HP StorageWorks Emulex fibre channel host bus adapters for ProLiant and Integrity servers using Linux and VMware operating systems release notes
Description

These release notes contain driver, firmware, and other supplemental information for the Emulex fibre channel host bus adapters (HBAs) for ProLiant and Integrity servers using Linux® and VMware® operating systems. See Product models for a list of supported HBAs.

Update recommendation

Routine

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.
- 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.

Please refer to the section below for a list of HBA and Mezzanine part numbers.

Product models

The following HBAs and Mezzanine cards support Linux on ProLiant servers:

- HP Emulex LPe12000 8Gb FC single channel HBA (product number AJ762A)
- HP Emulex LPe12002 8Gb FC dual channel HBA (product number AJ763A)
- HP Emulex LPe1105–HP 4Gb FC HBA for HP c-Class BladeSystem (product number 403621–B21)
- 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)

The following HBAs support Linux on ProLiant and Integrity servers:

- HP StorageWorks FC2143 (product number AD167A)
- HP StorageWorks FC2243 (product number AD168A)
- HP StorageWorks FC2142SR (product number A8002A)
- HP StorageWorks FC2242SR (product number A8003A)

Devices supported

The Emulex HBAs for Linux are supported on HP servers that:

- Support the Linux operating systems described in “Operating systems” on page 4.
- Support the following storage arrays for Linux:
  - Modular Smart Array 1000
  - Modular Smart Array 1500

HP StorageWorks Emulex fibre channel host bus adapters for ProLiant and Integrity servers using Linux and VMware operating systems release notes
• Modular Smart Array 2012fc/2212fc
• Enterprise Virtual Array 3000/5000 GL
• Enterprise Virtual Array 4000/6000/8000 XL
• Enterprise Virtual Array 4400
• Enterprise Virtual Array 4400 with embedded switch*
• Enterprise Virtual Array 4100/6100/8100
• XP1024/128, XP10000/12000, and XP20000/24000

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

NOTE:

For Modular Smart Arrays and Enterprise Virtual Array, active/passive storage arrays are supported in single-path mode only.

*EVA 4400 with embedded switch is not currently supported with SLES 9 SP4.

For MSA 2000 Product Family Disk Array Only.

* MSA 2000 minimum required Firmware J200P24–01.

* Creating Vdisks online or offline without Volumes during the Vdisk creation process on MSA 2000 is not supported. It is required to create at least one volume on the storage during the Vdisk creation process.

* MultiPulse is not supported with MSA 2000, Please refer to HP Device Mapper documentation for Multipathing support.

Operating systems

Linux on ProLiant servers

Table 1 This table lists software support with the following 2.6 versions of x86 and x64 Linux: RHEL5 U1 (2.6.18-53.el5), RHEL5 U2 (2.6.18-92) SLES10 SP1 (2.6.16.53–0.16) and SLES10 SP2 (2.6.16.60–0.21).

<table>
<thead>
<tr>
<th>HBA</th>
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<th>HBA Anyway</th>
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Table 2 This table lists software support with the following 2.6 versions of x86 and x86_64 Linux: RHEL4 U5 and U6, SLES9 SP3 and SP4.

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Table 3 This table lists software support with the following 2.6 kernel versions of x86 and x86_64 Linux: SLES10 initial release.

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Table 4 This table lists software support with the following 2.4 kernel versions of x86 and x86_64 Linux: RHEL3 U7 and U8.

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Linux on Integrity servers

The following versions of Linux are supported on Integrity servers.

Table 5 This table lists software support with the following 2.6 versions of Itanium Linux: SLES10 initial release.

<table>
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<th>HBA</th>
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Table 6 This table lists software support with the following 2.6 versions of Itanium Linux: SLES10 SP 1 and RHEL5.1.

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Table 7 This table lists software support with the following 2.6 versions of Itanium Linux: RHEL4 U5 and U6, SLES9 SP3 and SP4.

<table>
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VMWare

HP fully supports the use of Windows and Linux as a guest OS on VMware ESX versions 2.5.x and 3.x. When running VMware, fibre channel HBAs are supported by in-box drivers supplied with ESX. Windows and Linux FC HBA drivers are not used on the Virtual O/S. To insure that your HBA is fully supported by HP and VMware, refer to one of the websites below:

For VMware ESX version 3.x, see the website:

For VMware ESX version 2.5.x, see the website:
http://www.vmware.com/support/pubs/esx_pubs.html

Installing the Linux device driver using the HP Kit

HP does not support building the ipfc driver from source code. The driver versions for kernel-based distributions are as follows:
• Driver 7.x.x for the 2.4 kernel
• Driver 8.x.x.x for the 2.6 kernel
To install the Linux driver:
• Download the appropriate driver kit for your distribution where the driver kit file will be in the form of hp-lpfc-yyyy-mm-dd.tar.gz.
• Copy the driver kit to the target system.
• Uncompress and untar the driver kit by using the command # tar zxfv hp-lpfc-yyyy-mm-dd.tar.gz.
• Change directory to the hp-lpfc-yyyy-mm-dd directory.
• The INSTALL command syntax will vary depending on your configuration. Use the -h option of the INSTALL script for a list of all supported arguments. If you have a previous driver kit installed, you can invoke the INSTALL command without any arguments as the script will use the currently loaded configuration:
  # ./INSTALL
For SLES 10 SP1 only: # ./INSTALL -p
If you want to force the installation to failover mode, use the -m flag:
For SLES 10 SP1 only: # ./INSTALL -mp
• If you want to force the installation to single-path mode, use the -s flag:
  # ./INSTALL -s
For SLES 10 SP1 only: # ./INSTALL -sp
The INSTALL script will install the appropriate driver RPM for your configuration, as well as the appropriate fibreutils RPM. Once the INSTALL script is finished, you will either have to reloa the Emulex driver modules (lpfc, lpfcdfc and lpfcmpl) or reboot your server. To unload the driver, enter the following command:
  # modprobe -r lpfcmpl

