

# HP Insight Foundation Suite for Integrity with Linux User's Guide

HP Smart Setup

HP Support Pack



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# About This Document

This document describes how to use the HP Insight Foundation Suite for Integrity with Linux (HIFIL) V2.6 product.

- The HP Smart Setup software prepares your system for installation of the Linux operating system (OS). The HP Smart Setup EFI-based setup utility (EBSU) utility assists with tasks such as configuring storage adapters, upgrading firmware, preparing a system hardware inventory, and installing diagnostics tools.
- The HP Support Pack installs additional utilities and tools (such as HP system management software) after the Linux OS is installed. It includes the HP Integrity Linux Management Tools, which provides HP Systems Insight Manager for additional functionality.

The document printing date and part number indicate the document's current edition. The printing date changes when a new edition is printed. Minor changes may be made at reprint without changing the printing date. The document part number changes when extensive changes are made.

Document updates may be issued between editions to correct errors or document product changes. To ensure that you receive the updated or new editions, you should subscribe to the appropriate product support service. See your HP sales representative for details.

See the latest version of this document at the HP Technical Documentation website:

<http://docs.hp.com>

## Additional Documentation

The HP Smart Setup and Support Pack software packages each contain a set of software documentation. The documentation is located in the `/docs` directory. Within the `/docs` directory, you can access the `index.html` web page or the `README.txt` file, both of which list the documentation found in the respective software packages.

Linux OS distributions provide documentation with their respective products. The documentation for your specific Linux OS is included with your system. For additional information about your Linux OS and its associated documentation, read the support notes document that HP provides with your OS distribution.

## Intended Audience

This document is intended for system administrators responsible for installing, configuring, and managing Linux. Administrators must have knowledge of OS concepts, commands, and configuration. It is also helpful to have knowledge of Extensible Firmware Interface (EFI) concepts.

## Typographic Conventions

This document uses the following typographical conventions.

`Command`

A command name or qualified command phrase.

`ComputerOut`

Text displayed by the computer.

**Ctrl-x**

A key sequence. A sequence such as **Ctrl-x** indicates that you must hold down the key labeled **Ctrl** while you press another key or button.

`ENVIRONVAR`

The name of an environment variable, for example, `PATH`.

[ERRORNAME]

The name of an error, usually returned in the `errno` variable.

**Key**

The name of a keyboard key. **Return** and **Enter** both refer to the same key.

**Term**

The defined use of an important word or phrase.

**User Input**

Commands and other text that you type.

*Variable*

The name of a placeholder in a command, function, or other syntax display that you replace with an actual value.

[ ]

The contents are optional in formats and command descriptions. If the contents are a list separated by |, you must choose one of the items.

{ }

The contents are required in formats and command descriptions. If the contents are a list separated by |, you must choose one of the items.

...

The preceding element can be repeated an arbitrary number of times.

|

Separates items in a list of choices.

## Publishing History

The document publishing date and part number indicate the current edition of the document. The publishing date changes when a new edition is released. Minor changes might be made at reprint without changing the publishing date. The document part number changes when extensive changes are made. Document updates might be issued between editions to correct errors or document product changes. To ensure that you receive the updated or new editions, subscribe to the appropriate product support service. See your HP sales representative for details. For the latest version of this document online, see *HP Insight Foundation Suite for Integrity with Linux User's Guide*:

<http://h20000.www2.hp.com/bc/docs/support/SupportManual/c01861377/c01861377.pdf>

Manufacturing Part Number	Supported OS	Supported Versions	Edition Number	Publication Date
5992-3193	RHEL SLES	RHEL4U4 and later, RHEL5, RHEL5U1, RHEL5U2, and RHEL5U3 SLES10, SLES10SP1, SLES10SP2, and SLES11	2.6	September 2009
5992-3193	RHEL SLES	RHEL4U4 and later, RHEL5, RHEL5U1, RHEL5U2, and RHEL5U3 SLES10, SLES10SP1, SLES10SP2, and SLES11	2.5	May 2009
5992-3193	RHEL SLES	RHEL4U4 and later, RHEL5, RHEL5U1, and RHEL5U2 SLES9SP3, SLES9SP4, SLES10, SLES10SP1, and SLES10SP2	2.4	September 2008



Manufacturing Part Number	Supported OS	Supported Versions	Edition Number	Publication Date
5992-3193	RHEL SLES	RHEL4U4 and later, and RHEL5 and RHEL5U1 SLES9SP3, and SLES10 and SLES10SP1	2.3	April 2008
5992-3193	RHEL SLES	RHEL4U4 and later, and RHEL5 and RHEL5U1 SLES9SP3, and SLES10 and SLES10SP1	2.2	December 2007
5991-7635	RHEL SLES	RHEL4U4 and later, and RHEL5 SLES8 (HP Smart Setup only), SLES9SP3 and SLES10	2.1	August 2007
5991-7635	RHEL SLES	RHEL3U8, RHEL4U4 and later, and RHEL5 SLES8 (HP Smart Setup only), SLES9SP3 and SLES10	2.0	March 2007
5991-6413	RHEL SLES	RHEL3U8 and RHEL4U4 and later SLES8 (HP Smart Setup only), SLES9SP3 and SLES10	1.2	November 2006
5991-6413	RHEL SLES	RHEL3U8 and RHEL4U4 and later SLES8 (HP Smart Setup only) and SLES9SP3	1.1	September 2006
5991-5295	RHEL	RHEL4U3	1.01	July 2006
5991-5295	RHEL SLES	RHEL3U7 and RHEL4U3 SLES8 (HP Smart Setup only) and SLES9SP3	1	April 2006

## Related Information

- The HP Insight Foundation Suite for Integrity with Linux website:  
<http://www.hp.com/go/integritylinuxessentials>
- The Intel EFI website:  
<http://developer.intel.com/technology/efi/>
- The HP WBEM Providers for Linux product website:  
<http://www.hp.com/go/wbemlinux>
- The HP Systems Insight Manager website:  
<http://www.hp.com/go/hpsim>
- The Distributed Management Task Force (DMTF) website that contains details on the WBEM protocol:  
<http://www.dmtf.org/standards/wbem>
- The Open Group's OpenPegasus website:  
<http://www.openpegasus.org>
- The HP Business Support Center website that contains HP Integrity server technical support information:  
<http://www.hp.com/support/itaniumservers/>

- For additional information on HP products and services, see the HP website:  
<http://www.hp.com>
- For the location of the nearest sales office, call:

In the United States: +1 800 637 7740

In Canada: +1 905 206 4725

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In Latin America: +1 305 267 4220

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For product information, contact any of the HP worldwide sales offices or HP Channel Partners (in the United States, call 1 800 637 7740).

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Include the document title, manufacturing part number, and any comment, error found, or suggestion for improvement you have concerning this document.

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# 1 Planning the Installation

Installing the Linux operating system (OS) on an HP Integrity server involves preparing the hardware for the OS installation, installing the OS, and updating the system with the latest OS patches. This chapter helps you plan the installation based on the server model, the OS edition, the source of the OS media, and your network environment. Subsequent chapters guide you through the installation process.

## Overview

The HP Integrity server family, based on the Intel Itanium processor, supports Linux on a full range of server models. This range includes entry-level servers, such as the 2-processor rx1620; mid-range servers, such as the rx7640 and rx8640; and the high-end 128-processor Superdome.

Some servers, such as the HP Superdome, rx8640, and rx7640 servers, are based on the HP Super-Scalable Processor chipset (sx1000 or sx2000). They are composed of basic building blocks known as **cells**. These **cell-based servers** can be set up as a single system or divided into multiple partitions, where each partition is assigned memory, processors, and I/O resources for its exclusive use. Each partition can execute its own OS image.

## Support Information

To prepare for the installation of the HP Insight Foundation Suite for Integrity with Linux, verify that the server satisfies the software and hardware requirements described in this section.

## Supported Linux OS Distributions

The Linux OS distributions supported by the HP Insight Foundation Suite for Integrity with Linux are as follows:

- Red Hat Enterprise Linux (RHEL)
  - RHEL4U4 and later updates
  - RHEL5 and later updates
- SUSE Linux Enterprise Server (SLES)
  - SLES10 and later service packs
  - SLES11

## Supported Hardware

HP provides support for Linux on HP Integrity servers using *only* the latest HP Support Pack version that is provided with the HP Insight Foundation Suite for Integrity with Linux. This is the latest HP Support Pack for a given Linux distributor without exception. HP supports the minimum OS distributions as listed in Table 1-1 including later updates and service packs unless otherwise specified in “Support Exceptions” (page 12). Each HP Support Pack version contains *only* the currently supported OS distributions and includes any problem resolutions that have been implemented to improve the product.

HP recommends that you frequently update your copy of the HP Insight Foundation Suite for Integrity with Linux to ensure that your servers are being managed with the most current support tools and that you have the supported version of HP Support Pack. You can obtain the latest version of the product as described in “Obtaining the Latest HP Insight Foundation Suite for Integrity with Linux” (page 17).

HP recommends that you review Appendix D (page 59) to ensure that the adapters in your server are supported by the HP Insight Foundation Suite for Integrity with Linux. In addition, HP recommends that you keep the server up-to-date as described in “Updating the Server” (page 31).

The following table provides the minimum RHEL and SLES OS distributions that are supported using the latest HP Insight Foundation Suite for Integrity with Linux:

**Table 1-1 Supported Minimum OS Distributions by HP Integrity Server**

Server	RHEL Distributions	SUSE Distributions
BL860c	RHEL4U6, RHEL5U1	SLES10, SLES11
BL870c	RHEL4U6, RHEL5U1	SLES10SPI, SLES11
cx2620	RHEL4U4	None
rx1600	RHEL	None
rx1620	RHEL4, RHEL5	SLES10
rx2600	RHEL4	None
rx2620	RHEL4, RHEL5	SLES10
rx2660	RHEL4U4, RHEL5	SLES10SP1, SLES11
rx3600	RHEL4U4, RHEL5	SLES10, SLES11
rx4640	RHEL, RHEL5	SLES10
rx5670	None	None
rx6600	RHEL4U4, RHEL5	SLES10, SLES11
rx7620	RHEL4U1, RHEL5U1	SLES10
rx7640	RHEL4U4, RHEL5U1	SLES10, SLES11
rx8620	RHEL4U1, RHEL5U1	SLES10
rx8640	RHEL4U4, RHEL5U1	SLES10, SLES11
Superdome sx1000	RHEL4U1, RHEL5U1	SLES10
Superdome sx2000	RHEL4U4, RHEL5U1	SLES10SP1, SLES11

## Support Exceptions

The following support exceptions should be reviewed to ensure that you are using the correct versions of the product:

HP Smart Setup EBSU utility and the rx2600 HP Integrity server:

The HP rx2600 server is not supported by the HP Smart Setup EBSU utility after the version 4.2 so you must retain a copy of this version for use in managing this server.

MPT Fusion HBA driver requirements on the rx2660, BL860c and BL870c HP Integrity servers:

The use of the MPT Fusion HBA driver on the rx2660, BL860c, and BL870c HP Integrity servers requires an update of this driver when your server is running RHEL5 or SLES10 and is described in “Installing the MPT Fusion HBA Drivers for Linux” (page 33).

## Ensure Support for Linux on HP Integrity Servers

HP recommends that you review the Linux certification and support matrix for your HP Integrity servers prior to downloading Linux from the Red Hat or Novell SUSE websites. You should ensure that the distribution of Linux that you want to install is both certified and supported on your server.

Use the following steps to review information about the supported and certified distributions of the RHEL and the SUSE Linux distributions for HP Integrity servers:

1. Go to the Open Source and Linux from HP website at:

<http://www.hp.com/go/integritylinux>

2. Click **Linux certification and support matrices**.
3. Select the appropriate Linux distribution tab, locate the server name of interest, and then click the link.

Detailed product information, downloads, documentation, and specific certification information is provided in a categorized listing.

## Choosing an Installation Scenario

When you purchase an HP Integrity server, you can order additional hardware, support options, and an OS Enablement Kit, such as the HP Insight Foundation Suite for Integrity with Linux. You can also order a factory-installation of the OS. Depending on your order and subsequent use, one of the following scenarios will apply to your system:

- **Factory-Installed Linux**

To get the system up and running, verify that the OS is installed correctly. Perform an update of the latest Linux patches and fixes from the website of the installed Linux distribution. Install additional tools and utilities using the HP Support Pack.

- **No OS Installed**

Use HP Smart Setup to prepare the server hardware for installation and use the Linux Installer media to load the OS files on the server or you can execute a cold installation. After installation, verify that the OS is installed correctly. Perform an update of the latest Linux patches and fixes from the website of the installed Linux distribution. Install additional tools and utilities using the HP Support Pack.

- **Factory-Installed OS Other than Linux**

If you run an alternate factory-installed OS, you can perform the migration on an entry-level server or engage an HP Customer Engineer (CE) to perform the migration on a mid-range or high-end server. Contact HP Support or sales to engage an HP CE.

When migrating to Linux from another OS, pay attention to the differences in supported hardware between the two operating systems. You must replace incompatible components with those supported on Linux. If you want to keep the data residing on the server hard disk, you must back up the data and verify that you can restore it elsewhere.

Use HP Smart Setup to prepare the server hardware for installation and update the system with the latest firmware and drivers. Use the Linux Installer media to load the OS files on the server. Perform an update of the latest Linux patches and fixes from the website of the installed Linux distribution. Install additional tools and utilities using the HP Support Pack.

- **Installed Linux Incorrect or Inoperable**

Use HP Smart Setup to set up and update the system with the latest firmware and available drivers. After reinstallation of Linux, verify that the OS is installed correctly. Perform an update of the latest Linux patches and fixes from the website of the installed Linux distribution. Install additional tools and utilities using the HP Support Pack.

## Choosing an Installation Environment

The installation environment consists of the server model, the Linux OS distribution and version, a VGA or serial console, and the software you need to perform the installation. The software required for installation includes the HP Smart Setup software package and the Linux installer media.

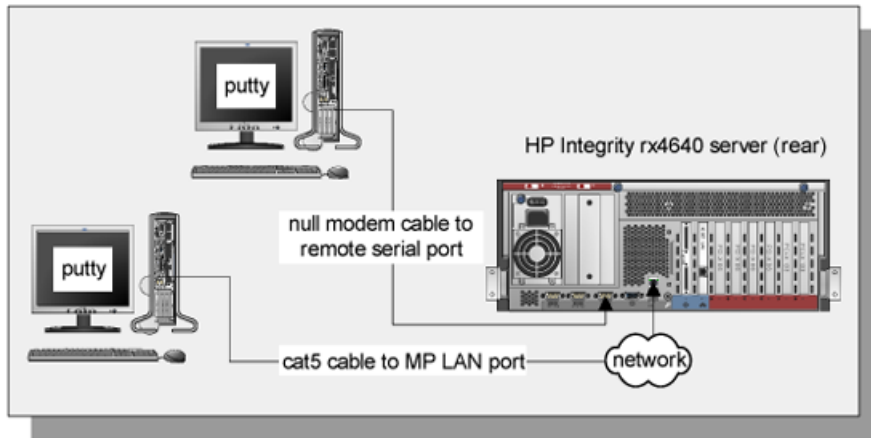
A list of the supported HP Integrity servers is provided in the “Support Information” (page 11) section; a list of the supported adapters is provided in Appendix D (page 59).

## Using a Serial Console

A **serial console** is a PC running terminal emulation software, such as a Secure SHell (SSH) client like PuTTY (available from the web or on your Linux system). Using the `minicom` or `cu` command, connect to the server through the Management Processor (MP) serial port or LAN port.

Figure 1-1 shows serial consoles connected to an HP Integrity rx4640 server.

**Figure 1-1 Serial Console Configuration**



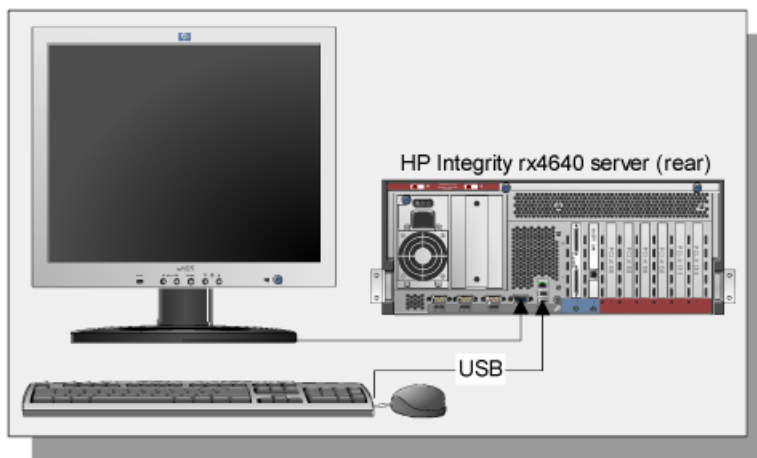
When using a headless console to install Linux, you can view detailed installation information for each file by monitoring the setup log channels.

