

TotalStorage DS300 and DS400



Software Installation Guide

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Software Installation Guide

Note: Before using this information and the product it supports, read the general information in Appendix B, "Notices," on page B-1.

First Edition (September 2004)

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Installing and Running ServeRAID Manager

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This chapter provides installation instructions for IBM ServeRAID Manager, and provides an overview of the software features and navigation tools. For detailed instructions on how to use IBM ServeRAID Manager to manage your external storage subsystem, refer to the online Help.

System Requirements

Management Station System Requirements

To successfully install and run the IBM ServeRAID Manager management station, you need:

- PC with an Intel-compatible 500 MHz processor (IA32, AMD32, or AMD64)
- 256 MB RAM
- 35 MB hard disk drive space
- Microsoft® Windows® Advanced Server 2003, Windows XP, or Windows 2000

Client Station System Requirements

To successfully install and run an IBM ServeRAID Manager client station, you need:

- PC with an Intel-compatible 500 MHz processor (IA32, AMD32, or AMD64)
- 256 MB RAM
- 35 MB hard disk drive space
- 256 color video mode

On client station systems, the ServeRAID Manager is supported on a broad range of OSs, such as Windows, Linux, Netware, UnixWare, OpenServer.



Note: When installing the ServeRAID Manager on client stations, refer to the OS-specific Readme.txt files on the ServeRAID Manager Application CD for a list of supported OSs and other OS-specific information.

Installing IBM ServeRAID Manager

This section provides instructions for installing IBM ServeRAID Manager on systems running Windows. To install the ServeRAID Manager on client stations running OSs *other than* Windows, refer to the OS-specific Readme.txt files on the ServeRAID Manager Application CD for installation instructions.



Note: You need administrator privileges to install IBM ServeRAID Manager.

To install IBM ServeRAID Manager:

- 1 Insert the installation CD and wait for the Autorun executable to start the installation. If this does not occur, browse the CD and click **Autorun**.
- 2 When the installation wizard opens, click **Next**.
- 3 Read and accept the terms of the license agreement, then click **Next**.
- 4 Click **Next** to accept the default installation setup. Alternatively, use the dropdown boxes to select the ServeRAID components that you want to install, then click **Next**.
- 5 Create a user name and a password for the ServeRAID Management Station.

This is the user name and password that you will use to log onto your Management Station.

- 6 Click **Add User**, then click **Next**.
- 7 Click **Install**.

The installation wizard installs the software. This may take a few minutes to complete.

- 8 When the installation is complete, click **Finish**.

Getting Started

This section explains how to begin using IBM ServeRAID Manager.

Running IBM ServeRAID Manager



Note: You need administrator privileges to run IBM ServeRAID Manager.

To run IBM ServeRAID Manager as a standalone application, click **Start > Programs > ServeRAID Manager > ServeRAID Manager**.

For an introduction to IBM ServeRAID Manager features, see [Navigating IBM ServeRAID Manager on page 1-6](#).

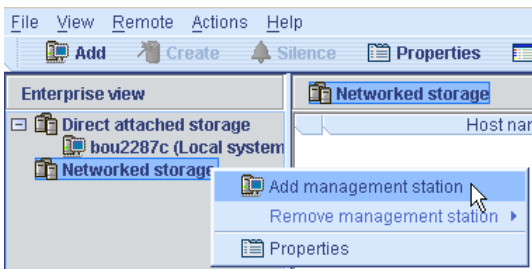
Adding a Management Station Agent

When you log in for the first time, you must add the management station before you can begin to set up your network storage.

The management station agent is a monitoring agent for network storage. After you add an agent to a management station, you can monitor and configure the attached storage system enclosures from a ServeRAID Manager console.

To add a management station agent:

- 1 In the Enterprise view, right-click the icon for the Networked storage and select **Add management station**, as shown below.



The Add management station window opens.

- 2 In the Type field, select **Management station**.
- 3 Enter the host name or TCP/IP address of the management station system.

- 4 Enter the management station user name and password, as they were defined during the ServeRAID Manager installation. (See [Step 5 on page 1-3.](#))
- 5 Select **Save user name/password**.
- 6 Click **Connect**.

The management station agent is added.

