

Support Note for Red Hat Enterprise Linux AS v.2.1 for the Itanium® Processor on HP Integrity Servers

Edition 4



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1 Support Note for Red Hat Enterprise Linux AS v.2.1 for the Itanium® Processor on HP Integrity Servers

Announcement

Hewlett-Packard has certified Red Hat Enterprise Linux AS v.2.1 Update 3 for the Itanium® Processor (errata kernel 2.4.18-e.40, glibc 2.2.4-32.11) on HP Integrity servers. Use the HP Enablement Kit for Linux to prepare your server for operating system installation. It will prompt you to insert the Red Hat Enterprise Linux AS v.2.1 installation CDs when the system is ready.

This Support Note provides an overview of operating system installation using the enablement kit, explains how to get updates from Red Hat Network, and lists available tools, firmware requirements, and known problems with Red Hat Enterprise Linux AS v.2.1 for the Itanium Processor on HP Integrity servers.

IMPORTANT Red Hat Enterprise Linux AS v.2.1 Update 3 enables Open IPMI, which is required to support the HP Insight Management Agents you can use on your system. (See “Manageability” on page 9 for more information on these agents.) Please follow the directions in “Registering Software and Getting Updates from Red Hat Network” on page 15 to upgrade to Update 3.

Support Note Contents

Support Note Contents

1. “Distributions Supported on HP Integrity Servers” on page 5
2. “Operating System Installation” on page 6
3. “Firmware Updates” on page 8
4. “Manageability” on page 12
5. “Registering Software and Getting Updates from Red Hat Network” on page 15
6. “Known Problems” on page 16

Distributions Supported on HP Integrity Servers

Hewlett-Packard has certified Red Hat Enterprise Linux AS v.2.1 for the Itanium Processor and Update 3 (errata kernel 2.4.18-e.40, glibc 2.2.4-32.11) on Integrity servers. You can order Red Hat Enterprise Linux AS v.2.1 at <http://www.software.hp.com>.

The HP Enablement Kit for Linux ships with your order of system hardware from HP. You can also download or order the enablement kit at <http://www.software.hp.com>. The enablement kit prepares your system for operating system installation and prompts you to insert operating system CDs when ready. Each distribution provides its own operating system documentation.

IMPORTANT Do not discard the Red Hat registration card packaged with the Red Hat CDs. To receive Red Hat updates and comply with HP support requirements, register the serial number on the card with Red Hat Network. See “Registering Software and Getting Updates from Red Hat Network” on page 15 for more information.

Documentation for HP's Enablement Kit for Linux, including the kit's CD booklet, Release Notes, and the Support Note for Red Hat Enterprise Linux AS v.2.1 for the Itanium® Processor come with your system. These documents, along with the SystemImager 3.0 manual, are also available at <http://www.docs.hp.com/linux>.

Operating System Installation

Before installing Red Hat Enterprise Linux AS v.2.1 for the Itanium® Processor on your Integrity server, use the HP Enablement Kit for Linux CD, which automates processes such as:

- Configuration of storage controllers
- Disk partitioning
- Linux installation from distributor media (i.e. CD-Rom)
- Recovery of a pre-installed operating system.

If your system came with Linux pre-installed, power on your server and configure it as prompted. The functionality provided by the enablement kit has already been applied.

NOTE The HP Enablement Kit for Linux CD booklet is a short, useful guide for questions you may have while using the enablement kit CD. We highly suggest referencing it when setting up your system. The CD booklet comes packaged with the enablement kit CD-Rom and is also available on the CD's `/docs` directory, which is accessible after booting the Linux kernel. Updates are available online at <http://www.docs.hp.com/linux>.

The booklet explains the automated processes behind each menu option, including hardware discovery, disk partitioning, and storage system options. Also included in the booklet are instructions for setting up a serial console as your system's display, frequently asked questions, and troubleshooting tips for the enablement kit.