## Using a VGA Console

A **VGA console** is a VGA monitor, a USB HP keyboard, and a USB mouse connected to the server. (You can use a USB-to-PS2 converter to connect to a console switch.)

Figure 1-2 shows a VGA console connected to an HP Integrity rx4640 server.

**Figure 1-2 VGA Console Configuration**



A VGA console provides complete access to all the installation and administration tasks that can be performed on the server. You can use the VGA console to prepare the server for installation, install the OS, and check server status after installation.

## Using the HP Smart Setup EBSU Utility

You can use HP Smart Setup both before and after the OS is installed.

HP recommends that you obtain the latest version of the HP Insight Foundation Suite for Integrity with Linux. For more information about downloading HP Smart Setup, see “Obtaining the Latest HP Insight Foundation Suite for Integrity with Linux” (page 17).

- **Before Installing the OS**

Use any bootable, removable media containing HP Smart Setup to boot the server. With the media in the CD/DVD drive or USB HDD, the server boots to the HP Smart Setup EBSU utility, which provides an interface for offline setup and assists with configuration tasks, such as creating hard disk partitions and upgrading the firmware. Additionally, the HP Smart Setup EBSU utility provides a wizard called **Smart Setup**. The Smart Setup wizard guides you through preparing the system for and installing the OS. The HP Smart Setup EBSU utility works in conjunction with the Linux Installer media, which contains the OS image. It is strongly recommended that you use the HP Smart Setup to install the OS.

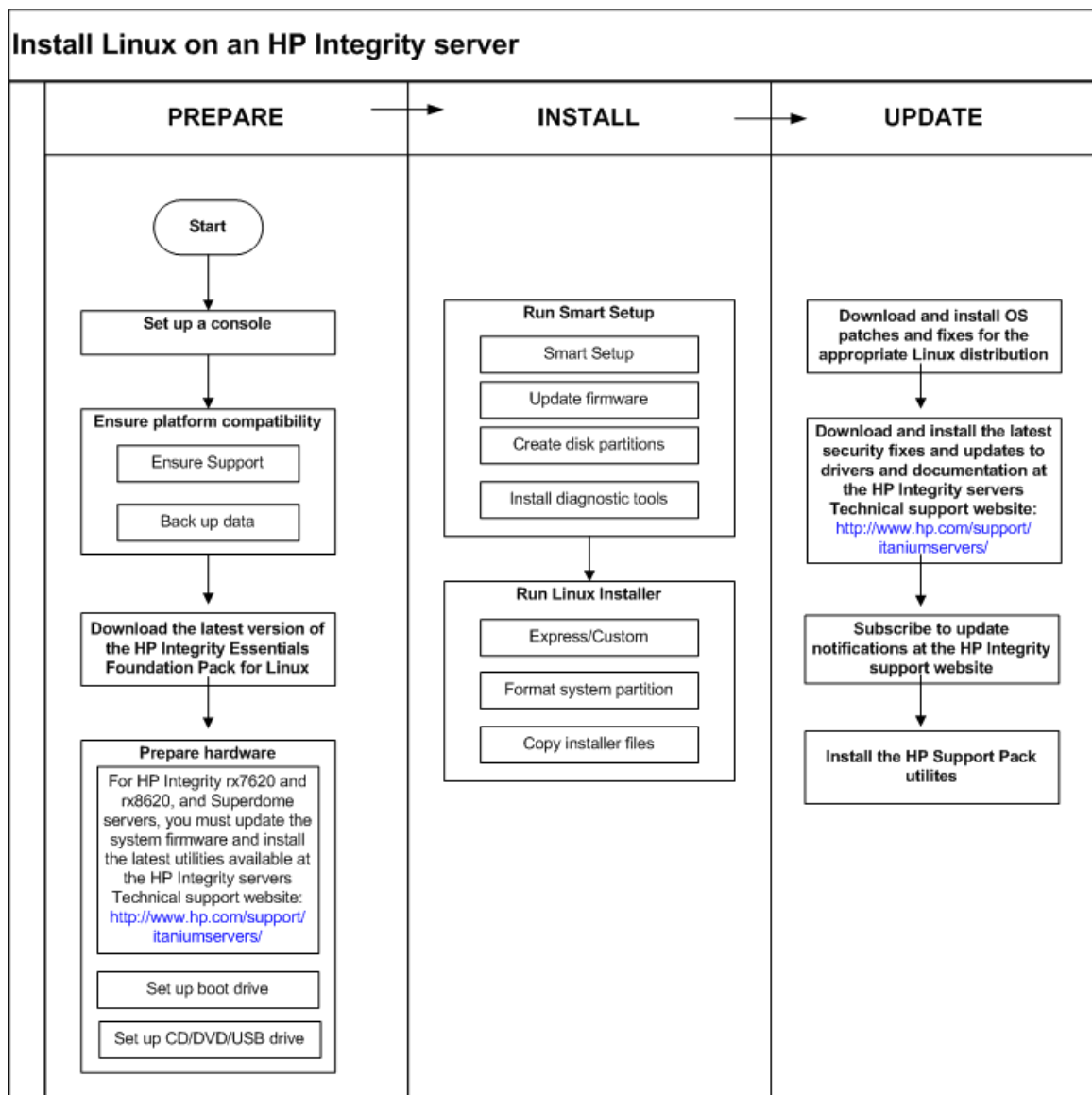
- **After Installing the OS**

Use the HP Smart Setup EBSU utility to install the EFI driver and utilities and to upgrade firmware, which ensures the stability and performance of the system.

## Installation Process

The OS installation process involves preparing the server, installing the OS on the server, and updating it with the latest firmware, drivers, utilities, security fixes, and OS fixes. Figure 1-3 shows the main tasks involved in each stage.

**Figure 1-3 Installation Overview**



There are minor differences in the sequence of tasks or the interface you use to perform them based on your choice of console and installation media. Use the detailed instructions in the following chapters, and note any warnings or cautions that might apply.



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## 2 Preparing for Installation

Preparing your server for an OS installation involves setting up a console (VGA, serial, or both) and preparing the hardware for installation. If you are migrating from another OS, you must also ensure that the server platform and its peripheral devices are compatible with Linux before proceeding. This chapter provides detailed instructions for each task.

### Obtaining the Latest HP Insight Foundation Suite for Integrity with Linux

HP recommends that you frequently update your copy of the HP Insight Foundation Suite for Integrity with Linux to ensure that your servers are being managed with the most current support tools.

You can obtain the latest version of the HP Insight Foundation Suite for Integrity with Linux by component format using the following procedure:

1. Ensure that your system has an application that can burn a bootable CD or DVD installed (for example, Nero or Roxio).
2. Go to the HP Insight Foundation Suite for Integrity with Linux Smart Setup download page at <http://h20293.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=T2387AA>.
3. Select the HP Smart Setup ISO file from the Software Specification list, complete the online form, and then click **Next** to complete the download.

The HP Smart Setup ISO file contains the entire HP Insight Foundation Suite for Integrity with Linux product including the HP Support Pack.



**NOTE:** The HP Insight Foundation Suite for Integrity with Linux media delivered by HP may not contain the latest version of the product.

4. Create a bootable disc by writing the HP Smart Setup ISO file and the HP Support Pack files to a CD or DVD using the media burning application.



**TIP:** You can download tar files of the HP Support Pack, HP SmartSetup Scripting Toolkit, and HP Management Base products.

### Ensuring Platform Compatibility

If you are migrating from another OS to Linux, ensure that the hardware is compatible and any data on the server disk is backed up.

### Verifying Hardware Compatibility

To verify that your existing hardware is compatible with Linux, use the following steps:

1. Review the Linux certification and support matrix as described in “Ensure Support for Linux on HP Integrity Servers” (page 12).
2. In the Linux certification and support matrix list, select the appropriate Linux distribution tab, and then click the link for the server whose compatibility you want to verify.
3. Click the **Product overview and how to buy** link.
4. Click the **options & accessories** tab to review supported hardware configurations. For example, the **options & accessories** page for the rx8640 server:

<http://h71028.www7.hp.com/enterprise/cache/423649-0-0-0-121.html>

This web page lists the processors, memory, adapters, and controllers that are available for the rx8640 server.

5. Verify existing device compatibility at the HP Integrity server connectivity website:  
<http://www.hp.com/go/serverconnectivity>
6. Verify storage compatibility by reviewing the *HP Integrity Server-Storage Support Matrices* located at:  
[http://www.hp.com/products1/serverconnectivity/support\\_matrices.html](http://www.hp.com/products1/serverconnectivity/support_matrices.html)



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**NOTE:** This list is not exhaustive because storage vendors may support more configurations than those indicated at this site. As a general rule, check with your storage vendor and an HP Sales Representative for a definitive statement on server-storage compatibility.

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## Backing Up Existing Data

To restore the data from the hard disk on your server after migrating to Linux, you must first back up the data and verify that it can be restored. Use the following guidelines:

1. Perform a server-wide backup using your existing backup utilities.
2. Verify the integrity of the backup by restoring samples of data to another server.
3. Store the backup in a safe place.

## Setting Up a Console

You can install the OS and administer the server from either a VGA console, a serial console, or both.

On HP Integrity rx1600, rx1620, rx2600, and rx2620 servers, the Management Processor (MP) is optional. In cases where the MP was not ordered, the only console is the serial interface on the bulkhead connector. This connector is a serial port (UART) and must be configured for use. For configuration information, see “Configuring and Using a Serial Console” (page 49).

## Setting Up a Serial Console

From the serial console, you can access the EFI shell and the MP. Use these utilities while installing and administering Linux on HP Integrity servers.

You can configure a serial console in two ways:

- Connect a PC to the MP serial port using a null modem cable.
- Connect a PC to the MP LAN port using a cat5 LAN cable.

On a system running Linux, the SSH client is the native terminal emulator application.

On a system running Windows, use a terminal emulator application, such as PuTTY or HyperTerminal. PuTTY is a free implementation of Telnet and SSH for 32-bit Linux and UNIX, and it provides an xterm terminal emulator. HP recommends that you use PuTTY version 0.57 or later, which is available the HP Insight Foundation Suite for Integrity with Linux or from the PuTTY Download Page website:

<http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>

To set up a serial console, perform the following steps:

1. Use a null modem cable to connect a PC to the MP serial port or to the serial console port (for systems without MP), or use a cat5 cable to connect a PC to the MP LAN port.
2. If necessary, install a terminal emulator and specify the following port settings:
  - Bits per second: 9600
  - Data bits: 8
  - Parity: none
  - Stop bits: 1
  - Flow Control: Xon/Xoff

3. Use the Keyboard Configuration Panel to map the Backspace character to **Ctrl-H**.
4. Boot the server.
5. Run the terminal emulator and press **Enter**.

The MP> prompt is displayed if you are using the Management Processor; otherwise, the server's output is shown.



**NOTE:** Before the Linux OS is booted, all console interaction occurs through EFI. To modify the default local graphics display to a serial console path, you must configure a single serial port (UART) for both Console-In/Out in the EFI boot manager. For detailed instructions, see “Configuring and Using a Serial Console” (page 49).

## Setting Up a VGA Console

On servers configured with an internal graphics adapter, you can connect a monitor, keyboard, and mouse directly to the appropriate ports. On HP Integrity rx5670 servers, you must first install an HP Graphics and USB Combo adapter (A6869A), and then connect the console to the appropriate ports. From an existing serial console, you can then modify the system configuration to redirect the output to the VGA console.

**Table 2-1 Graphics Support on Server Models**

Server Model	Graphics Adapter
rx1600, rx2600, rx4640, rx1620, rx2620	Internal graphics adapter (available on an MP adapter, which is optional on some servers)
rx5670	Optional HP Graphics and USB Combo adapter (A6869A)

To install the HP Graphics and USB Combo adapter:

1. Insert the HP Graphics and USB Combo adapter in an open PCI slot of the server.
2. Connect a VGA monitor, USB HP keyboard, and USB mouse to the appropriate ports.
3. Boot the server to the **EFI Boot Manager** menu.
4. From the EFI Boot Manager at the serial console, select **Boot Option Maintenance Menu**.
5. Select the option **Select Active Console Output Devices**.
6. Select the line with the appropriate graphics adapter PCI device.  
If there is no asterisk at the beginning of the line, the device is disabled. Press **Enter** to toggle the state of the adapter from disabled to enabled.
7. Select **Save Settings to NVRAM** and then **Exit**. The video display is now directed to the VGA console.

## Preparing the Server Hardware

This section describes how to set up the server hardware for OS installation, set up the boot drive, and set up the CD or DVD drive.

### Setting Up the Boot Drive

The OS installs through the boot controller that is detected as adapter zero and then to the drive detected as drive zero.



**CAUTION:** HP recommends that only the target OS drive be connected during installation. This ensures that the OS is installed on the correct drive.

To set up the boot drive, performing the following steps:

1. Power down the server.

2. Make a list of all device connections so you can reconnect them after the installation is completed.
3. Disconnect all mass storage devices from all controllers except the boot controller.
4. Configure the boot controller and boot drive.



---

**NOTE:** If you are using an HP SmartArray controller, see the *Controller's User Guide*. You can interrupt the boot process to invoke the EFI-based SmartArray configuration utility, ORCA. To invoke this utility press **F8** on the VGA console or **Esc-8** on the serial console.

---

## Accessing the Removable Media Devices Using EFI

When hardware (for example, a hard disk drive, a USB Hard Disk Drive (HDD) device, or a CD or DVD drive) is added to a system after the system has booted to EFI, the EFI shell environment does not automatically detect the new device. You must reconnect the device driver for the EFI shell to recognize the device.

Additionally, the EFI shell environment creates default mappings for all the device handles that support a recognized file system. After you change the system configuration or add a new device, you must regenerate these mappings.

### Enabling a CD/DVD Device

To access a CD/DVD, you must enable the EFI shell to detect it, and then access it using the following steps:

1. From the EFI shell, enter the following:

```
Shell> reconnect -r
```

The `reconnect` command reconnects one or more drivers from a device, disconnecting all the drivers from all the devices and then reconnecting them. If a device handle is not specified, the reconnect operation is performed on all the handles in the system. If a device handle is specified, only the device handle and the devices below it are reconnected.

2. Regenerate all mappings:

```
Shell> map -r
```

The `-r` option regenerates all the mappings in a system. The EFI shell displays a device mapping table similar to the following example:

```
fs0 : Acpi (PNP0A03,0) /Pci (2|0) /Ata (Primary,Master) /CDROM (Entry1) blk0
      : Acpi (PNP0A03,1) /Pci (1|0) /Scsi (Pun0,Lun0) blk1
      : Acpi (PNP0A03,0) /Pci (2|0) /Ata (Primary,Master) blk2
      : Acpi (PNP0A03,0) /Pci (2|0) /Ata (Primary,Master) /CDROM (Entry1)
```



---

**TIP:** The `map` command displays or defines a mapping between a user-defined name and a device handle. The most common use of this command is to assign drive letters to device handles that support a file system protocol. After these mappings are created, the drive letters can be used with all the file manipulation commands. It can also be used to create new mappings and delete existing mappings using the `-d` option. If the `map` command is used without any options, all the current mappings are listed. If the `-v` option is used, the mappings are shown with additional information on each mapped handle.

---

3. Record the device name of the CD/DVD device, `fs0`, in this example. Use this device name to explore the contents of the removable media.
4. Go to the CD/DVD file system:

```
# fsnumber:
```

5. Change directories to `\EFI\boot`, and then enter the following:

```
# bootia64.efi
```

The **Smart Setup EBSU** entry is created in the EFI Boot Manager as a selection for booting to launch the HP Smart Setup EBSU utility.

## Enabling a USB Device

To access a USB HDD device, you must enable the EFI shell to detect and then access it using the following steps:



---

**IMPORTANT:** The USB HDD device must be formatted with a FAT32 file system.

---

1. From any Linux system, go to the <http://www.hp.com/go/integritylinuxessentials> website, and click on the **Download for HP Insight Foundation Suite for Integrity with Linux** link.
2. Click the link for the HP Smart Setup tar file to download the file to a local folder.
3. Connect the USB HDD device, and then mount it if the OS does not do so automatically.
4. Extract the contents of the HP Smart Setup tar file to the USB HDD device, making sure that the EFI folder structure is in the root directory.

```
# tar zxvf ebsu-version.tgz -C /mnt/usb
```

5. Unmount the USB device:

```
# umount /mnt/usb
```



---

**CAUTION:** Failure to unmount the USB device will result in data loss.

---

6. Connect the USB device to the intended server.
7. From the EFI shell, enter the following:

```
Shell> reconnect -r
```

The `reconnect` command reconnects one or more drivers from a device, disconnecting all the drivers from all the devices and then reconnecting them. If a device handle is not specified, the reconnect operation is performed on all the handles in the system. If a device handle is specified, only the device handle and the devices below it are reconnected.

