



Multi-boot Image for 4Gb FC HBAs

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1. Package Contents

The multi-boot package for 4Gb HBAs is a compressed file that contains 4Gb BIOS, QLx246x FCode, QLx246x EFI, and firmware version 4.00.26. This package also includes FlasUtil.

- The 4Gb BIOS contained in this package supports 4Gb HBAs on Intel x86, Intel EM64T, and AMD64 platforms.
- The EFI Fibre Channel driver contained in this package supports 4Gb HBAs on Intel IA64 platforms.
- The FCode contained in this package supports 4Gb HBAs on Solaris SPARC platforms.
- `readme.txt` - Readme file for the multi-boot package. This readme file contains details for the multi-boot image, including the BIOS, EFI code, and FCode contained in the package.
- `release.txt` - Release notes for the multi-boot package. This release notes contains revisions notes for the multi-boot image, including the BIOS, EFI code, and FCode contained in the package.

2. 4Gb BIOS

This section provides user notes regarding the BIOS contained in the 4Gb multi-boot package. It includes the following topics:

- [2.1 BIOS Package Contents](#)
- [2.2 Supported Features](#)
- [2.3 HBA Configuration \(*Fast!UTIL*\)](#)
- [2.4 Updating the BIOS \(FlasUtil\)](#)
- [2.5 Additional Notes](#)

2.1 BIOS Package Contents

The following table describes the BIOS files included for updating the HBA BIOS.

Filename	Description
update.bat	DOS batch file that calls the executable files to update the adapter BIOS.
FlasUtil.EXE	Utility to update multi-boot code, RISC, and NVRAM files.
VPD.exe	Utility to update the adapter's Vital Product Data.
q24xxyyy.bin	Combined binary file, which includes the binaries for the firmware, FCode, EFI, and BIOS

2.2 Supported Features

The 4Gb BIOS package supports the following features:

- Up to 2031 Target IDs.
- Up to 256 LUNs.
- Point-to-point and loop configuration.
- Boot capability in FC-AL and fabric topologies.
- Compatible with DOS, Windows 2000, Windows Server 2003, Windows XP Professional, Novell NetWare, Solaris x86, and Linux on IA32, AMD64, and EM64T based systems.

2.3 HBA Configuration (*Fast!UTIL*)

NOTE: The *Fast!UTIL* BIOS utility does not run on SUN SPARC systems.

This section provides detailed configuration information for advanced users who want to customize the configuration of the 4Gb HBA and the connected devices. You can configure the board using *Fast!UTIL*.

To access *Fast!UTIL*, press **<ALT>+<Q>** or **<CTRL>+<Q>** during the HBA BIOS initialization (it may take a few seconds for the *Fast!UTIL* menu to appear). If you have more than one HBA, *Fast!UTIL* asks you to select the board you want to configure. After changing the settings, *Fast!UTIL* reboots your system to load the new parameters.

CAUTION! If the configuration settings are incorrect, your HBA may not function properly.

The *Fast!UTIL* Options menu provides the options described in the following subsections:

- [2.3.1 Configuration Settings](#)
- [2.3.2 Scan Fibre Channel Devices](#)
- [2.3.3 Fibre Disk Utility](#)
- [2.3.4 Loopback Data Test](#)
- [2.3.5 Select Host Adapter](#)
- [2.3.6 Exit *Fast!UTIL*](#)

2.3.1. Configuration Settings

The following topics show and describe the configuration settings for the 4Gb drivers:

- [2.3.1.1 Adapter Settings](#)
- [2.3.1.2 Selectable Boot Settings](#)
- [2.3.1.3 Restore Default Settings](#)
- [2.3.1.4 Raw NVRAM Data](#)
- [2.3.1.5 Advanced Adapter Settings](#)

