IBM System Storage





Quick Start Guide

Quick reference for the DS5100 and DS5300, and for the EXP5000





Color Key: IBM customer tasks are documented in the sections with the purple headings. Service Support Representative tasks are documented in the sections with the blue headings.



Ethernet connections on each controller, using one of the network configurations from the list below:

 DHCP Server •Default Ethernet port 1 IP address: -Controller A: 192.168.128.101 •Controller B: 192.168.128.102 •Subnet Mask: 255.255.255.0 Static IP

Learn about iSCSI port network configuration: Use one of the following network configurations to set up an iSCSI port network:

DHCP Server

- Default Ethernet port 1 IP address: Controller A: P1:192.168.130.101, P2:192.168.131.101, P3:192.168.132.101, P4:192.168.133.101 Controller B: P1:192.168.130.102, P2:192.168.131.102,
 - P3:192.168.132.102, P4:192.168.133.102
- Subnet Mask: 255.255.255.0 Static IP

For educational information about the DS5020 and other IBM System Storage products, go to http://ibmdsseriestraining.com/.

1.2 Install the software

At this time, check your current Fibre Channel and iSCSI (if applicable) Host Bus Adapters (HBAs), BIOS, and device driver versions. If necessary, update before proceeding. For IBM HBAs, the BIOS and device drivers are located in the HostAdapter directory on the DS Storage Manager software DVD. For the latest IBM HBA BIOS and drivers follow the steps under Accessing the IBM Support/Download Web site. Refer to the HBA READMEs for installation instructions.

Note: For Windows installations, install the StorPort device driver.

On the DS Storage Manager software DVD, locate the applicable operating system directory (Win32, WS03_x86_32bit, WS03_IA64, WS03 x64, Linux, Linux IA64, AIX, Solaris, HP-UX, or LoP). Before launching the SMIA executable file in the folder, verify that it is the latest DS Storage Manager available.

Access the IBM Support/Download Web site:

1. Go to http://www-03.ibm.com/systems/storage/disk/.

2. Choose a storage subsystem under **DS5000** to access the correct support page, then click **Product Support**.

3. Click on the **Download** tab, then click on **Storage Manager.** Choose the Storage Manager product specific to your version and host operating system.

4. On the subsequent browser page, choose the Storage Manager file (including the README) you wish to download, and click on that File

5. Download and unzip the packages into a directory that you can point to later.

Note: For detailed information about driver and firmware versions, make sure you consult the README files that are posted with each package.

Which Computer?

- Every attached I/O host All computers that are attached to the storage subsystem and will be sending I/O.
- Management Work Station Computer(s) that you will use to manage the storage subsystem.

Notes:

• For Windows installations, select the MPIO multipath driver. Review the appropriate OS and Device Driver READMEs included on the Storage Manager CD, and refer to the *IBM System Storage* DS Storage Manager Installation and Host Support Guide on the documentation CD for more detailed instructions.

Launch the SMIA executable file. Follow the wizard, and select the following installation methods:

- For one I/O host designated as a Monitor (for monitoring and sending alert notifications): Choose Typical (full installation), and when prompted, click
- Automatically Start Monitor . For all other I/O hosts attached to the storage subsystem:
- Choose Host.
- For the computers you will use to manage the storage subsystem:
 Choose Management Station, and when prompted, click **Do Not** Automatically Start the Monitor.

1.3 What you need for assembly

DS5100 and DS5300 ship group:

One 4-U DS5100 Storage Subsystem (1818-51A) One 4-U DS5300 Storage Subsystem (1818-53A)

- Two CDs:
 - DS Storage Manager Software/Firmware/Drivers/BIOS
 DS5100 and DS5300 User's Guide

Two power cord jumpers

• One rack-mounting hardware kit, including: • Two rails (right and left assemblies) and eight (8) M5 black hex-head screws with wide flanges

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EXP5000 ship group:

- Two SFP modules (eight included with the DS5100 and DS5300)
- 3-U EXP5000 Drive Expansion Enclosure (1818-D1A)
- One rack mounting hardware kit, with twelve (12) M5 black hex-head slotted screws and eight (8) washers

