



hp StorageWorks  
modular SAN  
array 1000



quick  
installation  
guide

# Table of Contents

This Quick Installation Guide provides instructions for installing drivers and software components on servers that will access the Modular SAN Array 1000 (MSA1000) storage.

Included sections:	Page
▪ <b>Kit Contents</b>	<b>3</b>
> Modular SAN Array 1000 Support Software CD	
> HP Management CD	
> Software License Agreement	
▪ <b>MSA1000 Support Software Installation under Microsoft Windows</b>	<b>6</b>
> Prerequisites	
> HBA Driver Installation under Windows 2000	
> HBA Driver Installation under Windows NT 4.0	
> Storage Configuration under Windows	
> Storage Diagnostics under Windows	

- **MSA1000 Support Software Installation under NetWare**     **12**
  - > Prerequisites
  - > HBA Driver Installation under NetWare
  - > Storage Configuration under NetWare
  - > Storage Diagnostics under NetWare
  
- **MSA1000 Support Software Installation under Linux**     **16**
  - > Prerequisites
  - > HBA Driver Installation under Linux
  - > Storage Configuration under Linux
  - > Storage Diagnostics under Linux
  
- **MSA1000 Support Software Bootable Environments**     **21**

# Kit Contents

The Modular SAN Array 1000 Setup and Management kit contains the Modular SAN Array 1000 Support Software CD and the HP Management CD, each of which is described below.

## > **MSA1000 Support Software CD**

The MSA1000 Support Software CD contains the drivers and utilities required to set up and configure the MSA1000 storage, including:

- **Fibre Channel Host Bus Adapter (HBA) drivers**

These are the drivers required for the supported HBAs installed in the servers that interface with the MSA1000 storage.

- **Array Configuration Utility (ACU)**

ACU is a browser-based disk configuration utility that lets you view, set up, and configure the array controllers and storage systems. For more information on the ACU, refer to the documentation in the *\Documentation\ACU User Guide* folder.

- **Array Diagnostics Utility (ADU)**

The ADU collects information about the array controllers in the system and generates a list of potential problems it has identified. It produces a report that can be saved to a diskette and analyzed by support technicians to aid in problem resolution.

- **ACU / ADU Bootable Utility**

The MSA1000 Support Software CD is a bootable media that enables a server to boot into a Linux shell and launch the ACU or the ADU, allowing the user to configure the MSA1000 storage or generate a diagnostic report without requiring a pre-installed operating system or drivers.

- **Documentation**

The *\Documentation* folder on the CD includes sub-folders containing user guides, whitepapers, and technical notes.

The following PDF files are included:

**Guides:**

- *ACU UGuide.pdf*
- *MSA Fabric Switch6 UGuide.pdf*
- *MSA1000 UGuide.pdf*
- *MSA1000 QIG.pdf* (this document)

**Whitepapers:**

- *Upgrading MSA1000 for Enhanced Features.pdf*
- *Linux DtS Data Migrations.pdf*
- *NetWare DtS Data Migrations.pdf*
- *NT Win2K DtS Migrations.pdf*

**Technical notes:**

- *NetWare MSA1000 External Boot setup tech note.pdf*
- *NT Win2K MSA1000 External Boot setup tech note.pdf*

**> HP Management CD**

The Management CD contains Intelligent Manageability agents and software that enable customers to manage the servers, clients, and storage configurations using their chosen platform as the primary management console.

Refer to the documentation on the Management CD for more information.

**> Software License Agreement**

This folded pamphlet details the terms, conditions, and copyright notices for the software included with the MSA1000.

# MSA1000 Support Software Installation under Windows

Before proceeding with this installation, make sure the equipment is connected correctly per the HP StorageWorks Modular SAN Array 1000 Installation Overview poster included in the shipping carton.