8. Regenerate all mappings:

```
Shell> map -r
```

The `-r` option regenerates all the mappings in a system. The EFI shell displays a device mapping table.



---

**TIP:** The `map` command displays or defines a mapping between a user-defined name and a device handle. The most common use of this command is to assign drive letters to device handles that support a file system protocol. After these mappings are created, the drive letters can be used with all the file manipulation commands. It can also be used to create new mappings and delete existing mappings using the `-d` option. If the `map` command is used without any options, all the current mappings are listed. If the `-v` option is used, the mappings are shown with additional information on each mapped handle.

---

9. Record the device name of the USB HDD device, `fs0`, for example. Use this device name to explore the contents of the removable media.
10. Go to the USB file system:

```
# fsnumber:
```

11. Change directories to `\EFI\boot`, and then enter the following:

```
# bootia64.efi
```

The **Smart Setup EBSU** entry is created in the EFI Boot Manager as a selection for booting to launch the HP Smart Setup EBSU utility.



**NOTE:** This entry may fail if you change the USB connection. You must execute the preceding steps again to reconnect the USB HDD device.

---

# 3 Installing the OS and Updating the Server

This chapter provides instructions for installing Linux using the HP Smart Setup EBSU utility or a cold installation. You can install the HP Support Pack after installing the OS.

## Using HP Smart Setup to Install the OS

The HP Smart Setup EBSU utility provides an easy-to-use interface for installing the OS and for performing other tasks, such as configuring storage adapters, upgrading firmware, partitioning the hard disk, and installing diagnostic tools.

Installation requires a serial or VGA console and involves the following steps:

- booting from a bootable, removable media containing HP Smart Setup,
- running the HP Smart Setup EBSU utility,
- launching the Linux installer,
- loading OS files to the boot disk,
- and booting the server from the boot disk.

You must be connected either to the serial or VGA console of the MP on the target server using a terminal emulation application, such as SSH client, PuTTY, minicom, or the cu command. If the MP is not available on the network, you must be physically connected using a serial or VGA cable.

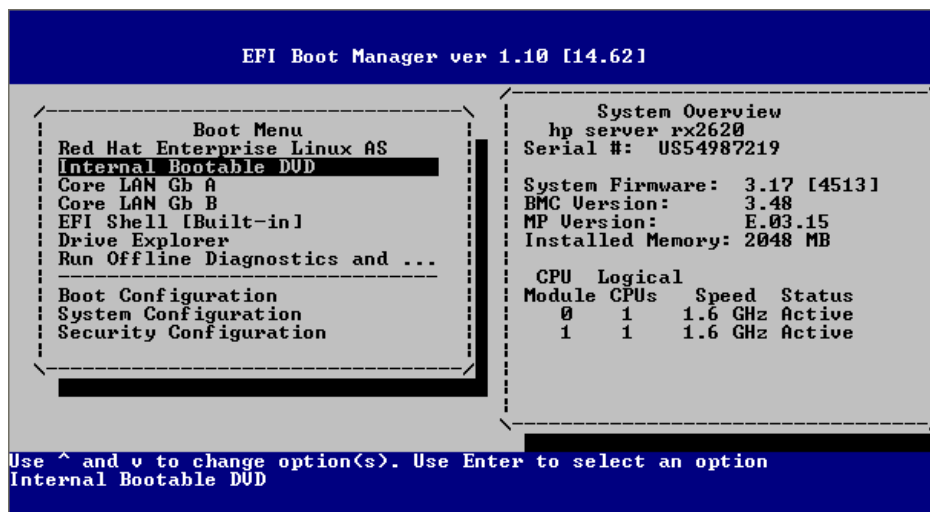


**IMPORTANT:** When using QLogic Fibre Channel adapters while using the configuring partitions, creating partitions, or HP Smart Setup EBSU utilities, if an older version of the EFI aux driver is installed it is possible that storage devices attached to this adapter may not be detected. If this situation occurs, a prompt is displayed and you must update the firmware of the QLogic Fibre Channel adapters before reattempting the utility.

To install Linux, perform the following steps:

1. Ensure that the removable media is accessible and contains the HP Smart Setup EBSU utility. For details, see “Accessing the Removable Media Devices Using EFI” (page 20).
2. From the EFI Boot Menu, select **Smart Setup EBSU** as appropriate, and then press **Enter**. Figure 3-1 shows the EFI Boot Manager menu that is displayed.

**Figure 3-1** EFI Boot Manager Menu



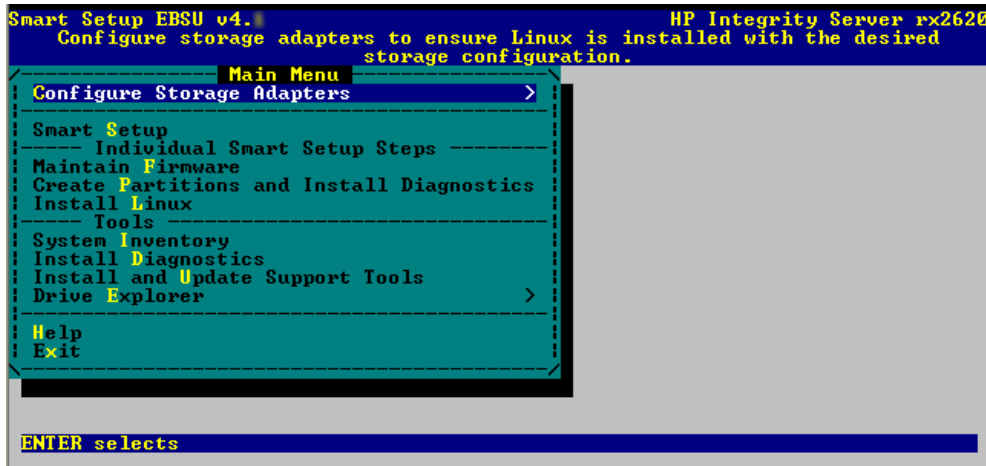


**NOTE:** The entry **Smart Setup EBSU** (if configured) are not displayed in all EFI Boot Managers. If this entry does not appear, perform the steps detailed in “Accessing the Removable Media Devices Using EFI” (page 20).

3. The HP Smart Setup EBSU utility starts and displays the introduction screen. Press **Enter** to accept the default selection and continue.

The Main Menu is displayed, as shown in Figure 3-2.

**Figure 3-2 HP Smart Setup EBSU Main Menu**



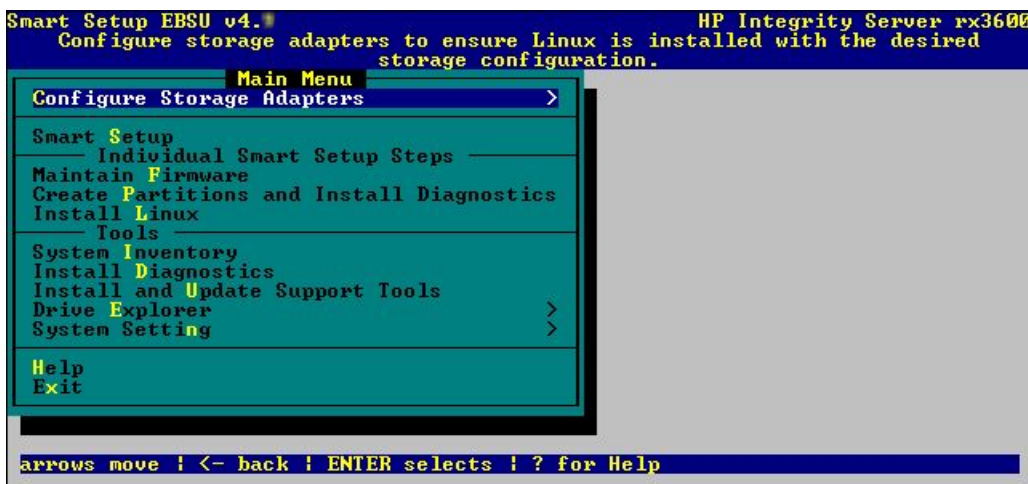
**NOTE:** If there are I/O adapters installed on your system that Linux does not support, the list of unsupported adapters is displayed. In addition, you are warned that you can continue with the use of the HP Smart Setup EBSU utility, however, it could invalidate your HP service contract. For more HP Integrity server information, see the HP Business Support Center website:

<http://www.hp.com/support/itaniumservers>

4. If your HP Integrity server is cell-based (for example, a Superdome sx2000 server) or contains the zx2 chipset, execute this step; otherwise, continue to step 6.

The additional **System Settings** option appears on the Main Menu, as shown in Figure 3-3.

**Figure 3-3 HP Smart Setup EBSU Main Menu with System Setting Option**





Based on the type of server, the option to configure either the Advanced Configuration and Power Interface (ACPI) or maximum payload size (MPS) setting appears. Use the following steps to configure your system's ACPI or MPS settings properly:

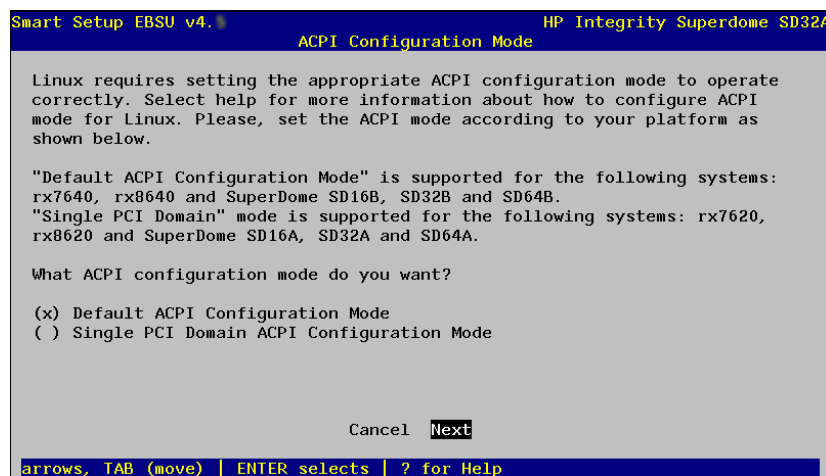
Select **System Settings** and press **Enter**.

Choose one of the following processes as appropriate for your system, either ACPI or MPS:

### ACPI Setting

- a. The following screen is displayed:

**Figure 3-4 Configure the ACPI Setting**



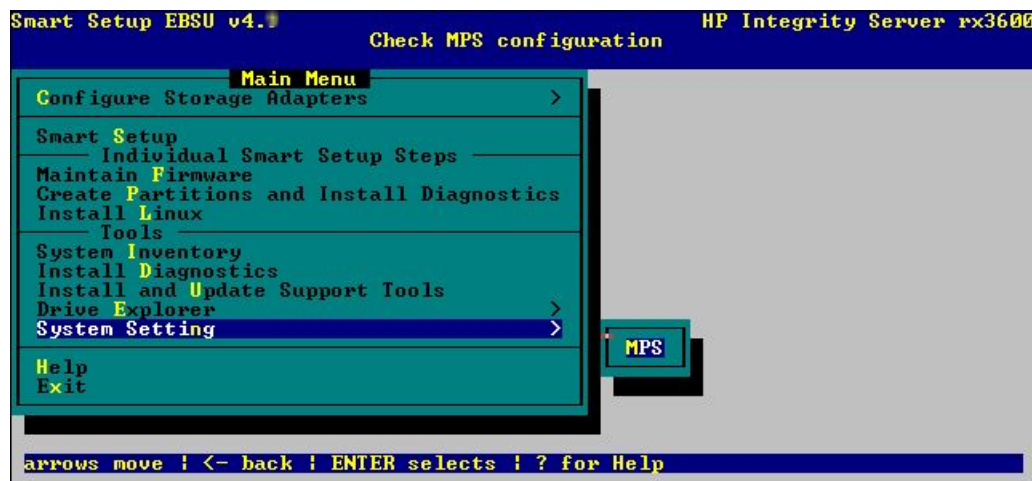
- b. Select the proper setting for your server using the information provided.
- c. Select **Next**, and then press **Enter** to continue.
- d. Press **Enter** to accept the default selection (**OK**). The system is rebooted.

You are returned to the HP Smart Setup EBSU utility introduction screen to continue with your Linux installation using the new ACPI configuration.

Or

**MPS Setting** The following screen is displayed:

**Figure 3-5 Configure the MPS Setting**



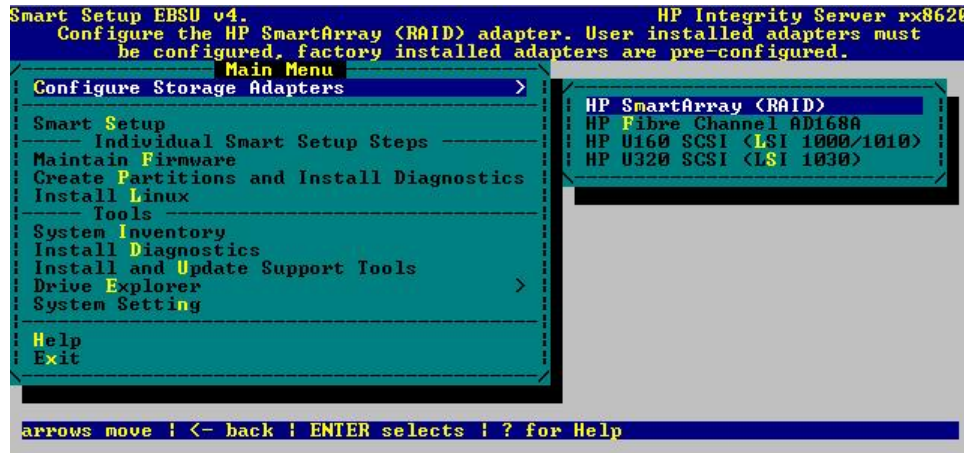
The current MPS setting is determined from the system. If it is set to "ON" no further action is required and a confirmation is displayed. Otherwise, you are prompted to set the MPS variable to "ON" and reboot the system. If this variable cannot be detected, set, or is unsupported on the system, an error is displayed.



**NOTE:** This setting cannot be changed for the rx2660, rx3600, and rx6600 PCI-X servers, therefore, this menu option is not available.

5. Select **Configure Storage Adapters** and press **Enter**. A submenu displays the list of adapters on the system, as shown in Figure 3-6.

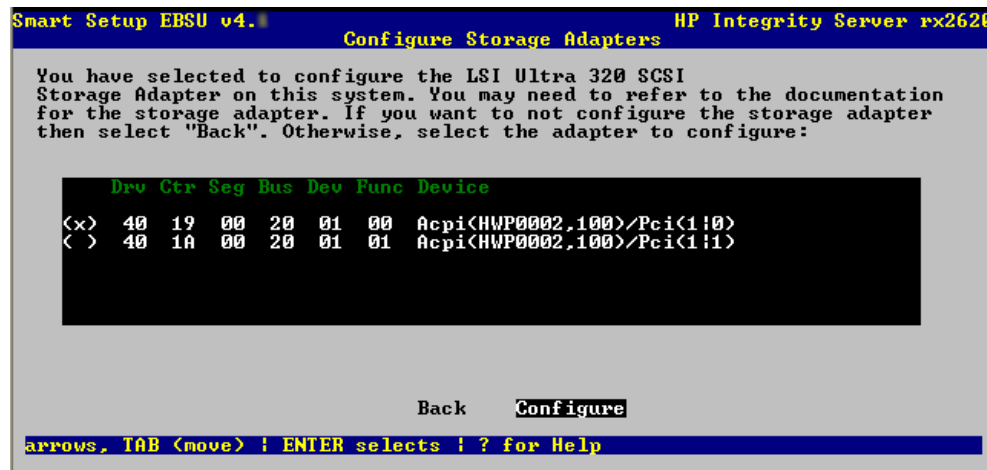
**Figure 3-6 Configure Storage Adapters Option**



**NOTE:** Prior to launching the Smart Setup wizard, you must use the **Configure Storage Adapters** option to ensure that Linux is installed with the desired storage configuration. Only storage that is going to be used as a boot device must be configured at this time. Other (non-boot) storage can be configured using the HP Smart Setup EBSU utility or after OS installation.