2.3.1.1 Adapter Settings

Setting	Values	Default	Description
Host Adapter BIOS	Enabled/Disabled	Disabled	When this setting is disabled, the ROM BIOS on the HBA is disabled, freeing space in upper memory. This setting must be enabled if you are booting from an FC disk drive attached to the HBA. See section 2.3.1.2 for details on specifying the boot device.
Frame Size	512/1024/2048	2048	This setting specifies the maximum frame length supported by the HBA. NOTE: This option is not available for QLE2x0 HBAs.
Loop Reset Delay	0 - 60 seconds	5 seconds	After resetting the loop, the firmware refrains from initiating any loop activity for the number of seconds specified in this setting. NOTE: This option is not available for QLE2x0 HBAs.
Adapter Hard Loop ID	Enabled/Disabled	Disabled	This setting forces the adapter to attempt to use the ID specified in the Hard Loop ID setting. NOTE: This option is not available for QLE2x0 HBAs.
Hard Loop ID	0 - 125	0	If the Adapter Hard Loop ID setting is enabled, the adapter attempts to use the ID specified in this setting. NOTE: This option is not available for QLE2x0 HBAs.
Spin Up Delay	Enabled/Disabled	Disabled	When this bit is set, the BIOS waits up to two minutes to find the first drive.
Connection Options	0/1/2	2	This setting defines the type of connection (loop -0, point-to-point -1, or loop preferred then point-to-point -2). NOTE: This option is not available for QLE2x0 HBAs.
Fibre Channel Tape Support	Enabled/Disabled	Enabled	This setting enables FCP-2 recovery. NOTE: This option is not available for QLE2x0 HBAs.
Data Rate	0/1/2/3	2	This setting determines the data rate. When this setting is 0, the QLx246x board runs at 1 gigabit/sec. When this setting is 1, the QLx246x board runs at 2 gigabits/sec. When this setting is 2, the HBA auto-negotiates and determines the data rate. When this setting is 3, the QLx246x board runs at 4 gigabits/sec. NOTE: This option is not available for QLE2x0 HBAs.

2.3.1.2 Selectable Boot Settings

The **Configuration Settings** menu provides access to the **Selectable Boot Settings** option. If you enable the Host Adapter BIOS in the **Adapter Settings**, you can select the boot device as shown in the following table.

Selectable Boot Settings

Enable Selectable Boot	Boot WWPN/LUN	Device Boot
No	x	BIOS configures the first disk drive it finds as boot device.
Yes	None specified	BIOS configures the first disk drive it finds that is also a LUN 0 as boot device.
Yes	Specified	BIOS scans through the specified Boot WWPN/LUN list until it finds a disk drive. This is configured as boot device.

The **Selectable Boot Settings** option allows you to specify up to four WWPN/LUN as boot devices. To enable the **Selectable Boot** option and insert devices into the boot device locations, follow these steps:

1. From the **Configuration Settings** menu, select **Host Adapter Settings**.
2. Enable the **HBA BIOS**, then press **ESC** to return to the **Configuration Settings** menu.
3. From the **Configuration Settings** menu, select **Selectable Boot Settings**.
4. Press **ENTER** to enable or disable (toggle) the **Selectable Boot** option. Use the down arrow key to move to the **Primary** location of the **Selectable Boot List** menu.
5. Press **ENTER** to see a list of accessible devices (in the **Select Fibre Channel Device** menu).
6. Select a drive using the arrow keys to scroll down to the device you want to put into your **Selectable Boot** menu list, then press **ENTER** to select the requested device and load it into the **Selectable Boot** menu list.
7. Repeat this step to specify up to three alternate boot devices.

NOTES:

- When the **HBA BIOS** is enabled and the **Selectable Boot** option is enabled, you must always select a device and put it in the **Primary** boot device location of the **Selectable Boot** menu list.
- For new systems with Phoenix and AMI multi-boot BIOS the **Selectable Boot** settings for the HBA does not work, unless the System **BIOS Hard Drive Boot** option is in the correct order.

2.3.1.3 Restore Default Settings

The **Restore Defaults** option from the **Configuration Settings** menu restores the HBA default settings.

2.3.1.4 Raw NVRAM Data

This option displays the adapter's NVRAM contents in hexadecimal format. This is a QLogic troubleshooting tool; you cannot modify the data.

NOTE: This option is not available for QLE2x0 HBAs.

2.3.1.5 Advanced Adapter Settings

From the **Configuration Settings** menu in *Fast!UTIL*, select **Advanced Adapter Settings**. The following table describes the default settings for the 4Gb HBA.

NOTE: These options are not available for QLE2x0 HBAs.