## > Prerequisites

- Host computer must have one of the following supported Host Bus Adapters (HBA) installed:
  - > FCA2101 Host Bus Adapter
  - > 64-bit/66-MHz PCI-to-Fibre Channel Host Bus Adapter
- Host computer must be running Windows NT 4.0 Server with Service Pack 6a (or later) or Windows 2000 Server with Service Pack 2 (or later).
- Host computer must be running Microsoft Internet Explorer v5.0 or later with the Microsoft Virtual Machine update.
- Host computer must have Java 2 Runtime Environment, Standard Edition v1.4 installed.

The Java Plug-in is located in the *\Misc\Java* folder on the Support Software CD.

- Host computer must have all ProLiant server drivers installed from the latest SmartStart for Servers CD.

**NOTE:** Supported HBAs are tested and qualified on additional server platforms such as IBM and Dell.

## > HBA Driver Installation under Windows 2000

1. With the HBA(s) installed in the server, power on the server and start up Windows 2000.
2. If the **New Hardware Wizard** window is displayed for the newly installed HBA(s), use the **Cancel** button to exit the Wizard screen(s).
3. Insert the MSA1000 Support Software CD into the CD-ROM drive and let it auto-start the installation program.
4. **Agree** to the license agreement.
5. Click **Install Windows HBA Drivers**.  
The files are extracted to a temporary directory.  
Wait for this operation to complete.
6. Click **Install** to continue.  
The following message is displayed:  
The installation was completed successfully.
7. Restart the server to finish driver installation.  
If you do not want to restart at this time, click **Close** to exit and proceed with other installations.
8. Remove the CD from the CD drive before restarting the server.

## > HBA Driver Installation under Windows NT 4.0

1. With the HBA(s) installed in the server, power on the server and start up Windows NT 4.0.
2. After Windows has started, insert the MSA1000 Support Software CD into the CD-ROM drive and let it auto-start the installation program.
3. **Agree** to the license agreement.
4. Click **Install Windows HBA Drivers**.

The **HP Setup for Microsoft Windows NT 4.0** window is displayed. Under software details, it will show

Emulex LP6000/LP7000/LP8000/LP9000/LP850/LP950,  
PCI-Fibre Channel HBA (with adjunct driver)

5. Click **Install** to continue.
6. Click **OK** to close the pop-up window and click **Exit**.
7. Restart the server to finish the driver installation.  
If you do not want to restart at this time, click **Close** to exit and proceed with other installations.
8. Remove the CD from the CD drive before restarting the server.

## > Storage Configuration under Windows

The Web-based ACU utility is available in Windows environments to configure the MSA1000 storage.

### *To install the ACU on the server*

1. Insert the MSA1000 Support Software CD into the CD-ROM drive of the server and let it auto-start the installation program.
2. Click **Install Array Configuration Utility**.
3. Click **Install** and follow the on-screen instructions to complete the installation.

After the files have been copied, the Setup screen will display a completion message.

4. Click **Exit** and remove the CD from the CD drive.
5. Click **Start > Programs > Compaq System Tools > Compaq Array Configuration Utility XE**.

Enter the required passwords and accept the security certificate.

6. **Enable** or **disable** remote access and click **OK**.

*If remote access is disabled*, the ACU can only be run locally through Windows Internet Explorer on the server being used to configure the storage.

*If remote access is enabled*, the ACU can be run remotely through a client system running Insight Manager.

**NOTE:** The ACU runs in the background. Its icon is displayed in the system tray.

### ***To launch the ACU***

1. Open your Web browser.
2. *For a local connection*, enter the address `http://127.0.0.1:2301`.

*For a remote connection*, enter `http://SERVER_ID:2301`

where *SERVER ID* is the name or the IP address of the host running the ACU.

A login page is displayed.

If a Management home page is displayed, click **Array Configuration Utility** in the left column of the initial Web-based Management page.

3. Enter a user name and password with administrator rights and click **OK**.

Initially, both the user name and password are *administrator*.

The Array Configuration Utility is opened.

The ACU will begin detecting the controllers that are attached to your system. This may take a few minutes.

When controller detection is complete, a new ACU page is displayed, presenting the controller information it found.