6. Select the appropriate storage adapter and press **Enter**.
7. A list is provided with device IDs that are applicable to your adapter as generated by the EFI command `drvcfg`, as shown in Figure 3-7. Each device represents an adapter or a channel on an adapter. Select the appropriate adapter from the list and select **Configure**.

**Figure 3-7 Configuring Storage Adapters**



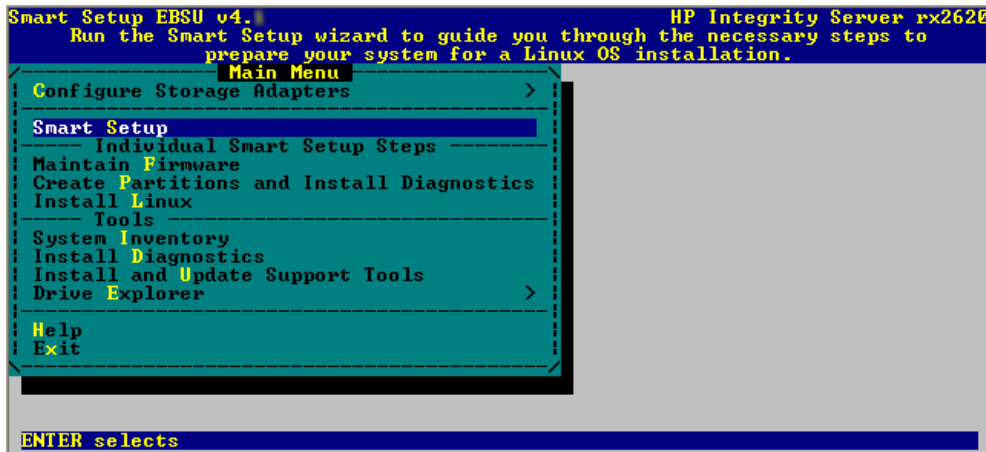
8. Review the storage adapter documentation and provide any additional information. For more information regarding the use of the storage configuration utility, see the documentation specific to the storage adapter.
9. After the desired storage adapters are configured, press **ESC** to return to the Main Menu.



**NOTE:** If you have just configured a RAID volume, then you must reboot the system so that it is detected. Additionally, on rx7620 and rx8620 servers, you must run the `search all` command from the EFI shell before attempting to use this volume.

- To launch the Smart Setup wizard, from the Main Menu select **Smart Setup** and press **Enter**, as shown in Figure 3-8.

**Figure 3-8 Select Smart Setup**



- Smart Setup provides an introduction to the wizard.

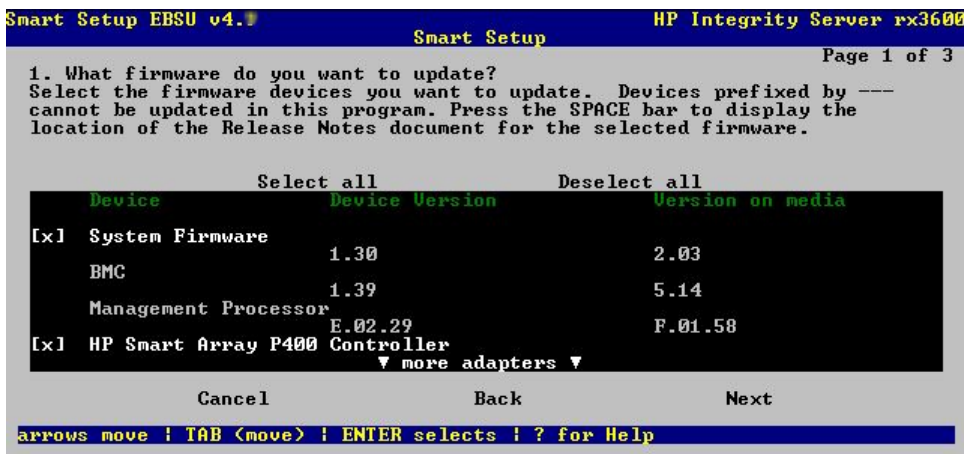


**NOTE:** To install Linux on a RAID volume or a Fibre Channel LUN, you must first ensure that this storage is configured as described in the previous steps.

Select **Next** and press **Enter** to continue and display the next screen.

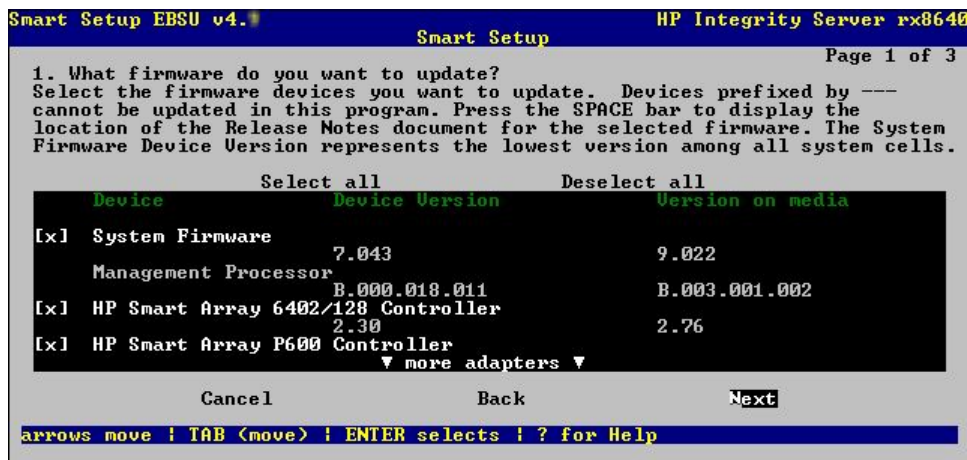
Smart Setup Page 1 (Figure 3-9) is the firmware update screen, which lists each system device, its installed firmware version, and the firmware version that is in the HP Insight Foundation Suite for Integrity with Linux you are using.

**Figure 3-9 Page 1: Update Firmware**



If the server is cell-based, the firmware update screen is slightly different as shown in Figure 3-10

Figure 3-10 Page 1: Update Firmware, Cell-Based Servers



For either server type, all hardware devices present are listed and automatically selected if updating is necessary. If multiples of one type of PCI adapter exist, only those adapters that are in need of updating are actually upgraded, provided that the adapter flasher enables the selection of adapters to flash.

12. Select the devices with firmware that you want to update. To continue, select **Next** and press **Enter** to display the next screen as in Figure 3-11.



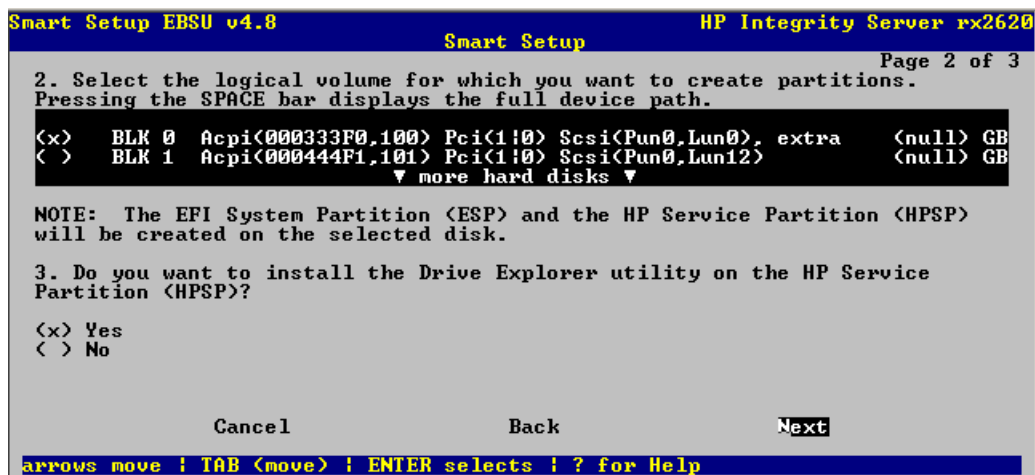
**NOTE:** You may not be able to use the **Smart Setup** function to upgrade the firmware of some devices. This function does not allow you to upgrade the firmware if the installed version is the same or higher than the version of the HP Smart Setup utility. However, you can make a firmware downgrade by selecting the **Maintain Firmware** function from the Main Menu. When using this function, you are prompted for confirmation of the downgrade. ADD EBSU QLOGIC PROMPT CHANGES HERE AND IN CH5.

The Smart Setup wizard upgrades the firmware for all supported servers except the following:

rx1660	rx1620	rx2600	rx2620	cx2620
rx4640	rx5670	rx7620	rx8620	Superdome sx1000

For these servers, you must contact HP Support for assistance in upgrading the firmware.

Figure 3-11 Page 2: Disk Partitioning



13. Make the appropriate selections for the options on Smart Setup Page 2 as follows:
  - a. For question 2, specify the logical volume on which you want to create partitions.

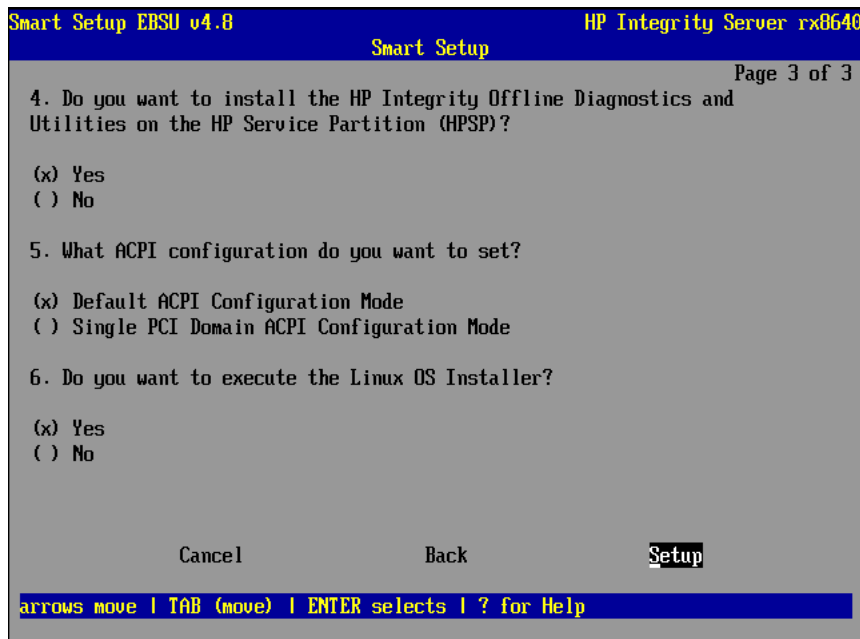


**NOTE:** The EFI System Partition (ESP) and the HP Service Partition (HPSP) will be created on the chosen logical volume to simplify the maintenance of your server.

- b. For question 3, specify the option to install the Drive Explorer utility, which enables you to browse a drive in EFI.

Select **Next** and press **Enter** to display the next screen similar to Figure 3-12.

**Figure 3-12 Page 3: Installation Considerations**



14. Make the appropriate selections for the options on Smart Setup Page 3 as follows:
  - a. For question 4, specify the option to install offline diagnostic tools from the HP Itanium Processor Family (IPF) Offline Diagnostics and Utilities media.
  - b. Question 5 is only enabled if the system is cell-based; otherwise it appears in red and is disabled. If the system is cell-based, specify the ACPI configuration mode.  
For the Superdome, rx8640, rx8620, rx7640, and rx7620 servers, use of the default selection is suggested; all others should use the **Default ACPI Configuration Mode** selection.
  - c. For question 6, specify the option to launch the Linux installer.

Select **Setup** and press **Enter** to display the partition deletion confirmation window

15. Select **Continue** and press **Enter**.

A prompt is displayed with the following message:

(i) INFORMATION! All tasks you selected will now be performed.

A progress bar is displayed along with the status text. The screen might flash periodically as your tasks are automatically performed.

16. Press **Enter** to continue.

You are prompted to insert the diagnostics media.

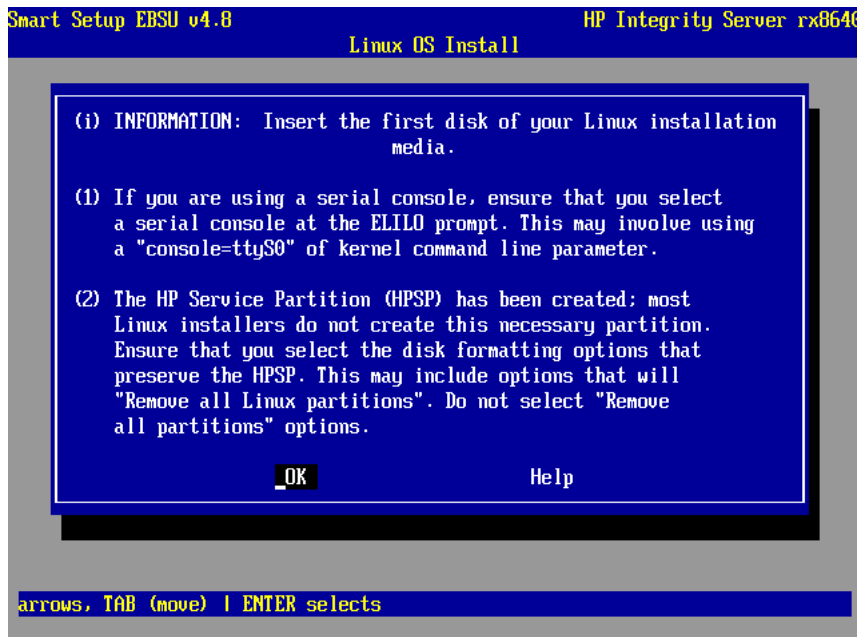
17. Insert the HP Itanium Processor Family (IPF) Offline Diagnostics and Utilities media and press **Enter**.

18. A prompt is displayed with a message directing you to insert the Linux installer media in the CD or DVD drive, as shown in Figure 3-13.



**IMPORTANT:** If you are using a serial console, prior to starting the Linux OS Installation, see “Configuring and Using a Serial Console” (page 49) and follow the instructions.

**Figure 3-13 Inserting the Linux Installer Media**



Insert the Linux Installer media and press **Enter**.

The Linux OS installation completes. Immediately after the initial installation of the OS is successfully installed, HP recommends that you run the HP Support Pack installer as described in Chapter 5 (page 39).

## Using the Linux Media to Install the OS

You can install Linux on your server using the distribution media for one of the supported OSs. This activity is considered a “cold installation”. The installation process is very similar to the standard cold installation with these three configuration exceptions:

- Firewall configuration
- Security Enhanced Linux (SELinux)
- Package group selection

The instructions for the supported OSs are detailed in the following documents:

- For RHEL4— See *Red Hat Enterprise Linux 4 Installation Guide for x86, Itanium, AMD64, and Intel Extended Memory 64 Technology (Intel EM64T)*:  
<http://www.redhat.com/docs/manuals/enterprise/RHEL-4-Manual/x8664-multi-install-guide/>
- For RHEL5— See *Red Hat Enterprise Linux 5 Installation Guide*):  
[http://www.redhat.com/docs/manuals/enterprise/RHEL-5-manual/Installation\\_Guide-en-US/](http://www.redhat.com/docs/manuals/enterprise/RHEL-5-manual/Installation_Guide-en-US/)
- For SLES10— See *Installing SUSE LINUX Enterprise Server 10 on HP Integrity Servers*:  
<http://docs.hp.com/en/5991-6394/>
- For SLES11— See *Installing SUSE LINUX Enterprise Server 11 on HP Integrity Servers*:  
<http://docs.hp.com/>

To install the OS, follow these steps:

1. Begin the OS installation as described in the installation guide for the OS you are installing.
2. Select the defaults (or configure as needed) until the Firewall Configuration screen appears.

Modify the selections offered as follows:

- a. Click the **No firewall** radio button to disable the firewall.
- b. For RHEL4 or RHEL5, set **Enable SELinux** to **Enable** to use a security policy.  
HP Insight Foundation Suite for Integrity with Linux supports the use of SELinux with RHEL4 and RHEL5 only.

3. Continue the installation using the defaults provided (or configure as needed) until the Package Group Selection screen appears.

Modify the selection by clicking **Everything** to install all packages included with RHEL.

4. Continue the installation using the defaults provided (or configure as needed).

The Linux OS installation completes. HP recommends that you run the HP Support Pack installer immediately after the installation of the OS is complete as described in Chapter 5 (page 39).

## Updating the Server

To update your system after installing the OS, you must install the latest patches and fixes from the appropriate Linux OS distribution website.



---

**NOTE:** Firmware upgrades for Superdome sx1000, rx8640, rx8620, rx7640, and rx7620 servers must be performed by HP CEs in compliance with the support agreement.

