Emulex fibre channel host bus adapters for Integrity and Proliant servers using Linux release notes
Description
These release notes contain firmware, driver and supplemental information for the Emulex host bus adapters (HBAs) for Integrity and Proliant servers using Linux®. See “Product models” on page 3 for a list of supported HBAs.

Update recommendation
Routine

Product models

Standalone HBAs
The following HBAs support Linux on Integrity and Linux on Proliant systems:
• HP StorageWorks FC2143, product number AD167A
• HP StorageWorks FC2243, product number AD168A

The following HBAs support Linux on Proliant only:
• HP StorageWorks FC2142SR (product number A8002A)
• HP StorageWorks FC2242SR (product number A8003A)

Mezzanine HBAs
The following Mezzanine HBAs support Linux on Proliant:
• c-Class:
  • HP Emulex LPe1105-HP 4Gb FC HBA for HP c-Class BladeSystem (product number 403621-B21)
• p-Class:
  • HP Emulex-based BL20p Fibre Channel Mezz HBA (product number 394757-B21)
  • HP Emulex-based BL25/30/35/45p Fibre Channel Mezz HBA (product number 394588-B21)

Devices supported
The Emulex HBAs for Linux on Integrity and Linux on Proliant are supported on HP servers that:
• Support the Linux operating systems described in “Operating systems” on page 4.
• Support the Integrity servers listed on the HP website http://www.hp.com/products1/serverconnectivity/support_matrices.html.
• Support B-Series, C-Series, and M-Series switch products.
• Support the following storage arrays for Integrity Linux and Proliant Linux:
  • Modular Smart Array 1000
  • Modular Smart Array 1500
  • Enterprise Virtual Array 3000/5000 GL
  • Enterprise Virtual Array 4000/6000/8000 XL
  • XP12000, XP1024/128
NOTE:
For Modular Smart Arrays and Enterprise Virtual Array, active/passive storage arrays are supported in single-path mode only.

- Support the following storage array for Linux on Proliant only:
  - HP StorageWorks Multipulse application

For the latest supported array firmware, see the HP storage array website http://h18006.www1.hp.com/storage/arraysystems.html.

Operating systems

Linux on Integrity servers

Integrity Linux operating systems lists the required operating systems for the HBAs that support Linux on Integrity servers.

Table 1 Integrity Linux operating systems

<table>
<thead>
<tr>
<th>HBAs</th>
<th>Linux operating systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP StorageWorks FC2143, product number AD167A</td>
<td>2.6 kernel:</td>
</tr>
<tr>
<td>HP StorageWorks FC2243, product number AD168A</td>
<td>• RHEL 4, Updates 3 and 4</td>
</tr>
<tr>
<td></td>
<td>• SLES 9, SP2 and SP3</td>
</tr>
<tr>
<td></td>
<td>• SLES 10</td>
</tr>
<tr>
<td></td>
<td>RHEL 4, Updates 3 and 4</td>
</tr>
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<td></td>
<td>SLES 9, SP2 and SP3</td>
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<tr>
<td></td>
<td>SLES 10</td>
</tr>
</tbody>
</table>

Table 2 Integrity Linux system requirements lists the firmware, drivers, and utility versions for the HBAs that support Linux on Integrity servers.

Table 2 Integrity Linux system requirements

<table>
<thead>
<tr>
<th>HBAs</th>
<th>Feature</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP StorageWorks FC2143, product number AD167A</td>
<td>Firmware</td>
<td>2.70a5</td>
</tr>
<tr>
<td>HP StorageWorks FC2243, product number AD168A</td>
<td>Linux driver</td>
<td>8.0.16.32 supported on SLES 9</td>
</tr>
<tr>
<td></td>
<td>Emulex Multipulse driver</td>
<td>2.2.20</td>
</tr>
<tr>
<td></td>
<td>EFI</td>
<td>3.11a5 (included in the Universal Boot image 5.02a1)</td>
</tr>
<tr>
<td></td>
<td>Universal Boot image</td>
<td>5.02a1</td>
</tr>
<tr>
<td></td>
<td>Utility</td>
<td>HBAware utility 3.2a7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See “HBAware” on page 8 for HBAware restrictions.</td>
</tr>
</tbody>
</table>

Linux on Proliant servers

Table 3 Linux on Proliant servers lists the required operating systems for the HBAs that support Linux on Proliant servers.
### Table 3 Linux on Proliant operating system requirements

