Installing Debian GNU/Linux 4.0 ("Etch")
for i386 and AMD64
on HP ProLiant Servers

Support Notes

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Abstract

ProLiant servers provide an excellent platform for Linux and are engineered from the ground up to provide performance, reliability, and scalability, using industry-standard components.

This document provides information about installing Debian GNU/Linux 4.0 (codenamed "Etch"), for the i386 and AMD64 architectures on ProLiant Servers.

1. Hardware Support

Before beginning the installation, please consult the *Debian Capabilities Matrix for ProLiant Servers* to ensure that this version of the operating system is supported on the targeted ProLiant Server. To access this document, click on the **Capabilities matrix** link on the http://www.hp.com/go/proliantdebian HP website.

Note that this installation provides support for the base ProLiant system; however, peripherals and plug-in cards are not supported.

2. Obtaining Additional Information and Software for Debian GNU/Linux on HP ProLiant Servers

You can obtain the latest additional Debian GNU/Linux information, services, and value-add software downloads for your HP ProLiant server from the http://www.hp.com/go/proliantdebian HP website.

At this location, you can access one of the following topics:

- Capabilities matrix
- Downloads
- Debian GNU/Linux Services
- Documentation

Additional information about Debian GNU/Linux from HP is available at: http://www.hp.com/go/debian.

3. Installing Debian GNU/Linux 4.0

This section describes performing a new installation of Debian GNU/Linux 4.0 on ProLiant servers using the standard Debian.org Debian installer.

For additional help and information about installing Debian GNU/Linux 4.0, see the following:

- *Debian GNU/Linux Installation Guide* - http://www.debian.org/releases/stable/installmanual
- *Debian GNU/Linux 4.0 Release Notes* - http://www.debian.org/releases/stable/releasenotes
- Installation information and images - http://www.debian.org/releases/stable/debian-installer

Before beginning, please assure that this installation is supported on your specific ProLiant hardware, as described in the *Hardware Support* section of this document.

To perform the installation:

1. Configure the server's drive arrays using the **ROM Configuration for Arrays** option (if applicable). When prompted, press the **<F8>** key during the **Power-On Self Test (POST)**, after the array controller has initialized. For full details, consult the *User's Guide* for your ProLiant server.

2. Configure the server using the **ROM Based Setup Utility (RBSU)**. The RBSU can be entered by pressing the **<F9>** key during the POST. For full details, consult the *User's Guide* for your ProLiant server.

3. If you have not already done so, obtain the Debian GNU/Linux 4.0 installation image for your system from the following location, and create an installation CD/DVD with it:

   http://www.debian.org/releases/stable/debian-installer

4. Insert the Debian GNU/Linux 4.0 installation media into the CD/DVD drive and boot the system. The installation will begin and following prompt is eventually displayed:

   ```
   Press F1 for the help index, or ENTER to boot:
   ```

5. Follow the instructions as they are displayed on the screen to proceed with the installation. You can usually just press **Enter** in response to most of the displayed screen prompts.

   If you have any questions during the installation procedure, see the *Debian GNU/Linux Installation Guide* for further information:

   http://www.debian.org/releases/stable/installmanual

4. Troubleshooting the Installation

This section describes common issues that might occur during installation using the Debian.org installer. Problem statements and resolutions are described in the following table.   For additional information about Debian installation issues, go to the following website: http://wiki.debian.org/HP/ProLiant

Known Issue	Explanation / Workaround
"Debootstrap error" occurs during base installation on ProLiant DL380G4 servers. This error results in a failure to install the base system. If this error occurs, it is likely that the system is having problems reading the installation media.	To get around this situation, you can do one of the following things: • Recreate (reburn) the installation media. This may or may not avoid the error. • Use the iLO virtual media option. Refer to the iLO user's guide (*Integrated Lights-Out User Guide*) for details about this option.