4. Click **MSA1000 Controller** in the left column to begin the configuration.

For detailed information on the features and uses of the ACU, refer to the documentation in the `\Documentation\ACU User Guide` folder on the MSA1000 Support Software CD.

**NOTE:** The ACU can also be launched directly from the bootable media of the MSA1000 Support Software CD. For instructions on using the bootable version of the ACU, see the “MSA1000 Support Software Bootable Environments” section at the end of this document.

## > **Storage Diagnostics under Windows**

The ADU can be launched directly from the MSA1000 Support Software CD. For instructions on using the bootable version of the ADU, see the “MSA1000 Support Software Bootable Environments” section at the end of this document.

# MSA1000 Support Software Installation under NetWare

Before proceeding with this installation, make sure the equipment is connected correctly per the HP StorageWorks Modular SAN Array 1000 Installation Overview poster included in the shipping carton.

## > Prerequisites

- Host computer must have the following supported Host Bus Adapter (HBA) installed: FCA2210 Host Bus Adapter
- Host computer must be running one of the following Novell NetWare versions:
  - > Novell NetWare 5.1 with support pack 5 or later.
  - > Novell NetWare 6.0 with support pack 2 or later.
- Host computer must have all ProLiant server drivers installed from the latest SmartStart for Servers CD.

**NOTE:** The supported HBAs are tested and qualified on additional server platforms, such as IBM and Dell.

## > HBA Driver Installation under NetWare

Two methods are available for loading the driver for the FCA2210 HBA:

- Using the Command Line from the System Console
- Using the NWCONFIG Utility

Each method is discussed in the following sections.

### Using the Command Line from the System Console

1. Install the HBA(s), power on the server, and start your NetWare server.
2. Insert the MSA1000 Support Software CD into the CD-ROM drive of the server.
3. From the system console, mount the CD-ROM drive by entering:

```
CDROM
```

4. From the system console, enter the following command:

```
HPSSCD611:\netware\hpsetup.nlm
```

(HPSSCD611 is the label of the MSA1000 Support Software CD.)

The **HP StorageWorks Modular SAN Array 1000 Driver Installation** screen is displayed.

5. Follow the on-screen instructions to complete the driver installation.
6. Remove the CD before restarting the server.

## Using the NWCONFIG Utility

1. Install the HBA(s), power on the server, and start your NetWare server.
2. Insert the MSA1000 Support Software CD into the CD-ROM drive of the server.
3. From the system console, mount the CD-ROM drive by entering:  
CDROM
4. From the system console, enter the following command:  
NWCONFIG  
The **Configuration Options** menu is displayed.
5. From the Options menu, select **Product Options**.  
The **Other Installation Actions** menu is displayed.
6. From the Other Actions menu, select **Install a product not listed** and press **Enter**.
7. Press **Escape**.
8. When prompted, press **F3** to change the installation path and enter:  
HPSSCD611:\netware  
(HPSSCD611 is the label of the MSA1000 Support Software CD.)  
The **HP StorageWorks Modular SAN Array 1000 Driver Installation** screen is displayed.
9. Follow the on-screen instructions to complete the driver installation.
10. Remove the CD before restarting the server.

## Completing Driver Installation

1. After the driver is installed, load the NWCONFIG utility. In the Configuration Options screen, select **NCF files Options**. Press **Enter**.
2. Select **Edit STARTUP.NCF file** and press **Enter**.
3. Enter the following Load command for each HBA, using the appropriate slot number to indicate where the HBAs are inserted in the server:  

```
LOAD QL2300.HAM SLOT = xx /LUNS /ALLPATHS /PORTNAMES
```

where **xx** represents the slot number.
4. Press **F10** to save these changes.
5. Return through all previous menus.
6. Restart the server to load the new drivers and the new configuration.

## > Storage Configuration under NetWare

To configure the MSA1000 storage, use the bootable version of the ACU located on the MSA1000 Support Software CD. For more information, see the “MSA1000 Support Software Bootable Environments” section at the end of this document.