<table>
<thead>
<tr>
<th>HBAs</th>
<th>Linux operating systems</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4 Gb HBAs</strong>&lt;br&gt;HP Emulex LPe1105-HP 4Gb FC HBA for HP c-Class BladeSystem, product number 403621-B21</td>
<td><strong>2.6 kernel</strong>&lt;br&gt;• RHEL 4, Updates 3 and 4&lt;br&gt;• SLES 9, SP3&lt;br&gt;• SLES 10</td>
</tr>
<tr>
<td>HP StorageWorks FC2143&lt;br&gt;HP StorageWorks FC2243&lt;br&gt;HP StorageWorks FC2142SR&lt;br&gt;HP StorageWorks FC2242SR</td>
<td><strong>2.4 kernel</strong>&lt;br&gt;RHEL 3, Updates 7 and 8&lt;br&gt;<strong>2.6 kernel</strong>&lt;br&gt;• RHEL 4, Updates 3 and 4&lt;br&gt;• SLES 9, SP2 and SP3&lt;br&gt;• SLES 10</td>
</tr>
<tr>
<td><strong>2 Gb HBAs</strong>&lt;br&gt;HP Emulex-based BL20p Fibre Channel Mezz HBA&lt;br&gt;HP Emulex-based BL25/30/35/45p Fibre Channel Mezz HBA</td>
<td><strong>2.4 kernel</strong>&lt;br&gt;RHEL 3, Updates 7 and 8&lt;br&gt;<strong>2.6 kernel</strong>&lt;br&gt;• RHEL 4, Updates 3 and 4&lt;br&gt;• SLES 9, SP2 and SP3&lt;br&gt;• SLES 10</td>
</tr>
</tbody>
</table>

**Table 4 x86 and x64 Linux system requirements** lists the firmware, BIOS, drivers and utility versions for the HBAs that support Linux on Proliant servers.
### Table 4 HBAs for Linux on Proliant system requirements

<table>
<thead>
<tr>
<th>HBAs</th>
<th>Feature</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4 Gb HBAs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HP Emulex LPe1105-HP 4Gb FC HBA for HP c-Class BladeSystem, product number 403621-B21</td>
<td>Firmware</td>
<td>2.70a5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIOS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HP Emulex LPe1150 4Gb FC HBA for HP StorageWorks FC2143</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIOS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HP StorageWorks FC2142SR HP StorageWorks FC2242SR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIOS</td>
</tr>
<tr>
<td><strong>2 Gb HBAs:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HP Emulex-based Bl20p Fibre Channel Mezz HBA</td>
<td>Firmware</td>
<td>1.91a5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIOS</td>
</tr>
<tr>
<td><strong>4 Gb HBAs</strong></td>
<td>Linux driver</td>
<td>2.4 kernel</td>
</tr>
<tr>
<td>HP Emulex LPe1105-HP 4Gb FC HBA for HP c-Class BladeSystem, product number 403621-B21</td>
<td></td>
<td>• 7.3.6 supported on RHEL 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 7.3.6 supported on SLES 8, SP4</td>
</tr>
<tr>
<td>HP StorageWorks FC2143</td>
<td></td>
<td>2.6 kernel</td>
</tr>
<tr>
<td>HP StorageWorks FC2243</td>
<td></td>
<td>• 8.0.16.32 supported on RHEL 4, Updated 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 8.0.16.32 supported on SLES 9</td>
</tr>
<tr>
<td>HP StorageWorks FC2142SR</td>
<td></td>
<td>• 8.1.6.8 supported on SLES 10</td>
</tr>
<tr>
<td>HP StorageWorks FC2242SR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emulex Multipulse driver</td>
<td>2.2.20 is supported on RHEL 4 , SLES 9 and SLES 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Utility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 2.1a24 is supported on RHEL 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Languages

American English

### Enhancements

**VMware support for Linux using Proliant**

These HBAs support VMware ESX. VMware has embedded drivers that support HBAs. HP recommends that you only use certified drivers as described in the [VMware I/O Compatibility Guide](http://www.vmware.com/pdf/vi3_san_guide.pdf), which lists the HBAs and drivers that have been certified for each ESX version. In addition, see the VMware Storage/SAN Compatibility Guide at [http://www.vmware.com/pdf/vi3_san_guide.pdf](http://www.vmware.com/pdf/vi3_san_guide.pdf).
Prerequisites

Before you perform HBA updates, you must:

- Ensure that the system is running one of the operating system versions listed in “Operating systems” on page 4.
- See the HP server PCI slot specifications to determine if your server is compatible with these HBAs.

