



Technical Note

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Configuring the StorageWorks MSA1000 for external boot with Microsoft Windows – New Installations

Abstract: This technical note outlines step-by-step procedures for configuring the StorageWorks MSA1000, servers, and the FCA2101 Host Bus Adapter for external boot.

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Considerations and Limitations

- These steps and procedures are intended for an advanced user who has a solid foundation of knowledge in server hardware, storage hardware, and operating system installation
- These procedures currently apply only to Microsoft Windows 2000 Advanced Server and Microsoft Windows NT
- All prerequisites and current scaling limitations for the MSA1000 apply
- Do not use SmartStart to install OS on server
- Firmware upgrades should be performed from a DOS boot to avoid loss of connectivity to the MSA1000
- Secure Path is not supported when the operating system is installed to the MSA1000
- You must copy the FCA2101 driver files from the HP StorageWorks Modular SAN Array 1000 Support Software CD to a floppy for a part of the OS installation

Where X: is the drive letter of your CD ROM drive, copy all files to a floppy – during OS installation you will be asked for controller drivers, and you can only install them via floppy.

Microsoft Windows 2000: **X:\Win2k*. *** (all files EXCEPT Lputilnt.EXE)

Microsoft Windows NT 4.0: **X:\Winnt4*. *** (all files AND subdirectories EXCEPT Lputilnt.exe)

- Do not perform any configuration on internal drives until the installation of the operating system has been completed on the MSA1000. Upon system reboot, execute the Online RAID Configuration Utility and enable the internal drives.
- These procedures assume a clean install on both the server and the MSA1000 – in other words, both are new, out of the box and have not previously been configured
- Upgrades to Host Bus Adapter firmware should not be performed by utilities from within the operating system. Corruption of the firmware and/or the operating system may result. All firmware upgrades should be performed from a DOS boot using the LP6DUTIL utility found on the MSA1000 Support Software CD
- The pagefile for the operating system should be installed to an internal drive per the recommendation of Microsoft
- ProLiant servers are available in two configurations. Newer models use ROM Based Setup Utility (RBSU), while older models do not. For servers with RBSU, refer to the section **Setup for RBSU Servers**, for those without this utility, refer to the section **Setup for Servers without RBSU**. Select one of the following procedures based on your ProLiant server configuration.
- Selective Storage Presentation must be used if multiple servers are to contain volumes on the same MSA1000

Setup for RBSU Servers

1. Boot the server from the ProLiant Smart Start CD-ROM version 5.3 or higher. As an alternative, you can download the latest ROM BIOS from <http://www.compaq.com>.
2. Install the latest ROM from the Smart Start CD-ROM or the downloaded version.
3. Set the boot order:
 - a. While the system is booting, Press **F9** to start the ROM Setup Utility.
 - b. Choose **Boot Controller Order**.
 - c. Select the primary HBA and move it to **Controller Order 1**.
 - d. Exit the utility.