Removing a Management Station Agent

To remove a management station agent:

- 1 In the Enterprise view, right-click **Networked storage**, select **Remove management station**, then select the management station to be removed.
- 2 Click **Yes**.

The management station agent is removed.

Adding the Storage Subsystem to the Management Station

To add your IBM TotalStorage external storage subsystem to the management station:

- 1 In the Enterprise view, right-click the management station in the Networked storage tree and select **Add agent**.
- 2 Type in the host name or TCP/IP address of one of the storage subsystem's management ports.
- 3 Enter the administrator password of the storage subsystem.



Note: The administrator password is established when the storage subsystem is installed on the network. It is not the same as the management station password.

- 4 Click **Add**.

The storage subsystem is added to the management station in the Enterprise view Networked storage tree.

For more information on configuring your IBM TotalStorage external storage subsystem and building your network storage, refer to the IBM ServeRAID Manager Help.

Navigating IBM ServeRAID Manager

IBM ServeRAID Manager provides an expandable tree view, or Enterprise view, (shown in [Figure 1-1](#)) which shows the systems and controllers you are managing. The Networked storage section of the tree is for management stations with network-attached storage enclosures.

You can perform most configuration and management tasks by selecting a controller or enclosure from the tree and working with related objects in the Physical and Logical device views (shown in [Figure 1-2](#) on page 1-6).



Figure 1-1 Enterprise View

[Figure 1-2](#) shows how IBM ServeRAID Manager displays the Physical and Logical device views, which show the physical devices and logical devices connected to the controller or enclosure.

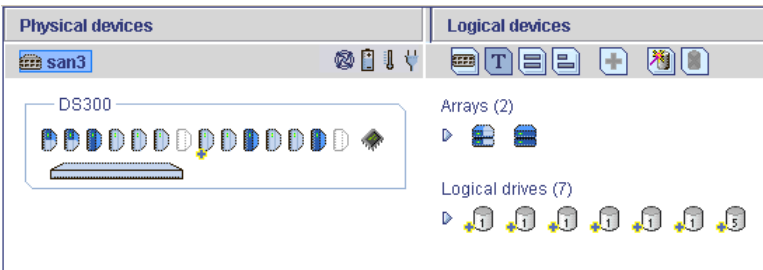


Figure 1-2 Physical and Logical Devices View

The Physical devices view (on the left in [Figure 1-2](#)) displays information about the drives, enclosures, and other devices attached to the controller. The devices are shown organized by the channel or port they are connected to and shown in numerical order. The display for each channel or port includes information on maximum speed capability, the number of the channel on the controller, and the number of devices attached to the controller.

The Logical devices view (on the right in [Figure 1-2](#)) displays information about the arrays and logical drives created using the physical devices. This information includes the number of arrays and logical drives, the RAID level of each device, and whether a logical drive is protected by a hot spare drive.

In the Physical devices and Logical devices views, you can:

- Collapse or expand a view to see more information about arrays, logical devices, and physical devices.
- Change how drives are displayed (see [page 1-8](#)).
- Identify components of a logical device (see [page 1-9](#)).

Physical Devices View

The Physical Devices view displays physical device information in enclosure view format, as shown in [Figure 1-3](#). Drives in the enclosure are shown in the physical slots they occupy with the proper vertical or horizontal orientation. Empty slots are shown as drive outlines. This is the default view for systems with an attached storage enclosure.

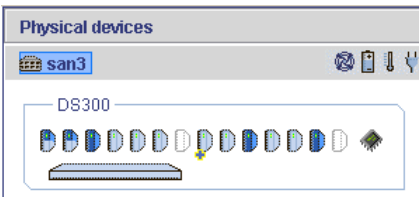


Figure 1-3 Physical Devices View

The indicator icons (shown at right) report status of the fan and temperature modules on SAF-TE (enclosure management) devices and other devices that monitor these conditions.



The indicator colors are:

- **Blue**—Normal
- **Yellow**—Warning
- **Red**—Error
- **Gray**—Not applicable to the devices.

For example, the fan indicator changes to yellow when one fan fails; it changes to red when a second fan fails and cooling is no longer adequate.