## > Storage Diagnostics under NetWare

The ADU can be launched directly from the MSA1000 Support Software CD. For instructions on using the bootable version of the ADU, see the “MSA1000 Support Software Bootable Environments” section at the end of this document.

# MSA1000 Support Software Installation under Linux

Before proceeding with this installation, make sure the equipment is connected correctly per the HP StorageWorks Modular SAN Array 1000 Installation Overview poster included in the shipping carton.

## > Prerequisites

- Host computer must have the following supported Host Bus Adapter (HBA) installed: FCA2214 Host Bus Adapter
- Host computer must be running one of the following Linux versions:
  - > Red Hat Linux 7.2 Professional (2.4.7-10 and 2.4.9-34 kernels)
  - > Red Hat Linux Advanced Server 2.1 (2.4.9-e.3 kernel)
  - > SuSE Linux Enterprise Server 7 (2.4.7-64GB and 2.4.16-64GB kernels)
- Host computer must have the kernel source and the kernel headers installed.
- Host computer must be running Netscape Navigator 4.76 or later.
- Host computer must have Java 2 Runtime Environment installed and enabled.

Obtain the Java Plug-in for your Linux operating system from the Web.

**NOTE:** The supported HBA is tested and qualified on additional server platforms such as IBM and Dell.

## > HBA Driver Installation under Linux

The following sections discuss installing the FCA2214 HBA drivers:

- Patching the Linux Kernel
- Installing the Driver from the Provided RPM File
- Compiling a Driver from Source Code

### Patching the Linux Kernel

Because this process involves building a new kernel for the MSA1000, HP recommends performing this task during inactive periods. Depending on the kernel configuration, this process may take longer than one hour. Some third-party drivers may require re-installation on the new kernel.

1. Install the HBA(s) in the server, power on the server, and start up your Linux operating system.
2. Log on as the root user.
3. Insert the MSA1000 Support Software CD in the CD-ROM drive of the server and, from the console, mount the CD-ROM drive.
4. Navigate to the *LINUX* directory on the CD.
5. Copy the source RPM file and the msinstall script to a temporary directory:  

```
cp qla2x00-6.0.2-2.src.rpm msinstall directory
```

where *directory* is the path of a temporary directory, such as */root/msa*.
6. Change to the temporary directory used in the previous step.
7. Eject the MSA1000 Support Software CD from the CD-ROM drive of the server.

8. Run the provided script to prepare the server for the MSA1000 by entering:

```
./msainstall
```

This script patches the kernel source and creates a new kernel image that allows Linux to detect the MSA1000 Controller and its configured LUNs. The boot loader will be configured to boot to this new kernel.

This process may take longer than one hour.

**NOTE:** msainstall uses the `.config` file in the `/usr/src/linux kernel version/` directory. If that directory has no `.config` file, `make oldconfig` will make one.

9. Reboot your server to the new default kernel.

## Installing the Driver from the Provided RPM File

1. Change to the temporary directory where `qla2x00-6.0.2-2.src.rpm` is located.
2. Install the FCA2214 HBA driver on the new kernel by entering:

```
rpm --rebuild qla2x00-6.0.2-2.src.rpm
```

3. Load the FCA2214 HBA driver on the new kernel by entering:

```
insmod qla2300
```

4. If desired, add the `insmod qla2300` command to one of the startup configuration files, such as `/etc/rc.local`, to load the driver at each system startup.

## Compiling a Driver from Source Code

If you need to build your own FCA2214 HBA driver module from source code or manually patch the Linux kernel, refer to *InstallNotes.txt* in the `/LINUX` directory on the MSA1000 Support Software CD.

## > Storage Configuration under Linux

The ACU is available to configure the MSA1000 storage. If you plan to use the ACU to configure the MSA1000 storage, use the steps in this section to install the ACU from the Support Software CD on to the server and to launch the ACU.

### *To install the ACU on the server*

1. Insert the MSA1000 Support Software CD in the CD-ROM drive of the server.
2. Mount the CD-ROM.
3. From the console, browse to the */LINUX/onacu* directory on the CD.
4. At the prompt, enter:

```
rpm -Uvh cpqacuxe-6.0-6.0.i386.rpm
```

**NOTE:** Warning messages regarding driver version dependencies may be displayed. These messages do not affect the MSA1000 and may safely be ignored.