Important information

This section describes restrictions that apply to Linux and this release of HBAs:

- When presenting XP LUNs to a Linux host, the LUNs must start with LUN 0.
- The Emulex MultiPulse 2.2.20 driver only supports active/active storage arrays.
- Because the order in which a switch reports Fibre Channel ports to a name server can vary, the order in which LUNs are discovered can vary between system boots. Use a LUN persistency tool to ensure that the name of a device does not change between system boots.

HP recommends that you use the Udev utility to ensure that the name of a device does not change between system boots. For detailed information, see the website http://www.kernel.org/pub/linux/utils/kernel/hotplug/udev.html.

- Boot from SAN is not supported on the A8002A with RHEL 4 (U3 & 4) ia64 or SLES 10 ia64.
- If you are installing the Linux operating system for the first time, load the operating system and then download and install the supported Linux HBA driver from the HP website http://welcome.hp.com/country/us/en/support.html.
- When running the scsi_info command on older XP arrays such as XP1024/128, you may see output similar to that shown in the following example. Ignore the error, and note that the XP array’s WWN is not all zeros.

The XP array returns INQUIRY data that differs slightly from that returned by EVA or MSA arrays.

```
[root@coco /]# scsi_info /dev/sdal
SCSI_ID="4,0,8,0":VENDOR="HP":MODEL="OPEN-E":FW_REV="5005":WWN="0000000000000000":LUN="5235303020303030-3130353930203030"

[root@coco /]# scsi_info /dev/sdam
SCSI_ID="4,0,8,1":VENDOR="HP":MODEL="OPEN-E":FW_REV="5005":WWN="0000000000000000":LUN="5235303020303030-3130353930203030"

[root@coco /]# scsi_info /dev/sdan
SCSI_ID="4,0,9,0":VENDOR="HP":MODEL="OPEN-3":FW_REV="2114":WWN="03000000002018e9":LUN="5234353120303030-3330313032030303"

[root@coco /]# scsi_info /dev/sdao
SCSI_ID="4,0,9,1":VENDOR="HP":MODEL="OPEN-3":FW_REV="2114":WWN="0b00000000600000":LUN="5234353120303030-3330313032030303"
```

FC2142SR and FC2242SR HBAs for Linux on Proliant systems

HP Proliant DL380 (G4) servers must have Systems ROMPaq Firmware 4.05 P51-08/16/2005 or later to be compatible with the FC2142SR and FC2242SR. Failure to use this ROMPaq version can cause the HBAs to hang during the power-on self-test (POST). For detailed information, see http://h18004.www1.hp.com/support/files/server/us/download/23728.html.
HBAware

Consider the following restrictions for HBAware for Linux systems:

• If you are installing the hp-lpfc kit and HBAware for the first time, enter the following command to ensure that HBAware displays all HBAs:
  
  # /opt/hp/hp-lpfc/remove_lpfc_hbaconf_entry.sh

Compatibility and interoperability

• The HBAs support the servers and switches described in “Devices supported” on page 3, and support the operating systems described in “Operating systems” on page 4.

• HP recommends that you implement zoning with HBAs, as described in the HP StorageWorks SAN design reference guide, available at http://h18006.www1.hp.com/products/storageworks/san/documentation.html.

Determining the current version

This section describes how to determine the HBA driver and firmware versions.

Using HBAware

To use HBAware:

1. Start HBAware:
   - Enter the following command at a command line on your system:
     
     HBAware

2. Select View and then select one of the following options:
   - Group HBAs by HostName
   - Group HBAs by Fabric Address
   
   The HBAs appear in the Discovered Elements pane.

3. Click an HBA to display the driver and firmware version in the Adapter Summary pane.

4. Click the Firmware tab to view BIOS information.
Using Linux files

Locate files in Linux directories to view HBA information. The file locations vary by kernel.

2.4 kernels

To view driver and firmware information:

1. Go to the `/proc/scsi/lpfc` directory to view a list of SCSI HBAs. A numbered file (such as 0 or 1) represents each HBA on the system.
2. Open the file to view the version information.

2.6 kernels

To view driver and firmware information:

1. Go to the `/sys/class/scsi_host` directory to view a list of SCSI HBAs. A numbered file (such as `host0` or `host1`) represents each HBA on the system.
   • Review the following files for version information:
     - `lpfc_drvr_version` contains driver information.
     - `fwrev` contains firmware information.

Effective date

April 2007