---

## Installing Updates from the Web

The latest software updates for your HP Integrity server are available from the HP Business Support Center as follows:

1. Go to the <http://www.hp.com/support/itaniumservers/> website.
2. Click on the appropriate product link for your server.
3. Click the **Download drivers and software** link.
4. Select a software/driver language from the list.
5. Click on the appropriate Linux distribution link.

All of the available driver and software updates are provided in a categorized listing for your selection.

6. Click **Download** for each driver or software product you want to update, and then follow the installation instructions provided.

Additional information specific to the selected server is also available at this website and includes troubleshooting, how to perform regular maintenance, how to upgrade or migrate the server, and associated documentation.

## Registering for HP Support Notifications

HP recommends that you register for alerts and notifications to stay informed of updates to the drivers, patches, and other components specific to your server.

To register, go to the Subscriber's Choice website and follow the instructions provided:

<http://www.hp.com/united-states/subscribe/gateway/>

# Installing the Fibre Channel HBA Drivers for Linux

If your system contains Fibre Channel Host Bus Adapters (HBAs), you should ensure that the most current drivers supported by HP are installed; this is applicable to all releases of Linux distributions. Fibre Channel HBAs include the following:

## A6826A

PCI-X 2-port 2Gbps Fibre Channel

## A7538A

PCI-X 1-port 2Gbps Fibre Channel

## AB379A

2-port 4Gbps Fibre Channel

## AB429A

1-port 4Gbps Fibre Channel

## AD167A

1-port 4Gbps Fibre Channel

## AD168A

2-port 4Gbps Fibre Channel

## AE311A

1-port 4Gbps Fibre Channel

## AD300A

2-port 4Gbps Fibre Channel

## A8002A

1-port 4Gbps Fibre Channel

## A8003A

2-port 4Gbps Fibre Channel

## 403619-B21

2-port 4Gbps Fibre Channel

List all PCI devices to determine whether your system contains one of these adapters:

```
# lspci | grep Fibre
```

```
80:02.0 Fibre Channel: Emulex Corporation Helios-X LightPulse Fibre Channel Host Adapter (rev 01)
a0:02.0 Fibre Channel: QLogic Corp. QLA2312 Fibre Channel Adapter (rev 03)
a0:02.1 Fibre Channel: QLogic Corp. QLA2312 Fibre Channel Adapter (rev 03)
```



**NOTE:** The number of PCI functions displayed for each adapter by `lspci` is determined by the number of ports the adapter has. In other words, 2-port adapters have two entries with the same PCI bus/slot that differ only in function number, as in the previous example.

Adapter Part No.	Output of <code>lspci</code> Command
A6826A	Fibre Channel Fibre Channel: QLogic Corp. QLA2312 Fibre Channel Adapter (rev 03)
A7538A	Fibre Channel Fibre Channel: QLogic Corp. QLA2312 Fibre Channel Adapter (rev 03)
AB379A	Fibre Channel: QLogic Corp. QLA2422 Fibre Channel Adapter (rev 02)
AB429A	Fibre Channel: QLogic Corp. QLA2422 Fibre Channel Adapter (rev 02)
AD167A	Fibre Channel: Emulex Corporation Helios LightPulse Fibre Channel Host Adapter (rev 01)



Adapter Part No.	Output of <code>lspci</code> Command
AD168A	Fibre Channel: Emulex Corporation Helios-X LightPulse Fibre Channel Host Adapter (rev 01)
AE311A	Fibre Channel: QLogic Corp. QLA2432 Fibre Channel Adapter (rev 02)
AD300A	Fibre Channel: QLogic Corp. QLA2432 Fibre Channel Adapter (rev 02)
A8002A	Fibre Channel: Emulex Corporation Zephyr LightPulse Fibre Channel Host Adapter (rev 01)
A8003A	Fibre Channel: Emulex Corporation Zephyr-X LightPulse Fibre Channel Host Adapter (rev 02)
403619-B21	Fibre Channel: QLogic Corp. QLA2432 Fibre Channel Adapter (rev 02)

If any entries are shown that match the model numbers listed, update the driver using the following steps:

1. Go to <http://www.hp.com/>.
2. Click **Software & Drivers**.
3. Click **Download drivers and software (and firmware)**.
4. In the For Product field, enter the model number of your Fibre Channel adapter (for example, A6826A).
5. Press **Go**.
6. Select the appropriate OS from the **Product search results** list.
7. Click the **Download** button for the latest Linux Driver Kit for Qlogic HBAs and Qlogic-based mezzanine HBAs driver to obtain a tar archive of all necessary files



**NOTE:** All drivers for a given brand of adapter are contained in one driver kit. In this case, all drivers for Qlogic adapters are contained in this driver kit.

8. Unpack the driver files in the kit. For example, the following command could be used:  

```
# tar zxvf hp_qla2x00-date.tar.gz
```
9. Change to the directory that was created in the previous step.
10. Install the driver:  

```
# ./INSTALL
```

For additional information, see the documentation that is included with the Linux Driver Kit for Qlogic HBAs and Qlogic-based mezzanine HBAs.

## Installing the MPT Fusion HBA Drivers for Linux

Support for the HP Insight Management Agent for the Core 8 port Serial Attached SCSI (SAS) HBA on the rx2660 server, or BL860c, and BL870c server blades is not included with the MPT Fusion driver that is shipped with the Red Hat and Novell Linux distributions. However, HP Insight Management Agent support is included with the MPT Fusion driver that is shipped with RHEL4.6 and RHEL4.7.

If you are running HP Insight Management Agents for these HBAs on one of the listed servers, you must update the driver using the following steps:

1. Go to the <http://www.hp.com/support/itaniumservers/> website.
2. Click on the appropriate product link for your server.
3. Click the **Download drivers and software** link.
4. Select a software/driver language from the list.

5. Click on the appropriate Linux distribution link.  
All of the available driver and software updates are provided in a categorized listing for your selection.
6. Click the **Download** button for the latest **MPTLinux Driver Update for Integrity Servers** driver to download the tar file.
7. Install the driver on your system:  

```
# rpm -ivh <downloaded driver name>
```
8. Reboot your system.



**NOTE:** To avoid any potential issues, review the known issue “Installing the MPT Fusion HBA Driver on RHEL 5U2 and RHEL 5U3 using a Xen Kernel Hangs the Server” (page 56).

---

For additional information, see the documentation that is included with the MPT Fusion driver update.

---

## 4 EFI and HP Smart Setup Media Utilities

This chapter describes functions available through the HP Smart Setup EBSU utility and provides an easy-to-use interface to upgrade the firmware, partition the hard disk, install diagnostic tools, configure storage controllers, and run other EFI utilities.

### Using the Option ROM Configuration for Arrays Utility

Option ROM Configuration for Arrays (ORCA) is an EFI utility that enables you to configure a RAID array without booting Linux. Using ORCA you can create, view, or delete a logical drive. For detailed instructions on using ORCA, see any of the following documents: *HP SmartArray 5300 Controller User's Guide*, *HP SmartArray 6402 Controller User's Guide*, *HP SmartArray P600 Controller User's Guide*, and *HP SmartArray P800 Controller User's Guide*.

To access ORCA:

1. Log on to the MP (management processor) using telnet or Hyperterminal.
2. Enter the console command, **CO**, to access the **SAC>** prompt.
3. At the **SAC>** prompt, enter **restart** to reboot the system.
4. During the system reboot after the SmartArray adapter is detected, you are prompted to press **F8** at the MP prompt (or **Esc-8** if you are using a serial console), to enter the ORCA utility.

The Main menu is displayed.

5. Choose one of the options presented: **Create**, **View**, or **Delete a Logical Drive**.

### Using EFI

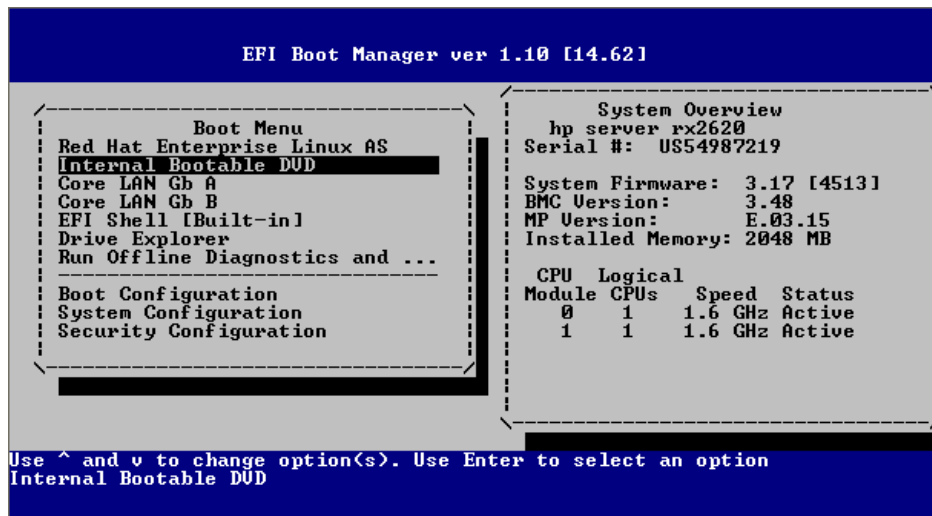
The Intel Extensible Firmware Interface (EFI) specification defines a model for the interface between the OS, the firmware, and the hardware. EFI serves the same purpose on Itanium-based computers as the BIOS on x86-based computers. EFI provides a standard environment for running pre-boot applications and for booting the OS.

HP Integrity servers use EFI to initialize the platform firmware and load the OS. After the system is initialized, EFI provides two interfaces with which you can interact, as described in the following sections.

### EFI Boot Manager

First displayed when you power on the server, the EFI Boot Manager provides a menu-based interface (Figure 4-1 is an example) with options for booting the OS, loading EFI applications, configuring the server, and performing other pre-boot operations.

Figure 4-1 EFI Boot Manager



## EFI Shell

Available as a selection from the EFI Boot Manager, the EFI Shell provides a command-line interface from which you can get information about the system, install an operating system, boot the operating system, execute batch scripts, launch EFI applications, load EFI drivers, and manage files and system variables.

### For Additional Information

Use the following resources to obtain additional EFI information.

- The Intel™ EFI website:  
<http://developer.intel.com/technology/efi/>
- EFI Shell command help:  
From the EFI Shell, enter **help** or **?** for a list of EFI shell commands.

## HP Smart Setup Utilities

Some of the options available from the HP Smart Setup EBSU utility main menu are not part of the steps required to prepare your system for Linux installation, but such options can be used to customize, diagnose problems, or fine-tune firmware settings.

### Accessing HP Smart Setup Utilities

To access the HP Smart Setup utilities:

1. Power on the server. The server boots to the EFI utility.
2. Ensure that the removable media, containing the HP Smart Setup EBSU utility, you want to use is accessible. For details, see "Accessing the Removable Media Devices Using EFI" (page 20).
3. From the EFI Boot Menu, select **Smart Setup EBSU** or **Smart Setup from EBSU** as appropriate, and then press **Enter**.



**NOTE:** The entry **Smart Setup EBSU** or **Smart Setup from EBSU** are not displayed in all EFI Boot Managers. If this entry does not appear, perform the steps detailed in "Accessing the Removable Media Devices Using EFI" (page 20).

4. The HP Smart Setup EBSU utility executes and the introduction screen is displayed. Click **OK** and press **Enter** to continue.

The HP Smart Setup EBSU utility provides the following capabilities:

- **Configure Storage Adapters**—Configures bootable I/O adapters. A submenu provides a list of storage adapters from which to choose.
- **Smart Setup**—Provides a wizard that guides you through the following set of preselected Linux installation setup tasks:
  - Updating firmware
  - Creating disk partitions
  - Installing offline diagnostic tools
  - Installing Linux
- **Maintain Firmware**—Upgrades the firmware for all the selected devices that can be upgraded. You can upgrade all the devices at once or select one or more individually.



**NOTE:** You may not be able to use the **Smart Setup** function to upgrade the firmware of some devices. This function does not allow you to upgrade the firmware if the installed version is the same or higher than the version of the HP Smart Setup utility. However, you can make a firmware downgrade by selecting the **Maintain Firmware** function from the Main Menu. When using this function, you are prompted for confirmation of the downgrade. The Smart Setup wizard upgrades the firmware for all supported servers except the following:

rx1660	rx1620	rx2600	rx2620	cx2620
rx4640	rx5670	rx7620	rx8620	Superdome sx1000

For these servers, you must contact HP Support for assistance in upgrading the firmware.

- **Create Partitions and Install Diagnostics**—Creates partitions, such as the EFI System Partition (ESP) or the HP Service Partition (HPSP).
  - ESP - A partition that is required to boot the OS. Only the EFI drivers and the OS files should be stored here. This partition is labeled `EFIPART`.
  - HPSP - An optional partition. The files from the HP Itanium Processor Family (IPF) Offline Diagnostics and Utilities media are stored here. This partition is labeled `HPSPART`.
- **Install Linux**—Launches the Linux Installer.
- **System Inventory**—Retrieves system information and displays a complete, categorized report of the system inventory information including the UUID (Logical) and Serial Number (Logical) when possible, installed memory, and the firmware version for all I/O adapters.
- **Install Diagnostics**—Installs a copy of the diagnostics programs from the HP Itanium Processor Family (IPF) Offline Diagnostics and Utilities media to the HPSP partition.
- **Install and Update Support Tools**—Copies support tools to the HPSP partition. These tools are for use only by HP Support.
- **Drive Explorer**—Offers these options:
  - **Execute** - Launches Drive Explorer, which displays the directories present on the disks in the EFI partition or executes EFI programs.
  - **Install** - Installs Drive Explorer.



**IMPORTANT:** When using QLogic Fibre Channel adapters while using the configuring partitions, creating partitions, or HP Smart Setup EBSU utilities, if an older version of the EFI aux driver is installed it is possible that storage devices attached to this adapter may not be detected. If this situation occurs, a prompt is displayed and you must update the firmware of the QLogic Fibre Channel adapters before reattempting the utility.



---

# 5 Installing and Using the HP Support Pack

This chapter provides instructions for installing and using the HP Support Pack. This contents of this software package *must* be installed after installation of the OS only.

## Software Provided in the HP Support Pack

The HP Insight Foundation Suite for Integrity with Linux provides the following additional functionality and utilities for your Linux system in the HP Support Pack:

- “HP Management Base for Integrity Servers” (page 39)
- “HP Insight Management Agents” (page 39)
- “HP System Management Homepage ” (page 40)
- “HP Server Manageability eXtensions” (page 40)
- “HP WBEM Providers for Linux” (page 40)
- “HP Partition Manager ” (page 40)
- “HP nPartition Commands” (page 40)
- “HP Array Configuration Utility – Command Line Interface” (page 41)
- “OpenPegasus ” (page 41)
- “HP Utilization Provider Including WBEM” (page 41)
- “HP SmartSetup Scripting Toolkit” (page 42)
- “HP SAS Integrated Raid (IR) Configuration Utility” (page 42)
- “HP Integrity Virtual Machines WBEM Provider” (page 42)

## HP Management Base for Integrity Servers

HP Management Base for HP Integrity servers installs an Open IPMI driver appropriate for the target system and several utilities for Baseboard Management Controller (BMC) management. These items are needed by other management products, such as HP Insight Management Agents and HP WBEM Providers.

For information about HP Management Base, see *hpbmc(8)*, *hpuid(8)*, *hpseld(8)*, *openipmi(4)* and the *HP Management Base Installation and User's Guide*:

<http://www.docs.hp.com/en/5991-7630>

## HP Insight Management Agents

Based on the Simple Network Management Protocol (SNMP), HP Insight Management Agents (HPIMA) allow you to remotely monitor configuration information and system status on your HP Integrity server from any SNMP browser. A central management server that uses HP Insight Manager ( or HP Systems Insight Manager) gathers and organizes the raw agent information from the browser for display in reports, allowing you to monitor system use and troubleshoot problems.

HP Insight Management Agents provide a broad spectrum of SNMP agents for the collection of server management data. This product includes SNMP extensions, data collection agents, and MIBs ported from the legacy "Compaq Insight Manager" product, such as Health, Host, Network Interface Card (NIC), Standard Equipment, Standard Information, Storage (including IDA, IDE, SCSI, and FC), and Threshold. The agents are handled by the HP Systems Insight Manager though they should work with any other management console applications that use SNMPv1.

You can obtain the latest version of HP Insight Management Agents by installing the downloaded HP Support Pack as described in “Obtaining the Latest HP Insight Foundation Suite for Integrity with Linux” (page 17).