5. From the console, enter the command to start the ACU:

```
To enable remote access:      /usr/sbin/cpqacuxe  -R
```

```
To disable remote access:    /usr/sbin/cpqacuxe  -d
```

The ACU runs as a background daemon.

### *To launch the ACU*

1. From the console, enter `netscape` to start Netscape Navigator.
2. For a local connection, enter the address `http://127.0.0.1:2301`.

For a remote connection, enter `http://SERVER ID:2301`

where *SERVER ID* is the name or IP address of the host running the ACU.

A login page is displayed.

3. Enter a user name and password with administrator rights and click **OK**.

Initially, both the user name and password are administrator.

The Array Configuration Utility is opened.

If a Management page is displayed, click **Array Configuration Utility** in the left column of the Web-based Management page.

The ACU will begin detecting the controllers that are attached to your system. This may take a few minutes.

When controller detection is complete, a new ACU page is displayed, presenting the controller information it found.

4. Click **MSA1000 Controller** on the left column to begin the configuration.
5. To stop the ACU, enter the following command at the console:

```
/usr/sbin/cpqcacuxe -stop
```

For detailed information on the features and uses of the ACU, refer to the documentation in the *\Documentation\ACU User Guide* folder on the MSA1000 Support Software CD.

**NOTE:** The ACU can also be launched directly from the bootable media of the MSA1000 Support Software CD. For instructions on using the bootable version of the ACU, see the “MSA1000 Support Software Bootable Environments” section at the end of this document.

## > Storage Diagnostics under Linux

The ADU can be launched directly from the MSA1000 Support Software CD. For instructions on using the bootable version of the ADU, see the “MSA1000 Support Software Bootable Environments” section at the end of this document.

# MSA1000 Support Software Bootable Environments

The ACU and the ADU are provided on and can be run from the MSA1000 Support Software CD.

## *To use the bootable media on the MSA1000 Support Software CD*

1. Make sure the equipment is connected appropriately per the HP StorageWorks Modular SAN Array 1000 Installation Overview poster included in the shipping carton.  
**NOTE:** Host server must have a minimum of 256MB of RAM.
2. Power on the server with the MSA1000 Support Software CD inserted into the CD-ROM drive.
3. While booting to the CD, the screen will scroll information, pausing several times as the Linux environment loads.

The screen will go blank momentarily while the 'X Window' initializes.

**NOTE:** Depending on the size of your SAN, the command *Starting Fibre Channel* may take as long as five minutes to complete.

4. A page is displayed, with options for the ACU and the ADU.

Click the appropriate banner to start the desired utility.

### ***To launch the ACU***

1. After selecting the ACU banner, the ACU screen is displayed.

Click **MSA1000 Controller** on the left column to begin array configuration.

For information on setting up and configuring the MSA1000 storage using the ACU, refer to the documentation in the \Documentation\ACU User Guide folder of the Support Software CD.

2. When configuration of the arrays is complete, close the ACU window and exit the Web browser.

The system will restart automatically.

Remove the CD immediately to prevent booting to it again.

### ***To launch the ADU***

1. After selecting the ADU banner, the ADU screen is displayed and a diagnostic report is automatically generated for all array controllers.
2. To copy this report to a diskette, insert a Windows- or Linux-formatted diskette into the diskette drive of the server and click **Save Report**.

Wait for the report to be saved to the diskette.

3. After the completion message is displayed, close the ADU window and exit the Web browser.

The system will restart automatically.

Remove the CD immediately to prevent booting to it again.



© 2002 Hewlett-Packard Company

HP and StorageWorks are trademarks of Hewlett-Packard Company in the U.S., and/or other countries. All rights reserved. All other product names mentioned herein may be trademarks of their respective companies.

Third Edition (December 2002)  
Part Number: 254092-003



254092-003