The enablement kit menu presents the following options:

1. Restoring the factory pre-configured image
2. Installing Linux from distribution media
3. Installing a golden image over the network
4. Recovery shell (experts only)
5. Debian GNU/Linux installer.

To install your operating system:

1. Boot the HP Enablement Kit for Linux CD using the instructions in the enablement kit CD booklet
2. Choose option 2 from the enablement kit menu
3. Complete the steps presented, including selecting a target disk
4. Insert the operating system CDs when prompted
5. Follow your operating system's instructions to complete installation.

Recovering your operating system:

1. Choose option 1 from the enablement kit menu
2. Complete the steps presented, including selecting a target disk from a list
3. Insert the System Recovery CD
4. Reboot your system when prompted after installation is complete
5. Configure your system as prompted.

The HP Enablement Kit for Linux CD ships with your Integrity server. Please contact your HP sales representative to obtain the enablement kit if it is not with your order. You can order or download the HP Enablement Kit for Linux and updates for free at <http://www.software.hp.com>.

Firmware Updates

Firmware Updates

To determine your current firmware version, type "INFO FW" at the EFI Shell prompt. For firmware updates:

1. Go to <http://welcome.hp.com/country/us/eng/support.html>.
2. Select "download drivers and software"
3. Enter your server model number in the "for" box and hit **Enter**.
4. Click **firmware** under the **quick jump to downloads for...** heading.

Manageability

You can use tools such as HP Insight Manager 7 and HP Systems Insight Manager to remotely monitor system information on an Integrity server that has HP Insight Management Agents for Red Hat Enterprise Linux AS v.2.1, System Management Web Agent, or Web-Based Enterprise Management (WBEM) providers installed. This section provides a brief overview of both management tools and installation and configuration instructions for HP Insight Management Agents, System Management Web Agent, and WBEM providers.

Monitoring Tools

HP Insight Manager 7

HP Insight Manager 7 (IM7) is a Web-based tool designed to manage platforms running HP Insight Management Agents. The IM7 central management server must be an IA-32 system running Windows NT 4.0 or Windows 2000. With the IA-32 Windows system functioning as the central management server, IM7 monitors HP Insight Management Agents installed on both IA-32 and Itanium 2-based platforms.

Download IM7 for IA-32 Windows systems at <http://www.hp.com/servers/IM7>.

HP Systems Insight Manager

HP Systems Insight Manager is a multi-OS application for managing Proliant, Integrity, and HP 9000 systems running HP Insight Management Agents or WBEM providers in a Windows, Linux, or HP-UX environment. It delivers the capabilities required to manage all HP platforms and can be extended to provide custom device management. See <http://www.hp.com/go/hpsim> for more information.

HP Insight Management Agents

IMPORTANT Red Hat Enterprise Linux AS v.2.1 Update 3 enables Open IPMI, which is required to support the HP Insight Management Agents you can use on your system. Please follow the directions in “Registering Software and Getting Updates from Red Hat Network” on page 15 to upgrade to Update 3.

Based on the Simple Network Management Protocol (SNMP), HP Insight Management Agents allow you to remotely monitor configuration information and system status on your Integrity server from any SNMP browser. A central management server using HP Insight

Manageability

Manager 7 (IM7) 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 are available from the **Linux** link at <http://www.software.hp.com>. For more details on the SNMP protocol, see <http://www.net-snmp.net>.

NOTE Both IM7 and HP Systems Insight Manager are SNMP-aware, while HP Systems Insight Manager is also WBEM provider-aware.

Installing HP Insight Management Agent Packages for Red Hat Enterprise Linux AS v.2.1

1. From the **Linux** link at <http://www.software.hp.com>, download the HP Insight Management Agent for Integrity Servers into the directory of your choice when prompted by your Internet browser.
2. Login as root on the server where you downloaded the tar package.
3. Untar the binary you obtained from HP:
 - a. Type `tar -xvf hpima1.1*tar` and press **Enter**.
 - b. Type `cd hpima1.1` and press **Enter**.