For more information, see *HP Insight Management Agents for Linux on HP Integrity Servers: Installation Guide and Release Notes*:

<http://www.docs.hp.com/en/5991-2731/>

## HP System Management Homepage

The HP System Management Homepage (SMH) is a web server that can be used by HP web-enabled system management software. The System Management Homepage provides an interface between the HP Insight Management Agents and the HP manageability tools. The HP System Management Homepage software organizes data from HP Insight Management Agents installed on a server into easy-to-read tables that are displayed in a web interface.

For more information, see the HP System Management Homepage website:

<http://www.hp.com/servers/manage/smh>

## HP Server Manageability eXtensions

The HP Server Manageability eXtensions (SMX) is a manageability framework for HP Proliant and HP Integrity servers using Web Based Enterprise Management (WBEM) and the Common Information Model (CIM). SMX is designed to run on HP servers and provide complete manageability as defined by the Distributed Management Task Force (DMTF), Storage Networking Industry Association (SNIA) and the HP WBEM Technical Committee (TC).

## HP WBEM Providers for Linux

WBEM is a Distributed Management Task Force (DMTF) standard that uses Internet technologies, such as XML, HTTP, and SSL, to manage systems. HP WBEM Providers for Linux allows management applications such as HP Systems Insight Management to retrieve, monitor, and configure system information. HP WBEM Providers are the instruments that provide system data for the management application.

For more information, see the HP WBEM Solutions for Linux website:

<http://www.hp.com/go/wbemlinux>

## HP Partition Manager

HP Partition Manager provides you with a convenient GUI to configure and manage nPartitions on HP servers. Using HP Partition Manager, you can perform complex configuration tasks without having to remember commands and parameters. You select nPartitions, cells, I/O chassis, or other components from the graphical display, and then select an action from a menu. HP Partition Manager is installed on your HP Integrity system by default when HP nPartitions commands are installed; HP Partition Manager is not installed as a standalone application.

You can use HP Partition Manager to perform the following tasks: create, modify, and delete nPartitions, examine the nPartition configuration of a complex (all of hardware within a server—including all cells, I/O chassis, cables, cabinet hardware, and power and utilities components), check the complex for potential configuration and hardware problems, and manage hardware resources on the complex.



**IMPORTANT:** Before installing HP Partition Manager, you must download and install the Sun JDK 6 or BEA JRockit 5.0. For the JDK installation details, see “Product Installation Dependencies” (page 42).

---

## HP nPartition Commands

HP nPartition Commands enable you to create, modify, and delete nPartitions on HP nPartition servers, including HP Integrity servers such as the Superdome, rx8640, rx8620, rx7640, and rx7620 servers. The manpages for these commands are also installed.



## HP Array Configuration Utility – Command Line Interface

HP Array Configuration Utility – Command Line Interface (ACU-CLI) for Linux on Itanium-based systems is an online tool that can be used to manage and configure Smart Array-based storage controllers. The HP ACU-CLI is an interactive command console that provides immediate feedback to the user, and is functionally equivalent to the ACU GUI.

## OpenPegasus

OpenPegasus implements the WBEM standard to enable management solutions that deliver increased control of enterprise resources. OpenPegasus is installed on your HP Integrity system by default when WBEM providers or HP nPartitions commands are installed; OpenPegasus is not installed as a standalone application.

OpenPegasus SDK is the software developers kit for the OpenPegasus product. It provides the tools needed to develop Common Information Model (CIM) client applications and provides modules for OpenPegasus.



**NOTE:** The OpenPegasus SDK is included with your Linux RHEL5 and SLES 10 OS distribution. For your convenience, the OpenPegasus SDK for RHEL and SLES 10 are found in the HP Support Pack software package in the following locations respectively:

```
distros/rhel5/tog-pegasus-devel-2.7.1-17hp.rhel5.ia64.rpm  
distros/sles10/tog-pegasus-devel-2.7.1-17hp.sles10.ia64.rpm
```

You can download all current versions of OpenPegasus SDK from the Open Group website:

<http://www.openpegasus.org/pr/>

For more information, see the *HP WBEM Providers for Linux Installation Guide and Release Notes*:

<http://docs.hp.com/en/5991-6518/>

## Small Footprint CIM Broker

The Small Footprint CIM Broker (`sfcb`) is a CIM server conforming to the CIM Operations over HTTP protocol. It supports the HP SMX WBEM providers that were developed in conjunction with the Common Manageability Programming Interface (CMPI). The Small Footprint CIM Broker provides access to the HP SMX WBEM providers and is installed on your HP Integrity system by default when WBEM providers are installed on SLES 11. It is not installed as a standalone application.



**NOTE:** The `sblim-sfcb` RPM is not included in the support pack, however it is delivered with the SLES11 distribution.

For more information, see the *HP SMX WBEM Providers for Linux Installation Guide and Release Notes*:

<http://docs.hp.com/en/####-####>

For more information about the Small Footprint CIM Broker, see the Novell website:

<http://www.novell.com>

## HP Utilization Provider Including WBEM

HP Utilization Provider provides a light-weight daemon, `utild`, that records system-utilization data on a five-minute interval. System-utilization data includes CPU utilization, memory utilization, disk utilization, and network utilization. The HP Utilization Provider includes the WBEM provider, which provides access to the utilization data. The Virtual Server Environment (VSE) Management Software relies on the HP Utilization Provider. Removing HP Utilization Provider prevents the VSE Management Software from functioning properly.

When HP Utilization Provider is installed, it launches the `utild` daemon, which consumes minimal CPU, memory, and disk resources. Only 30 days of utilization data are kept in data files in `/var/adm/utild`. The total disk space used by these files should not exceed 20MB in the default installation. The `utild` process wakes up every five minutes and discovers and records four metrics (CPU, memory, disk, and network utilization); this discovery process has minimal impact on system performance.

The WBEM schema files for the HP Utilization Provider are installed at `/opt/utild/mof`. For more information, see `utild(1M)`.

## HP SmartSetup Scripting Toolkit

The SmartSetup Scripting Toolkit (SSTK) enables you to deploy a large number of HP Integrity servers rapidly and efficiently. Using SSTK, you can develop custom scripts that simplify server deployments by automating various hardware configuration and software installation operations. SSTK can set specific Extensible Firmware Interface (EFI) boot variables, create disk partitions, and tie into the standard unattended installation process to install the OS and selected applications.

SSTK is delivered as a tar file that is used to install and configure the product. For more information, see the “Configuring the Repository” section of the *SmartSetup Scripting Toolkit Deployment Guide*:

<http://www.docs.hp.com/en/5991-6250/>

## HP SAS Integrated Raid (IR) Configuration Utility

The Integrated Raid (IR) Configuration Utility, `cfggen`, is a Linux command line utility that configures the IR functionality of the HP Serial Attached SCSI (SAS) controllers that are used in LSI-1068-based HP SAS controllers. This utility is a minimally interactive program that can be executed from the Linux prompt. The result from invoking this utility is communicated to the environment through the program status value returned when the program exits.

For more information about `cfggen`, see `cfggen(8)`, the “Utilities Reference” chapter of the *SmartSetup Scripting Toolkit Deployment Guide*, or the *HP 8 Internal Port SAS Host Bus Adapter (SAS Controller) Users Guide*:

<http://docs.hp.com/en/J6369-90071/>

## HP Integrity Virtual Machines WBEM Provider

HP Integrity Virtual Machines (Integrity VM), is a soft partitioning and virtualization technology within the HP Virtual Server Environment, that enables you to create multiple virtual servers or machines within a single HP Integrity server or nPartition. Each virtual machine hosts its own: "guest" operating system instance, applications and users. The HP Integrity VM WBEM provider facilitates the enabling of manageability and support of guests

## Product Installation Dependencies

Some software products have dependencies or prerequisites that might not be available on your system. When installing software, the Management media installer attempts to handle any dependencies that are required. Also, most required software is provided with your Linux OS distribution media and should be installed by default.

If there is required software that is not delivered with the Management media installer or with the Linux OS installation, an error message displays information about the missing software packages or files and the installation process is aborted. You must then obtain and install the required packages or files before running the installer again. See your Linux OS for information about obtaining and installing the missing software. A list of software dependencies for all supported Linux distributions is provided in “HP Support Pack Dependencies” (page 51).



---

**NOTE:** The Management media installer automatically checks your system for the `hpmgmtbase` software. This software is installed or updated by default.

---

## Removing OpenWBEM

OpenPegasus is required to install nPartition Commands, Partition Manager, and HP WBEM Providers. Removing OpenWBEM requires the removal of several other SLES utilities. You should verify that you do not need these utilities before you remove them. The HPIMA, ACU-CLI, and HP SMH utilities do not require OpenPegasus.

The installer prompts you to remove OpenWBEM if you choose to install any of the above packages that require OpenPegasus. You are first prompted to view more information about the package before removal, and then you are prompted to remove the OpenWBEM package from your system. At this point, you must decide whether to reply with `confirm` (to remove OpenWBEM and continue with the installation), or with `n` (to discontinue).

## Installing the Java Development Kit Product

### Installing Sun JDK 6 for the Linux IA64 Platform

Use this procedure to install the Sun Java Development Kit (JDK) 6.

1. Download Sun JDK 6 binary file for the Linux Intel Itanium platform from the Sun Developer Network website:

<http://java.sun.com/javase/downloads/index.jsp>

2. Set execute permissions on the downloaded file:

```
# chmod jdk-6u12-linux-ia64.bin
```

3. Run the self-extracting binary to extract the RPM file:

```
# ./jdk-6u12-linux-ia64.bin
```



---

**NOTE:** The initial `./` is required if you do not have `.` (a period) in your `PATH` environment variable.

---

A binary license agreement is displayed.

4. You must agree to the Sun JDK 6 license agreement to proceed with the installation.



---

**NOTE:** The default installation path is `/usr/java/`, which can be modified during the installation process. A good location to install the Sun JDK is `/usr/local/`. Use this information when setting the `JAVA_HOME` environment variable in the next step.

---

5. Set the `JAVA_HOME` environment variable:

```
# export JAVA_HOME="javaDir"
```

where `javaDir` is the directory in which the Sun JDK 6 files were installed. For example, `/usr/java/jdk1.6.0_12`.



---

**NOTE:** The `JAVA_HOME` environment variable must be exported in this fashion prior to, and in the same shell session as, the use of the HP Support Pack installer.

---

### Installing BEA JRockit 5.0 JDK for the Linux IA64 Platform

Use this procedure to install the BEA JRockit 5.0 Java Development Kit (JDK).

1. If your system is running RHEL5U1, you must disable SELinux before installing the BEA JRockit 5.0 JDK. Otherwise, bypass this step.

```
# echo 0 >/selinux/enforce
```

2. Download the **JRockit 5.0 R27.5 JDK Linux (Intel Itanium - 64-bit)** file to the directory on the Linux system where HP Partition Manager, nPartition Commands, and nPartition Provider are to be installed from the BEA JRockit website:

[http://download2.bea.com/pub/jrockit/50/jrockit-R27.5.0-jdk1.5.0\\_14-linux-ipf.bin](http://download2.bea.com/pub/jrockit/50/jrockit-R27.5.0-jdk1.5.0_14-linux-ipf.bin)

3. Set execute permissions on the downloaded file:

```
# chmod a+x jrockit-R27.5.0-jdk1.5.0_14-linux-ipf.bin
```

4. Run the self-extracting binary to extract the RPM file:

```
# ./jrockit-R27.5.0-jdk1.5.0_14-linux-ipf.bin
```



---

**NOTE:** The initial `./` is required if you do not have `.` (a period) in your `PATH` environment variable.

---

A binary license agreement is displayed.

5. You must agree to the BEA JRockit 5.0 JDK license agreement to proceed with the installation.



---

**NOTE:** The default installation path is `/root/jrockit-R27.5.0-jdk1.5.0_14`, which can be modified during the installation process. A good location to install the JRockit 5.0 JDK is `/usr/local/`. Use this information when setting the `JAVA_HOME` environment variable in the next step.

---

6. Set the `JAVA_HOME` environment variable:

```
# export JAVA_HOME="javaDir"
```

where `javaDir` is the directory in which the BEA JRockit 5.0 JDK files were installed. For example, `/root/jrockit-R27.5.0-jdk1.5.0_14`.



---

**NOTE:** The `JAVA_HOME` environment variable must be exported in this fashion prior to, and in the same shell session as, the use of the HP Support Pack installer.

---

7. If your system is running RHEL5U1, you must re-enable SELinux. Otherwise, bypass this step.

```
# echo 1 >/selinux/enforce
```

## Installing Software from the HP Support Pack

The software included in the HP Support Pack is installed by running the interactive installer `install.sh`. This installer provides options for installing one or more of the products described in “Software Provided in the HP Support Pack” (page 39).

### Before Running the Installer

Before running the installer, perform the following steps:

1. Review the “Product Installation Dependencies” (page 42) section and ensure that you prepare your system accordingly.
2. Ensure that you have the latest version of the product as described in “Obtaining the Latest HP Insight Foundation Suite for Integrity with Linux” (page 17).
3. Log in to the system as `root`.
4. Mount the media containing the HP Support Pack or identify the directory into which the tar file was unpacked.

## Running the Installer

You can run the installer anytime after the OS has been installed; however, HP recommends that you run the installer immediately after the initial installation of the OS.

To install software from the HP Support Pack , perform the following steps:

1. Start the installer:

```
# ./install.sh [-s]
```



---

**NOTE:** The optional command option, `-s` , can be used to execute the installation silently.

---

The following message is displayed:

```
Welcome to the HP Intergrity Essentials Foundations Pack for Linux version #.##.#
```

```
Check ftp://ftp.hp.com/pub/linux for software updates [Y/N]?
```

2. Select one of the following options:

- a. If you want the installer to determine if a newer version of the HP Support Pack is available, enter **Y**.

The installer connects to the HP FTP site and performs a comparison between your version and the latest version of the HP Support Pack.

- If a newer version is not available, the installation of the current version of the HP Support Pack software proceeds.
- If a newer version is available, a message is shown notifying you that a new version is available. A list of options is displayed. Select the appropriate option.

- b. If you do not want the installer to determine if a newer version of the HP Support Pack is available, enter **N** .

```
You have selected not to update your Management CD software at this time.  
If you would like to update this software in the future, you can obtain the  
latest version from HP's support website as follows:  
For the latest information and downloads go to  
http://www.hp.com/go/integritylinuxessentials
```

```
Press <enter> to continue the installation of the current version of the HP Support Pack.
```

```
Press Enter to proceed with the installation of the current version of the HP Support Pack.
```

3. You are prompted to make additional selections based on the software update option you selected in the previous step.

The installer analyzes your system and prepares it for installation of the products provided with the HP Support Pack.



---

**NOTE:** If the installer detects missing RPMs that are necessary to the installation, messages are displayed indicating which RPMs you must install before proceeding. For example, messages similar to the following may appear:

```
hpima will not be available because the following required RPMs are missing:
```

```
net-snmp sensors
```

```
hpsmh will not be available because the following required RPMs are missing:
```

```
net-snmp sensors
```

In this case, you would need to install the required RPMs for HP-IMA and HP SMH before these products can be installed.

---

A menu of available products and options that can be installed is displayed. The contents of this menu depend upon the version of the HP Support Pack that you are installing or the Linux distribution installed on your system. A menu similar to one of the following is displayed:

### **Menu for RHEL4:**

1. Install HP Insight Manager Agents for HP Integrity servers
2. Install HP System Management Homepage
3. Install HP Insight Management Agents Webapp via HP SMH.
4. Install nPartition Commands
5. Install The nPartition Management GUI for HP Integrity servers.
6. Install HP WBEM Providers for Linux
7. Install HP Command Line Array Configuration Utility
8. Install HP Utilization WBEM Provider
9. Install HPVM Guest Kit for Linux
10. Install The Open64 Compiler Suite v4.2.1
11. Install or update everything
12. Uninstall HIFIL and return to this menu
13. Exit

### **Menu for SLES11:**

1. Install HP System Management Homepage
2. Install HP's Server Manageability eXtensions (SMX)
3. Install Server Manageability eXtensions Webapp via HP SMH
4. Install HP Command Line Array Configuration Utility
5. Install MPT Fusion SAS Integrated RAID configuration utility
6. Install The Open64 Compiler Suite v4.2.1
7. SMX with everything else available: remove IMA, WBEM if found
8. Uninstall HIFIL and return to this menu
9. Exit

### **Menu for all other Linux Distributions:**

1. Install HP Insight Manager Agents for HP Integrity servers
2. Install HP System Management Homepage
3. Install HP Insight Management Agents Webapp via HP SMH.
4. Install nPartition Commands
5. Install The nPartition Management GUI for HP Integrity servers.
6. Install HP Server Manageability eXtensions (SMX)
7. Install Server Manageability eXtensions Webapp via HP SMH
8. Install HP Command Line Array Configuration Utility
9. Install HP Utilization WBEM Provider
10. Install MPT Fusion SAS Integrated RAID configuration utility
11. Install HPVM Guest Kit for Linux
12. Install The Open64 Compiler Suite v4.2.1
13. WBEM providers with everything else: remove SNMP agents if found
14. Install SNMP agents and everything else: remove WBEM providers if found
15. Uninstall HIFIL and return to this menu
16. Exit

The installation options are categorized as follows:

#### **Install individual products**

Individual products can be installed one at a time and the process is repeated for each product you want to install.

