



Technical Note

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Configuring the StorageWorks MSA1000 for external boot with NetWare – New Installations

Abstract: This technical note outlines step-by-step procedures for configuring the StorageWorks MSA1000, servers, and the FCA 2214 Host Bus Adapter for external boot.

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Considerations

Please read and understand the following:

- These steps and procedures are intended for an advanced user who has a solid foundation of knowledge in server hardware, storage hardware, and the NetWare operating system and installation
- These procedures currently apply only to Novell NetWare versions 5.x and 6.x
- All prerequisites and current scaling limitations for StorageWorks MSA1000 apply
- Do not use SmartStart to install OS on server
- Do not perform any configuration (using Array Configuration Utility) on internal drives until the installation of the operating system has been completed on the StorageWorks MSA1000
- These procedures assume a clean install on both the server and the StorageWorks MSA1000 – in other words, both are new, out of the box and have not previously been configured

Initial Steps

Install Host Bus Adapter (HBA) in the Server

Install the HBA in an open slot in the server. Connect the appropriate fibre cables to the HBA and interconnect devices. Review the install documentation that came with the HBA or the Quick Install Guide (MSA 1000) for detailed instructions.

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.

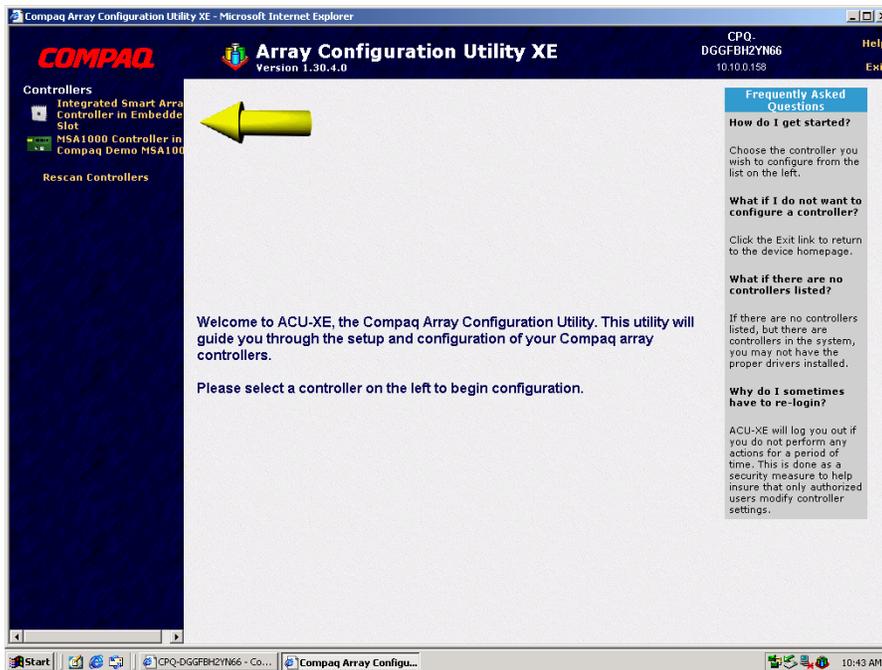
Setup for Servers without RBSU

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

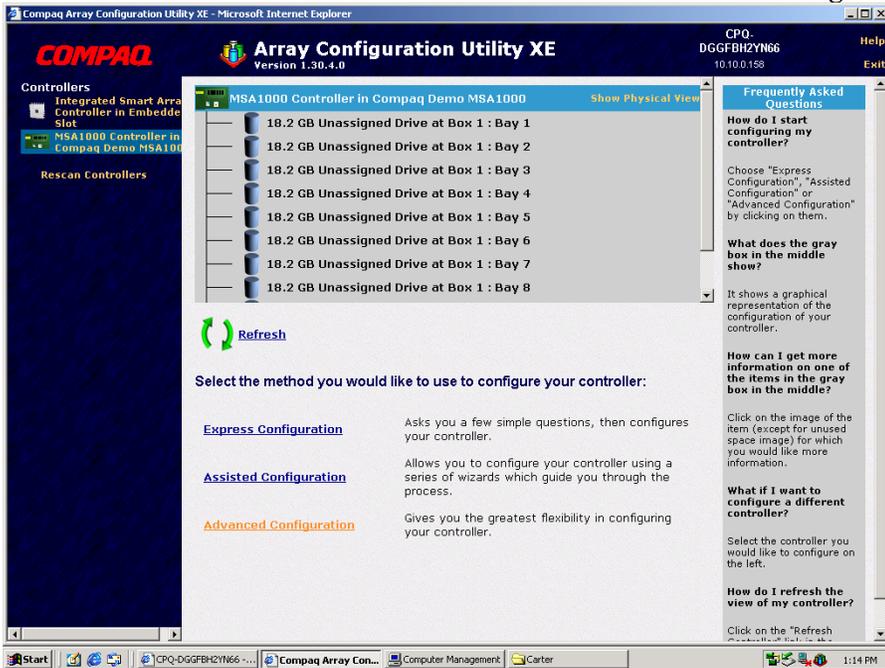
1. Download and install the latest system ROM from the website: <http://www.compaq.com>.
2. Download SOFTPAQ SP18002.
3. Run the SOFTPAQ program to create an upgrade diskette.
4. Boot from the ProLiant Smart Start CD-ROM and run the program to clear the configuration.
5. Reboot from the new upgrade diskette. 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

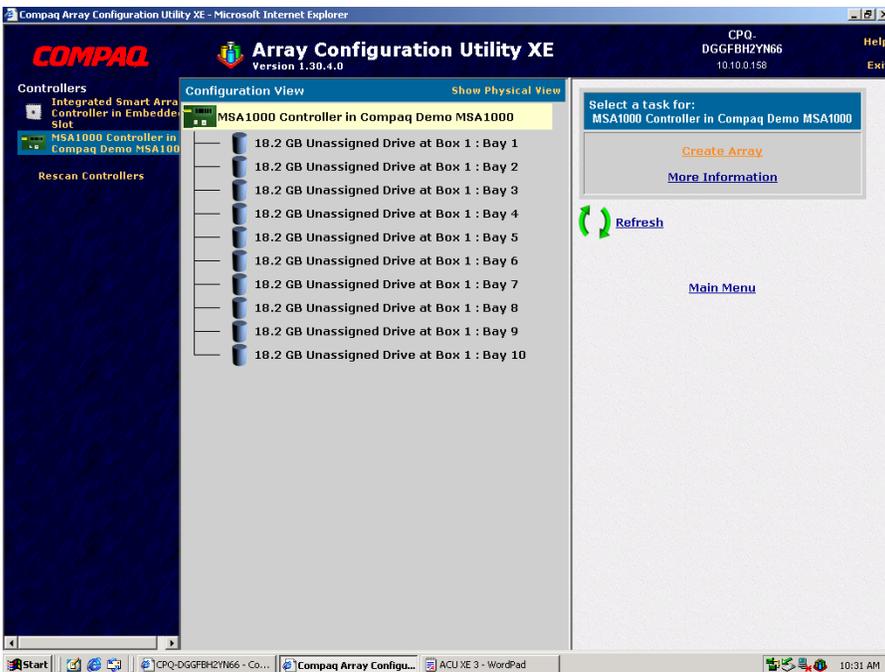
1. Power on server with HP StorageWorks Modular SAN Array 1000 Support Software CD in CD-Rom
2. After initialization the user will see **Array Configuration Utility XE**
3. A list of detected controllers is displayed on the left of the screen



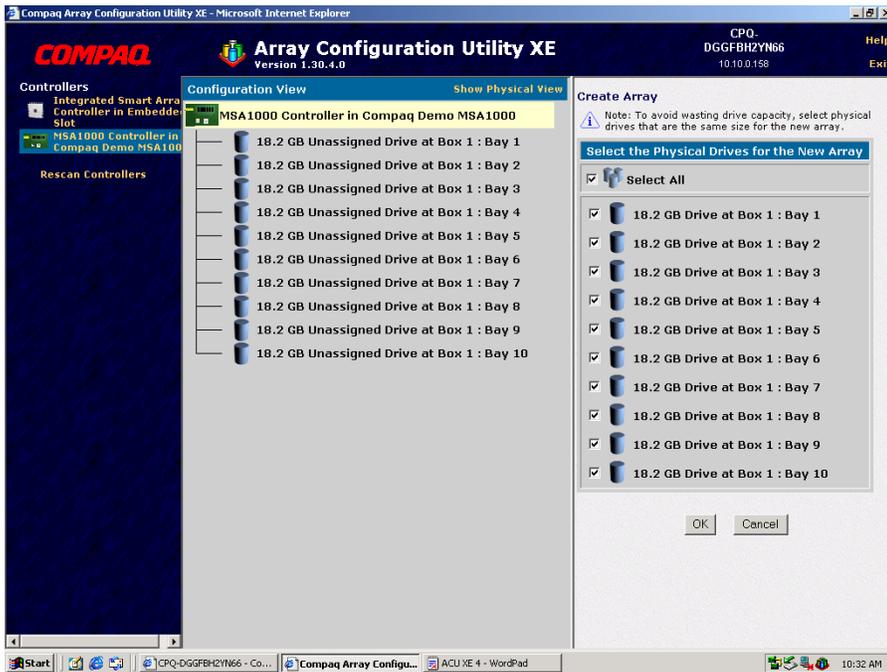
4. Select the **MSA1000 Controller** and choose **Advanced Configuration**