Known Issue	Explanation / Workaround
There is a discrepancy between the way that logical disk size is reported by the Debian installer and certain SmartStart tools (such as ACU and ORCA). • The Debian installer reports logical disk size in terms of MB (megabyte) and GB (gigabyte). • ACU and ORCA report logical disk size in terms of MiB (mebibyte) and GiB (gibibyte). Therefore, when the Debian installer reports a disk size as "GB" and "MB", it means "GB" and "MB". However, when ACU and ORCA report a disk size as "GB" and "MB", they are actually providing the size in "GiB" and "MiB".	There is no workaround for this situation. The Debian installer is technically correct by reporting logical disk size as MB (megabyte) and GB (gigabyte). ORCA and ACU are technically incorrect by using MB and GB when they are actually providing the logical disk size in MiB (mebibyte) and GiB (gibibyte). If necessary, you can convert between MB and MiB, or GB and GiB, as follows: $$1MB = \frac{1000^2}{1024^2} MiB$$ $$1GB = \frac{1000^2}{1024^2} GiB$$

Known Issue	Explanation / Workaround
For new installations of Debian 4.0 (Etch), networking services are not restarting properly. The **/etc/init.d/networking restart** command is not restarting all network interfaces.	The **/etc/init.d/networking restart** command is not restarting all network interfaces because the **/etc/network/interfaces** file contains different values in Debian 4.0 than it had in Debian 3.1: • Debian 3.1 used the value: **auto eth0** • Debian 4.0 uses the value: **allow-hotplug eth0** The **/etc/init.d/networking restart** command will only restart interfaces declared as **auto**. Therefore, running this command on a default Debian 4.0 system could result in the loss of network connectivity to your system. You can restore the Debian 3.1 behavior by changing the **allow-hotplug** qualifiers to **auto**. Upgrades from Debian 3.1 to Debian 4.0 do not experience this situation. For more information, see the interfaces(5) manpage.

Known Issue	Explanation / Workaround

Debian 4.0 (Etch) installation intermittently hangs at the package installation stage of the installation.
 	
When performing an i386 Debian Etch installation on an AMD server, the installation hangs at the following point in the installation:
 	
"Retrieving files at 81 of 81"
	To get around this situation, when you reach the **Software selection** screen, do the following:
	
	1. Unselect all options.
	2. Select continue.
	3. Continue/complete the installation.
	4. Reboot the system.
	
	Once your system has rebooted:
	
	1. Log in as **root**.
	2. Execute the following command:
	
	    # tasksel --new-install
	
	Note: After the **tasksel** command completes, you will see the following error:
	
	    tasksel: aptitude failed (255)
	
	This error can be safely ignored. For further information, refer to:
	
	    http://bugs.debian.org/cgi-bin/bugreport.cgi?bug=425397

Known Issue	Explanation / Workaround
Debian 4.0 (Etch) for i386 does not use all memory in systems with large amounts of memory (greater than 4GB). The kernels installed by default in Debian 4.0 for i386 do not support more than 4GB of memory.	To access the additional memory beyond 4GB, identify your system's configuration in *Table 1*, included below. Then install the kernel package that applies to your configuration, as described in the following example. **Note:** Before proceeding with the installation of a new Debian kernel package, refer to *Appendix A* for information that can help you to decide which kernel package will best satisfy the requirements of your situation. For example, to install the *linux-image-2.6-amd64* kernel, you would use the following command:

<div align="center">

 # aptitude install linux-image-2.6-amd64

</div>

A reboot of the system is required for this installation to take effect.

After rebooting the system, you must configure it using the ROM-Based Setup Utility (RBSU), as follows:

1.   When prompted, press the **<F9>** key during the POST.
2.   Select System Options and set **Hyperthreading** to "**Disable**".
3.   Press the **<F10>** key to save your changes, and exit the RBSU.