NOTE If the ucd-snmp packages don't install, the packages already installed on your system are a later version than those HP provides. In this case, remove your current ucd-snmp rpms with the `rpm -e` command.

If you can't remove the ucd-snmp rpms, other packages such as kernel-utils, ethereal, or ethereal-gnome packages, which have dependencies on the ucd-snmp packages, may be installed on your system. Remove such packages first, then remove the ucd-snmp packages and replace with the packages provided by HP.

4. Install the rpm packages in this order:
 - a. Type `rpm -Uvh ucd-snmp*.rpm` and press **Enter**.
 - b. Type `rpm -Uvh hpima-1.1*rpm` and press **Enter**.

Configuring HP Insight Management Agent Packages

The installation process of the HP Insight Management Agent packages performs an automated search for SNMP configuration files on your system. Depending on the data found there, a series of prompts requests you to either supply missing information or gives you the opportunity to change current settings.

Input the information requested. Note that most installation prompts interpret a blank response as no change to the current setting or else use an appropriate default value. Prompts that require user input do not allow you to proceed until you supply the requested information.

Installation Prompt Types

1. **localhost** - Data you provide at localhost installation prompts is used in SNMP GET and SET operations that are performed from the localhost. The HP Web Agent package (optional) requires the data you input at the “localhost” prompts to operate.
2. **Central Management Server** - The Central Management Server installation prompts request community string data for a single remote server, which is typically the Insight Manager Console. Community string data can also be used by any other application.

Finishing Configuration When you have supplied the information solicited by the prompts, the SNMP daemon starts as do the HP Insight Management Agent packages.

NOTE If you do not specify a trap destination during configuration, each peer daemon will log a complaint in `/var/opt/hpima/agents.log`. Although the agents run, no traps are sent.

If you remove the HP Insight Management Agents Package, the previous SNMP daemon configuration will be restored.

The data you provided at the installation prompts along with the information collected from the SNMP configuration files is stored in `/etc/snmp/snmpd.conf`. If you are familiar with manual configuration of SNMP agents, you may edit this file and restart the SNMP daemon. The following output is generated when you finish answering the prompts:

```
=====  
The following file(s) contained the prior snmpd configuration:  
    /etc/snmp/snmpd.conf  
    They have been saved and will be restored when hpima is removed.  
  
New configuration is stored in /etc/snmp/snmpd.conf  
=====
```

Manageability

(Re)starting the SNMP daemon, configured to support the HP Insight Management Agents for Red Hat Enterprise Linux AS v.2.1

Please read the License Agreement for this software at
`/opt/hp/hpima/hpima.license`

By installing this package, you are accepting the terms of the 'License for HP Value Added Software'.

```
Start Foundation Peer Daemon 'hpimafdtpeerd'      [OK]
Start Foundation Host Agent 'hpimahostd'         [OK]
Start Foundation Threshold Agent 'hpimathreshd'   [OK]
Start Server Peer Daemon 'hpimasvrpeerd'        [OK]
Start Server Health Agent 'hpimahealthd'         [OK]
Start Server Standard Equipment Agent 'hpimastdeqd' [OK]
HP Insight Management Agents for Red Hat Enterprise Linux AS v.2.1 are enabled
The hpima RPM has installed successfully.
```

To verify HP Insight Management agent status, type `service hpima status` and press **Enter**.

System Management Web Agent

System Management Web Agent, which integrates with IM7 and HP Systems Insight Manager, provides a Web interface that organizes the SNMP data into easy-to-read tables. The System Management Web Agent is available from the **Linux** link at <http://www.software.hp.com>. For more information on the System Management Web Agent, see IM7 or HP Systems Insight Manager documentation.

