a command from a
| command prompt window, in the root directory of the IBM System Storage DS
| Storage Manager CD.

| Perform the following steps to upgrade the IBM System Storage DS Storage
| Manager in your Windows environment using the unattended (silent) mode:

- | 1. Log on to your Windows system as an administrator.
- | 2. Insert the IBM System Storage DS Storage Manager upgrade CD into the
| CD-ROM drive. If the interactive mode starts, click the **Exit** selection on the
| LaunchPad window to end the program.
- | 3. Type the following command at the command prompt: *setup.exe -silent*. Press
| the **Enter** key to start the upgrade process in unattended (silent) mode.
- | 4. Check the install log file for any possible error messages. This file is located in
| the **xxx\logs\install.log** directory, where *xxx* is the destination directory where
| the DS Storage Manager is installed.
- | 5. Start the IBM System Storage DS Storage Manager if no errors are evident.
- | 6. Perform the postinstallation tasks when the DS Storage Manager has been
| installed successfully.

Chapter 8. Removing the DS Storage Manager

You can uninstall the DS Storage Manager using either the graphical mode or the unattended (silent) mode.

If you uninstall the DS Storage Manager in graphical mode, you are presented with a series of windows that guide you through the uninstallation process. If you uninstall the DS Storage Manager in unattended (silent) mode, you can use the command prompt to remove all installed files and restart your management console.

Removing the DS Storage Manager from a Windows operating system

Complete this task to remove the IBM System Storage DS Storage Manager from your Windows operating system by using the Windows Add/Remove Programs facility.

1. Log on to your Windows operating system with administrator authority.
2. Navigate to your Windows Control Panel and open the Add/Remove program facility.
3. Scroll the list of currently installed programs and click the listing for IBM System Storage DS6000 Storage Manager.
4. Click the **Change/Remove** button, and the Welcome window for the Uninstaller is displayed.
5. Click **Next** to continue or click **Cancel** to exit the removal process. When you click **Next**, the Confirmation window is displayed that shows the directory from which the IBM System Storage DS Storage Manager GUI program will be removed.
6. Click **Remove** to continue or **Cancel** to stop the removal and exit the uninstallation process. Click **Back** to return to the previous window. When you click **Remove**, the Uninstallation Progress window is displayed. When the uninstallation process is finished, the Finish window is displayed, which contains a statement about the success or failure of the uninstallation process.

During the uninstallation process, the following system checks occur:

- A check of your system to detect if DS Storage Manager Server is used by other programs on the system and if not used, removes it from the system. Otherwise, the DS Storage Manager Server is not removed from your system.
- A check of your system to detect if DS Network Interface Server is used by other programs on the system and if not used, removes it from the system. Otherwise, the DS Network Interface Server is not removed from your system.
- A check to determine whether any of the files to be removed are locked because they are in use by another process. If a locked file has been detected, you can perform the following:
 - a. From Windows services, set the **IBM WebSphere Application Server V6.1 - DS Storage Manager** and **IBM DS Network Interface Server** services to the **Manual** startup type.
 - b. Reboot the computer.
 - c. Proceed once again with the removal of the DS Storage Manager.

Another reason that files can be locked is because you changed the host name where you installed the DS Storage Manager. See the DS Storage Manager installation instructions for more information on host names and how to resolve a changed host name.

When the uninstallation process is finished, the Uninstaller Finish window is displayed. The Uninstaller Finish window provides a statement about the success or failure of the uninstallation process.

If the uninstall program cannot remove some information from your system, the Reboot window is displayed. You must reboot so that previously locked files are released and automatically deleted.

7. Click **Finish** to complete the removal process and exit the GUI part of the uninstallation program.
8. Close the Add/Remove Programs window.
9. Restart your system, if required (now or later), to complete the removal process.

If you want to remove all configuration settings before you reinstall the DS Storage Manager, you must delete the `dsnserver` and the `SMServer` subdirectories from the Program Files\IBM directory.

Removing the DS Storage Manager from a Windows operating system using the unattended (silent) mode

Complete this task to remove the IBM System Storage DS Storage Manager from your Windows operating system by using the unattended (silent) mode.

1. Log on to your Windows operating system with administrator authority.
2. Open the Command Prompt window.
3. Navigate to the directory where the DS6000 Storage Manager is installed.
4. Type `<dest_path>_uninst\uninstall.exe -silent`, where `<dest_path>` is the path where the DS Storage Manager is installed.
5. Wait for the program to remove the DS Storage Manager.
6. Restart your system, if required (now or later), to complete the removal of the program.

If you want to remove all configuration settings before you reinstall the DS Storage Manager, you must delete the `dsnserver` and the `SMServer` subdirectories from the Program Files\IBM directory.

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Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully.

Features

These are the major accessibility features in the IBM System Storage DS6000 information:

- You can use screen-reader software and a digital speech synthesizer to hear what is displayed on the screen. IBM Home Page Reader version 3.0 has been tested.
- You can operate features using the keyboard instead of the mouse.

Navigating by keyboard

You can use keys or key combinations to perform operations and initiate menu actions that can also be done through mouse actions. You can navigate the IBM System Storage DS6000 information from the keyboard by using the shortcut keys for your browser or Home Page Reader. See your browser Help for a list of shortcut keys that it supports. See the following Web site for a list of shortcut keys supported by Home Page Reader: http://www-306.ibm.com/able/solution_offerings/keyshort.html

Accessing the publications

You can find HTML versions of the IBM System Storage DS6000 information at the following Web site: <http://www.ehone.ibm.com/public/applications/publications/cgibin/pbi.cgi>

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