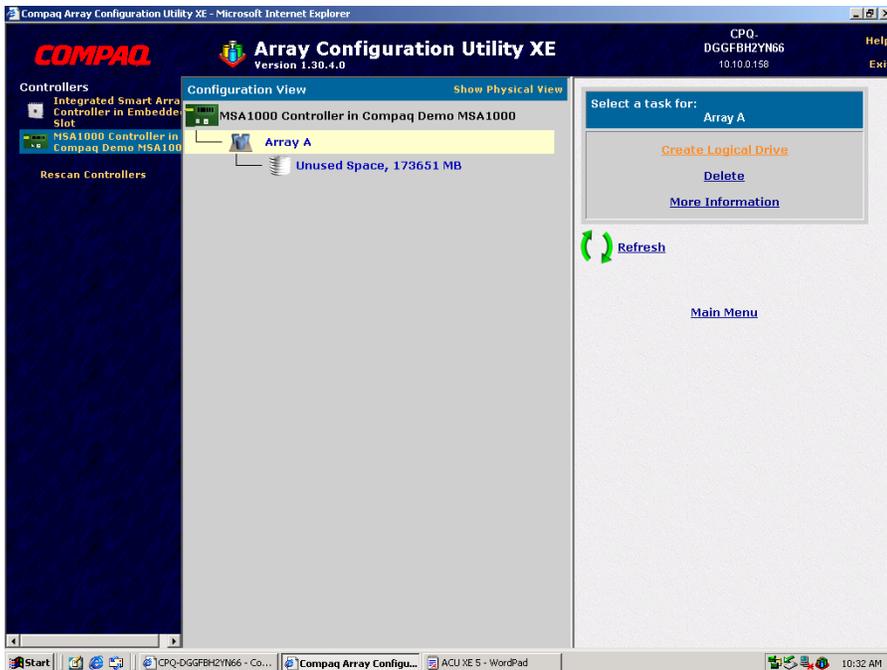
5. The array controller and available drives will be displayed. Select the array controller and click on **Create Array**



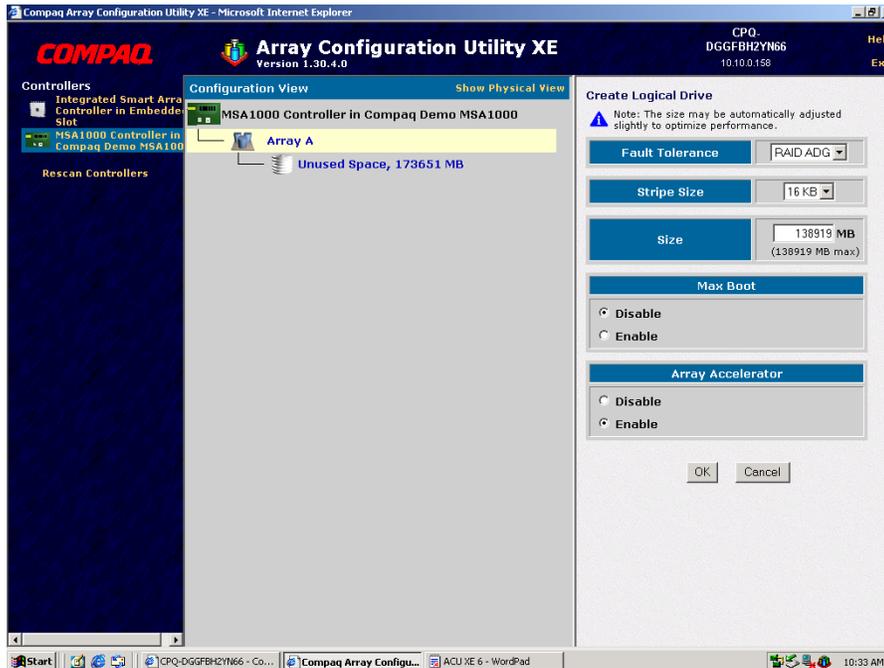
6. Select the drives to be included in the array and choose OK



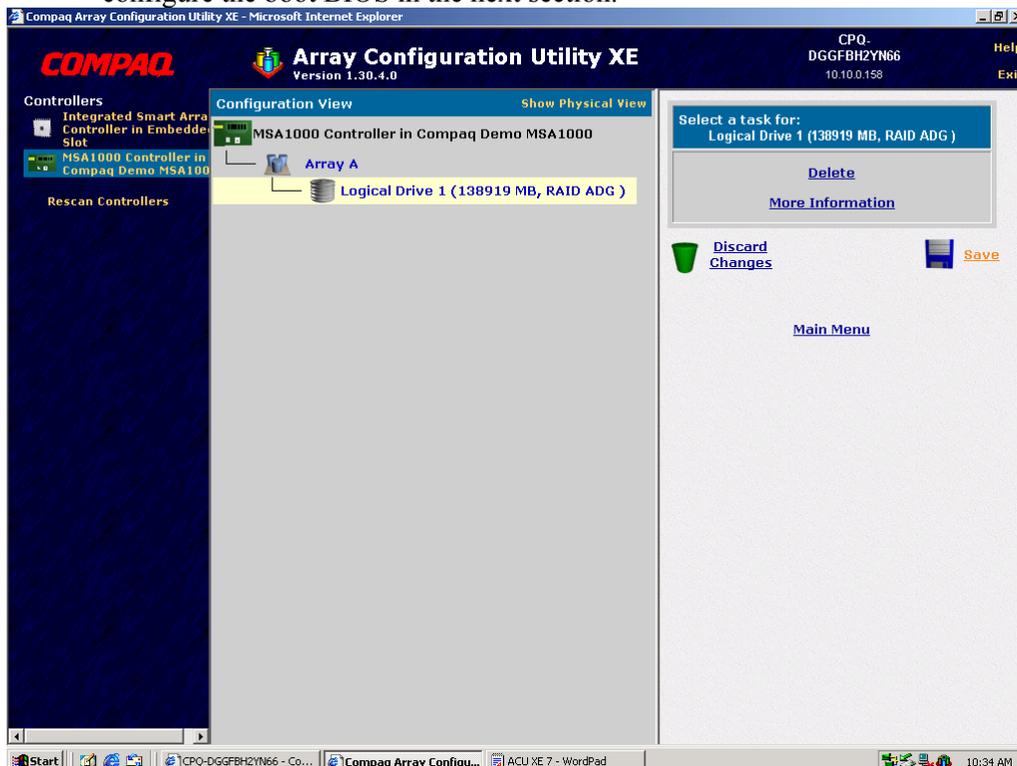
7. Select the Create Logical Drive command



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



- Configuration of the MSA1000 is complete. Choose **Save** and then **Exit**. Close the browser window and the server will perform a reboot. Remove the 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 Qlogic BIOS Utility

As the Server typically will boot to an internal drive, the server has to be configured to boot via the Fibre Channel Host Bus Adapter. The following steps illustrate this.

