```
=================================================================
      Linux* Driver Release Notes For Intel(R) Desktop Boards
=================================================================
```

```
=========================== PRODUCT ============================
      Intel Desktop Board Information for Users of Red Hat* 8.0
=================================================================
```

DATE: October 27, 2003

```
=======
Purpose
=======
```
This readme provides information on what to do when installing the Red Hat* 8.0 Linux* operating system with kernel 2.4.18-4 or higher on an Intel(R) desktop board based system (see "Hardware Requirements"). If the operating system is already installed, instructions are provided on how to update to the SMP kernel that supports Intel Hyper-Threading technology.

```
=============================================
Text and Command Conventions for this Document
=============================================
```
 -- Commands are listed either as stand-alone indented lines such as:
      make install
    or surrounded by => ____ <= delimiters in sentences such as:
      Enter the => make install <= command.

 -- Special callouts, buttons, and paths are placed within quote
    marks. For example:
      Go to the "/root/test" directory and click on the "test.bin" file.
      Always press the "Enter" key after each command entry.

 -- Bullet items are called out with a double dash "--" prefix at
    the left side of the page.

```
===============
Before You Begin
===============
```
Verify that the following hardware and software requirements are met:

Hardware Requirements

 -- Intel(R) Desktop Board with Intel(R) D865 or Intel(R) D875 chipsets, or

 -- Intel(R) Desktop Board D845GVA (Note: this board does not support Intel Hyper-Threading technology).

Software Requirements

 -- Red Hat* 8.0 Linux* with kernel 2.4.18-4 or higher.

 -- Check that the BIOS version is the most recent release.

 -- Check that you have all Linux kernel source files and any needed compiling tools.

 -- If your system uses Intel Hyper-Threading (HT) technology, verify that it is enabled in BIOS.

 -- If you plan to installing this operating system on a Serial ATA (SATA) disk drive, please set the device configuration to run in "Legacy Mode" through the BIOS. Note: When in Legacy Mode, you are limited to a combination of 4 storage devices. For example, 2 SATA and/or 2 Parallel ATA (PATA) disk drives, or up to 4 PATA disk drives).

```
======================================
Device Support under Red Hat* 8.0 Linux*
======================================
```
The following lists devices that either have integrated support for the listed Intel desktop boards, or require additional drivers with the Linux software/kernel. Be sure to update to the SMP kernel first. Then you may install additional device drivers in any desired order, To obtain the latest drivers for your Intel desktop board, go to:
    http://developer.intel.com/design/motherbd

 -- SMP Kernel -- If the hardware, processor, chipset, and BIOS support Intel Hyper-Threading technology, then update the operating system to the SMP kernel by following the "Enabling Intel Hyper-Threading Technology" instructions later in this readme document. If this update is not done first, other devices drivers listed below may need to be reinstalled.

 -- Currently Red Hat 8.0 does not natively support Serial ATA disk drive configurations running in "Enhanced" mode. You must set the Intel(R) desktop board to run in "Legacy" mode to install the operating system on a SATA disk drive. NOTE: When in "Legacy" mode you are limited to a combination of 4 storage devices (for example, 2 SATA and/or 2 PATA disk drives, or 4 PATA disk drives).

 -- Intel 865G Graphics -- Support for the Intel 865G Graphics solution can be obtained by downloading the appropriate driver for the desktop board being used.   Install it using instructions either provided with the driver or update the x-server from: www.xfree86.org

-- Intel(R) Pro 1000 LAN -- Note that this device will not function properly after a normal installation of Red Hat 8.0. Red Hat 8.0 will attempt to install the appropriate LAN drivers and it may appear that the LAN drivers install the LAN device, but the device does not work properly. Download the appropriate driver for the Intel desktop board being used and install it using the instructions provided with the driver.

-- ADI* 1985 AC'97 Audio -- Note that this device will not function properly after a normal installation of Red Hat 8.0. Red Hat 8.0 will attempt to install and load AC'97 audio drivers and it will appear that the audio solution is properly configured when it really is not. Download the appropriate drivers for the desktop board being used and install them using the instructions provided with the driver.