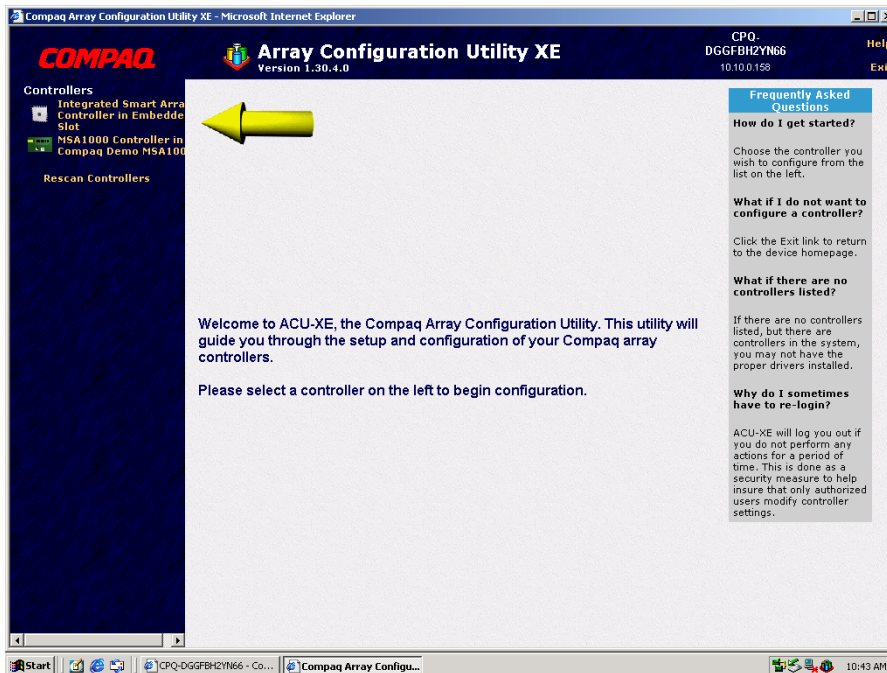
Setup for Servers without RBSU

If your server does not have RBSU or the current system partition installed, perform the following steps:

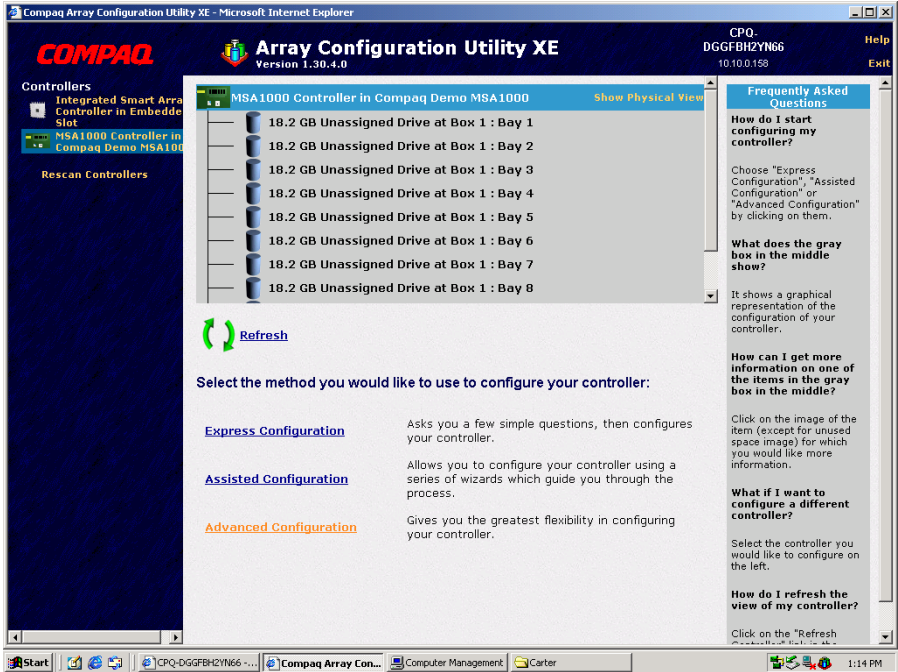
1. Download and install the latest system ROM from the website: <http://www.compaq.com>.
2. Download SOFTPAQ SP18002.
3. Run the SOFTPAQ program to create an upgrade diskette.
4. Boot from the ProLiant Smart Start CD-ROM and run the program to clear the configuration.
5. Reboot from the new upgrade diskette. The `ORD.EXE` program should start automatically.
6. Set the Primary HBA to **Position 1**.
7. Reboot the server.