Advanced Adapter Settings

Setting	Values	Default	Description
Execution Throttle	1-256	16	This setting specifies the maximum number of commands that can execute on any one target port. When it reaches a target port's execution throttle, the system will not issue any new commands until one of the current commands finishes executing.
LUNs per Target	0/8/16/32/64/128/256	128	This setting specifies the number of LUNs supported per target if the target does not support the Report LUN command. Multiple LUN support is typically for redundant array of independent disks (RAID) boxes that use LUNs to map drives.
Enable LIP Reset	Yes/No	No	This setting determines the type of loop initialization process (LIP) reset used when the operating system initiates a bus reset routine as follows: yes = The driver initiates a global LIP reset to reset the target devices. no = The driver initiates a global LIP reset with full login.
Enable LIP Full Login	Yes/No	Yes	This setting instructs the ISP chip to re-login to all ports after any LIP.
Enable Target Reset	Yes/No	Yes	This setting enables the drivers to issue a Target Reset command to all devices on the loop when a SCSI Bus Reset command is issued.
Login Retry Count	0 - 255	8	This setting specifies the number of times the software tries to log in to a device.
Port Down Retry Count	0 - 255 seconds	30 seconds	This setting specifies the number of seconds the software waits to retry a command to a port returning port down status.
Link Down Timeout	0 - 255 seconds	30 seconds	This setting specifies the number of seconds the software waits for a link down to come up.
Operation Mode	0/5/6	0	This setting specifies the reduced interrupt operation (RIO) modes, if supported by the software driver. The RIO modes allow posting multiple command completions in a single interrupt. The following modes are supported: 0 = Interrupt for every I/O completion 5 = Interrupt when Interrupt Delay Timer expires 6 = Interrupt when Interrupt Delay Timer expires or no active I/Os
Interrupt Delay Timer	0 - 255 seconds	0	This setting contains the value (in 200-microsecond increments) used by a timer to set the wait time between generating an interrupt.
Enable Interrupt	YES/NO	NO	This setting when set to YES will enable the BIOS to use the IRQ assigned to the ISP24xx. When set to NO the BIOS will poll for ISP mailbox command completion status.

2.3.2 Scan Fibre Devices

This option scans the FC loop and lists all the connected devices by loop ID. It lists information about each device; for example, vendor name, product name, and revision. This information helps when configuring your HBA and attached devices.

2.3.3 Fibre Disk Utility

This option scans the Fibre Channel loop and lists all the connected devices by loop ID. You can select a Fibre Channel hard disk and do one of the following:

- Perform a low-level format.
- Verify the disk media. Verify the disk data.
- Select a disk device.

CAUTION! Performing a low-level format destroys all data on the disk.

2.3.4 Loopback Data Test

This option allows you to perform Loopback tests. You can select one of the following Loopback tests:

- External Loopback Data Test.
- Internal 1 bit Interface Loopback Data Test.
- Internal 10 bit Interface Loopback Data Test.

NOTE: When running an external loopback data test, make sure that the FC loop is up or a Loopback plug is attached to the adapter before starting the test. If your HBA is attached to a fabric switch port, the HBA and Switch port must be set to run in Arbitrated Loop mode.

2.3.5 Select Host Adapter

If you have multiport or multiple 4Gb adapters in your system, use this option to select and then configure or view the settings of a specific adapter port or adapter.

2.3.6 EXit *Fast!UTIL*

This option allows you to exit the utility and reboot the system or to return to *Fast!UTIL*. After making changes to the QLogic HBA in *Fast!Util*, make sure you save the changes before you reboot the system.

2.4 Updating the BIOS (FlasUtil)

The QLogic flash programming utility is a DOS utility. Please boot to DOS or Floppy to run the utility. Do not run this utility from drive connected to 4Gb HBAs.

Make sure `Flasutil.exe` and the source files `q24xxyyy.bin` are in the same directory.

2.4.1 Flashing the BIOS

1. Insert the 4Gb HBA in the system.
2. Boot to DOS.
3. Run FlasUtil program by typing the following `flasutil` command at the prompt:
`flasutil.exe /I /FB /O q24xxyyy.bin`
This programs the flash image to the adapter.
4. Reboot the system.

2.4.2 FlasUtil Command Line Options

The QLogic Flash and NVRAM Programming Utility is a DOS utility. The following paragraphs describe the command line options available with this utility. The QLogic flash programming utility is a DOS utility. Please boot to DOS or Floppy to run the utility. Do not run this utility from drive connected to 4Gb HBAs.

Make sure `Flasutil.exe` and the source files `q24xyyy.bin` are in the same directory.