Logical Devices View

This view displays information about the logical devices created using the physical devices, including the number of arrays and logical devices, the RAID level of each device, and whether a logical device is protected by a hot spare drive.

You can create and delete logical devices in the Logical devices view by selecting the **Create** option and using the Create wizard.

Changing How Drives are Displayed

You can choose how information is displayed in the Physical devices view by clicking one of the following buttons in the Logical devices view.



Displays the enclosure view. This is the default view.



Displays physical device information in text format.



Displays physical device information in full size capacity format. A full-length bar is displayed for each drive, regardless of capacity. A small segment on each drive is reserved for the *RAID signature*; this area is indicated by a gray *cap* at the end of each bar.

Note: A drive shaded in light blue is not part of any disk group.



Displays physical device information in relative size capacity format. A full-length bar is displayed for the largest drive; proportionally shorter bars are displayed for other drives.

Viewing Related Components

When you click on a physical or logical device in the device views, the related components are highlighted.

For instance, when you click an array, the associated logical drives are highlighted in the Logical devices view and the physical drives that are members of the array are highlighted in the Physical devices view, as shown in [Figure 1-4](#).

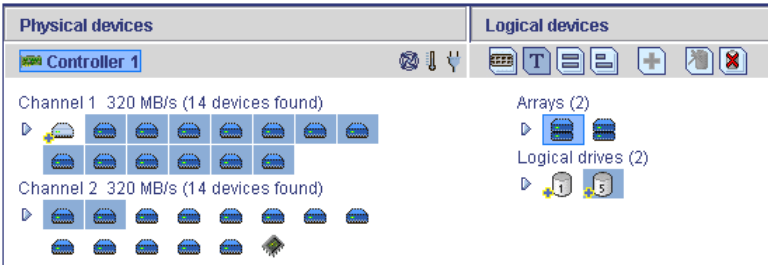


Figure 1-4 Displaying an Array's Logical and Physical Drives

In another example, when you click a hotspare, the logical devices protected by that spare are highlighted, as shown in [Figure 1-5](#).

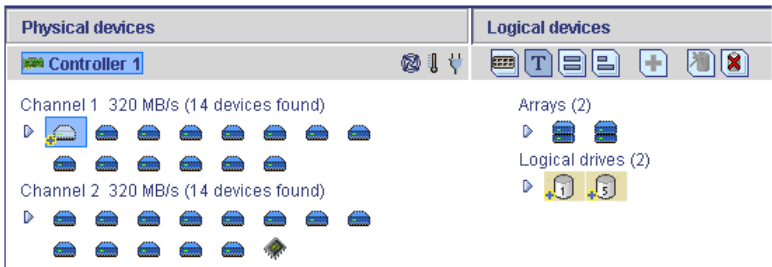


Figure 1-5 Displaying a Logical Devices Protected by a Spare

Finding More Information

For detailed instructions on how to use IBM ServeRAID Manager to manage your external storage subsystem, refer to the IBM ServeRAID Manager Help.

Installing Firmware

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This chapter provides instructions for downloading and installing firmware to your IBM TotalStorage external storage subsystem.

Downloading Firmware

To download a new firmware image, go to www.ibm.com/pc/support, then go to the page that is for your IBM TotalStorage model. Follow the online instructions to download the file.

Keep the default file name, and save the file to a system that is accessible by IBM ServeRAID Manager.

Updating the Firmware

Follow these steps to update the firmware:

- 1 In the Enterprise view, click the enclosure that you want to update.
- 2 Right-click **Modify enclosure software**, then click **Update image**.

The Software Update wizard opens.

- 3 Click **Next**.

The Select a software image window opens.

- 4 Click **Browse**, select the firmware file, then click **Next**.

The Update summary window opens.

- 5 Review the update summary, then click **Apply**.

ServeRAID Manager applies the firmware update. The progress meter shows the update status. When the update is complete, the progress meter automatically closes.

- 6 Restart the controller. (See [Restarting the Controller on page 2-3](#).)

Restarting the Controller

To restart a controller:

- 1 In the Physical devices view, right-click the controller and select **Restart controller**.
- 2 Click **Yes** to confirm that you want to restart the controller.



Note: Restarting the controller may take several minutes. Data on the controller is unavailable during that time.