1. Power on the server, and run the Server Vendors BIOS / Setup utility to install the adapter. Save the configuration, and Reboot.
2. As the server boots, the menu prompt for the HBA will display. Press <CTRL Q> to start the QLogic (Fast!UTIL) BIOS Utility.

```
1152 MB Detected

COMPAQ System BIOS - P21 (08/03/2001)
Copyright 1982,2001 Compaq Computer Corporation. All rights reserved.

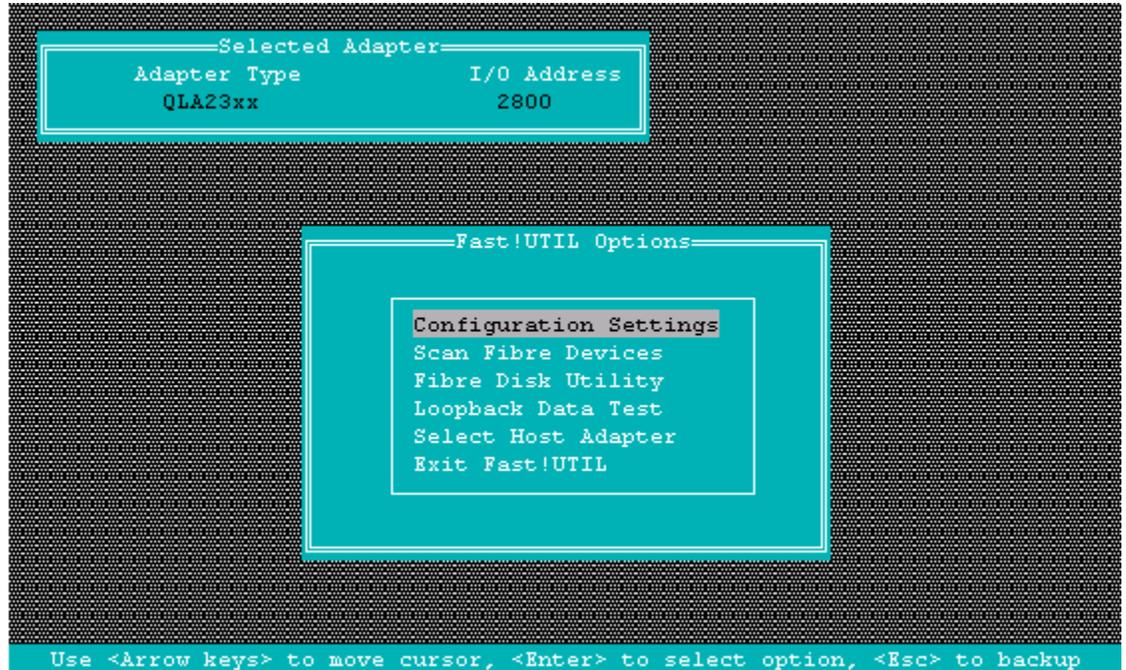
Processor 1 initialized at 1.0 GHz/133 MHz with 256 Kbyte Cache
Processor 2 initialized at 1.0 GHz/133 MHz with 256 Kbyte Cache

COMPAQ Integrated Smart Array Controller (ver 1.42)    0 Logical Drive(s)
1785-Slot 0 Drive Array Not Configured
      No Drives Detected

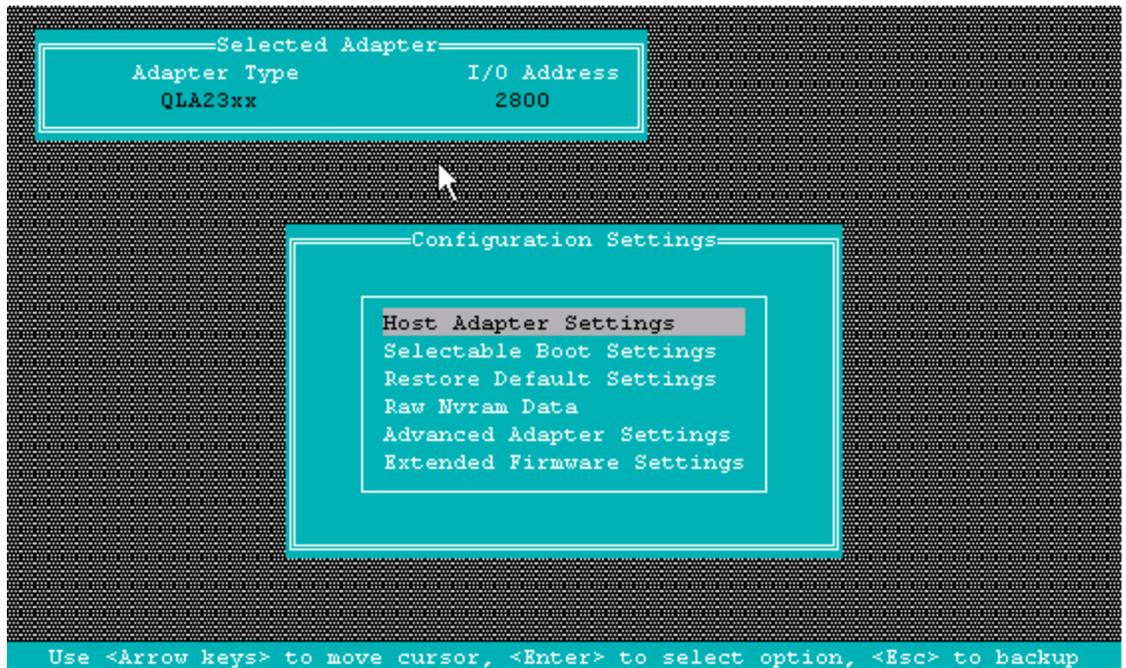
QLogic Corporation
QLA2312 PCI Fibre Channel ROM BIOS Version 1.29      Subsystem Vendor ID 0E11
Copyright (C) QLogic Corporation 1993-2002. All rights reserved.
www.qlogic.com

Press <CTRL-Q> for Fast!UTIL
```

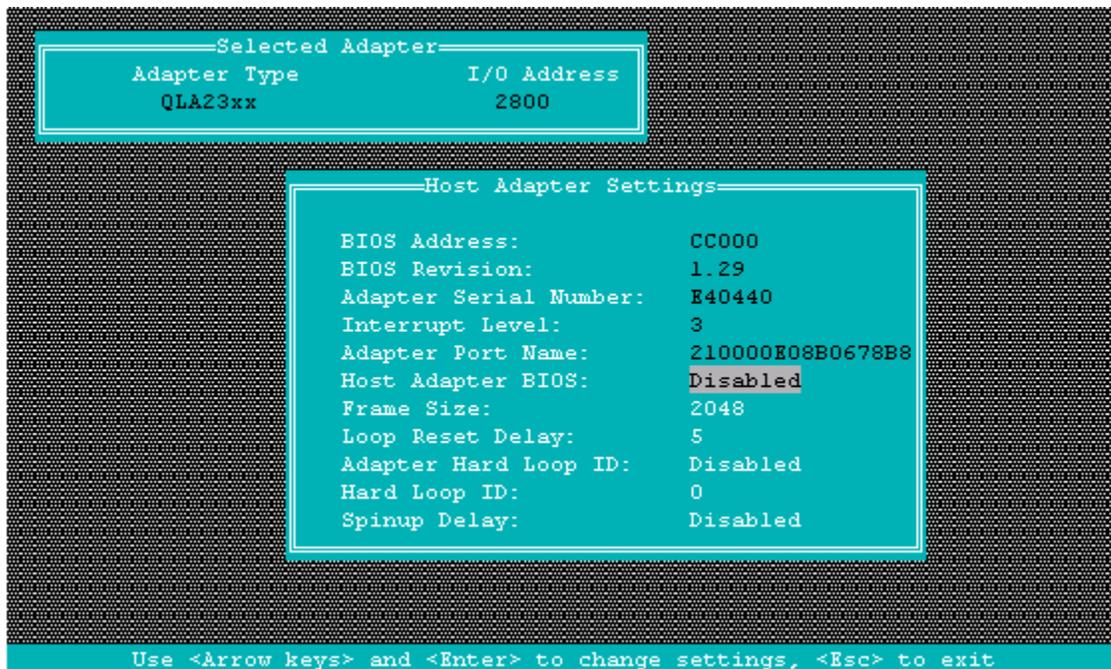
3. At the QLogic main menu, select **Configuration Settings** (default) and press Enter



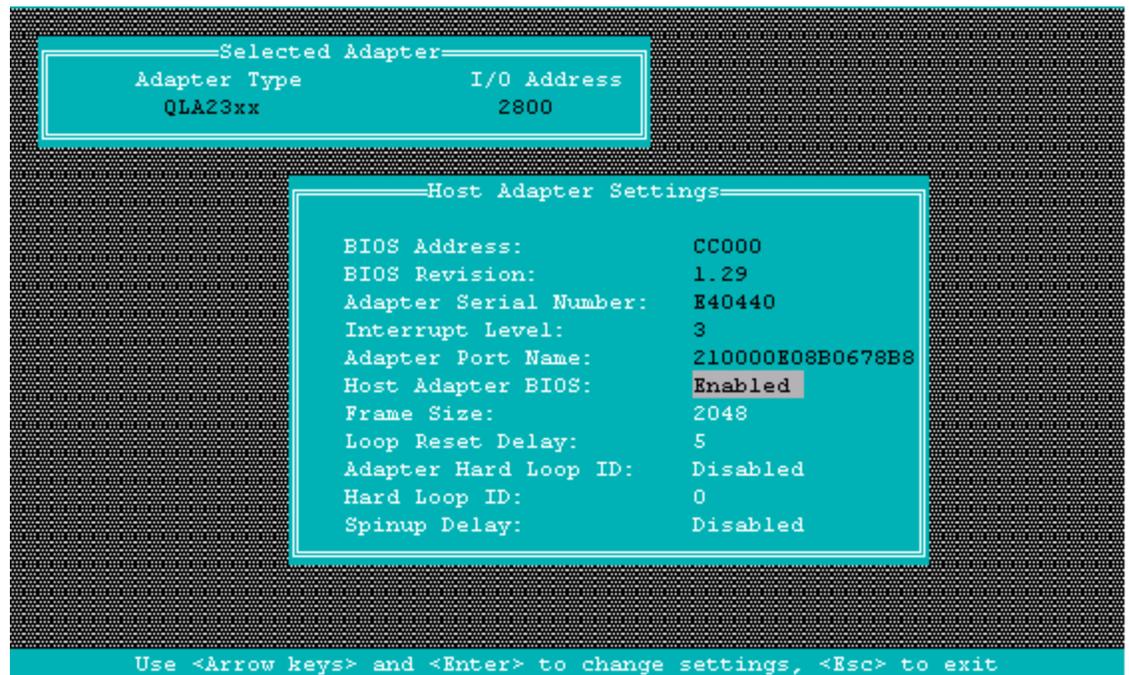
4. Select the first option **Host Adapter Settings** and press Enter.