BIOS Flash Options

Option	Description
Boot Code Only	
<code>/F xxxx</code>	Writes BIOS Flash using the adapter address = xxxx. Entering this option without an address writes flash to all adapters. If the flash already contains a valid BIOS, it preserves the existing NVRAM defaults.
<code>/C xxxx</code>	Verifies Flash of Adapter at Address xxxx. Entering this option without an address verifies flash of all adapters.
<code>/W xxxx</code>	Copies BIOS Flash of adapter address xxxx to a file.
FCode Only	
<code>/FF xxxx</code>	Writes FCode Flash, Adapter Address = xxxx. Entering this option without an address writes flash to all adapters.
<code>/CF xxxx</code>	Verifies FCode of Adapter at Address xxxx. Entering this option without an address verifies FCode of all adapters.
Firmware Only	
<code>/FR xxxx</code>	Writes firmware to Flash, Adapter Address = xxxx. Entering this option without an address writes firmware to all adapters.
<code>/CR xxxx</code>	Verifies firmware of Adapter at Address xxxx. Entering this option without an address verifies firmware of all adapters.
<code>/WR xxxx</code>	Copies firmware of adapter at address xxxx to a file.
1Mb Binary Complete Flash Image Only	
<code>/FB xxxx</code>	Writes 1Mb combined image to Flash, Adapter Address = xxxx. Entering this option without an address writes flash on all adapters.
<code>/CB xxxx</code>	Verifies 1Mb combined image of Adapter at Address xxxx. Entering this option without an address verifies the 1Mb combined image of all adapters.
<code>/WB xxxx</code>	Copies 1Mb image of adapter at address xxxx to a file.
Additional Options	
<code>/I</code>	Ignores Subsystem ID.
<code>/M</code>	Do not prompt for I/O address.
<code>/Q</code>	Quiet mode, no messages are displayed.
<code>/V xxxx</code>	Displays current version of BIOS on adapters at address xxxx. Entering this option without an address displays BIOS version of all adapters.
<code>/VR xxxx</code>	Displays current version of RISC on adapters at address xxxx. Entering this option without an address displays the RISC version of all adapters.
<code>/S xxxx</code>	Displays serial number of adapter at address xxxx. Entering this option without an address displays S/N of all adapters.
<code>/Y xxxx</code>	Displays Port Name of adapter at address xxxx. Entering this option without an address displays the Port Name of all adapters.
<code>/O <filename.ext></code>	Use <filename.ext> instead of QL.xxRXX.BIN.

For example, for HBAs with previous valid Flash and NVRAM contents, use the following command line options:

- To update the flash on a QLogic HBA:
`c:\>flasutil /fb`
- To update the RISC code (only) on a QLogic HBA:
`c:\>flasutil /fr`

2.5 Additional Notes

- If you used an FC RAID target in a Cluster Environment, you should enable the Enable Target Reset = Enabled (Advanced Adapter Settings).
- Use `/I` option if Update Utility (FlasUtil) does not detect your HBA.

3. 4Gb EFI

This section provides user notes regarding the EFI driver contained in the 4Gb multi-boot image. It includes the following topics:

- [3.1 EFI Package Contents](#)
- [3.2 Supported Features](#)
- [3.3 HBA Configuration](#)
- [3.4 Utilities \(EfiUtil\)](#)
- [3.5 Additional Notes](#)

3.1 EFI Package Contents

The following table describes the files included in the EFI software package.

Filename	Description
q24xyyy.bin	Combined binary file, which includes the binaries for the firmware, FCode, EFI, and BIOS.
EfiUtil.EFI	EFI Utility to update the driver, firmware, and NVRAM.
QL24XX.DRV	Auxiliary driver file used for updating the HBA.
UPDATE.NSH	EFI script file used to update the HBA on an EFI system.
EFI\EFICFG.PDF	HBA Configuration and Diagnostic PDF.
EFI\efiutil.pdf	HBA EfiUtil Utility PDF.

NOTE: All `bin`, `efi`, and `nsh` files are required to update the HBA on an EFI system.

3.2 Supported Features

The 4Gb EFI supports the following features:

- EFI 1.10
- EFI protocols: SCSI Pass Thru, Block IO, Driver Diagnostics, Driver Configuration, Component Name
- 382 targets
- 2047 LUNs per target
- Fabric and arbitrated loop topologies
- Boot from SAN

3.3 HBA Configuration

Refer to the `EFICFG.PDF` file to configure the HBA parameters.

3.4 Utilities (EfiUtil)

To update the EFI Driver, RISC Firmware, or NVRAM:

1. Unzip and copy the update kit files to the root level of a USB storage device.
NOTE: Please do not change or rearrange the kit directories and/or files that were unzipped and copied to the USB storage device.
2. Connect the USB device to the EFI-based system with the FC HBAs.
3. At the system's EFI shell prompt, enter a `map -x` command to map the USB device file system. You can check the mapping as follows:
`map -b`
4. Locate the USB device and change to that directory. For example, if the USB is shows `fs9` after the `map -x` command:
`r:`
`fs9: <enter>`
The EFI shell prompt should change as follows:
`fs9:\>`

5. Use the `EfiUtil.efi` utility (or `EfiUtil`) to update the FC HBAs, making sure to specify a filename for the `efi_write` option since it does not provide a default filename.
6. Reboot the system to make the `Driver/Firmware/NVRAM` changes take effect.
7. Update the HBA on the EFI system. For example:

```
fs9:> update.nsh
```

NOTE: To perform other manual EfiUtil flash functions, refer to the `efiutil.pdf`.