Note: Debian does supply some compatibility for 32-bit applications on an amd64 installation. For more information about this, refer to the following webpage: http://wiki.debian.org/DebianAMD64Faq

Table 1 - HP-Recommended Kernel Packages vs System Configurations

For this System Configuration:			Use this HP-Recommended Kernel Package:
Debian Architecture	*HP Value-Add Software*	*Hyperthreading set in RBSU*	
AMD64	*Yes or No*	*Enabled or Disabled*	*linux-image-2.6-amd64*
i386	*No*	*Enabled or Disabled*	
i386	*Yes*	*Disabled*	*linux-image-2.6-686-bigmem*
i386	*Yes*	*Enabled*	*No Option Available*

Known Issue	Explanation / Workaround
System hangs at boot after reporting CPU information when running the 686-bigmem kernel. The 686-bigmem kernel is known to cause boot-time hangs on systems with hyperthreading enabled.	Refer to *Appendix A* for information about the workaround for this problem. Then, identify your system's configuration from *Table 1* (located in the preceeding *Known Issue* section), and follow the instructions provided in that section for installing the recommended kernel package.

Known Issue	Explanation / Workaround
Debian 4.0 (Etch) installs the 486 kernel on AMD systems and sees only 1 CPU. If you install etch for i386 using CD 1 of the full CD set, it will be unable to find the AMD-optimized kernel and will instead install the 486 kernel. This occurs because CD 1 does not include the k7 kernel, which is optimized for AMD systems, and the 486 kernel does not provide SMP support.	For new installations, you can remedy this situation in one of the following ways: • Install with the **netinst** ISO. This requires install-time access to a Debian mirror. • Install using DVD 1, which contains the k7 kernel. If you've already done the installation, you can install the k7 kernel simply by running the following command: **# aptitude install linux-image-2.6-k7** You must reboot the system to begin running this kernel.

Known Issue	Explanation / Workaround
Debian 4.0 (Etch) does not support more than 16 logical drives (LUNs) on a Smart Array Controller.	If you configure more than 16 logical drives on a Smart Array controller, it will only see the first 16. This is due to a hardcoded limit in the cciss driver.

Appendix A

Choosing Between the AMD64 or i386 Ports of Debian

This section provides information to help you decide whether to install the AMD64 or i386 ports of Debian on your system.

AMD64

The AMD64 port provides a complete 64-bit userspace. If you require individual processes that use large amounts of memory (greater than 3GB), you should install the AMD64 port. There is limited support for running 32-bit binaries, but doing so increases the complexity of the system configuration.
For further details, refer to the following website: http://wiki.debian.org/DebianAMD64Faq

i386

The i386 port does not support 64-bit applications, but is compatible with many existing applications that do not yet have 64-bit versions. You should install the i386 port if you need to run these applications and do not require executing individual processes that use large amounts of memory (greater than 3GB).

Installing an Optimized Kernel (for i386 port only)

By default, the Debian Installer tries to install the most optimal kernel for your system. But there are times when you may want (or need) to install a more optimized kernel after the initial installation. This section will help you decide if you should select and install an alternate kernel.

Note: Debian provides some kernel images with additional features such as Xen (**-xen**) and Linux Virtual Server (**-vserver**). This section does not explicitly cover these images, although the information is also applicable to them.

There are three possible scenarios:

- If you are running the AMD64 port, there is only one generic kernel image, called 'amd64'.   This kernel has been tested by HP and is compatible with the HP value-add software. See the compatibility matrix for specific configurations that have been tested. If you have installed the AMD64 port, you can ignore the rest of this section.

- If your system has less than 4GB of memory, the installer will have already selected the kernel that is most optimized for your system. In this case, you can skip this section, because there is no alternate kernel to install.

- If you are running the i386 port, and your system has greater than 4GB of memory, you will need to install one of the following optimized kernels to enable access to the additional memory:

    - **686-bigmem**
      The 686-bigmem kernel allows you to access more than 4GB of memory, and is compatible with 32-bit HP Value-Add Software. This kernel uses a processor feature called "**pae**" that enables the large memory access, but comes with a performance penalty.

      If your system has hyperthreading enabled in the RBSU, you may experience a "hang" situation at boot time.

      To work around this issue, you must do one of the following:
      - disable hyperthreading
      - install the AMD64 kernel

➢ **AMD64**
The AMD64 kernel allows you to access more than 4GB of memory, but is incompatible with 32-bit HP Value-Add Software.

This kernel does not require the use of "pae" to access the additional memory (greater than 4GB), and therefore does not have the performance penalty.

In addition, the AMD64 kernel does not require you to disable hyperthreading in the RBSU.