Booting Windows From Enterprise Modular Arrays

Transparent Mode Procedures

Firmware 3.81A1 with boot BIOS 1.60A4

Compaq Enterprise Storage

Refer to the Introduction (INTRODUCTION.PDF) for information about supported configurations, restrictions, and an overview of the procedures detailed here.

Detailed Installation Procedure

This document is valid for BIOS menus based on the 176479-B21 (DS-KGPSA-CB) firmware 3.81A1 with boot BIOS 1.60A4.

Note: The user is expected to have a working knowledge of the HSG80-based Fibre Channel RAID Array technology and the interconnections required to attach to an FC-HBA in a Windows-based server. This information is in the documentation that comes with the RAID Array and StorageWorks Solution Kit. The user is also expected to have a working knowledge of Windows NT 4.0 or Windows 2000.

References in this document to HSG80 are intended to cover all of the RA8000 Family RAID Array products.

Prework

The items listed below are not covered in this document. However, they are part of the initial setup and they must be completed.

RA8000/ESA12000, MA8000/EMA12000, or MA6000

- Setting and/or verifying the HSG80 controller port topology for your configuration.
- Setting and/or verifying the controller SCSI Version. In SCSI-3 mode, LUN 0 is assigned to the Command Console. Therefore, the unit you assign as your boot disk must be LUN 1 or higher. **SCSI-3 mode is recommended.**
- Verifying that all existing storage units have the proper access set.
- Delete any unused connections.

Switch-based Configurations And Zoning

- If zoning is enabled, be sure to check the switch for any zoning conflicts.

Special Considerations For Boot Disk Partitions

Before attempting to create a boot disk, you must ensure that you are starting with a clean, unpartitioned virtual disk. We recommend using HSUTIL, DILX, or FDISK to delete any partitions that may already exist. If you have just created a new virtual disk, this condition would not exist and you would simply need to create the partition in a step during the installation procedure, itself.

If you are planning to set up booting from a RAID Array that has other virtual disks attached to other servers, be aware of the following. When setting up booting for the new server, the installation program will present you with a list of partition onto which to load the operating system. You will see a disk for every controller port the HBA can access. Although it may look like you have more than one virtual disk available for booting, it really is only one. When creating a partition for the operating system load,you need to create the same partition size on all the disks that carry the same disk description as determined by Windows (for example, Disk 00 Id 01 XXXXX). If you don't make the partitions exactly the same, and especially in SCSI-3 mode, the installer will format the partition, reboot, and restart the selection process.

Booting Transparent Mode Single Server Configurations

Note: For this booting procedure, start with only one FC-HBA in the server. For configurations that use additional FC-HBA's (for data), add the extra FC-HBA's after booting has been set up. If you are creating a single server, multiple path configuration (which requires Secure Path) use the procedures in the next section and ignore instructions for the second FC-HBA and path.

Boot disks created on the Compaq RAID Arrays are limited to 8GB due to features of the 176479-B21 (DS-KGPSA-CB) FC-HBA firmware.

Note: ProLiants are available in two configurations. Newer models use RBSU (ROM Based Setup Utility) for controlling booting. If you have a newer ProLiant, you should follow the two RBSU procedures below. If you have an older model without RBSU, skip to the non-RBSU setup.

Server ROM BIOS Upgrade for RBSU (ROM Based Setup Utility) ProLiant Servers

1. Boot the server from the ProLiant Smart Start CD-ROM version 5.3 or higher or download the latest ROM BIOS from http://www.compaq.com.
2. Install the latest ROM from Smart Start or the one that was downloaded.

Setting The Boot Order for RBSU (ROM Based Setup Utility) ProLiant Servers

1. While the system is booting, Press the **<F9>** key for the ROM Based Setup Utility.
2. Choose *Boot Controller Order*.
3. Select the primary PCI Fibre Channel Adapter and move it to *Controller Order 1*. Move the secondary adapter to *Controller Order 3*.
4. Exit the utility.