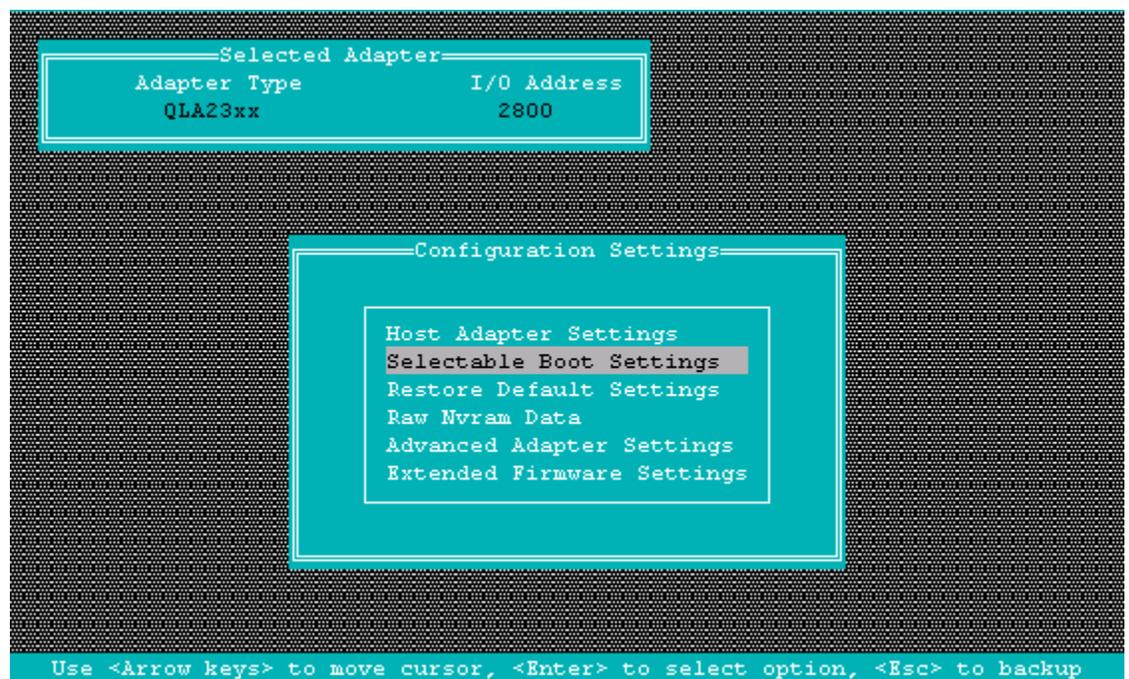
5. By default, the Host Adapter BIOS is Disabled. Arrow down to **Disabled**, and press Enter to **Enable**.



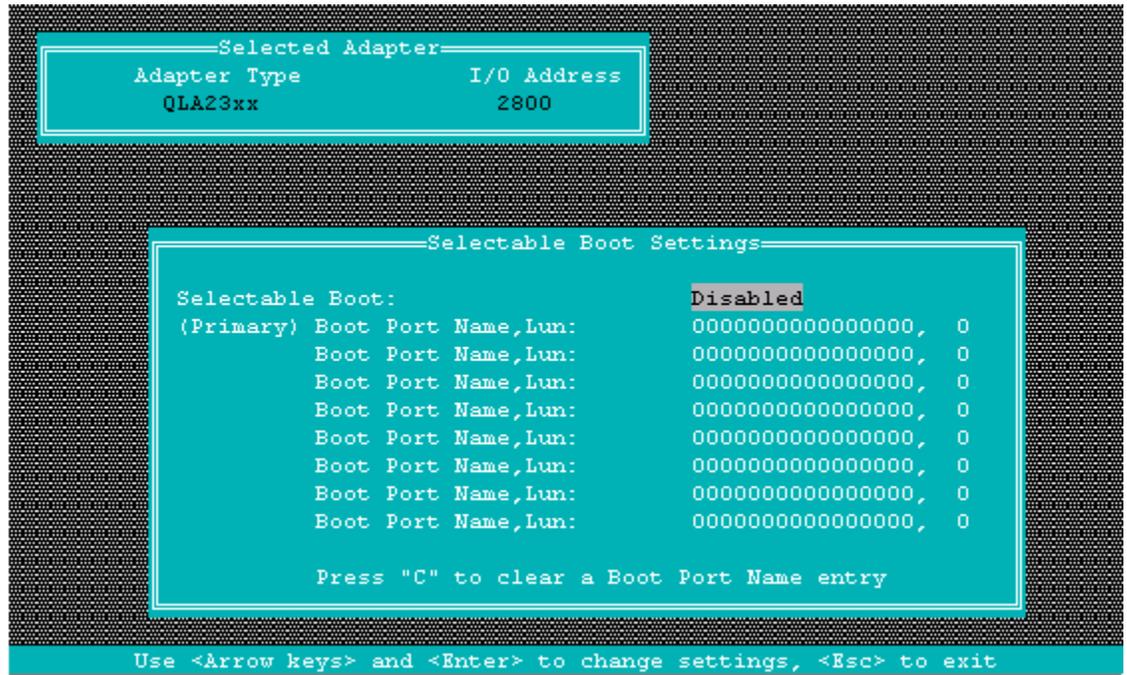
6. Once the Bios is **Enabled**, the options will look like this:



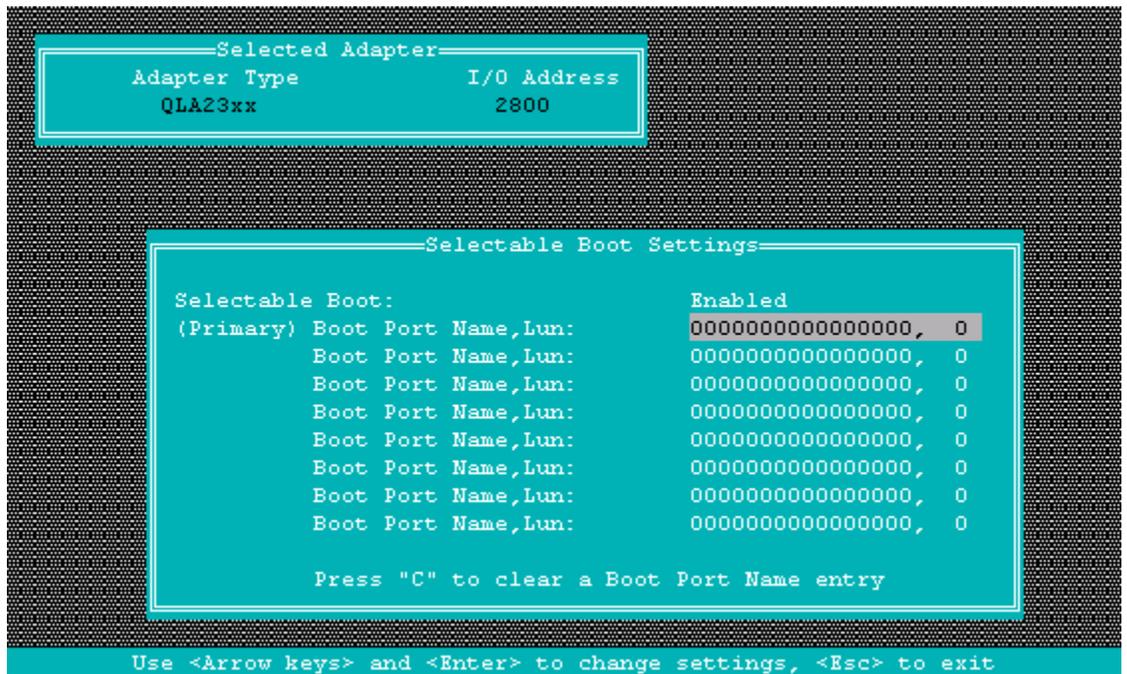
7. Press the Escape key to back up one menu, and arrow down to **Selectable Boot Settings**, and press Enter to select it.



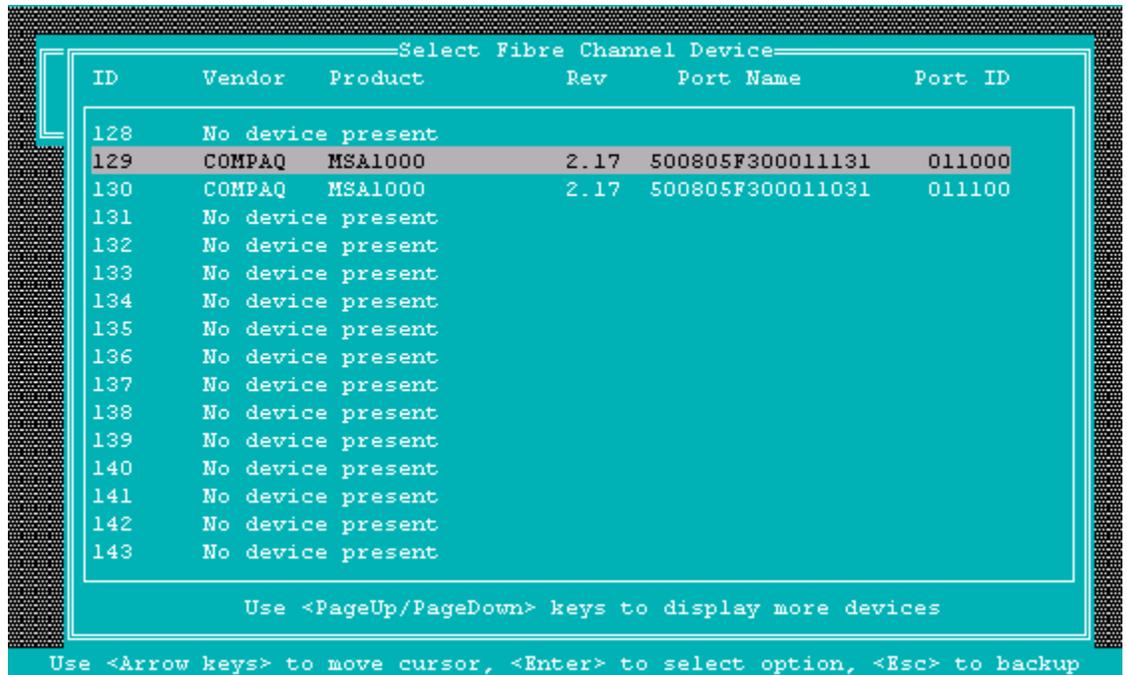
- By default, the **Selectable Boot** option is **Disabled**. Press Enter to **Enable** it.