Configuration of Volume(s) on MSA1000

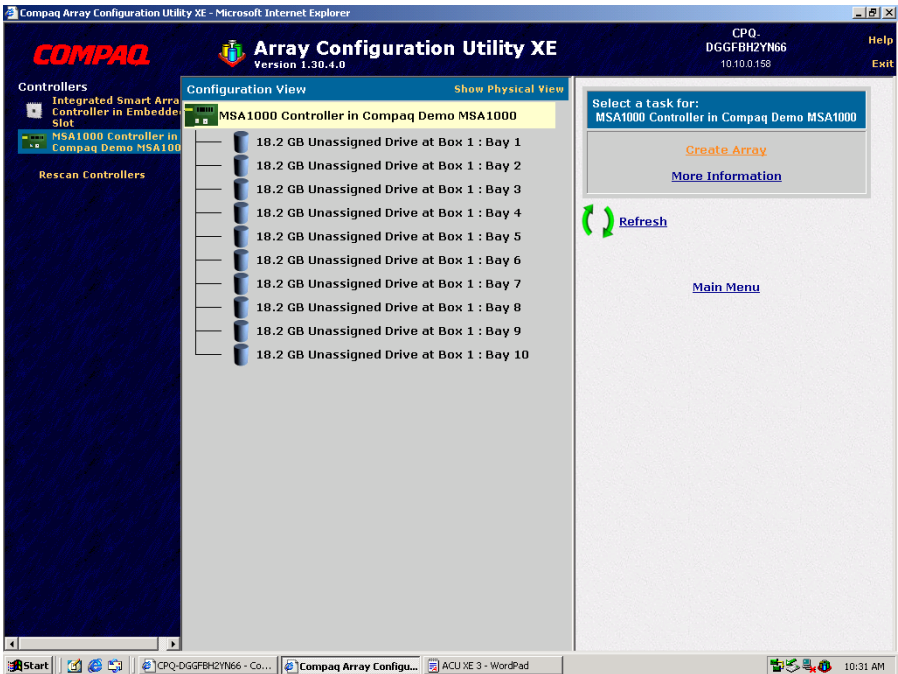
1. Power on server with HP StorageWorks Modular SAN Array 1000 Support Software CD in CD-Rom
2. After initialization the user will see **Array Configuration Utility XE**
3. A list of detected controllers is displayed on the left of the screen



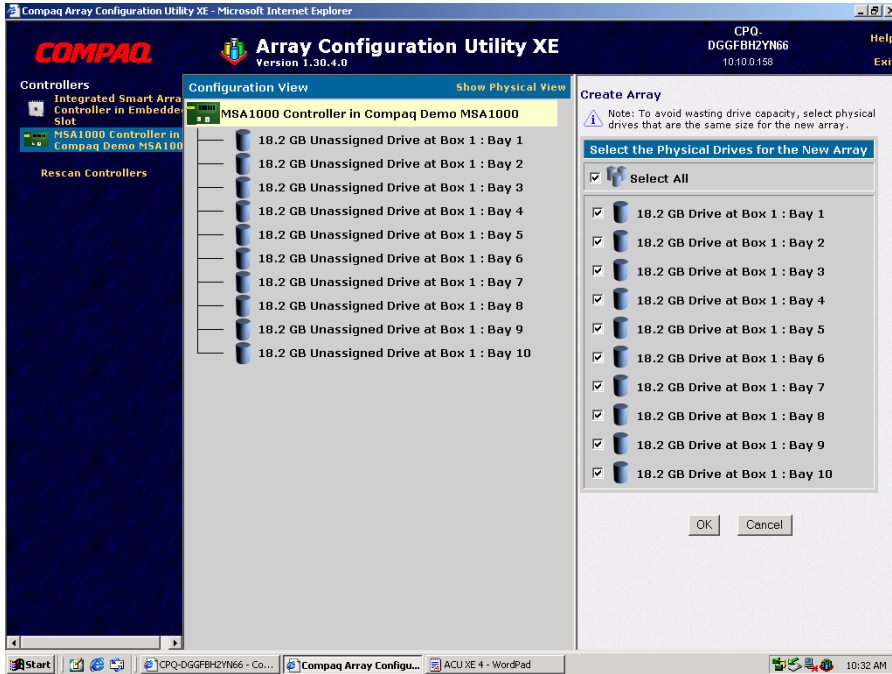
1. Select the **MSA1000 Controller** and choose **Advanced Configuration**