3.5 Additional Notes

None

4. 4Gb FCode

This section provides user notes regarding the FCode contained in the 4Gb multi-boot image. It includes the following topics:

- [4.1 FCode Package Contents](#)
- [4.2 Supported Features](#)
- [4.3 HBA Configuration](#)
- [4.4 Updating the BIOS](#)
- [4.5 Additional Notes](#)

4.1 FCode Package Contents

The following table describes the files included in the FCode software package.

Filename	Description
q24xxyyy.bin	Combined binary file, which includes the binaries for the firmware, FCode, EFI, and BIOS.

4.2 Supported Features

The FCode supports the following features:

- 2048 Target ID Support
- 256 LUNS/target support for qla FCode
- 16384 LUNs/Target for qlc FCode
- Fabric boot support
- Local loop boot support
- 1,2 or 4 Gigabit data rate support
- Compatible with Solaris 8, 9, and 10

4.3 HBA Configuration

This section describes the HBA configuration for the FCode that comes packaged in the 4Gb multi-boot image:

- [4.3.1 Selecting QLogic/SUN HBA Port at OBP](#)
- [4.3.2 Setting and Viewing Fibre Channel Connection Mode](#)
- [4.3.3 Setting and Viewing Fibre Channel Data Rate](#)
- [4.3.4 Setting and Viewing BIOS Compatibility Mode](#)
- [4.3.5 Setting and Viewing FCode Operation Mode](#)
- [4.3.6 Displaying and Entering Boot Device Information](#)

4.3.1 Selecting QLogic/SUN HBA Port at OBP

Select the QLogic/Sun HBA port at OBP prior to viewing or setting Fibre Channel connection mode/data rate.
For example:

```
(i)ok show-disks
  a) /pci@7c0/pci@0/pci@9/QLGC,qla@0,1/sd (QLogic HBA Port 1)
  b) /pci@7c0/pci@0/pci@9/QLGC,qla@0/sd (QLogic HBA Port 0)
  c) /pci@7c0/pci@0/pci@8/QLGC,qla@0/sd
  d) /pci@7c0/pci@0/pci@1/pci@0,2/LSILogic,sas@2/disk
  e) /pci@7c0/pci@0/pci@1/pci@0,2/SUNW,qlc@1,1/fp@0,0/disk (Sun HBA Port 1)
  f) /pci@7c0/pci@0/pci@1/pci@0,2/SUNW,qlc@1/fp@0,0/disk (Sun HBA Port 0)
  g) /pci@7c0/pci@0/pci@1/pci@0/ide@8/cdrom
  h) /pci@7c0/pci@0/pci@1/pci@0/ide@8/disk
  q) NO SELECTION
Enter Selection, q to quit: f
/pci@7c0/pci@0/pci@1/pci@0,2/SUNW,qlc@1/fp@0,0/disk has been selected.
Type ^Y ( Control-Y ) to insert it in the command line.
e.g. ok nvalias mydev ^Y
      for creating devalias mydev for /pci@7c0/pci@0/pci@1/pci@0,2
      /SUNW,qlc@1/fp@0,0/disk

(ii)ok " /pci@7c0/pci@0/pci@1/pci@0,2/SUNW,qlc@1" select-dev

      or

(ii)ok select /pci@7c0/pci@0/pci@1/pci@0,2/QLGC,qla@0,1

      QLogic QLA2462-Host HBA Driver(SPARC): 1.22 10/02/06
      Firmware version 4.00.24.
```

4.3.2 Setting and Viewing Fibre Channel Connection Mode

To change or view the current host HBA Fibre Channel connection mode, type:

```
set-connection-mode
```

NOTE: If your Device ID is 54xx (QLE220), you cannot change the connection mode.
By default = Loop preferred, otherwise point-to-point.