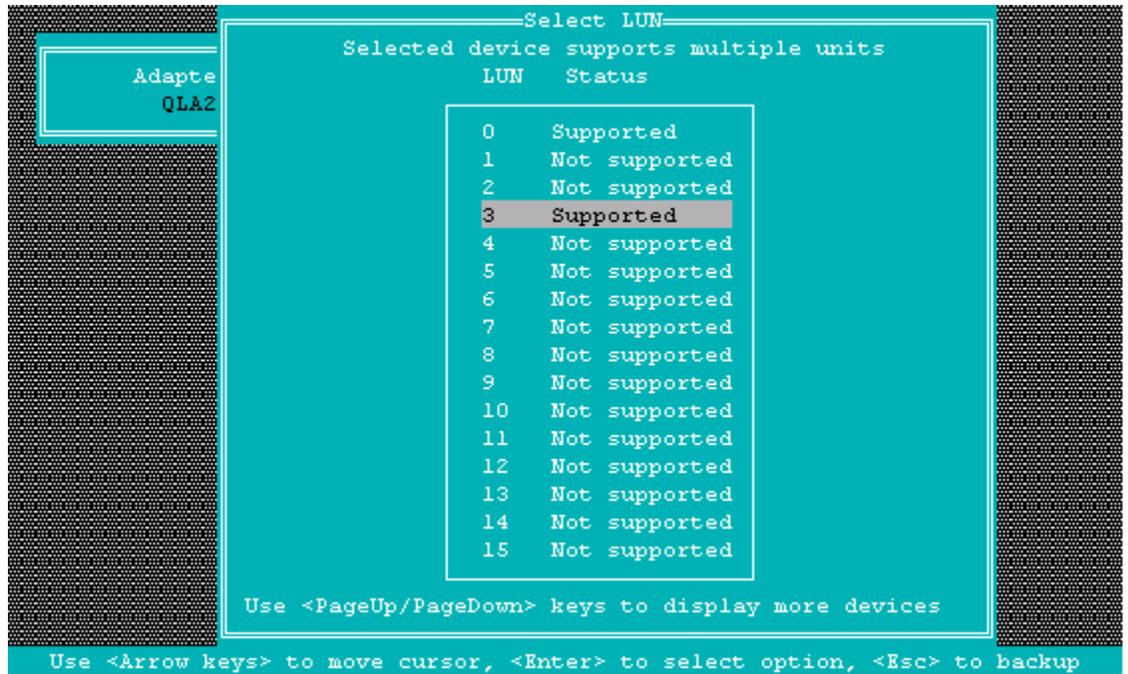
- After enabling, it will look like this. Arrow down to **(Primary) Boot Port Name, Lun:**, and press Enter.



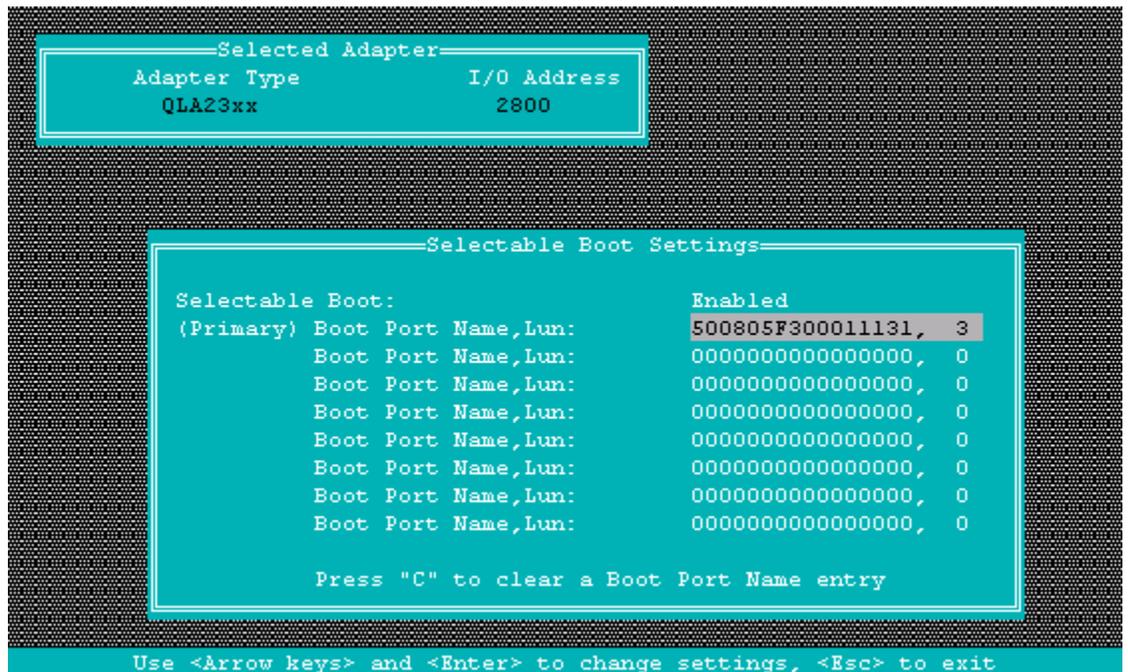
- Next, you are presented with a list of devices found on the SAN. Note: If you do not see any devices listed, there is a fibre cabling problem that will need to be root caused. Arrow down to the MSA1000 that you want to boot from (In this example, we are showing to MSA1000's in the SAN). Once the correct MSA1000 is highlighted, press Enter.



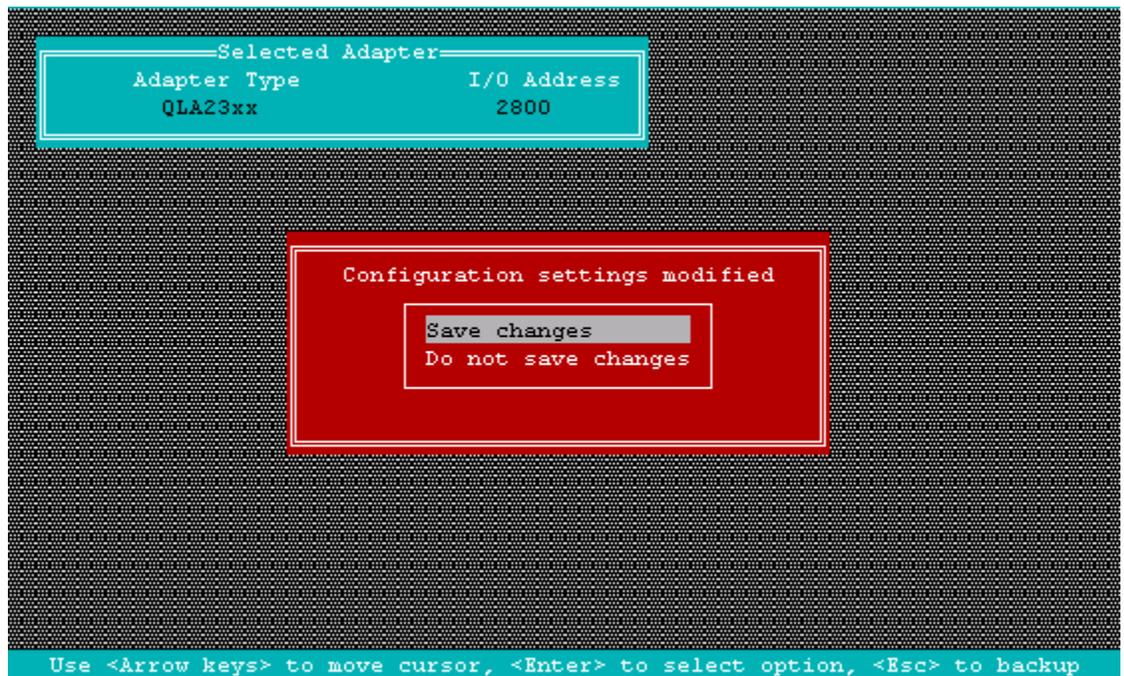
- The next screen shot shows the available LUNs on the selected MSA1000 controller. Arrow down to the LUN that you want to boot from, and press Enter to select