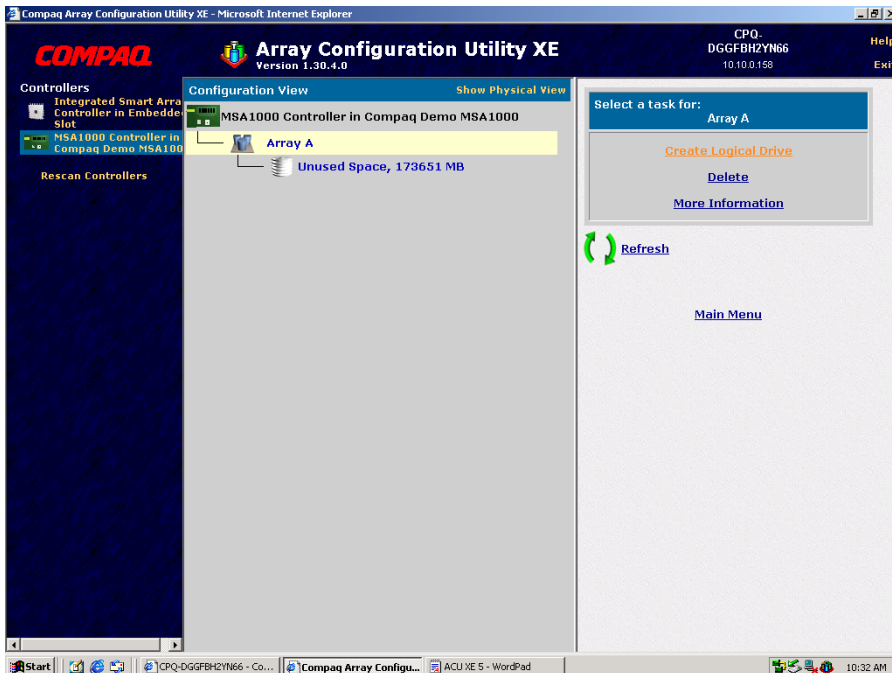
5. The array controller and available drives will be displayed. Select the array controller and click on **Create Array**



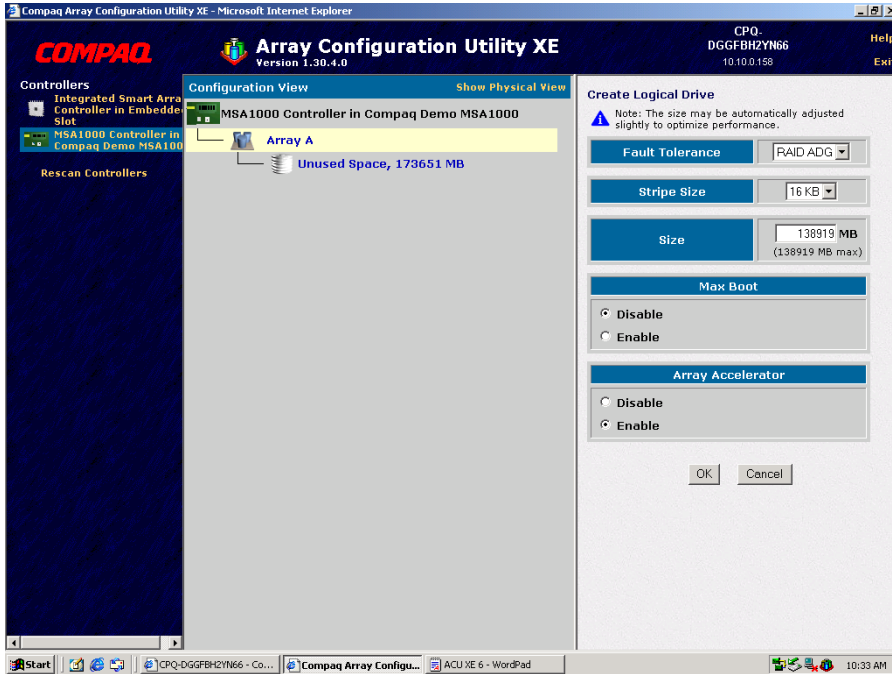
6. Select the drives to be included in the array and choose **OK**