#### **Install everything (RHEL4), SMX and everything, or IMA and everything**

With all Linux distributions, it is possible to install all of the products in the HP Support Pack at one time. However, with all distributions except RHEL4 there is a choice of which WBEM provider to install with the HP Support Pack products, HP SMX or HP WBEM. If you choose to install the HP SMX web-based providers, HP-IMA is removed first to avoid conflicts. Conversely, if HP WBEM SNMP-based providers are chosen for installation, then HP SMX is removed first to avoid conflicts.

#### **Update all products**

To update all the software products in the HP Support Pack that can coexist, in a single step, enter the appropriate option number and press **Enter**. The installer automatically exits after all products are updated or installed.

## Uninstall HIFIL

This option is displayed only when HP Management Base is installed on the system.

To remove the HIFIL product, including HP Management Base, enter the appropriate option number and press **Enter**. The installer returns to the menu after the entire HIFIL product is removed.

4. Enter an option from the menu and press **Enter**.



---

**NOTE:** If HP Management Base is installed and you select it for installation, the installer will ask if you want to upgrade or uninstall it. Choosing to upgrade the product may reveal dependency conflicts, which will require you to intervene. Instructions for solving these conflicts or how to properly configure HP Management Base are provided by the installer.

**NOTE:** There is a known compatibility issue with HP ACU-CLI and RHEL5U1 on HP Integrity servers with a SmartArray controller configured with more than one logical drive. To avoid creating this adverse condition, the installer will not install the HP ACU-CLI (`hpacucli`) product on these servers and this option is not displayed in the product installation menu. Further, if `hpacucli` is detected on the system, it is uninstalled by the installer.

---

5. After the installation is complete, you must start the appropriate framework to access any providers, execute one of the following:

**WBEM Providers (OpenPegasus) on RHEL or SLES 10:**

```
# /etc/init.d/tog-pegasus start
```

**SMX WBEM Providers (SFCB) on SLES 11:**

```
# /etc/init.d/sfcb start
```



---

**NOTE:** The installation log for the HP Support Pack is located in `/var/log/hp/managementCD-version_number-install.log`. This directory is applicable if the media you are using is CD/DVD or the USB HDD.

---





# A Configuring and Using a Serial Console

Before the Linux operating system (OS) is booted, all console interaction occurs through EFI. To modify the default local graphics display to be a serial console path, you must configure a single serial port (UART) for both Console-In/Out in the EFI boot manager. This configuration allows the Linux kernel to interpret the UART as `ttys0` on system boot sending output to the selected display screen.

## Configuring a Serial Console

To configure a serial console, perform the following steps:



**NOTE:** The steps and actual computer output may vary slightly from the following process. These differences are based on the version of EFI and version of Management Processor.

1. When the system boots, select **Boot Option Maintenance Menu** from the EFI Boot Manager screen and press **Enter**.
2. From the Boot Option Maintenance Menu, select **Select Active Console Output Devices** and press **Enter**. The resulting screen displays a list of UARTs and PCI devices available for console I/O.



**NOTE:**

- UART identifiers of PNP0501 describe modes available for "Serial A" or "Serial 1" built-in UART.
- UART identifiers of HWP0002 describe modes available for the "Console" UART on the management processor (MP).

3. Select a UART from the list and press **Enter**.
4. From the same screen, select **Save Settings to NVRAM** and press **Enter**.  
The system prompts you to save NVRAM if you omit this step.
5. Select **Exit** and press **Enter** to return to the main menu.
6. Select the option **Select Active Console Input Devices** from the main menu and press **Enter**.
7. From the list provided, select the same UART that you chose as your output device and press **Enter**.
8. Select **Save Settings to NVRAM** and press **Enter**.
9. Select **Exit** and press **Enter**.
10. To apply the changes you have selected, select **Cold Reset** from the **Boot Option Maintenance** menu and press **Enter**.
11. When prompted, enter **Y** and press **Enter**.

The firmware and serial console are configured after system reset.

## Using a Serial Console

Although you might have set up a serial console in the EFI boot manager, Linux defaults to a VGA console. If no VGA device is present, console output is directed to a stub device (for example, not visible.) To specify a serial console, you must pass the `console=` parameter to the kernel. This can either be done as an extra parameter to the kernel or by means of the parameter `append=line` in `elilo.conf`. For example:

```
Manual Boot Option ----- fs0:\> elilo linux "console=ttys0"
      ELILO boot: linux console=ttys0

Automatic via elilo.conf
-----
append="console=ttys0"
```



---

**IMPORTANT:** Exactly one UART must be selected in the EFI Console-In/Out tables for a serial console to work. The UART selected in this table is `ttys0`.

---

The format of the console parameter is as follows:

```
console=ttysn[,spb]
```

*n* = Serial line

where:

*s*

= Speed

Example: 9600, 19200, 38400, 57600, 115200 (9600 is the default if no speed is specified. 115200 is the maximum for HP UART.)

*p*

= Parity

Example: n (no parity, typical case)

*b*

= Bit Encoding.

Example: 7, 8 (8 is the typical case).

For a 115200 baud console, the following syntax is used:

```
console=ttys0,115200n8
```

---



**NOTE:** If you are using a Linux distribution that uses kernel revision 2.6.10 or later (Post RHEL4), this method of specifying a console will not work. For more information on serial ports with these kernels, see the Linux Cross Reference website:

<http://lxr.linux.no/source/Documentation/ia64/serial.txt>

---

# B HP Support Pack Dependencies

Some software products contained in the HP Support Pack have dependencies or prerequisites that may or may not, already be available on your system. If there are dependencies that are not delivered with the installer or with the Linux OS installation, an error message displays with information on the missing software packages or files and the installation process is aborted. You must then obtain and install the required packages or files from the Linux distribution media before running the installer again.

The following sections provide information about dependencies for the HP Support Pack for RHEL4, RHEL5, SLES10, and SLES11.

## RHEL4

The following list provides information about software contained in RHEL4 and the related dependencies.

```
hpacucli-8.28-xxx.ia64.rpm need below packages:
  glibc prctl libunwind

hpima-3.12-xxx.rhel4.ia64.rpm need below packages:
  bzip2-libs compat-libstdc++-296 e2fsprogs elfutils-libelf systemtap glibc openssl popt redhat-release rpm-libs
  tcp_wrappers zlib

hpima-webapp-4.5-xxx.rhel4.ia64.rpm need below packages:
  net-snmp

hpmgmtbase-2.11-xxx.rhel4.ia64.rpm need below packages:
  binutils glibc redhat-release

hpsmh-3.0.0-xxx.ia64.rpm need below packages:
  None

hpsmh-tomcat-1.3-xxx.linux.ia64.rpm need below packages:
  None

hpvm-4.1.0-xxx-rhel.ia64.rpm need below packages:
  glibc

hpvmprovider-4.1.0-xxx-rhel.ia64.rpm need below packages:
  glibc libgcc libstdc++ tog-pegasus

hpwbem-3.3.8-xxx.rhel4.ia64.rpm need below packages:
  glibc libgcc libstdc++ popt tog-pegasus

hpwbem-base-server-3.3.8-xxx.rhel4.ia64.rpm need below packages:
  glibc libgcc libstdc++ popt tog-pegasus

hpwbem-firmwarelogs-3.3.8-xxx.rhel4.ia64.rpm need below packages:
  glibc libgcc libstdc++ tog-pegasus

hpwbem-legacy-3.3.8-xxx.rhel4.ia64.rpm need below packages:
  ethtool glibc libgcc libstdc++ rpm-libs sysfsutils tog-pegasus

hp.com-npartition-providers-1.07.01-xxx.rhel4.ia64.rpm need below packages:
  glibc libgcc libstdc++ tog-pegasus

hp.com-npartition-cmds-1.03.00-xxx.rhel4.ia64.rpm need below packages:
  glibc libgcc libstdc++ tog-pegasus

hp.com-parmgr-2.02.04-xxx.rhel4.ia64.rpm need below packages:
  tog-pegasus

hp-utilprovider-01.07-xxx.rhel4.ia64.rpm need below packages:
  glibc libgcc libstdc++ tog-pegasus

mptsas_cfggen-2.0.30-xxx.ia64.rpm need below packages:
  None

net-snmp-5.1.2-xxx.EL4.7hp.ia64.rpm need below packages:
  beecrypt bzip2-libs chkconfig elfutils-libelf systemtap glibc libselinux openssl popt rpm-libs tcp_wrappers
  zlib

net-snmp-perl-5.1.2-xxx.EL4.7hp.ia64.rpm need below packages:
  bzip2-libs elfutils-libelf systemtap glibc openssl perl popt rpm-libs tcp_wrappers zlib

net-snmp-utils-5.1.2-xxx.EL4.7hp.ia64.rpm need below packages:
  elfutils-libelf systemtap glibc openssl perl

net-snmp-devel-5.1.2-xxx.EL4.7hp.ia64.rpm need below packages:
  beecrypt-devel elfutils-devel rpm-libs rpm-devel

net-snmp-libs-5.1.2-xxx.EL4.7hp.ia64.rpm need below packages:
```

```
glibc openssl  
open64-4.2.1-xxx.ia64.rpm need below packages:  
gcc glibc info perl
```

## RHEL5

The following list provides information about software contained in RHEL5 and the related dependencies.

```
hpacucli-8.28-xxx.ia64.rpm need below packages:  
glibc prectl libunwind  
  
hprima-3.12-xxx.rhel5.ia64.rpm need below packages:  
compat-libstdc++-296 e2fsprogs-glibc net-snmp net-snmp-glibc openssl perl redhat-release tcp_wrappers zlib  
  
hprima-webapp-4.5-xxx.rhel5.ia64.rpm need below packages:  
net-snmp  
  
hpmgmtbase-2.11-xxx.rhel5.ia64.rpm need below packages:  
binutils glibc OpenIPMI redhat-release  
  
hpsmh-3.0.0-xxx.ia64.rpm need below packages:  
None  
  
hpsmh-tomcat-1.3-xxx.linux.ia64.rpm need below packages:  
None  
  
hpsmx-webapp-0.2-xxx.noarch.rpm need below packages:  
libxml2-python python python-devel  
  
hp.com-npartition-providers-1.07.01-xxx.rhel5.ia64.rpm need below packages:  
glibc libgcc libstdc++  
  
hp.com-npartition-cmds-1.03.00-xxx.rhel5.ia64.rpm need below packages:  
glibc libgcc libstdc++  
  
hp.com-parmgr-2.02.04-xxx.rhel5.ia64.rpm need below packages:  
None  
  
hp-smx-02.05-xxx.rhel5.ia64.rpm need below packages:  
glibc libgcc libstdc++  
  
hp-utilprovider-01.07-xxx.rhel5.ia64.rpm need below packages:  
glibc libgcc libstdc++  
  
mptsas_cfggen-2.0.30-xxx.ia64.rpm need below packages:  
None  
  
open64-4.2.1-xxx.ia64.rpm need below packages:  
gcc glibc info perl  
  
tog-pegasus-2.7.1-xxxhp.rhel5.ia64.rpm need below packages:  
bash bind-utils chkconfig coreutils e2fsprogs glibc grep libgcc libstdc++ net-snmp net-tools openssl pam procs  
redhat-lsb sed SysVinit
```

## SLES10

The following list provides information about software contained in SLES10 and the related dependencies.

```
hpacucli-8.28-xxx.ia64.rpm need below packages:  
glibc prectl libunwind  
  
hprima-3.12-xxx.sles10.ia64.rpm need below packages:  
compat e2fsprogs glibc openssl libgcc libstdc++ net-snmp popt rpm sensors sles-release tcpd  
  
hprima-webapp-4.5-xxx.sles10.ia64.rpm need below packages:  
net-snmp  
  
hpmgmtbase-2.11-xxx.sles10.ia64.rpm need below packages:  
binutils glibc sles-release  
  
hpsmh-3.0.0-xxx.ia64.rpm need below packages:  
None  
  
hpsmh-tomcat-1.3-xxx.linux.ia64.rpm need below packages:  
None  
  
hpsmx-webapp-0.2-xxx.noarch.rpm need below packages:  
libxml2-python python python-devel python-xml  
  
hvvm-4.1.0-xxx-sles10.ia64.rpm need below packages:  
glibc  
  
hvvmprovider-4.1.0-xxx-sles10.ia64.rpm need below packages:  
glibc libgcc libstdc++ libunwind  
  
hp.com-npartition-providers-1.07.01-xxx.sles10.ia64.rpm need below packages:
```

```

glibc libstdc++ libunwind

hp.com-npartition-cmnds-1.03.00-xxx.sles10.ia64.rpm need below packages:
glibc libgcc libstdc++ libunwind

hp.com-parmgr-2.02.04-xxx.sles10.ia64.rpm need below packages:
None

hp-smx-02.05-xxx.sles10.ia64.rpm need below packages:
glibc libgcc libstdc++ libunwind

hp-utilprovider-01.07-xxx.sles10.ia64.rpm need below packages:
glibc libgcc libstdc++ libunwind

mptsas_cfggen-2.0.30-xxx.ia64.rpm need below packages:
None

open64-4.2.1-xxx.ia64.rpm need below packages:
gcc glibc info perl

tog-pegasus-2.7.1-xxxhp.sles10.ia64.rpm need below packages:
bash bind-utils coreutils e2fsprogs glibc grep openssl libgcc libstdc++ libunwind net-snmp net-tools openssl
pam procs sed

```

## SLES 11

The following list provides information about software contained in SLES11 and the related dependencies.

```

hpacucli-8.28-xxx.ia64.rpm need below packages:
glibc prctl libunwind

hpmgmtbase-2.11-xxx.sles11.ia64.rpm need below packages:
binutils glibc sles-release

hpsmh-3.0.0-xxx.ia64.rpm need below packages:
None

hpsmx-webapp-0.2-7.noarch.rpm need below packages:
libxml2-python python python-xml

hp-smx-02.05-xxx.sles11.ia64.rpm need below packages:
glibc libtdb1 libgcc43 libstdc++43 libunwind sblim-sfcb

mptsas_cfggen-2.0.30-xxx.ia64.rpm need below packages:
None

open64-4.2.1-xxx.ia64.rpm need below packages:
gcc glibc info perl

```



---

## C Known Issues

This appendix contains known issues with the HP Insight Foundation Suite for Integrity with Linux product, which undergoes rigorous testing before each release. From HP test activities to date, the following items have been uncovered that you should keep in mind.

### HP Insight Management WBEM Providers on Pegasus cimserver Supports Multi-Process Mode Only

HP Insight Management WBEM providers running on Pegasus cimserver (RHEL5, SLES10) only support running in multi-process mode. HP Insight Management WBEM Providers will not currently support running in a single process on the Pegasus cimserver.

To ensure your providers are running in a Pegasus multi-process configuration, perform the following steps as the root user:

1. Verify that the cimserver is running to retrieve configuration values by entering:  

```
# /etc/init.d/tog-pegasus start
```
2. Verify that *forceProviderProcess* is set to true by entering:  

```
# cimconfig -g forceProviderProcesses
```

This command should return `Current value: true`.
3. Based on the value returned in Step 2, perform one of the following steps.
  - If the command returns `Current value: false`, reset the value by entering:  

```
# cimconfig -p -s forceProviderProcesses=true
```
  - If the command returns `Current value: true`, reset the Pegasus cimserver to allow the new setting to take affect by entering:  

```
# /etc/init.d/tog-pegasus restart
```

### Unaligned Access Messages

Due to the current alignment boundaries of certain data structures on Integrity servers, customers may see infrequent messages in the system event log with the format `sfcbd unaligned access`. This should only occur during WBEM Provider initialization and does not represent any loss of data integrity or functionality.

### Superfluous PAM Authentication Message

The release currently shipping for SuSE Linux Enterprise Server 11 (SLES11) has a verbose `sfcb` default configuration setting for all PAM authenticated actions. This setting results in a superfluous message of the following form:

```
pam_succeed_if(sfcb:auth): requirement "user ingroup sfcb" was met by the root user.
```

This message appears in `/var/log/messages` reporting for each successful PAM authentication during WBEM requests. An enhancement request has been filed with SuSE as well as SFCB maintainers and will be resolved by the next distribution release.