Installing System Management Web Agent

1. From the **Linux** link at <http://www.software.hp.com>, download the System Management Web Agent packages for Integrity servers into the directory of your choice when prompted by your Internet browser. The download contains the rpm package as well as a ReadMe with configuration instructions.
2. Login as root on the server where you downloaded the rpm packages.
3. Install the System Management Web Agent to enable integration with IM7 or HP Systems Insight Manager.

Type `rpm -Uvh hpsmwa-1.1-rhas21.ia64.rpm` and press **Enter**.

4. See the ReadMe file for configuration instructions.

WBEM and WBEM Providers

WBEM (Web-Based Enterprise Management) is a DMTF (Distributed Management Task Force) standard that uses Internet technologies such as XML, HTTP, and SSL to manage systems. It allows management applications such as HP Systems Insight Manager to retrieve, monitor, and configure system information.

WBEM providers are the instruments that provide system data for the management application. See <http://www.hp.com/large/infrastructure/management/wbem/> for more information on WBEM.

Installing WBEM Providers

1. You can install WBEM providers on Red Hat Enterprise Linux AS v.2.1.
2. From the **Linux** link at <http://www.software.hp.com>, download the HP WBEM Services package in the directory of your choice when prompted by your Internet browser. Follow the directions provided in the package.
3. From the same **Linux** link at <http://www.software.hp.com>, download the compressed tar file of WBEM providers for Integrity servers into the directory of your choice when prompted by your Internet browser.
4. Login as root on the server where you downloaded the tar file.
5. Untar the file with `tar -xvf` command, and the tar file expands into a subdirectory.
6. Install the rpm packages in the subdirectory in this order:
 - Type `rpm -Uvh parted-dump*.rpm` and press **Enter**.
 - Type `rpm -Uvh hpserver-core*.rpm` and press **Enter**.
 - Type `rpm -Uvh hp.com-wbem-providers*.rpm` and press **Enter**.
7. To verify proper installation:
 - a. Type `cimserver` on the command line and press **Enter** to start the cimserver.
 - b. Type `osinfo` and press **Enter**. If the WBEM providers are installed properly, the system displays information such as host name, distribution name and version, license type, etc. An example of system output follows:

```
OperatingSystem Information
Host: mundie.fc.hp.com
Name: SUSE LINUX Enterprise Server
( 2.4.18-e.0.26 custom #3 SMP Sun Sep 1 04:22:31 MDT 2002 )
Version: 2.1 (Pensacola)
```

Manageability

```
UserLicense: Unlimited user license
Number of Users: 2 users
Number of Processes: 68 processes
OSCapability: 64 bit
LastBootTime: Jan 16, 2044 0:51:18 (-0500)
LocalDateTime: Jan 27, 2044 3:35:45 (-0500)
SystemUpTime: 960267 seconds = 11 days, 2 hrs, 44 mins, 27 secs
```

The Health Daemon and Open IPMI

The HP Insight Management Agent packages include a Health daemon that provides system status and operational information such as temperature, fan speeds, inventory lists, disk status, voltages, and event logs. This daemon requires Open IPMI for which HP provides the drivers with the agent packages. You must update to Red Hat Enterprise Linux AS v.2.1 Update 3 to use the agents. See “Registering Software and Getting Updates from Red Hat Network” on page 15 for upgrade instructions.

NOTE See <http://developer.intel.com/design/servers/ipmi/index.htm> for more information about IPMI (Intelligent Platform Management Interface).

You see the following message if your system does not have compatible IPMI modules:

```
-----Notice-----
```

```
This package does not supply Open IPMI drivers that match your kernel
version (<output from uname -r>). /opt/hp/hpsa/OpenIPMI/README.ipmi has
instructions to patch your kernel and generate IPMI modules that are com-
patible.
```

```
The Health daemon will not run without Open IPMI.
```

```
-----End Notice-----
```

The rest of the HP Server Agents will run without Open IPMI. When the modules have been built and installed using instructions in the ReadMe referenced in the notice above, start the Health daemon:

1. Type `service hpima restart`.
2. Press **Enter**.

Registering Software and Getting Updates from Red Hat Network

To ensure you have the most current version of software, use the following instructions to obtain updates from Red Hat Network. Pre-installed software versions may not be up to date.