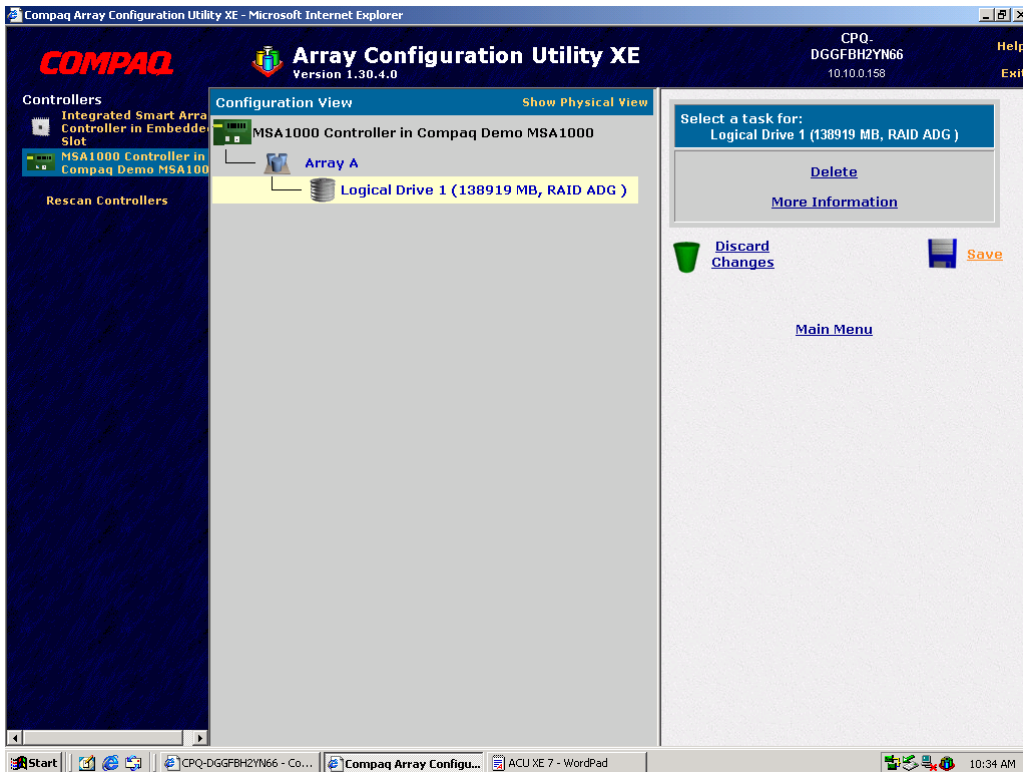
7. Select the **Create Logical Drive** command



8. Configure the volume with the Fault Tolerance and parameters desired and choose **OK**



9. Configuration of the MSA1000 is complete. Choose **Save** and then **Exit**. Close the browser window and the server will perform a reboot. Remove the HP StorageWorks Modular SAN Array 1000 Support Software CD from the CD-Rom and prepare to configure the boot BIOS in the next section.



Configuration of Boot BIOS with Emulex BIOS Utility

1. As the server boots the menu for the HBA will display. Press <Alt E> to start the Emulex BIOS Utility.

```
!!! Emulex LP950 BIOS, Copyright 1998 !!!   RB1.60A4
Press <Alt E> to go to Emulex BIOS Utility
Press <s> to skip Emulex BIOS
_
```

2. You are presented with a list of HBAs in the server, press 1 → Enter to select the displayed HBA.

```
Emulex Light Pulse BIOS Utility, RB1.60A4
Copyright 1997, 1999 Emulex Corp.

Emulex Adapters in the System:

1. LP950:          PCI Bus #:04 PCI Device #:04

Enter a Selection:

Enter <x> to Exit
```

3. You are presented with two selections. Note the options at the bottom of the screen to navigate through the menus.

```
Adapter 1:          PCI Bus #:04 PCI Device #:04

LP950:   I/O Base: 6000   Firmware Version: RS3.82A1
Port Name: 10000000 C9272A43   Node Name: 20000000 C9272A43
Topology: Auto Topology: Loop first (Default)

1. Configure Boot Devices
2. Configure This Adapter's Parameters
```

4. Press 2 → Enter to select **Configure This Adapter's Parameters**.

```
Adapter 1:          PCI Bus #:04 PCI Device #:04

LP950:   I/O Base: 6000   Firmware Version: RS3.82A1
Port Name: 10000000 C9272A43   Node Name: 20000000 C9272A43
Topology: Auto Topology: Loop first (Default)

1. Enable or Disable BIOS
2. Change Default ALPA of this adapter
3. Change PLOGI Retry Timer (+Advanced Option+)
4. Topology Selection (+Advanced Option+)
5. Enable or Disable Spinup delay (+Advanced Option+)
6. Auto Scan Setting (+Advanced Option+)
7. Enable or Disable EDD 3.0 (+Advanced Option+)
8. Enable or Disable Start Unit Command (+Advanced Option+)
9. Enable or Disable Environment Variable (+Advanced Option+)

Enter a Selection:

Enter <x> to Exit          <PageUp> to Previous Menu
```