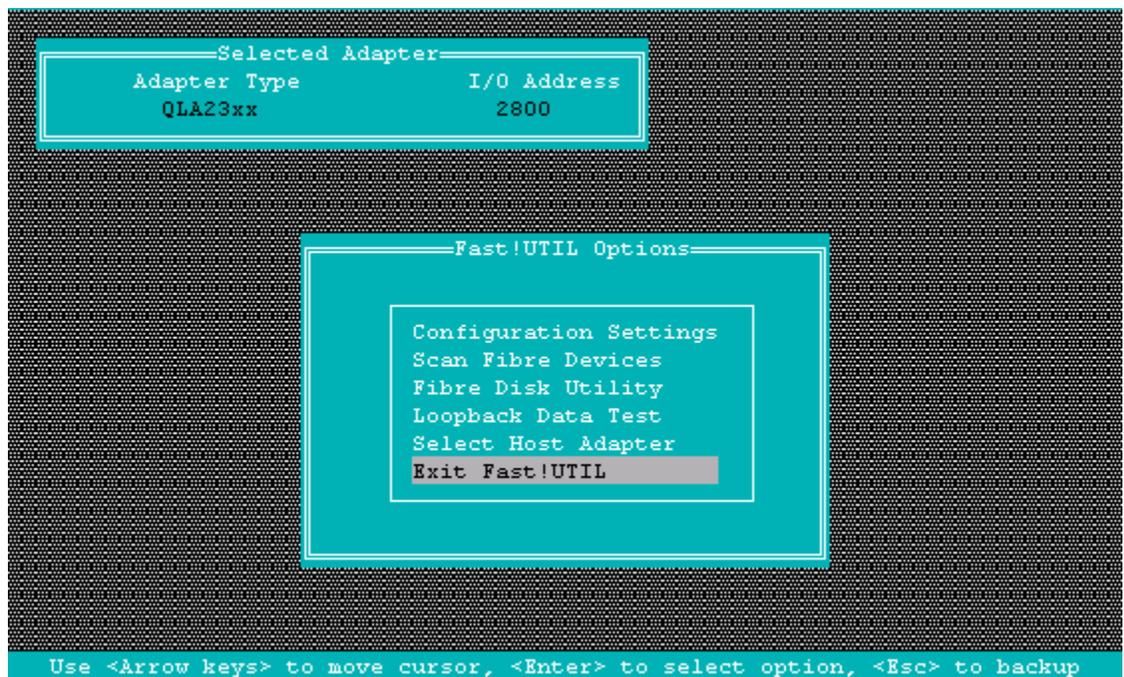
- Once the Boot LUN is selected, the screen will appear as follows:



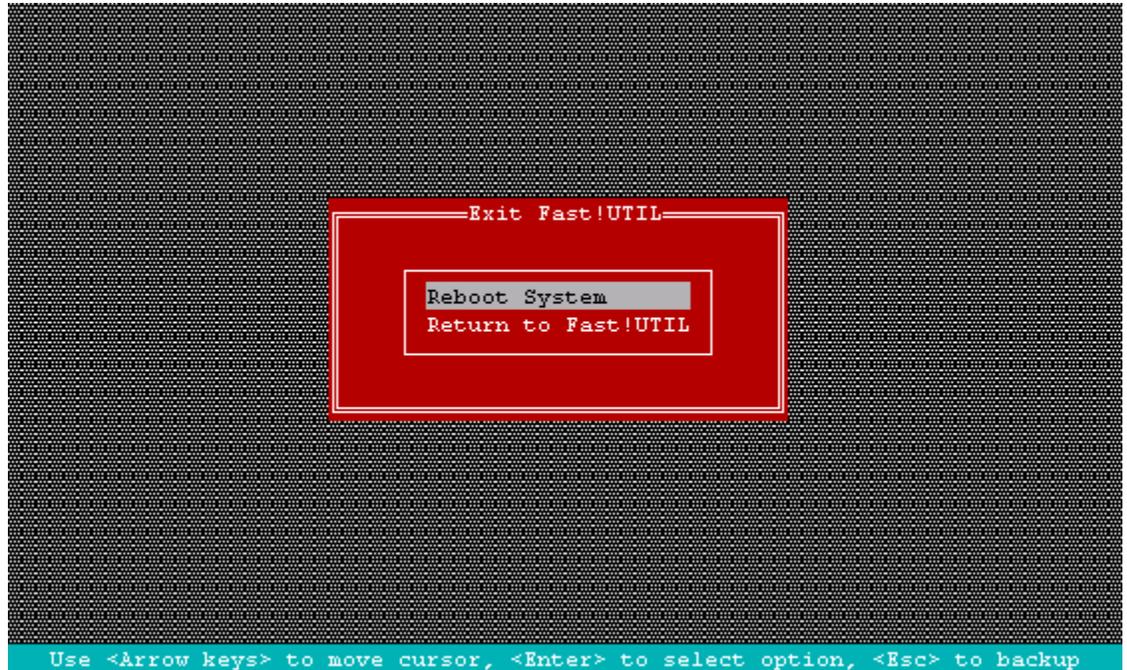
13. Press the Escape Key, and Save Changes.



14. Press the Escape Key again, and select Exit Fast!UTIL



15. Select the Reboot System option. The server will now attempt to boot from the volume controlled by the MSA1000.



16. As the Server is going through POST (Power On Self Test), you will see a screen like the one below, showing that the QLogic BIOS is active, and has a LUN to attempt to Boot from.

```

Processor 2 initialized at 1.0 GHz/133 MHz with 256 Kbyte Cache

COMPAQ Integrated Smart Array Controller (ver 1.42)  0 Logical Drive(s)
1785-Slot 0 Drive Array Not Configured
  No Drives Detected

QLogic Corporation
QLA2312 PCI Fibre Channel ROM BIOS Version 1.29      Subsystem Vendor ID 0E11
Copyright (C) QLogic Corporation 1993-2002. All rights reserved.
www.qlogic.com

Press <CTRL-Q> for Fast!UTIL
ISP2312 Firmware Version 3.01.12
QLogic adapter using IRQ number 3

-----
Drive Letter C: is Moved to Drive Letter D:
LOOP ID 129,3  is Installed As Drive C:

-----
Device Device  Adapter Port  Lun  Vendor  Product  Product
Number Type   Number  ID  Number  ID      ID      Revision
  80  Disk     0      011000  3    COMPAQ  MSA1000 VOLUME  2.17
ROM BIOS Installed

```

17. It is important to note that the Server will fail in attempting to Boot from this LUN, as no Operating System has yet to be installed on this boot Volume. See the following section, **Installation of Operating System** for the final steps.