1. Install Red Hat on your system and reboot.
2. Login as root on the console (HP recommends using the graphical console rather than the text console).
3. Using the registration card number that came with your Red Hat Linux CDs, run the `rhm_register` command to register your system and create an account with Red Hat Network.
4. Communication between your system and Red Hat Network server begins with confirmation of your installed software packages, and optionally, your hardware. Red Hat Network server notes any necessary updates and sends email to the Red Hat administrator to forward the packages to your system when you request an update.
5. To update your system, run the `up2date` command on the console (HP again recommends using the graphical console rather than the text console) to initiate the process with Red Hat Network. Now follow the instructions Red Hat provides.

NOTE Red Hat ensures all information transferred is treated as private and confidential. By default, all data sent and received over the network uses the secure sockets layer (SSL).

Red Hat provides more detailed information on the update process in its documentation.

Known Problems

Known Problems

1. No support for uncertified .rpm packages.

If you add uncertified .rpms to the operating system, it will not be supported. Only .rpms bundled in supported Linux distributions for Integrity servers and official Red Hat Updates for those distributions will be supported.

2. No support for systems with a recompiled kernel.

Although you may recompile your kernel to change configuration parameters, HP does not support systems on which you have recompiled your kernel for any other reason, e.g. for kernel source code changes.

Supported customizations:

- a. Modifying configuration options found in `/usr/src/linux-version-versionnumber/configs` to set values or make modules static or dynamically loadable.
- b. Changing boot-time parameters found in `/usr/share/doc/kernel-doc-2.4.18/kernel-parameters.txt` (with the `kernel-doc` .rpm) or in `/usr/src/linux-2.4/Documentation/kernel-parameters.txt` (with the `kernel-source` /rpm.)

3. Installation failures:

- a. If your media is an NFS directory containing ISO images and you are doing a custom installation, do not select the “everything” package group. Doing so causes the installation to crash.
- b. If using CDs for a custom installation, do not select the “everything” package group. Doing so causes the installation to crash in this case as well.

4. USB conflicts and system reboots.

Configurations that include a USB 1.1 mass storage device under the same OHCI root hub as the USB keyboard can cause conflicts resulting in system reboot. You can use the `usbview` tool to view the topology of the USB root hubs to avoid such configurations. If improperly configured, refreshing the data in `usbview` while the USB mass storage device is being accessed may cause your system to reboot.

To view the topology using `usbview`:

- a. Launch `usbview`
- b. Attach the USB mass storage device

- c. If `usbview` shows both the mass storage device and the USB keyboard under the same OHCI root hub, relocate the mass storage device to a different USB port
- d. Close `usbview` before using the mass storage device and do not reopen it or any other applications that use `usbdevfs` while using the device.

5. USB-to-PS2 adapter failures.

The A7782 USB-to-PS/2 adapter occasionally fails to connect at EFI when using system firmware revisions 1.44 and earlier. The symptom is the following message, which continues to print dots:

```
USB Keyboard Not Responding, Searching for another:.....
```

Use the power button to turn the system off and back on again to work around this situation. To avoid the problem completely, connect a USB keyboard directly to the system or update firmware to revision 1.61 or later.

6. System is unbootable after adding new disks.

When you add new disks, the system may fail with one of the following messages:

```
init=  
or  
VFS root not found
```

To fix the problem:

- a. Remove any disks you've added since you last booted your system.
- b. Invoke `parted /dev/sdX` where `sdX` is the disk where your root partition resides.
- c. Use `name` command to assign "/" as a LABEL to the root file system. `help name` from inside `parted` explains the syntax you should use, e.g. `name 1 /`
- d. Manually verify `root=LABEL=/` is in each image section of the `/boot/efi/efi/redhat/elilo.conf` file.