Configuring a New Controller

In this Chapter...

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This chapter provides detailed instructions for configuring a new or replacement controller as part of your IBM TotalStorage external storage subsystem.



Note: For detailed instructions on installing a RAID controller, refer to the *IBM TotalStorage DS300 and DS400 Hardware Installation and User's Guide* on the Publications CD.

Getting Started

When installing a replacement controller, remove (un-cam but leave in place) the disk drives until told to replace them later in this procedure.

Power on your IBM TotalStorage external storage subsystem and connect to it through Telnet, using the default IP address below:

192.168.70.123

Use the `setup` command in the Command Line Interface (CLI) to open the Setup Wizard.



Note: When you connect to an IBM TotalStorage external storage subsystem for the first time, the Setup Wizard opens automatically.

The Setup Wizard helps you enter the information required to connect your IBM TotalStorage external storage subsystem to a local network.

Using the Setup Wizard, change the default settings on your IBM TotalStorage external storage subsystem (listed below) as required for your network, following the instructions provided in [Using the Setup Wizard on page 3-3](#).

Hostname	DS300/DS400
Domain Name	ibm.com
Timezone [GMT]	GMT-5
New Administrator Password	PASSWORD Note all capital letters and the use of a '0' (zero) instead of the letter 'O'
Default Gateway	0.0.0.0
DNS Servers	NO
User DHCP	NO
Management i/f IP Address	192.168.70.123
Management i/f IP Netmask	255.255.0.0
Management i/f Broadcast Address	192.168.255.255

Using the Setup Wizard

The Setup Wizard steps you through a set of questions. In addition to typing in the answers to the questions, you can also use three commands, as shown in this Table:

Command	Function
Abort	Quit the Setup Wizard without changing anything
Back	Go to previous question
Help	Describe the current options

If a question has a predefined or default answer, the answer appears in square brackets []. Some options take an arbitrary string, in which case the commands `back` and `abort` can not be used. In those circumstances, enclose the answer in double-quotes " " so that the answer will be accepted even if it is the same as a command.

hostname

Supply the name by which the system is to be known.

The special `BACK` command here repeats this prompt.

domain name

Supply the domain in which the system belongs.

SAN name

Supply the Storage Area Network in which the system belongs.

timezone

Supply the system time zone.

system Date

Supply the system date.

define administrator password

Define whether an administrator password is required. If a password is required, you are prompted for that password, which must be supplied twice.

Press **Ctrl** to leave the password unchanged.

Press **Return** (or **Enter**) twice to require no administrator password.

define operator password

Define whether an operator password is required. (See [define administrator password on page 3-4](#) for more information.)

dhcp

Reply *yes* or *no* to determine whether DHCP should be used to discover the system's network values.

If you enter *yes*, the wizard takes you to the Save new configuration question (see [page 3-5](#)). If you enter *no*, the wizard continues with questions about the system's main ethernet interface.

IP address

Enter the IP number in the conventional dotted quad format, as shown in this example:

192.193.194.195

netmask

Define the size of the netmask.

A netmask can be represented in a number of ways. The examples shown here all refer to the same netmask:

/23	The number of bits set in the network part.
255.255.254.0	The set bits displayed in the same way as an IP number
0xffffffe0	The mask show as a hex number

broadcast address

Enter the address to be used for broadcasts. You can use any of the forms described for the `interface manage interface broadcast` command.

default gateway

Enter the name or IP number of a router to which packets for destinations that do not have routes defined for them in the system should be sent. Enter `no` to clear the default gateway.

DNS servers

Enter the IP numbers of up to 3 systems that will act as DNS servers. Enter `no` to clear the list of DNS servers.

save new configuration

When the Setup Wizard has finished, the system is configured but the new configuration is not saved immediately in non-volatile memory. Enter `yes` to save the configuration immediately, or `no` to defer saving the configuration.

The `save` command saves the configuration.

Finish?

Enter `yes` to apply the values you have entered, or `no` to return to the first question and change the values you have entered.



Note: If you changed the IP address, you must Telnet to the new IP address to reestablish the Telnet session.