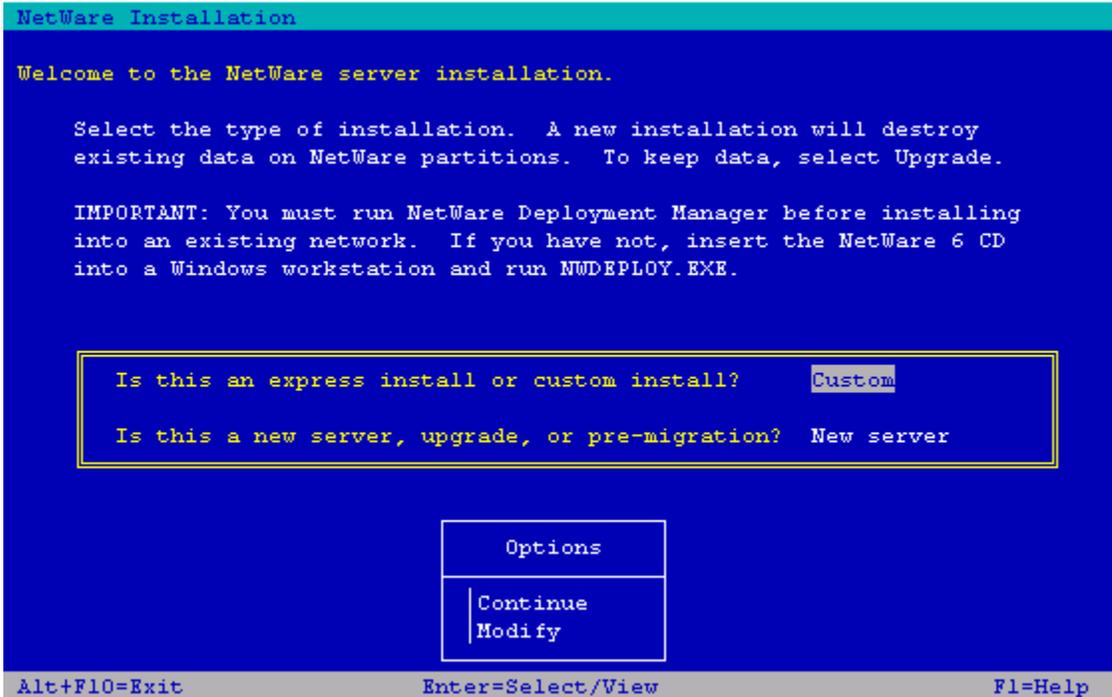
Installation of Operating System

Completing the OS install to the Server

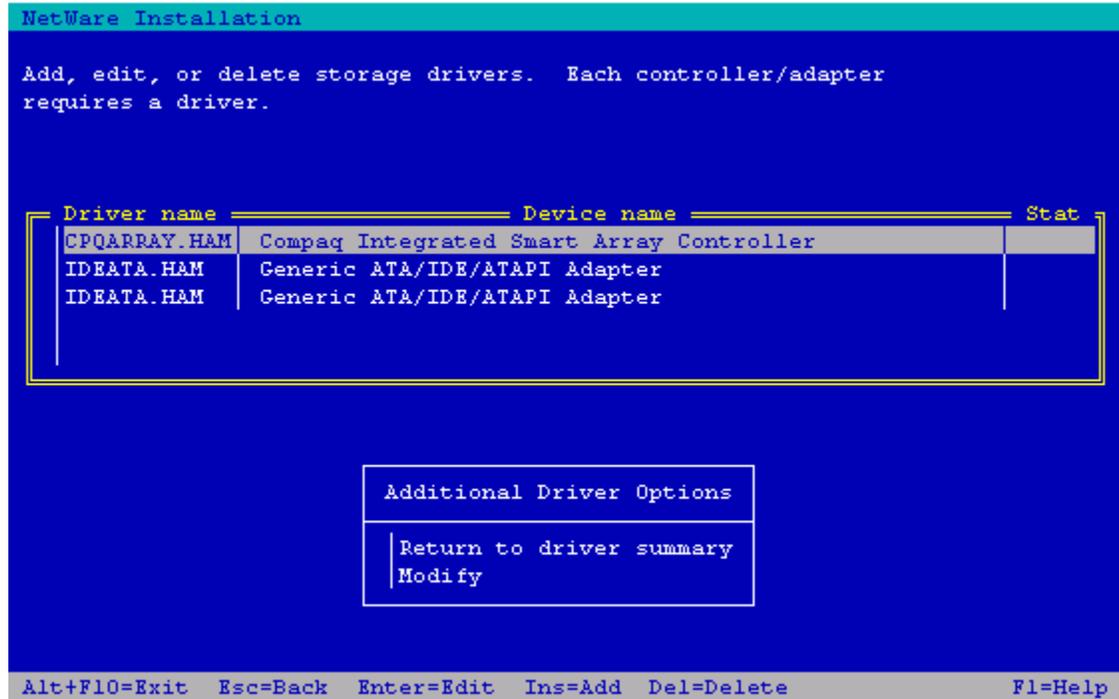
1. Install DOS on the boot disk. See your DOS Operating System Vendor's documentation for creating a bootable DOS partition.
2. Follow the standard NetWare instructions to begin the installation. Typically this is accomplished by loading the DOS CD ROM device drives, and at the CD Drive prompt, running the NetWare install (INSTALL.BAT).

```
F:\>install
```

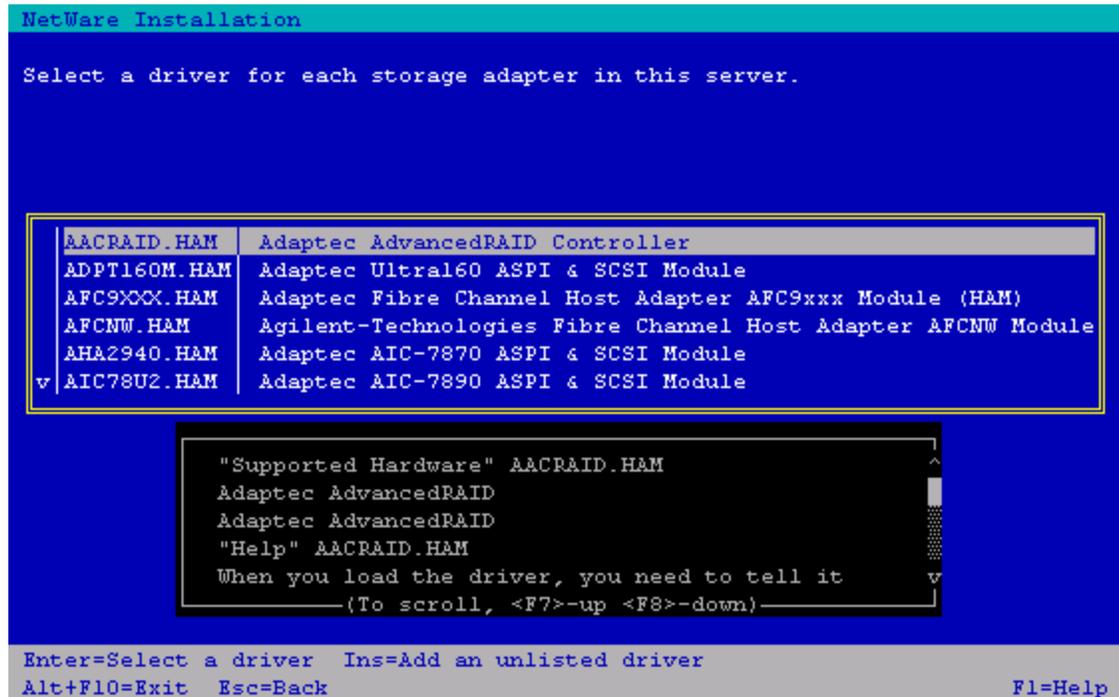
3. At the **Welcome to the NetWare server installation** screen, select a **Custom** and **New Server** install. This is necessary to allow the QLogic drivers to be loaded at the proper time.



- At some point during the install, you will be notified of the detected drivers. When prompted, you will want to load additional drivers to support the QLogic HBA and the MSA1000. Arrow down to **Modify**, and press Enter. Arrow down to **Storage adapters:** and press Enter. The screen will look like this:



- Press the **Ins** key to **Add an additional driver**. After pressing **Ins**, the screen will look like this:



7. Press the **Ins** key again to **Add an unlisted driver**. After pressing the **Ins** key, the screen will look like this:

```

NetWare Installation

Select a driver for each storage adapter in this server.

Path A:\ will be scanned for drivers to install. Verify that this
directory path corresponds to where the driver files (*.HAM and *.DDI)
are located. Drivers for a large number of disk controllers are included
with NetWare. You may insert the appropriate NetWare diskette (or
specify a NetWare CD-ROM directory), or insert a third-party diskette.

See your NetWare documentation for information about which disks or
CD-ROM directories contain driver files.

Press <F3> to specify a different path;
Press <Enter> to continue.

_____ (To scroll, <F7>-up <F8>-down) _____

F3=Specify a different source drive/directory
Alt+F10=Exit  Esc=Back  Enter=Continue                                     F1=Help

```

8. From another machine, copy the NetWare HBA drivers from the MSA1000 Support Software CD for NetWare / Linux to a floppy (drivers are located in \HBA\NetWare\drivers subdirectory on the CD). Place the floppy diskette in the floppy drive, and press Enter. You will be presented with a list of possible drivers to load, select QL2300.HAM QLogic QLA2300 PCI Fibre Channel Host Bus Adapter, and press Enter.

```

NetWare Installation

Multiple drivers were found that support the following ADAPTER:
  PRODID: PCI.1077.2312.0E11.0100.02  BUS: PCI  CLASS: UNKNOWN
  HINNAME: PCI.SLOT_1  HINNUMBER: 1  SUBCLASS: UNKNOWN
Select the driver (HAM) that best matches your system, or press F10.

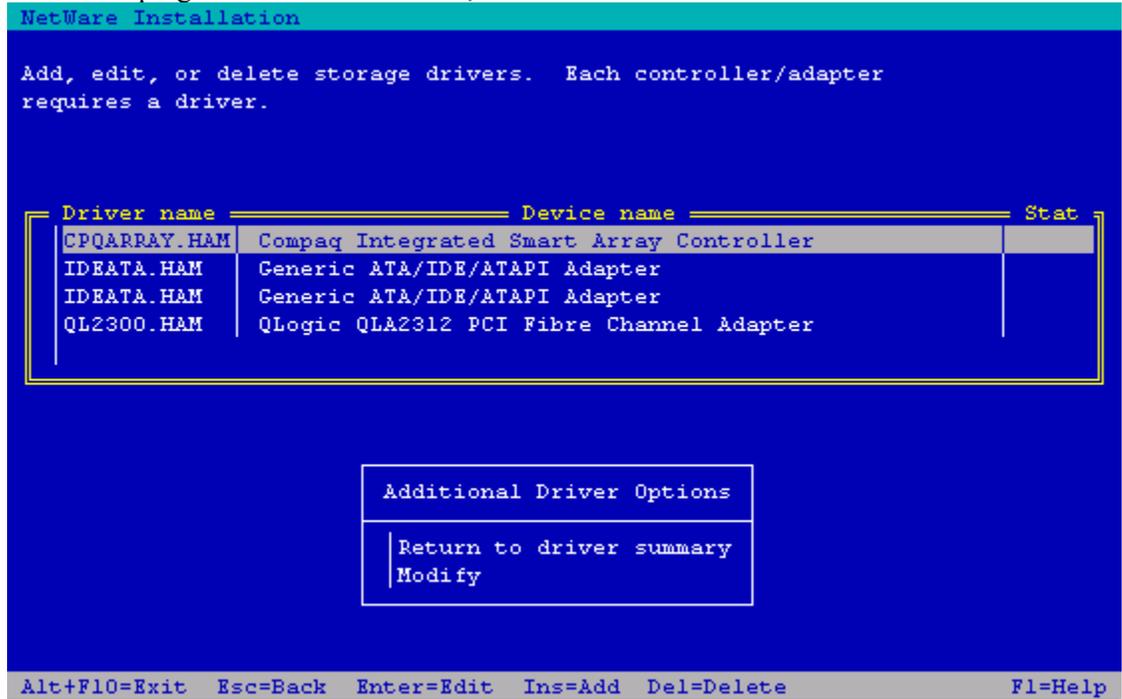
QL2300.HAM | QLogic QLA2300 PCI Fibre Channel Host Adapter Module
QL2300D.HAM | QLogic QLA2300 PCI Fibre Channel Host Adapter Module

"Supported Hardware" QL2300.HAM
QLogic QLA2312 PCI Fibre Channel Adapter
QLogic QLA2310 PCI Fibre Channel Adapter
"Help" QL2300.HAM
This HAM driver is for the QLogic QLA2300 family
_____ (To scroll, <F7>-up <F8>-down) _____

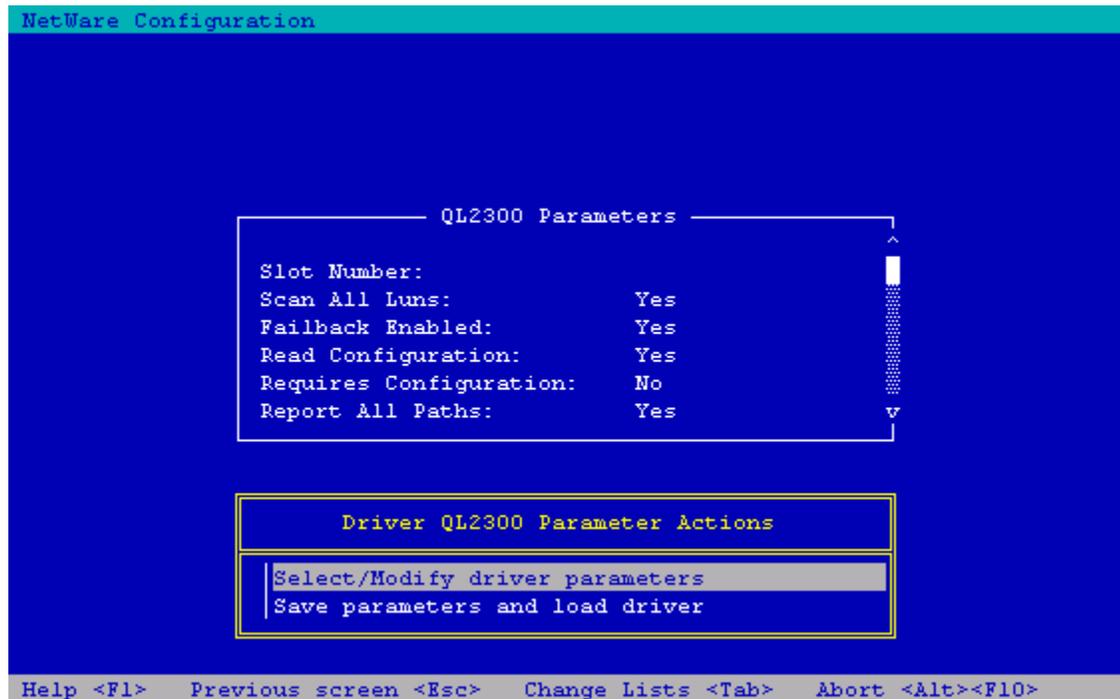
Enter=Select a driver
Alt+F10=Exit  F10=Continue-no selection  F3=Display full list                                     F1=Help