Ex.:

```
==== sample elilo.conf for mounting root partition by label ====  
  
prompt  
timeout=50  
default=linux
```

Known Problems

```

image=vmlinuz-2.4.18-e.Nsmp
    label=linux
    initrd=initrd-2.4.18-e.Nsmp.img
    read-only
    root="LABEL=/"
    append="console=ttyS0,115200n8 hdd=ide-scsi"

image=vmlinuz-2.4.18-e.N
    label=linux-up
    initrd=initrd-2.4.18-e.N.img
    read-only
    root="LABEL=/"
    append="console=ttyS0,115200n8 hdd=ide-scsi"
===== sample elilo.conf for mounting root partition by label =====

```

e. Manually verify "LABEL"="/" entry is in the /etc/fstab.

```

===== sample fstab for mounting root device by label =====
LABEL=/      /           ext2        defaults,errors=remount-ro    1 1
/dev/hda1    /boot/efi   vfat        defaults                       0 0
none        /dev/pts    devpts      gid=5,mode=620                 0 0
none        /proc       proc        defaults                       0 0
none        /dev/shm    tmpfs       defaults                       0 0
/dev/hda3    swap        swap        defaults                       0 0
/dev/hda5    /home       ext2        defaults,errors=remount-ro    0 2
/dev/cdrom   /mnt/cdrom  iso9660     noauto,owner,kudzu,ro        0 0
/dev/cdrom1  /mnt/cdrom1 iso9660     noauto,owner,kudzu,ro        0 0
===== sample fstab for mounting root device by label =====

```

7. SCSI errors and resets cause system failures.

SCSI errors and resets for any reason cause system failures. For example, if your disks have a problem such as a parity or disk error that causes a SCSI reset, the system will fail. Combining a Seagate drive with the ds2100 disk carrier causes electrical problems on the SCSI bus and subsequent reset attempts that also result in system failure. Do not use Seagate drives with this disk carrier.

8. The following error message is generated on normal system startup: .

```

Mounting filesystems [FAILED]

```

This problem exists:

- a. On Itanium 2 processors greater than 1GHz.
- b. When your HP A7061A (Gigabit copper) network interface card (NIC) uses a static IP address.

- c. When `etc/fstab` is configured to automatically NFS mount on the network accessed by the HP A7061A NIC referenced in Step b.

Initialization of the HP A7061A NIC can take up to 30 seconds longer than the system startup script for networking reports. The network appears to be up but isn't due to an issue with the `tg3` driver. To workaroud the problem, run:

```
ifdown eth<N>; ifup eth<N>; mount server:remotepath localpath
```

where `<N>` is the appropriate number for the HP A7061A NIC.

9. Pressing the **F1** key in a text mode installation causes the installation to abort unless using Update 3 or later. Though the **F1** key should access `Help`, do not use it if installing in text mode with Red Hat Enterprise Linux AS v.2.1 Update 2 or earlier.

To update your operating system, use the instructions in “Registering Software and Getting Updates from Red Hat Network” on page 15.

10. On HP Integrity rx2600 servers, simultaneous sustained data transfer from the CD Rom drive and through networking devices can result in packet loss on the network.

This problem occurs because Direct Memory Access (DMA) is not enabled on the CD Rom drive. You can run `hdparm -d1 /dev/cdrom` to enable DMA on the CD drive; however, doing so can cause machine check aborts (MCAs).

11. Inconsistencies with man page directions for editing `/etc/fstab`.

If you manually edit the `/etc/fstab` file to alter the device partition to be mounted as swap space, follow the `fstab` man page directions. The `swapon` manpages incorrectly describe swap filesystem entries in `/etc/fstab` as being labeled with "sw" when they should be labeled "swap". `swapon` will not throw an error if it encounters an invalid swap entry in `/etc/fstab`.