If the messages become an issue, use the workaround that follows until this is resolved.

The PAM logging setting for `sfcb` can be changed by using the following steps:

1. Shutdown SFCB by running the following as root user:  

```
# /etc/init.d/sfcb stop
```
2. Edit the `/etc/pam.d.sfcb` config file by making the following edit:

Replace the line

```
auth          required          pam_succeed_if.so user ingroup sfcb
```

with the following line:

```
auth          required      pam_succeed_if.so quiet_success user ingroup sfc
```

3. Restart SFCB by entering the following:

```
# /etc/init.d/sfc
```

## HP Insight Management WBEM Providers Information Reporting

HP Insight Management WBEM Providers do not currently report all information about bonded network interfaces. If bonded interfaces are configured on a given server, CIM\_IPProtocolEndpoint WBEM instances will not be displayed on these servers. This information will be available on servers when the HP Insight Management WBEM Providers add Ethernet teaming support the next release.

## Changing IP Address of Network Interface

While HP Insight Management WBEM Providers are running, if the IP address of a network interface is changed the providers do not pickup the new IP address of the network interface. This issue will be resolved in the next release.

Until this issue is resolved, use the following workaround:

Restart the cimserver using one of the following commands as the root user:

- If running Pegasus on RedHat Enterprise Linux 5 (RHEL5) or SuSE Linux Enterprise Server 10 (SLES10) enter the following:  

```
# /etc/init.d/tog-pegasus restart
```
- If running SFCB on SuSE Linux Enterprise Server (SLES11), enter the following:  

```
# /etc/init.d/sfc
```

## Configuring Storage Adapters

The Configure Storage Adapters function in the HP Smart Setup EBSU utility requires that the EFI driver for the storage adapter be installed prior to configuring storage adapters. You must first select the **Maintain Firmware** function from the HP Smart Setup EBSU main menu to upgrade the adapters, thus installing the EFI driver. You can then proceed to use the **Configure Storage** function to set up your storage adapter.

## Partitioning Fibre Channel HBA Adapters

Creating a partition using EBSU, or other partitioning tools, can result in the duplication of the created partition in multiple LUNs. Typically, this happens when there are redundant paths to the same storage device. For example, when you have two paths (A and B) to a storage device then two blocks bound to the original LUN are created. If you create a partition in the original LUN, it will be mirrored in the duplicated blocks.

For more details regarding configuring LUNs, see the *HP StorageWorks: Booting Windows Server 2003 for Itanium-based systems from a storage area network application notes*:

<http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00193929/c00193929.pdf>.

To configure the boot LUN, see the "Configuring the HBAs" section in conjunction with the "Cabling options for single-channel HBAs" section to create a zone/boot environment with only one LUN mapped to the boot HBA.

## Installing the MPT Fusion HBA Driver on RHEL 5U2 and RHEL 5U3 using a Xen Kernel Hangs the Server

After the MPT Fusion HBA driver is installed on a system running RHEL 5U2 using a Xen kernel, the server hangs during rebooting and the following messages are displayed:



```
ELILO boot: Uncompressing Linux... done
Loading file HP-initrd-2.6.18-92.el5xen.img...done
```

This is the result of the MPT Fusion driver rebuilding the `initrd` file and modifying `elilo.conf` when the it is installed. The following is a comparison of the `elilo.conf` file contents before and after the driver installation:

Before	After
<pre>prompt timeout=20 default=linux relocatable  image=vmlinuz-2.6.18-92.el5xen     vmm=xen.gz-2.6.18-92.el5     label=linux  initrd=initrd-2.6.18-92.el5xen.img     read-only     root=/dev/VolGroup00/LogVol100     append="-- rhgb quiet"</pre>	<pre>prompt timeout=20 default=HP #Corresponds to kernel 2.6.18-92.el5xen # (previously, default=linux) relocatable  image=vmlinuz-2.6.18-92.el5xen     vmm=xen.gz-2.6.18-92.el5     label=linux     initrd=initrd-2.6.18-92.el5xen.img     read-only     root=/dev/VolGroup00/LogVol100     append="-- rhgb quiet"  # The following entry was added by Proliant # HBA install script # in package mptlinux-4.00.13.01-3.rhel5 image=vmlinuz-2.6.18-92.el5xen     label=HP     #Corresponds to kernel 2.6.18-92.el5xen      initrd=HP-initrd-2.6.18-92.el5xen.img      read-only     root=/dev/VolGroup00/LogVol100     append="-- rhgb quiet"</pre>

The default variable is changed to HP that corresponds to the Xen kernel and a new image stanza is inserted into the file. This new stanza is missing a line, which causes the server hang during reboot.

To avoid the system hangs during reboot, you must modify the file `/etc/elilo.conf` manually after the MPT Fusion driver is installed and *before* rebooting the server using the following steps:

1. Edit `/etc/elilo.conf`.
2. Add the following line immediately after the line, `image=vmlinuz-2.6.18-92.el5xen` in the `label=HP` stanza:

```
vmm=xen.gz-2.6.18-92.el5
```

The file should now look like:

```
prompt
timeout=20
default=HP
#Corresponds to kernel 2.6.18-92.el5xen
# (previously, default=linux)
relocatable

image=vmlinuz-2.6.18-92.el5xen
    vmm=xen.gz-2.6.18-92.el5
    label=linux
    initrd=initrd-2.6.18-92.el5xen.img
    read-only
    root=/dev/VolGroup00/LogVol100
    append="-- rhgb quiet"

# The following entry was added by Proliant HBA install script
# in package mptlinux-4.00.13.01-3.rhel5
```

```
image=vmlinuz-2.6.18-92.el5xen
vmm=xen.gz-2.6.18-92.el5
label=HP
#Corresponds to kernel 2.6.18-92.el5xen
initrd=HP-initrd-2.6.18-92.el5xen.img
read-only
root=/dev/VolGroup00/LogVol100
append="-- rhgb quiet"
```

3. Reboot the server.

## HP System Management Homepage Session Time-out Error

The default value of the `ui-timeout` option in the HP SMH is 20 seconds. For servers with numerous devices, 80 CPUs for example, the home or device pages may take more than 20 seconds to load and you may encounter a timeout message in your browser. You can avoid this by setting the value of `ui-timeout` to the maximum of 80 seconds, using one of the following methods:



---

**NOTE:** The maximum value for `ui-timeout` is 3600 seconds.

---

From the command line:

1. Set `ui-timeout` to 80 seconds:  

```
# /opt/hp/hpsmh/sbin/smhconfig --ui-timeout=80
```
2. Restart HP SMH:  

```
# /etc/init.d/hpsmhd restart
```

From HP SMH :

1. Sign in to HP SMH.
2. Select **Settings**→**SMH**→**Security**→**Timeouts**.
3. Modify the **UI timeout (seconds)** value, and then click **Apply**.
4. Sign out of HP SMH.
5. Restart HP SMH:  

```
# /etc/init.d/hpsmhd restart
```

## HP SAS Integrated Raid (IR) Configuration Utility May Cause Kernel Panics on RHEL4U7

The Integrated Raid (IR) Configuration Utility, `cfggen`, is a Linux command line utility that configures the IR functionality of the HP Serial Attached SCSI (SAS) controllers that are used in LSI-1068-based HP SAS controllers. The `cfggen` utility causes kernel panics when creating volumes with RHEL4U7.

Until this issue is resolved in the MPT driver, HP recommends that you use the EFI executable, `cfggen.efi`, utility to create volumes.

If `cfggen` is installed on a system running RHEL4U7, the HP Support Pack installer will remove it.

For information about using the `cfggen.efi` utility, see the *SmartSetup Scripting Toolkit Deployment Guide*:

<http://www.docs.hp.com/en/5991-6250/>

## Flashing HP PCIe 2-port 1000Base-T adapter (AD337A) Adapters

The HP PCIe 2-port 1000Base-T adapter (AD337A) with the 3.0.48 firmware version cannot be flashed using HP Smart Setup.

# D Supported Products Matrix

This appendix lists the adapters that are supported by the HP Insight Foundation Suite for Integrity with Linux in each of the supported OS distribution release. Table D-1 lists the I/O adapter part number by category, a brief description of the part, and the initial, supported Linux distribution(s) including later updates or service packs.

**Table D-1 Supported Products Matrix**

Part Number	Description	RHEL Support							SLES Support			
		4	4U1	4U3	4U4	4U6	5	5U1	10	10 SP1	10 SP2	11
Fibre Channel												
403619-B21	HP BLc QLogic QMH2462 FC HBA Opt Kit				X			X		X		X
A6826A	PCI-X Dual Channel 2Gb Fibre Channel HBA	X						X		X		
A7538A	HP StorageWorks Linux Q2300 64-bit HBA	X						X		X		
A8002A	HP FC2142SR 4GB PCI-e HBA				X			X		X		X
A8003A	HP FC2242SR PCI-e DC HBA				X			X		X		X
AB379A	HP PCI-X 2.0 2Port 4Gb Fibre Channel HBA Qlogic			X				X		X		X
AB379B	HP PCI-X 2.0 2Port 4Gb Fibre Channel HBA Qlogic				X			X		X		X
AB429A	1-port 4Gb FC Qlogic				X			X		X		X
AD167A	1-port 4Gb FC Emulex			X				X		X		X
AD168A	2-port 4Gb FC Emulex			X				X		X		X
AD300A	2-port 4Gb FC Qlogic PCI-e				X			X		X		X
AE311A	1-port 4Gb FC Qlogic PCI-e				X			X		X		X
IDE												
rx1600/rx2600	Embedded I/O for rx1600/ rx2600	X										
rx1620/rx2620/cx2620	Embedded I/O for rx1620/ rx2620/cx2620	X						X		X		
rx4640	Embedded I/O for rx4640	X						X		X		

**Table D-1 Supported Products Matrix** *(continued)*

Part Number	Description	RHEL Support							SLES Support			
		4	4U1	4U3	4U4	4U6	5	5U1	10	10 SP1	10 SP2	11
LAN												
447883-B21	4-port GbE Mezz					X		X		X		X
A5506B	PCI 4 Port 100Base-TX LAN Adapter	X					X		X			
A6794A	SCSI & LAN Core I/O (Procurium)		X						X			
A6865A	PCI core I/O for SuperDome		X						X			
A7061A	Win/Linux 1000Base-T Gigabit Eth Adpt	X					X		X			
A7073A	Win/Linux 1000Base-SX Gigabit Eth Adpt	X					X		X			
A9899A	Win/Linux 2 port 1000Base-SX Giga Adptr	X					X		X			X
A9900A	Win/Linux 2 port 1000Base-T Giga Adptr	X					X		X			X
AB290A	HP PCI-X 2p 1000BT, 2p U320 SCSI Adptr				X			X	X			X
AB306A	Core IO for the rx86/rp8420 server		X						X			
AB314A	HP Integrity rx8640 Core I/O adapter				X			X	X			X
2p GigE NIC	PCI-X 2-port 1000BT w/WOL (Core I/O)	X					X		X			X
AD144A	Win/Linux 133MHz 10GbE SR Fiber Adapter		X				X		X			X
AD145A	Win/Linux 4-port 1000Base-T Gigabit Adapter		X				X					
AD337A	HP PCIe 2-port 1000Base-T Adapter					X		X		X		X
AD338A	HP PCIe 2-port 1000Base-SX Adapter					X		X		X		X
AD385A	HP PCI-X 266MHz 10GigE SR Adapter					X		X		X		X

**Table D-1 Supported Products Matrix** (continued)

Part Number	Description	RHEL Support							SLES Support			
		4	4U1	4U3	4U4	4U6	5	5U1	10	10 SP1	10 SP2	11
BL860c	Embedded I/O for BL860c				X			X	X			X
BL870c	Embedded I/O for BL870c					X		X	X			X
rx1600/ rx2600	Embedded I/O for rx1600/rx2600	X										
rx1620/ rx2620/ cx2620	Embedded I/O for rx1620/ rx2620/cx2620	X					X		X			
rx2660	Embedded I/O for rx2660				X		X			X		X
MP												
A6695 - 69101	SCSI and MP Core I/O											
A6875A	HP Management Processor Adapter for ZX6000	X							X			
A9918A	Core I/O for the rx76xx/rp7420 server		X						X			
AB306A	Core IO for the rx86/rp8420 server		X						X			
AB314A	HP Integrity rx8640 Core I/O Adapter				X			X	X			X
AB315 - 60201	Core I/O for Mittlehorn server				X			X	X			X
RUSA UCIO	Ruby/Sapphire Unified Core I/O board				X		X		X			X
rx4640	Embedded I/O for rx4640	X					X		X			
RAID												
337972- B21	HP Smart Array P600 Controller				X		X		X			X
A9825A	Smart Array 5302 with 128MB cache	X							X			
A9826A	Smart Array 5304 with 256MB cache	X							X			
A9890A	HP Smart Array 6402/128MB Controller	X					X		X			X
AD335A	HP Smart Array P800 Controller				X		X		X			X

**Table D-1 Supported Products Matrix** (continued)

Part Number	Description	RHEL Support							SLES Support			
		4	4U1	4U3	4U4	4U6	5	5U1	10	10 SP1	10 SP2	11
AH226A	HP PCIe Smart Array E500 SAS Controller					X		X		X		X
SA P400 (core 1)	PCIe 8-port int SAS Smart Array P400 (Core I/O rx2660)				X		X		X			X
SA P400 (core 2)	PCIe 8-port SAS Smart Array P400 (Core I/O rx3600, rx6600)				X		X		X			X
SA P600	PCI-X 8-port int/4-port ext SAS Smart Array P600 (Core I/O rx3600, rx6600)				X		X		X			X
SA P800	PCIe 8-port int/8-port ext SAS Smart Array P800 (Core I/O rx3600, rx6600)				X		X		X			X
SAS												
431643-B21	HP BLc PCIe Mezz pass-thru				X			X	X			X
BL860c	Embedded I/O for BL860c				X			X	X			
BL870c	Embedded I/O for BL870c					X		X		X		
rx2660	Embedded I/O for rx2660				X		X			X		
SCSI												
A6695 - 69101	SCSI and MP Core I/O											
A6794A	SCSI & LAN Core I/O (Procurium)		X						X			
A7059A	Windows and Linux Ultra160 SCSI Adapter	X					X		X			
A7060A	Windows, Linux 2 port Ultra160 SCSI HBA	X					X		X			
A7173A	HP Dual Channel Ultra320 SCSI Adapter	X					X		X			X
A9918A	Core I/O for the rx76xx/tp7420 server		X						X			

**Table D-1 Supported Products Matrix** (continued)

Part Number	Description	RHEL Support							SLES Support			
		4	4U1	4U3	4U4	4U6	5	5U1	10	10 SP1	10 SP2	11
AB290A	HP PCI-X 2p 1000BT, 2p U320 SCSI Adapter				X			X	X			X
AB306A	Core IO for the rx86/rp8420 server				X				X			
AB314A	HP Integrity rx8640 Core I/O Adapter				X			X	X			X
AB315-60201	Core I/O for Mittlehorn server				X			X	X			X
rx1600/rx2600	Embedded I/O for rx1600/ rx2600	X										
rx1620/rx2620/cx2620	Embedded I/O for rx1620/ rx2620/cx2620	X					X		X			
USB												
A6869A	Graphics USB Adapter for HP servers											X
A6869B	HP Servers Graphics USB PCI Adapter				X			X	X			X
BL860c	Embedded I/O for BL860c				X			X	X			X
BL870c	Embedded I/O for BL870c					X		X		X		X
RUSA UCIO	Ruby/Sapphire Unified Core I/O board				X		X		X			X
rx1600/rx2600	Embedded I/O for rx1600/ rx2600	X										
rx1620/rx2620/cx2620	Embedded I/O for rx1620/ rx2620/cx2620	X					X		X			
rx2660	Embedded I/O for rx2660				X		X			X		X
rx4640	Embedded I/O for rx4640	X					X			X		
Video												
A6869A	Graphics USB adapter for HP servers											
A6875A	HP Management Processor adapter for zx6000	X							X			

**Table D-1 Supported Products Matrix** *(continued)*

Part Number	Description	RHEL Support							SLES Support			
		4	4U1	4U3	4U4	4U6	5	5U1	10	10 SP1	10 SP2	11
BL860c	Embedded I/O for BL860c				X			X	X			X
BL870c	Embedded I/O for BL870c					X		X		X		X
RUSA UCIO	Ruby/Sapphire Unified Core I/O board				X		X		X			X
rx2660	Embedded I/O for rx2660				X		X			X		X
rx4640	Embedded I/O for rx4640	X					X		X			







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