Server Setup non-RBSU ProLiant Servers

1. Boot from the ProLiant Smart Start CD-ROM and run the program to clear the configuration.
2. Run the System Configuration Utility.
3. Set the boot position of the Smart Array Controller to 15.
4. Reboot the server.

FC-HBA Setup

1. Record the FC-HBA's IEEE number. (You may install all adapters at this time).
2. Install the 176479-B21 (DS-KGPSA-CB) and record the PCI slot it occupies.
3. While the server is booting, watch for the message *Press <Alt E> To Go To Emulex BIOS Utility*. Press the **<Alt E>** key combination.
4. A screen will appear prompting you to *Enter a Selection*.
5. Choose the first adapter.
6. Choose option 2, *Configure This Adapter's Parameters*.
7. Choose option 1, *Enable or Disable BIOS*. Press the **<1>** key to enable BIOS.
8. Choose option 4, *Topology Selection (+Advanced Option+)*.
9. Choose *Point to Point*. Press the **<Pg Up>** key.
10. Choose option 8, *Enable Start Unit Command (+Advanced Option+)*. Press the **<1>** key to enable.
11. Press the **<X>** to exit and reboot the server.
12. While the server is booting, watch for the message *Press <Alt E> To Go To Emulex BIOS Utility*. Press the **<Alt E>** key combination.
13. Choose the first adapter.
14. Choose option 1, *Configure Boot Devices*.
15. Choose 1 as the primary boot path.
16. Use a terminal or computer running a terminal emulator to use CLI for the next steps:
    1. Use CLI to configure a device with no access allowed.

```
HSG> initialize disk10000
HSG> add unit d1 disk10000 disable_access_path=all
HSG> Show d1
```

    2. Note to which LUN the controller is online.
    3. Verify that the FC-HBA is online..

```
HSG> show connections
```

4. Rename the connection, if desired.
5. Assign the the FC-HBA access to the LUN.

```
HSG> set d1 enable_access_path=!newcon01

...enter the names of connections that are associated with
same controller to which the LUN is online. There should
be two connections entered at this time.
```

17. Enter the number of the first Compaq HSG device in the list.
18. At the prompt, enter the two digits of starting LUN (Hex). Use the LUN number you created earlier.
19. Choose 1, *Boot this device via WWPN*.

Operating System Install

1. Insert the *Windows NT 4.0* or *Windows 2000* CDROM.
2. Press the **F6** key as soon as the Windows installation setup text displays at the bottom of the screen.

```
Note: This is not the same as the better known step to chose to specify
additional drivers that appears later in the installation procedure.
The installation will fail if you do not chose F6 from the beginning.
Windows NT does not prompt for this. Windows 2000 does, however.
```

3. When setup prompts you to specify an additional device, choose **S=Specify Additional Device**.
4. Insert the 176479-B21 (DS-KGPSA-CB) FC-HBA diskette and press the **<Enter>** key.
5. A list of devices will be displayed, one of which is your 176479-B21 (DS-KGPSA-CB) adapter. Select it and press the **<Enter>** key.

```
If you don't see the 176479-B21 (DS-KGPSA-CB) adapter in the list,
recheck the Compaq HSG80 RA8000 Setup, Hub Setup, Switch Setup, FC-HBA
Setup, or Server Setup section(s).
```

6. You will return to the *Specify Additional Devices* screen. Press the **<Enter>** key.
7. Continue with the standard Windows NT or Windows 2000 setup.

Repeat the FC-HBA Setup and Operating System Setup Steps For Each Server

Cluster Setup Steps

1. Using CLI, create a new LUN to be used with the clustering service.
   - For example, you can type the following.

```
HSG> initialize disk30100
HSG> add unit D5 disk30100 disable_access_path = all
HSG> show connections
HSG> Set D5 enable_access_path = (all non-booting connection names)
```

   - There should be eight connections, four from each server.
2. Reboot the server.
3. Install clustering service. (Refer to Microsoft documentation on cluster installation.)