Options:

- Disk Drive Modules (DDMs) (two minimum for each EXP5000 expansion
- enclosure) Two SFP modules for each fiber-optic cable (only one SFP is required for
- direct attachment to host HBA) • Two fiber-optic cables for each Fibre Channel host connection (direct
- connection) or four fiber-optic cables for each redundant Fibre Channel switch connection (fabric connection)
- Two fiber-optic cables for each EXP5000 connection
- Two HBAs installed in each host Two installed Fibre Channel switches (fabric connection only)
- Two Ethernet cables, one per controller (out-of-band management only)
- Four Cat5A/Cat6 Ethernet cables for each redundant switch connection (iSCSI host connection only)Two installed Ethernet switches (iSCSI host connection only)

Tools:

- Internet connection
- Medium flat-blade screwdriver, #2 Phillips screwdriver, and 5/16 hex nut driver

Install the 2 support rails

- For proper weight distribution, install the rails from the DS5100 and DS5300 in the lower portion of the rack cabinet.
- Allow room above and below the DS5100 and DS5300 for drive expansion enclosures, as required.
- . Use rack mounting template A, to locate the correct rail mounting holes for EXP5000 expansion enclosure units.
- Use rack mounting template **B**, to locate the correct rail mounting holes for the DS5100 or the DS5300 storage subsystem units.

Note: For the DS5100 or DS5300, use the M5 black broad flange hex-head screws and template B. For the EXP5000, use the M5 black hex-head slotted screws and template A. For both templates, rack mounting holes labeled 1 should be used first, followed by rack mounting holes labeled 2.

2.1 Starting with the left rail, use a medium flat-blade screwdriver to loosen the two flat-head rail adjustment screws. Hold the front of the left rail against the inside of the front rack-mounting flange, and then extend the rear of the support rail until it makes contact with the rear rack mounting flange. The alignment pins at the rear of the rail should slide into the holes at the rear of the rack.

2.2 From the front of the

rack, with the rail-mounted flanges inside of the front rack mounting flange, use either the 5/16 (8mm) hex nut driver or the #2 Phillips screwdriver to loosely tighten the lower M5 screw only

Note: The type of tool depends on the unit you are installing.

2.3 From the back of the rack, tighten two M5 screws halfway for the unit being installed, using either the 5/16 (8mm) hex nut driver or the #2 Phillips screwdriver.

Attention:

Make sure that the screws are tight enough to support the weight of the device. Do not completely tighten the screws until you have installed the storage subsystem in the rack cabinet.

2.4 Repeat steps 2.1 through 2.3 with the right side rail.

2.5 Tighten the rail adjustment screws on both rails.



3 Install the enclosure



CAUTION:

Use safe practices when lifting.



3.1 Remove the front bezel by grasping the sides and pulling the bezel toward you.

Important: The following illustration shows a DS5100 or DS5300 with Fibre Channel host interface cards. Depending on the storage subsystem configuration you ordered, you might have only iSCS or a mix of iSCSI and Fibre Channel host interface cards



3.2 Remove the components. Each component of the DS5100 or DS5300, including power supplies, interconnect-battery unit, and controllers, is neight in place by two locking lever



To release both latches:

1. Push the latches to the side until the latches release the levers.

2. Rotate both levers out simultaneously. When the levers are completely free, use the levers to pull the component from the DS5100 or DS5300. Label controller A and controller B so that you can replace each controller in the correct location after the DS5200 or DS5300 is installed. Controller A is in the upper-left location and controller B is in the lower-right location.

3.3 Remove the empty DS5100 or DS5300 from the shipping box. With the help of another person, place the back of the subsystem on the support rails. Slide the subsystem into the cabinet, and verify that the back of it is secured by the hold-down clips at the back of each

Note: If you remove the components before installation, you can lift the enclosure into the rack with the help of one other person. If you do not remove the components, you should have at least two other people available to help you lift the enclosure into the rack.

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4 Secure the enclosure

Host Cables

radius of less than 38 mm (1.5 in.).

ATTENTION:

5.1 If not already installed in Fibre Channel host interface cards, insert an SFP module into the required host ports on both controllers. Remove any extra SFPs from host ports that won't be used. SFP modules are needed only for Fibre Channel ports.