For example:

```
ok set-connection-mode
Current HBA connection mode: 2 - Loop preferred, otherwise point-to-point
Do you want to change it? (y/n)
Choose HBA Connection Mode:
0 - Loop Only
1 - Point-to-point only
2 - Loop preferred, otherwise point-to-point
Enter: 2
Current HBA connection mode: 2 - Loop preferred, otherwise point-to-point
```

4.3.3 Setting and Viewing Fibre Channel data rate

To change or view the current host HBA Fibre Channel data rate, type:
set-data-rate

NOTE: If your Device ID is 54xx (QLE220) then you cannot change the data-rate.
By default = Auto-Negotiated.

```
Example:
ok set-data-rate
Current HBA Data Rate: Auto-Negotiated
Do you want to change it? (y/n)
Choose Data Rate:
0 - 1 Gigabit
1 - 2 Gigabit
2 - Auto-negotiated
3 - 4 Gigabit
Enter: 2
Current HBA Data Rate: Auto-Negotiated
```

4.3.4 Setting and Viewing BIOS Compatibility Mode

This parameter should not be changed unless the HBA was shipped with PC BIOS code and Solaris device paths were created for the attached storage devices, then later the HBA was flashed with FCode causing a change in the device paths and mount point failures.

- If the Solaris devices paths are created with BIOS on the HBA, the device paths contain `fibre-channel` as in the following example:
`/devices/pci@1f,700000/fibre-channel@4`
- If the HBA is subsequently flashed with FCode the device paths contain `SUNW,q1c` as in the following example:
`/devices/pci@1f,700000/SUNW,q1c@4`

To access the device paths created when BIOS was present on the HBA:

1. Select the host HBA device you wish to change. For example:

```
ok " /pci@1f,700000/SUNW,q1c@3" select-dev ok set-mode
FCode compatibility mode
Do you want to change it? (y/n)
Choose Compatibility Mode:
0 - FCode
1 - BIOS
Enter: 1
Current compatibility mode: BIOS
ok reset-all
```
2. Reboot and the device paths have `fibre-channel` in them.

4.3.5 Setting and Viewing FCode Operation Mode

FCode version 1.15 or later supports two FCode operation modes (`qla` and `qlc`):

- `qla` mode requires a driver named `qla2300`.
- `qlc` mode requires a driver named `qlc`. (This mode is not supported on Sun (SUNW) branded HBAs.)

WARNING! Use extreme caution when changing the FCode Mode; changing it may cause Solaris to create new device paths for this HBA, which may affect driver instance numbers and mount points in Solaris.

For example:

```
ok set-fc-mode Current FCode Mode: qlc
Do you want to change it? (y/n)
Choose FCode Mode:
0 - qlc
1 - qla
enter: 0
Current FCode Mode: qlc
```

4.3.6 Displaying and Entering Boot Device Information (qla mode only)

If the FCode is operating in qla mode, you must save the boot device information to the HBA as shown in the following examples.

The following example shows selecting a boot device from a list:

```
{0} ok set-boot-wnn
Current Boot-WWPN = 00000000.00000000 - Boot-LUN =0 - Boot-Target-ID =0
Do you want to change it? (y/n)
Select one of these devices:
0 - Dev# 0   PortID 101c9   Port WWN 21000020.3711b72b
1 - Dev# 1   PortID 101ca   Port WWN 21000020.3711c1b6
2 - Dev# 2   PortID 101cb   Port WWN 21000020.3711c13a
3 - Dev# 3   PortID 101cc   Port WWN 21000020.3711bc54
4 - Dev# 4   PortID 101cd   Port WWN 21000020.3711bfb9
5 - Enter Manually
Select #: 2
Enter 16-bit hex Boot ID: 3
Enter 16-bit hex Boot LUN: 0
Current Boot-WWPN = 21000020.3711c13a - Boot-LUN =0 - Boot-Target-ID =3
{0} ok
```

The following example shows entering boot device information manually:

```
{0} ok set-boot-wnn
Current Boot-WWPN = 21000020.3711c13a - Boot-LUN =0 - Boot-Target-ID =3
Do you want to change it? (y/n)
Select one of these devices:
0 - Dev# 0   PortID 101c9   Port WWN 21000020.3711b72b
1 - Dev# 1   PortID 101ca   Port WWN 21000020.3711c1b6
2 - Dev# 2   PortID 101cb   Port WWN 21000020.3711c13a
3 - Dev# 3   PortID 101cc   Port WWN 21000020.3711bc54
4 - Dev# 4   PortID 101cd   Port WWN 21000020.3711bfb9
5 - Enter Manually
Select #: 5
Enter 64-bit hex Boot WWPN: 1122334455667788
Enter 16-bit hex Boot ID: 99
Enter 16-bit hex Boot LUN: 33
Current Boot-WWPN = 11223344.55667788 - Boot-LUN =33 - Boot-Target-ID =99
{0} ok
```

4.4 Updating the FCode

You can update the FCode using SANsurfer FC HBA Manager or the SCLI application. Before flashing the FCode, the latest QLogic/Sun Solaris HBA driver must be installed. Copy the multi-boot binary file `Q24xxx.yy.BIN` on Sun SPARC System under root (`/`) directory.