Next Steps

Carefully follow these steps in order to complete the setup using IBM ServeRAID Manager:

- 1 Start IBM ServeRAID Manager. (See [Running IBM ServeRAID Manager on page 1-4.](#))
- 2 Add the management station agent. (See [Adding a Management Station Agent on page 1-4.](#))
- 3 Add the enclosure to the management station. (See [Adding the Storage Subsystem to the Management Station on page 1-5.](#))
- 4 If you have installed a replacement RAID controller, reinsert the disk drives. Wait approximately two minutes, then use the IBM ServeRAID Manager to scan for new or removed RDY drives. (Refer to the IBM ServeRAID Manager Help for detailed instructions.)
- 5 Configure the storage subsystem using the Configuration Wizard. (Refer to the IBM ServeRAID Manager Help for detailed instructions.)



Note: When the storage subsystem is configured, logical drives appear as physical drives to the initiator operating system. Refer to the initiator documentation to set up the initiators.

- 6 If existing arrays were associated with the old RAID controller, they will now appear as foreign arrays and can be imported. (For detailed instructions, refer to the IBM ServeRAID Manager Help.)

A

Using the Flashcopy Management Command Line Tool

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<i>Command Line Syntax and Output</i>	A-4
<i>Commands</i>	A-5

This appendix provides detailed instructions for using the Flashcopy Management Command Line Tool, which lets you take flashcopies (sometimes known as snapshots) of application databases.

Introduction

You can use the Flashcopy Management Command Line Tool to create and manage flashcopies of application databases.

A *flashcopy* is a frozen image of an application database at a particular point in time. You can use a flashcopy to back up an application database, and use it as a rollback point in case of a future problem with the application.

Using the Flashcopy Management Command Line Tool, you can:

- List Mini Snap Agents available on the IPSAN
- List available databases
- Take a flashcopy of the database
- Schedule a flashcopy of the database
- Rollback to a flashcopy
- Delete a flashcopy and its associated metadata
- Print usage information

Flashcopy Management Command Line Tool Glossary

This section provides definitions for terms used in the rest of this appendix to describe the commands and options of the Flashcopy Management Command Line Tool.

Agent

A machine on the network running at least one instance of a database server application that holds information on network storage volumes and disks.

Application

A database server application type that may be used to store network storage information.

Appointment

An entry in the *Diary*.

Database

The name of the database of the given *Instance* running on the *Agent*.

Diary

A scheduling service available on the host that allows you to schedule jobs.

Host

The machine on the network that runs the IBM ServeRAID Manager network storage management station.

Initiator

A device that begins a SCSI transaction by issuing a command to another device (a target). Typically a SCSI host is the initiator, but a target may also become an initiator.

Instance

A specific instance of a database server application.

Snapshot

A collection of data representing the state of a network storage device at a specific moment in time.

Command Line Syntax and Output

The Flashcopy Management Command Line Tool uses this syntax:

```
sstool ~host~ ~host_username~ ~host_password~  
~command [options]~
```

where:

- **host** is a name or IP address of the management service. **Host** may optionally have a port number specified. Otherwise the Flashcopy Management Command Line Tool uses 8003 by default.

For example:

- `samplehost:8000`
- `192.168.0.2:8000`
- `192.168.0.2`
- **host_username** and **host_password** are the user name and password used to log in to Management station.
- **command [options]** describes the action to be performed by the Flashcopy Management Command Line Tool. A command may have options associated with it. (See [Commands on page A-5](#).)

Return Values

- 0—Success
- 1—Invalid parameters
- 2—Subsystem error

Output

The Flashcopy Management Command Line Tool prints results to a standard output in tabular comma-delimited format. The column's order and meaning are specific to each command. See [Commands on page A-5](#) for more information.



Note: The Flashcopy Management Command Line Tool handles handle '/' as an option prefix instead of '-' or '--' for DOS/Windows users.