Do not bend or loop the cables to a diameter of less than 76 mm (3 in.) or a

5.2 Choose the host connection configuration.

Direct Connection (Fibre Channel only): Connect the fiber-optic cable from the host port on the controller to an HBA port on the host.

Switch Connection (Fibre Channel and iSCSI): Connect the fiberoptic or Ethernet cable from the host port on the controller to a port on the switch and make sure that the HBA and the controller are in the same zone at the switch.

5.3 Repeat for each controller-to-host connection.

5.4 When finished, label each cable with to/from information.

Direct connection (Fibre Channel only)



Switch connection (Fibre Channel and iSCSI)



4 Host 2, iSCSI host adapters 1 and 2

5 Zoned Fibre Channel switches6 Ethernet switches

DS5100 or DS5300 and EXP5000 Drive Expansion Cabling

Steps to connect one EXP5000 storage expansion enclosure:

5.5 Starting on the DS5100 or DS5300, connect the fiber-optic cable from drive port 8 (drive channel 1) of controller A to the 1B port on the left ESM board of the first storage expansion enclosure.

5.6 From the DS5100 or DS5300, connect the fiber-optic cable from drive port 1 (drive channel 5) of controller B to the 1B port on the right ESM board of the first storage expansion enclosure.

Steps to connect a second EXP5000 storage expansion enclosure:

5.7 Starting on the DS5100 or DS5300, connect the fiber-optic cable from drive port 6 (drive channel 2) of controller A to the 1B port on the left ESM board of the second storage expansion enclosure.



Do not place any object on top of rack-mounted devices.



4.1 Align the front mounting holes on the DS5100, DS5300, or the EXP5000 with the mounting holes on the cabinet.



2 Mounting 3 Screws

4.2 Using the 5/16 (8mm) hex nut driver, insert one M5 screw into the hole on each flange, and tighten the screws completely to secure the front of the DS5100, DS5300, or EXP5000 to the cabinet.

4.3 At the front and the rear of the rack cabinet, use the 5/16 (8mm) hex nut driver to finish tightening the other three M5 screws for each rail.

4.4 Replace the power supplies, the interconnect-battery unit, and the controllers. Make sure that controller A is in the upper slot and controller B is in the lower slot. Controller B is installed in the opposite orientation to controller A.

4.5 Attach the DS5100 or DS5300 front bezel by aligning the pins on the DS5100/DS5300 with the retainers on the cover, and press the cover until the pins snap into place.

Note: For complete instructions about how to install EXP5000 enclosures, see the *IBM System Storage DS5000 EXP5000 Storage Expansion Enclosure Installation, User's, and Maintenance Guide.*

5 Install the cables



CAUTION

When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the
- device.
 Use of controls or adjustments or performance of procedures other than those specified herein might
- result in hazardous radiation exposure.



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Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following:

 Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. **5.8** From the DS5100 or DS5300, connect the fiber-optic cable from drive port 3 (drive channel 6) of controller B to the 1B port on the right ESM board of the second storage expansion enclosure.



3 EXP5000 left ESMs

- 4 EXP5000 right ESMs5 ESM 1B ports
- 6 Controller drive ports

Ethernet Cables - Out-of-Band Management Only

Steps to connect:

5.9 Connect one end of the Ethernet cable to the Ethernet port 1 connector on Controller A.

5.10 Connect the other end of the Ethernet cable to the applicable network connection.

5.11 Repeat for controller B.

Notes:

If not already installed, insert SFP modules into the required DS5100 or DS5300 and EXP5000 drive ports. Remove any extra SFPs from drive ports that won't be used.
 Install a minimum of two drives per EXP5000. Start with the left slot.

6 Turn on the storage subsystem



Statement 5

CAUTION: The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The

device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.



IMPORTANT: You must follow the power sequence in the order provided below. To establish power redundancy for enclosures with two power supplies, use at least two different power distribution units (PDUs) in the rack cabinet. Split the power connections from each enclosure into the separate PDUs. Then connect the PDUs to external power receptacles that are on different circuits.