**NOTE:**
modprobe -r lpfcmpl is for MultiPulse configuration only.

# modprobe -r lpfcdfc

**NOTE:**
modprobe -r lpfcdfc is for RHEL 4 Ux and SLES 9SPx.

# modprobe -r lpfc
The commands to load the driver are:
# modprobe lpfc
# modprobe lpfcdfc

**NOTE:**
modprobe lpfcdfc is for RHEL 4 Ux and SLES 9SPx.

# modprobe lpfcmpl

**NOTE:**
modprobe lpfcmpl is for MultiPulse configuration only.

The command to reboot the server is:
# reboot
If your boot device is a SAN attached device, you will have to reboot your server.
To verify what RPM driver version is installed, use the RPM command with the -q option.

**Example 1.**

# rpm -q hp-lpfc
# rpm -q hp-multipulse

**For MultiPulse configuration only:**

# rpm -q fibreutils

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## Installing HBAnyware

To install HBAnyware:

1. Download the file `HP_ElxApps-<Kernel Version>-<HBAnyware Version>-<Driver Version>.zip` to the target system.
   
   **Example 2.**
   
   HP_ElxApps-26-3.2a16-8.1.10.11.zip

   **NOTE:**
   
   Please refer to Table 1, 2, 3, 4 and 5 for HBAnyware and Driver version info. Kernel Version: 26 for 2.6 Kernels and 24 for 2.4 Kernels.

2. Unzip the file on the target system.
   
   **Example 3.**
   
   # unzip HP_ElxApps-26-3.2a16-8.1.10.11.zip

3. Make the file executable under Linux.
   
   **Example 4.**
   
   # chmod +x HP_ElxApps-26-3.2a16-8.1.10.11.bin

4. Install the application.
   
   **Example 5.**
   
   #./HP_ElxApps-26-3.2a16-8.1.10.11.bin

5. Launch the application.
   
   **Example 6.**
   
   # HBAnyware or # /usr/sbin/hbanyware/hbanyware

   **NOTE:**
   
   Refer to application’s online help for more information.

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HBAnyware 3.4a16 has a known presentation issue with the 8.0.16.40 driver along with the AJ762A and AJ763A HBAs. The link speed is not displayed. This will be fixed in a future release.

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## Important information

### Restrictions

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

- SuSE 10 SP1 has a known issue related to Boot hang and udev timeout. To correct the issue, use the `./INSTALL` script with the `-p` flag. See the above section, “Installing the Linux device driver using the HP kit” on page 6 for more installation options.
- SLES 10 SP2 has an issue displaying 8Gb HBA speed. You can fix the issue with kernel version 2.6.16.60-0.25.
- The Emulex MultiPulse 2.2.22 2.2.38 and 2.2.39 drivers only supports active/active storage arrays.
- If using MultiPulse 2.1.x, you can have a maximum of four physical paths to a LUN. More than four paths can cause a failure.
• If using MultiPulse 2.2.x, you can have a maximum of eight physical paths to a LUN. More than eight paths can cause improper failure.

• 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

• When using MultiPulse with SUSE Linux systems in Boot from SAN configurations, HP recommends that you use the Udev utility to ensure that your system successfully boots. For detailed information about this procedure, see "Using the Udev utility with SUSE Linux systems" in the Booting Itanium Linux systems from a storage area network application notes, available on the website: http://h18006.www1.hp.com/storage/saninfrastructure.html.

• Boot from SAN is not supported on the A8002A with RHEL 4 U3 and U4, ia64, or SLES 10 IA64.

• Boot from SAN is not supported on the AJ762A and AJ763A with RHEL 4U5, SLES9 SP3 and SLES10 SP1.

• Boot from San is not supported with DL160G5 servers or the HP Emulex LPe12000/LPe12002. A fix will be available in a later version of the x86 HBA Bios.

• 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.

• XP LUNs presented to Linux hosts must start with LUN 0.

• MultiPulse can coexist with multipathing products such as QLogic® failover driver and Secure Path. However, note that MultiPulse only works with Emulex-based HBAs; it will not configure multiple paths for other HBAs in the system.

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

• No more than 10 targets are supported in a BFS zone.

• On a sx2000 system with the default logging level, a Call Trace may appear in the /var/log/messages file during failover events.

• 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="03000000002018d":LUN="5234353120303030-333031303203030"
[root@coco /]# scsi_info /dev/dao SCSI_ID="4,0,9,1":VENDOR="HP":MODEL="OPEN- 3":FW_REV="2114":WWN="0b0000000600000":LUN="5234353120303030-333031303203030"

• Starting with RHEL 5 U3 and SLES 10 SP3 active/passive arrays will not be supported.

• Installing PSP 7.91/92 causes fibreutils to downgrade. Re-install fibreutils rpm from the downloaded kit.

Example:
#rpm -Fvh fibreutils.<version>.linux.<arch>.rpm
• When an EVA 4400 with embedded switch is configured in a Heterogeneous SAN, HP recommends editing the HBA config file:
  # Edit /etc/modprobe.conf with your favorite editor.
  options lpfcmlp mlp_hbeat_tmo_busy=0  Save the file, then run the make_initrd script.
  # /opt/hp/hp-lpfc/make_initrd
  Reboot your server with the correct initrd.
• EVA 4400 with embedded switch is not currently supported with SLES 9 SP4.

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.

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.

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

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