For procedures on updating FCode using the SANsurfer applications, see the *FC HBA Manager Online Help* and the *SCLI User's Guide*.

4.5 Additional Notes

The following subsections provide additional information:

- [4.5.1 Limitations](#)
- [4.5.2 Beacon Support](#)
- [4.5.3 Selftest](#)
- [4.5.4 Building a Bootable Disk](#)

4.5.1 Limitations

- FCode settings will not be reflected in the CLI or the SANsurfer.
- Issue `Reset-all` when change is made to the FCode or Fiber link/target.
- External Optical Loop back is required when issue `test /pci@xxx...`
- FCode does not support `Loop Only` connection mode when attached directly to the EMC Symmetrix Storage.
- QLE2x0 does not support FL mode.

4.5.2 Beacon Support

Beacon is a feature that allows you to locate a specific host HBA visually. When the feature is activated, the green and amber LEDs on the back of the HBA flash at approximately one second intervals.

To enable the feature, select the host HBA device you wish to locate as follows:

```
ok beacon
```

The following message is displayed:

```
Flashing HBA LEDs, type any character to quit
```

The green and amber LEDs on the selected host HBA flash until you enter any character on the keyboard.

NOTE: For multi-channel host HBAs, only one channel LED will flash.

4.5.3 Selftest

To invoke a minimal selftest, enter the `test` command at the `ok` prompt followed by the HBA device path. For example:

```
ok test /pci@ld,700000/QLGC,qla@2
```

NOTES:

- Use a loopback plug when running the selftest.
- Run the `ext-loopback-test` command at OBP if you want to execute the `Diag-Echo-Test` manually, for diagnostic purposes, if the `topology = F-port`.

4.5.4 Building a Bootable Disk

This procedure assumes the system is already booted from an existing system disk, and that you have already performed a full system backup.

The device name shown in this example is for a device on the third PCI bus slot, target ID 130, LUN 0, slice 0. The device path is different on each system depending on which PCI bus slot, target ID, LUN, etc.

You must have already completed the steps listed above before attempting to create a bootable disk.

This procedure uses the Solaris command, `ufsdump` to create temporary `saveset` files for each partition on your current boot disk. To succeed with this method, you must have enough extra disk space to create the `saveset` files or your Solaris machine must have a high capacity tape drive attached.

To build a bootable disk:

1. Determine the amount of disk space used on your current boot disk using the `/usr/bin/df -k -l` command. For example:

```
/usr/bin/df -k -l

Filesystem            kbytes    used    avail capacity  Mounted on
/dev/dsk/c0t0d0s0    2577118 1650245  875331    66%    /
/proc                  0         0         0         0%    /proc
fd                     0         0         0         0%    /dev/fd
mnttab                 0         0         0         0%    /etc/mnttab
swap                  1310480         0 1310480    0%    /var/run
swap                  1311344         864 1310480    1%    /tmp
/dev/dsk/c0t0d0s7    5135326         114 5083859    1%    /home
```

This `df` example shows that the current boot disk is `/dev/dsk/c0t0d0s(x)`. There are two partitions of interest, slice 0 or `/` and slice 7 or `/home`. Slice 0 is using 1.6Gb and has 875Mb free. Slice 7 uses 114Kb and has 5Gb free. Therefore, Slice 7 or `/home` can be used to store the temporary `saveset` files. If at least 1.7Gb free was not available on this disk, a partition would have to be created on the new bootable disk large enough to hold the largest temporary `saveset` plus the largest used space on a partition. In this example, that would be a partition at least 3.2Gb (1.6Gb+1.6Gb).

- Use the `format` command to create, label, and format partitions on the new bootable disk. These partitions must be able to contain the contents of the temporary `savesets`. If you are not familiar with the `format` command, carefully read the Solaris documentation and man pages for the command.

CAUTION! Misusing the `format` command could destroy the data on the current disk drives.