Commands

This section provides detailed descriptions of the Flashcopy Management Command Line Tool commands and their options.

list_agents

- **Command:** `list_agents`
- **Options:** None
- **Description:** Returns a list of flashcopy agents on the IPSAN (that is, a list of hosts with flashcopy agents on them)

list_server_instances

- **Command:** `list_server_instances`
- **Options:**
 - a the name of the machine on the network that runs storage volume/disk database servers
 - d the network domain
 - au the agent user login name
 - ap the agent user password
 - app the database server application type
- **Description:** Returns a list of server instances available on a flashcopy agent

list_instance_databases

■ **Command:** `list_instance_databases`

■ **Options:**

- a the name of the machine on the network that runs storage volume/disk database servers
- d the network domain
- au the agent user login name
- ap the agent user password
- app the database server application type
- i server instance name (the name of the instance of the database server of a given application type running on the mini snap agent)
- iu the instance user login name
- ip the instance user password

■ **Description:** Returns a list of databases available on a server instance

take_snapshot

■ **Command:** take_snapshot

■ **Options:**

-a	the name of the machine on the network that runs storage volume/disk database servers
--d	the network domain
--au	the agent user login name
--ap	the agent user password
--app	the database server application type
-i	server instance name (the name of the instance of the database server of a given application type running on the mini snap agent)
--iu	the instance user login name
--ip	the instance user password
--db	database (the name of the database of a given instance running on the mini snap agent)
--ini	initiator
--dbu	the database user login name
--dbp	the database user password
--NAME	the flashcopy (snapshot) name

■ **Description:** Takes a flashcopy of the database

schedule_snapshot

■ **Command:** schedule_snapshot

■ **Options:**

- a the name of the machine on the network that runs storage volume/disk database servers
- d the network domain
- au the agent user login name
- ap the agent user password
- app the database server application type
- i server instance name (the name of the instance of the database server of a given application type running on the mini snap agent)
- iu the instance user login name
- ip the instance user password
- db database (the name of the database of a given instance running on the mini snap agent)
- ini initiator
- dbu the database user login name
- dbp the database user password
- NAME the flashcopy (snapshot) name

■ **Scheduling Options:**

Option	Value	Description
--MINUTE	0-59	The minute within the hour
--HOUR	0-23	The hour within the 24 hour period
--DAY	1-31	The day of the month
--WEEKDAY	0-6	The weekday
--MONTH	1-12	The month of the year
--YEAR	valid year	The year

In the scheduling options, *value* means that the task will run every unit of time. Values can also be given as a list of comma separated values.

For example:

- `--MINUTE 10,20,30`
- `--DAY 5,25`

Description: Schedules the flashcopy. The time pattern of the flashcopy is defined using the scheduling options as shown in *Scheduling Options* on [page A-8](#).

list_scheduled

- **Command:** `list_scheduled`
- **Options:** None
- **Description:** Returns a list of scheduled jobs on the management station

unschedule_snapshot

- **Command:** `unschedule_snapshot`
- **Options:**
 - `--NAME` the flashcopy (snapshot) name
- **Description:** Removes a flashcopy job from the host's diary.

roll_back

■ **Command:** roll_back

■ **Options:**

- a the name of the machine on the network that runs storage volume/disk database servers
- d the network domain
- au the agent user login name
- ap the agent user password
- app the database server application type
- i server instance name (the name of the instance of the database server of a given application type running on the mini snap agent)
- iu the instance user login name
- ip the instance user password
- db database (the name of the database of a given instance running on the mini snap agent)
- dbu the database user login name
- dbp the database user password
- NAME the flashcopy (snapshot) name

■ **Description:** Rolls back the database to a specific flashcopy

delete_snapshot

■ **Command:** delete_snapshot

■ **Options:**

- a the name of the machine on the network that runs storage volume/disk database servers
- d the network domain
- au the agent user login name
- ap the agent user password
- app the database server application type
- i server instance name (the name of the instance of the database server of a given application type running on the mini snap agent)
- iu the instance user login name
- ip the instance user password
- db database (the name of the database of a given instance running on the mini snap agent)
- dbu the database user login name
- dbp the database user password
- NAME the flashcopy (snapshot) name

■ **Description:** Deletes a flashcopy and its associated metadata

list_snapshots

■ **Command:** list_snapshots

■ **Options:** None

■ **Description:** Lists all flashcopies

help

■ **Command:** help

■ **Options:** none

■ **Descriptions:** Prints this document to standard output

B

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PN: 25K8191

Part Number: CDP-00023-01-A, LB 09/04