```

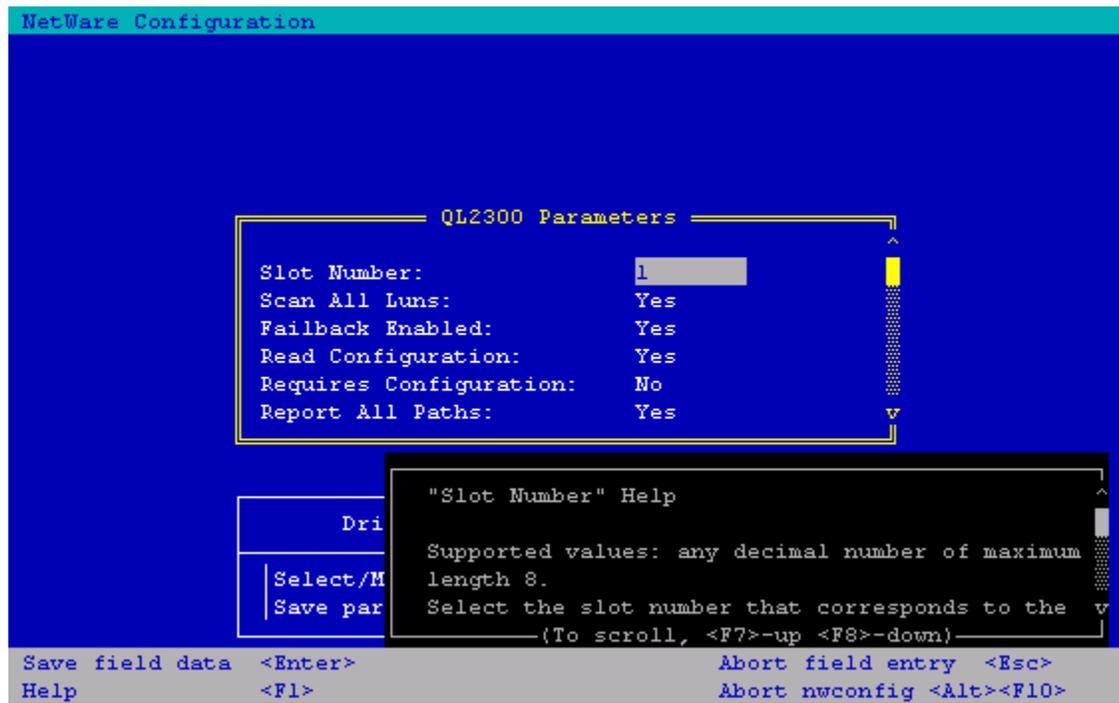
- The install program will load the driver, and the screen will look like this:



- You will need to modify the Qlogic driver parameters, arrow down to the QL2300.HAM under **Driver name**, and press Enter. To modify the driver parameters. Press Enter on **Select/Modify driver parameters**.



11. Add slot number that corresponds to the slot number of the server where the HBA was installed.



12. That will add this device driver to the list to load. Select **Return to driver summary** and press Enter

```
NetWare Installation
Add, edit, or delete storage drivers.  Each controller/adaptor
requires a driver.

Driver name      Device name      Stat
CPQARRAY.HAM    Compaq Integrated Smart Array Controller
IDEATA.HAM      Generic ATA/IDE/ATAPI Adapter
IDEATA.HAM      Generic ATA/IDE/ATAPI Adapter
QL2300.HAM      QLogic QLA2312 PCI Fibre Channel Adapter

Additional Driver Options
Return to driver summary
Modify

Alt+F10=Exit  Esc=Back  F3=Redetect  F1=Help
```

13. Select **Continue**, and press Enter

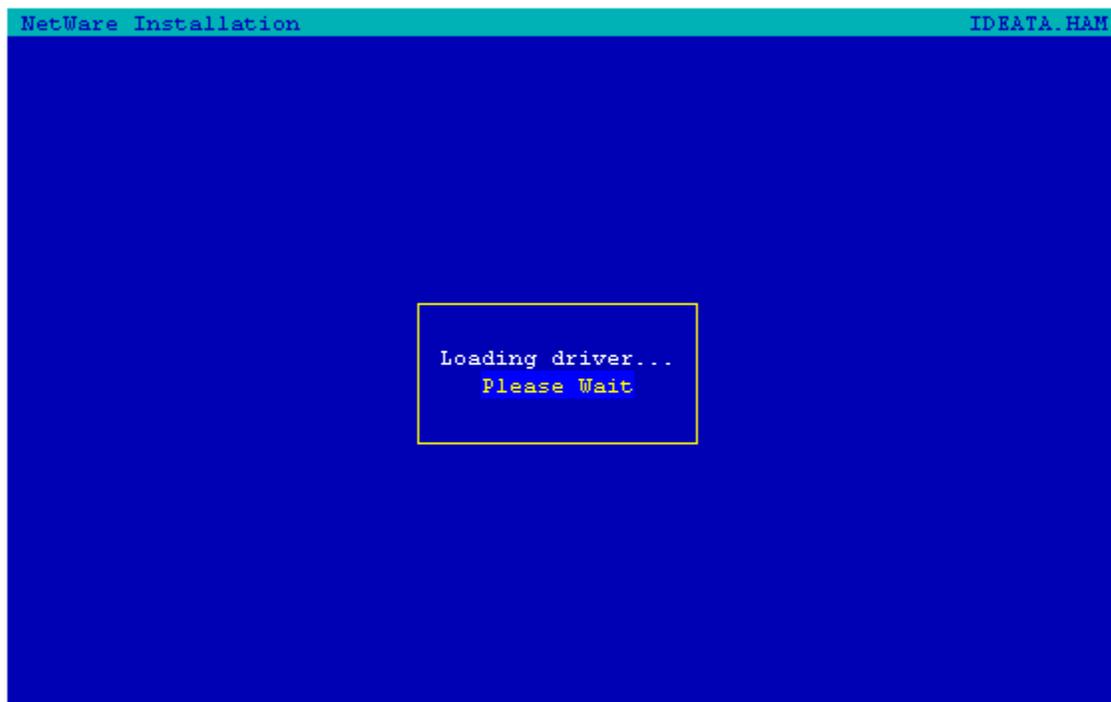
```
NetWare Installation
The following device drivers were detected for this server.  Add, change, or
delete device drivers as needed.

Device types      Driver names
Platform Support Module:  (optional)
HotPlug Support Module:  (optional)
Storage adapters:      CPQARRAY,IDEATA,IDEATA,QL2300

Options
Continue
Modify

Alt+F10=Exit  Esc=Back  F1=Help
```

14. Once **Continue** has been press, you will see a screen like the one below, where the Operating System is loading the drivers.



15. The installation will now continue normally. Depending on the hardware installed, you may or may not need to load additional drivers for Network adapters, etc. For this demonstration, it is assumed that no other drivers need to be loaded.

16. Finally, you will be asked to create the first NetWare volume – SYS. Chose the size of this volume, and follow the standard NetWare installation procedure to complete the installation. Note that the **Device** it is being created on is the MSA1000.



NetWare has now been successfully installed to a Boot LUN on the MSA1000