-- SigmaTel* ST9750 AC'97 Audio -- Note that this device will not function properly after a normal installation of Red Hat* 8.0. Red Hat 8.0 will attempt to install and load AC'97 audio drivers and it will appear that the audio solution is properly configured when it really is not. Download the appropriate drivers for the desktop board being used and install them following the instructions provided with the driver.

-- On-Board 1394 Controllers -- Note that this device is only supported for Intel desktop boards with Intel D865 or D875 chipsets.

-- USB 2.0 Devices -- Note these devices have integrated support for the listed Intel desktop boards (see Hardware Requirements).

==
Enabling Intel Hyper-Threading Technology
==
Use the following instructions when setting up Intel Hyper-Threading Technology:

1. Hardware verification: In order to install or upgrade the SMP mode (HT) in your existing computer system (PC), check that the chipset, CPU, and BIOS was designed to provide support for this SMP mode.

2. Use <F2> or <Del> keys to access system BIOS and verify that HT mode is set to ENABLED.

3. On a fresh install of the Linux operating system select a custom installation if available, and specifically select the .smp kernel.

4. You may also verify the kernel load via X-terminal access to the root or proc directory. Open X-terminal and type:

    Verify the CPU mode loaded in the kernel:

    cat /proc/cpuinfo <enter>

5. There are two methods to upgrade a computer system from UP mode to SMP mode. Assume the computer has a fully installed Linux operating system.

Method 1 (SMP Kernel Installation via RPM)
----
1. Put the first Red Hat O/S Installation disk (CD1) into CD-ROM drive.

2. To access the CDROM drive, open an X-Terminal window and type:
    Mount /dev/cdrom /mnt/cdrom udf,iso9660 <enter>

3. To install the SMP kernel, type the following into the X-Terminal window:
    rpm -Uvh/mnt/cdrom/RedHat/RPRS/kernel-smp-2.4.18-14.i686.rpm <enter>

4. Follow the screen instructions to complete this installation. Remember to reboot the system in order to load the new SMP kernel.

5. You may need to re-install all drivers after this upgrade.

Method 2 (SMP Kernel Installation via OS Upgrade)
----
1. This is a more graphical method. Choose the dialog drop box by selecting "Upgrade Existing System" from the "Installation" type screen.

2. Put the first Red Hat O/S Installation disk (CD1) into CD-ROM drive.

3. Reboot the machine (since the boot order had been set from BIOS), then the installation will be posted at the next screen.

4. Select "Upgrade Existing System" from the "Installation Type" screen.

5. Select "Customize Packages to Upgrade" from the "Upgrade Examine" screen.

6. Now chose: "Update Bootloader Configuration"

7. Select the following: "All packages" > "System Environment" > "Kernel" and pick "kernel-smp" from the "Individual Package Selection" screen.

8. Continue the upgrade until its complete. Depending on system speed it may take from 5 to 15 minutes. Also remember to reboot the system in order to load the new kernel.

9. After the reboot and the new SMP load, do a quick check to verify that SMP mode loaded in the kernel is correct. Run all the commands listed at step 2 (OS and Library Modules verification).

10. You may need to re-install all drivers after this upgrade.

=================

Important Notice
===============
All information and software contained herein is provided "AS IS" to Intel customers. Intel Corporation disclaims all express or implied warranties and liabilities for the use of this document, the software and the information contained herein, and assumes no responsibility for any errors which may appear in this document or the software, nor does Intel make a commitment to update the information or software contained herein. Intel reserves the right to make changes to this document or software at any time, without notice. Please contact the distribution vendor for specific Linux version support.

Hyper-Threading requires a computer system with an Intel Pentium(R) 4 processor supporting this technology, a chipset and BIOS that utilizes this technology, and an operating system that includes optimizations for this technology. Performance will vary depending on the specific hardware and software you use. See www.intel.com/info/hyperthreading for information.

Intel, Pentium, and the Intel logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

* Other names and brands may be claimed as the property of others.

Copyright (c) 2003 Intel Corporation.