5. You are presented with 9 options, press 1 → Enter to **Enable or Disable BIOS**.
6. Press 1 → Enter to enable the BIOS
7. Press the PageUp key to return to the previous menu
8. Press PageUp to return to the first menu
9. Press 1 → Enter to **Configure Boot Devices**
10. You are presented with a list of saved boot devices.

```
Adapter 1: S_ID:011900 PCI Bus #:04 PCI Device #:04

List of Saved Boot Devices:

1. Unused   DID:000000 WWPN:00000000 00000000 LUN:00 Primary Boot
2. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
3. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
4. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
5. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
6. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
7. Unused   DID:000000 WWPN:00000000 00000000 LUN:00
8. Unused   DID:000000 WWPN:00000000 00000000 LUN:00

Select a Boot Entry: _

Enter <x> to Exit                               <PageUp> to Previous Menu
```

11. Press 1 → Enter to select **Primary Boot**.
12. You are prompted to select the desired boot device.
13. Press 00 → Enter to clear selected boot entry.
14. Press 1 → Enter to select **Primary Boot**.
15. Press 01 → Enter to select the entry with the LUN that is presented by the MSA1000 controller.
16. You are prompted to enter in a two-digit LUN number, enter 00 → Enter.

```

Adapter 1:  S_ID:011900 PCI Bus #:04 PCI Device #:04
00. Clear selected boot entry!!
01. DID:011001 WWPN:500805F3 000009F1 LUN:00      COMPAQ LOGICAL VOLUME  0.52

      DID:011001 WWPN:500805F3 000009F1
      Enter two digits of starting LUN (Hex):00
      <PageUp> to Previous Menu

Select The Two Digit Number of The Desired Boot Device:01
Enter <x> to Exit                                <PageUp> to Previous Menu

```

17. You are presented with a list of available LUNs visible to the HBA.

```

Adapter 1:  S_ID:011900 PCI Bus #:04 PCI Device #:04

DID:011001 WWPN:500805F3 000009F1

01.      LUN:00      COMPAQ LOGICAL VOLUME  0.52
02.      LUN:01      COMPAQ LOGICAL VOLUME  0.52

Enter a Selection:
B#W: Boot number via WWPN. B#D: Boot number via DID
Enter <x> to Exit                                <PageUp> to Previous Menu

```

18. Press 01 → Enter to select the first LUN (logical drive 1) on the MSA1000.

19. You are prompted to select how to boot the device.

```
Adapter 1: S_ID:011900 PCI Bus #:04 PCI Device #:04
DID:011001 WWP:500805F3 000009F1
01.      LUN:00          COMPAQ LOGICAL VOLUME 0.52
02.      LUN:01          COMPAQ LOGICAL VOLUME 0.52

DID:011001 WWP:500805F3 000009F1 LUN:

1. Boot this device via WWP
2. Boot this device via DID

<PageUp> to Previous Menu
Enter a Selection:

Enter a Selection: 01
B#W: Boot number via WWP. B#D: Boot number via DID
Enter <x> to Exit          <PageUp> to Previous Menu
```

20. Press 1 → Enter.
21. You are returned to the list of saved boot devices.
22. Press x → y to exit the menu and reboot the server. As server begins reboot, insert the CD which contains the operating system

Installation of Operating System

- 1) On reboot insert OS CD and begin installation
- 2) As the operating system install begins a message will be displayed

Setup is inspecting your computers hardware configuration....

followed by a blue installation screen.

You must press F6 at this time to allow the operating system to install the additional driver required for the FCA2101.

Operating System Install Procedure Notes:

Windows 2000 will display a message: **Press F6 if you need to install a third party SCSI or RAID driver.** **Windows NT4.0** will not display a message, but will accept the F6 key to identify the need for installation of a third party driver.

(If you choose to install off the three boot disks then you can use the specify additional drivers when prompted later in the installation.)

1. When setup prompts you to Specify an Additional Device because it can't find a driver for the hardware that you have, choose **S=Specify Additional Device.**
2. Insert the KGPSA driver diskette (that was specified in the **Considerations** section of this Technical Note) and press enter. Choose: **KGPSA-xx, PCI-Fibre Channel HBA** and press <enter>
3. You will be returned to the Specify Additional Device screen. Press <enter>
4. Setup will continue to load additional drivers. From this point the installation will resume as normal.

NOTE: When prompted for the location to install the operating system ensure that you select the volume created on the MSA1000.

Completing the Server Build

Follow the on screen prompts during the OS install. When instructed, remove all media from floppy and CD ROM drives, and perform a reboot. Continue building the server for your specific environment.