For example:

```
format
partition
print
```

Current partition table (original):

Total disk cylinders available: 3880 + 2 (reserved cylinders)

Part	Tag	Flag	Cylinders	Size	Blocks
0	root	wm	0 - 2650	2.73Gb	(2651/0/0) 5726160
1	swap	wu	2651 - 2930	295.31Mb	(280/0/0) 604800
2	backup	wm	0 - 3879	4.00Gb	(3880/0/0) 8380800
3	unassigned	wm	0	0	(0/0/0) 0
4	unassigned	wm	0	0	(0/0/0) 0
5	unassigned	wm	0	0	(0/0/0) 0
6	unassigned	wm	0	0	(0/0/0) 0
7	home	wm	2931 - 3879	1000.90Mb	(949/0/0) 2049840

```
label
quit
quit
```

- Use the `newfs` command to create the file system. For example, for `qla` operation mode:

```
newfs -v /dev/rdisk/c3t130d0s0 (/)
newfs -v /dev/rdisk/c3t130d0s7 (home)
```

Example: In case of `qlc` operation mode

```
newfs -v /dev/rdisk/c5t22000004CFDF306d0s0 (/)
newfs -v /dev/rdisk/c5t22000004CFDF306d0s7 (home)
```

NOTE: The target device ID (t130) is in decimal format. The hexadecimal value for the target ID is used in the boot command line shown in step 12.

- Mount the boot partition to the `/mnt` mount point. For example, for `qla` operation mode:

```
mount /dev/dsk/c3t130d0s0 /mnt
Example: In case of qlc operation mode
mount /dev/dsk/c5t22000004CFDF306d0s0 /mnt
```

- Change the directory to the root partition mount point. For example:

```
cd /mnt
```

- Use the `ufsdump` utility to copy the root partition to the new boot disk. For example, for both `qla` and `qlc` operation mode:

```
ufsdump 0f - / | ufsrestore rf -
```

- Enter this command:

```
rm restoresymtable
```

- Install the boot block on the new boot disk. Examples:

For `qla` operation mode:

```
installboot /usr/platform/`uname -i`/lib/fs/ufs/bootblk /dev/rdisk/c3t130d0s0
```

For `qlc` operation mode:

```
installboot /usr/platform/`uname -i`/lib/fs/ufs/bootblk /dev/rdisk/c5t22000004CFDF306d0s0
```

9. Edit the new `vfstab` file to properly mount the new partition(s) during boot. In this case each reference to `c0t0d0s0` would be changed to `c3t130d0s0` (qla mode) or `c5t22000004CFDF306d0s0` (qlc mode).
 Example:

```
vi /mnt/etc/vfstab
```

NOTE: Replace every instance of `c0t0d0` with `c3t130d0` (in case of qla operation mode) or `c5t22000004CFDF306d0` (in case of qlc operation mode) in the `/mnt/etc/vfstab` file.
10. Edit the `/mnt/kernel/drv/sd.conf` file to add the boot target ID and LUN # For example:

```
name="sd" class="scsi" target=16 lun=6;
```
11. Shut down the system. For example:

```
/sbin/init 0
```
12. Boot from the newly created boot disk. Examples:
 For qla operation mode:

```
boot /pci@1f,2000/QLGC,qla@1/sd@3,0
```

 or

```
boot /pci@1f,2000/QLGC,qla@1/sd@3,ff (boot to target 3, LUN 255)
```

 For qlc operation mode:

```
boot /pci@1f,700000/SUNW,qlc@3/fp@0,0/disk@w22000004cfd306 (JBOD)
```

 or

```
boot /pci@1f,700000/SUNW,qlc@3/fp@0,0/disk@w216000c0ff898d16,a (Lun No. 10) (RAID)
```
13. View the current dump device setting. For example:

```
# dumpadm Dump content: kernel pages
Dump device: /dev/dsk/c0t0d0s1 (swap)
Savecore directory: /var/crash/saturn
Savecore enabled: yes
```
14. Change the dump device to the swap area of the new boot drive. Examples:
 For qla operation mode:

```
# dumpadm -d /dev/dsk/c3t130d0s1
```

 For qlc operation mode:

```
# dumpadm -d /dev/dsk/c5t22000004cfd306d0s1
```

NOTE: The following two steps set the newly created boot disk to be the default boot disk. These steps are performed at the system OBP (`ok`) prompt.
15. Create an alias entry for the new boot device (optional). For example, at the `ok` prompt, enter:

```
nvalias fibredisk /pci@1f,700000/SUNW,qlc@3/fp@0,0/disk@w22000004cfd306
```
16. Set default boot device to be the new boot device (optional). For example:

```
ok setenv boot-device fibredisk
```

5. Contacting Support

Please feel free to contact your QLogic approved reseller or QLogic Technical Support at any phase of integration for assistance. QLogic Technical Support can be reached by the following methods:

Web: <http://support.qlogic.com>

North America Contact Information

Email: support@qlogic.com

Phone: (952) 932-4040

Support contact information for other regions of the world is available at the QLogic website:

<http://support.qlogic.com>

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