6.1 Connect a power cable to each power supply in the storage subsystem, and then connect the other end to the rack cabinet power receptacle.

6.2 Turn on the power to fabric devices, if applicable.

6.3 Turn on both power switches of all attached EXP5000s, and wait 60 seconds.

6.4 Turn on both power switches of the DS5100 or DS5300.

6.5 If amber lights are visible, see the *DS5100 or DS5300 Storage Subsystems Installation, Maintenance, and User's Guide* to diagnose potential issues.

Note: Turn off the power to the storage subsystem in the reverse order; first the DS5100 or DS5300 and then the storage expansion enclosures.

7 Discover the storage subsystem

To discover and set up the storage subsystem, complete the following steps:

7.1 Start the DS Storage Manager software from your management station. The Enterprise Management and Confirm Initial Automatic Discovery windows open.

7.2 Select **Automatic Discovery** from the Enterprise Management Window to discover the storage subsystem. After the initial automatic discovery is complete, the Enterprise Management window displays all hosts and storage subsystems that are attached to the local sub network. **Note:** To discover storage subsystems that are outside of the local sub network, click **View** > **Task Assistant** > **Add Storage Subsystems**.

7.3 Click **Rename the Storage Subsystem**. Use the serial number of the DS5100 or DS5300 as the first part of the subsystem name.

7.4 Click Locate the Storage Subsystem. A blue LED flashes on the front of the selected storage subsystem. Label the storage subsystem with its associated name. Note: If the storage subsystem is not discovered automatically, add the storage subsystem manually by typing the IP address.

7.5 Highlight the storage subsystem and click **Tools** > **Manage Storage Subsystem** to open the Subsystem Management window and the Task Assistant.

7.6 If the storage subsystem is not in Optimal state, click the **Recover from Failure** icon in the Task Assistant. Follow the steps in the Recovery Guru. When the subsystem is Optimal, close the Task Assistant.

7.7 In the Subsystem Management window, click **Storage Subsystem** > **View Profile**. Click the **Controller Firmware**, **NVSRAM**, **ESM Firmware**, **Drive Product ID**, and **Firmware Versions** tabs, and write each number down for future use.

7.8 Save the profile for future use and close the profile window. **Note:** Save a copy of the storage subsystem profile and the Collect All Support Data bundle when you make configuration changes to the storage subsystems.

7.9 Make a direct management connection to the DS5000 storage subsystem by using the default TCP/IP addresses: Controller A: 192.168.128.101 Controller B: 192.168.128.102

7.9.1 Start the SMclient. The Enterprise Management window opens.
7.9.2 In the Enterprise Management window, click on the name of the default storage subsystem. The Subsystem Management window opens.
7.0.2 In the Subsystem Management window is the Control of the default storage subsystem. The Subsystem Management window opens.

7.9.3 In the Subsystem Management window, right-click the **Controller** icon; click **Change > Network Configuration**. The Change Network Configuration window opens.

7.9.4 In the Change Network Configuration window, click on the **Controller A** and **Controller B** tabs; type the new TCP/IP addresses in the applicable fields. Click **OK**.

7.9.5 Close the Subsystem Management window; wait five minutes, then delete the default DS5000 Storage Subsystem entry in the Enterprise Management window.

7.9.6 Add a new storage subsystem entry in the Enterprise Management window using the new TCP/IP address. **Note:** To manage storage subsystems through a firewall, configure the firewall to open port 2463 to TCP data.

8 Update the storage subsystem firmware

Note: The Storage Manager host code and HBA BIOS/driver should be up-to-date, if you completed all the steps in Section 1.2.

From the Subsystem Management Window, select **Advanced > Maintenance > Download**. Click the following options in the order listed:

1.	Controller firmware
2.	Controller NVSRAM
3.	ESM firmware
4.	Drive firmware

Configure the storage subsystem

From the Subsystem Management Window, click **View > Task Assistant**. If the storage subsystem is Optimal, complete the following tasks in the order listed:

- 1. Configure alert notification for problems in the storage subsystem
- Define hosts
 Create new storage partitions
- 4. Save configuration
- 5. Set/change password

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