Intel® Quick Start Kit for Linux*
Product Guide

Order Number: C94154-001

Revision History

Revision	Revision History	Date
-001	Final version of the Intel® Quick Start Kit for Linux* Product Guide.	November 2004

If an FCC declaration of conformity marking is present on the board, the following statement applies:

FCC Declaration of Conformity

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions related to the EMC performance of this product, contact:

Intel Corporation
5200 N.E. Elam Young Parkway
Hillsboro, OR 97124
1-800-628-8686

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications to the equipment not expressly approved by Intel Corporation could void the user's authority to use the equipment.

Canadian Department of Communications Compliance Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numerique német pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Réglement sur le broullage radioélectrique édicté par le ministére des Communications du Canada.

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Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order.

Copies of documents which have an ordering number and are referenced in this document, or other Intel literature, may be obtained from Intel Corporation by going to the World Wide Web site at: http://www.intel.com/ or by calling 1-800-548-4725.

Hyper-Threading Technology requires a computer system with an Intel® Pentium® 4 processor supporting Hyper-Threading Technology and an HT Technology enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. See http://www.intel.com/info/hyperthreading for more information including details on which processors support HT Technology.

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Introduction

The Intel® Quick Start Kit for Linux* enables Intel® Channel partners to design, build, and sell Linux-based desktop PCs. The kit contains updated device drivers, value added tools, documentation, and marketing materials.

This kit supports the following Intel® desktop boards:

- Intel desktop boards based on the Intel® 845 chipset (Intel® Celeron® processor-based boards)
- Intel desktop boards based on the Intel® 865 chipset (Intel® Pentium® processor-based boards)
- Intel desktop boards based on the Intel® 915 chipset (Intel Pentium processor-based boards)

NOTE

See "Hardware Requirements" on page 9 for a detailed list of supported motherboards.

This kit supports the following Linux distributions:

- Novell* Linux* Desktop 9
- Red Flag* Desktop 4.1
- Red Hat* Desktop 3 Update 3

Intel desktop boards combined with a Linux distribution make an excellent pair for deploying open source solutions. Intel has performed validation testing to give our channel partners confidence that the above combination of Intel desktop boards and Linux distributions function well together.

Intel offers new platform-level integration capabilities like the RPM Package and the Intel® Integrator Toolkit to enable more efficient system integration for desktop computers.

Intel continues to enhance our support for Linux-based PCs in the Reseller Channel. Please visit http://www.intel.com/go/linux for further details and updates.

How to Use the Kit

The Intel Quick Start Kit for Linux contains Linux driver software needed for supported Intel desktop boards when combined with the Linux OS distributions listed in this document. The kit's CD also contains useful tools that streamline platform configuration management in a production environment. Figure 1 shows how the CD in the kit is organized.

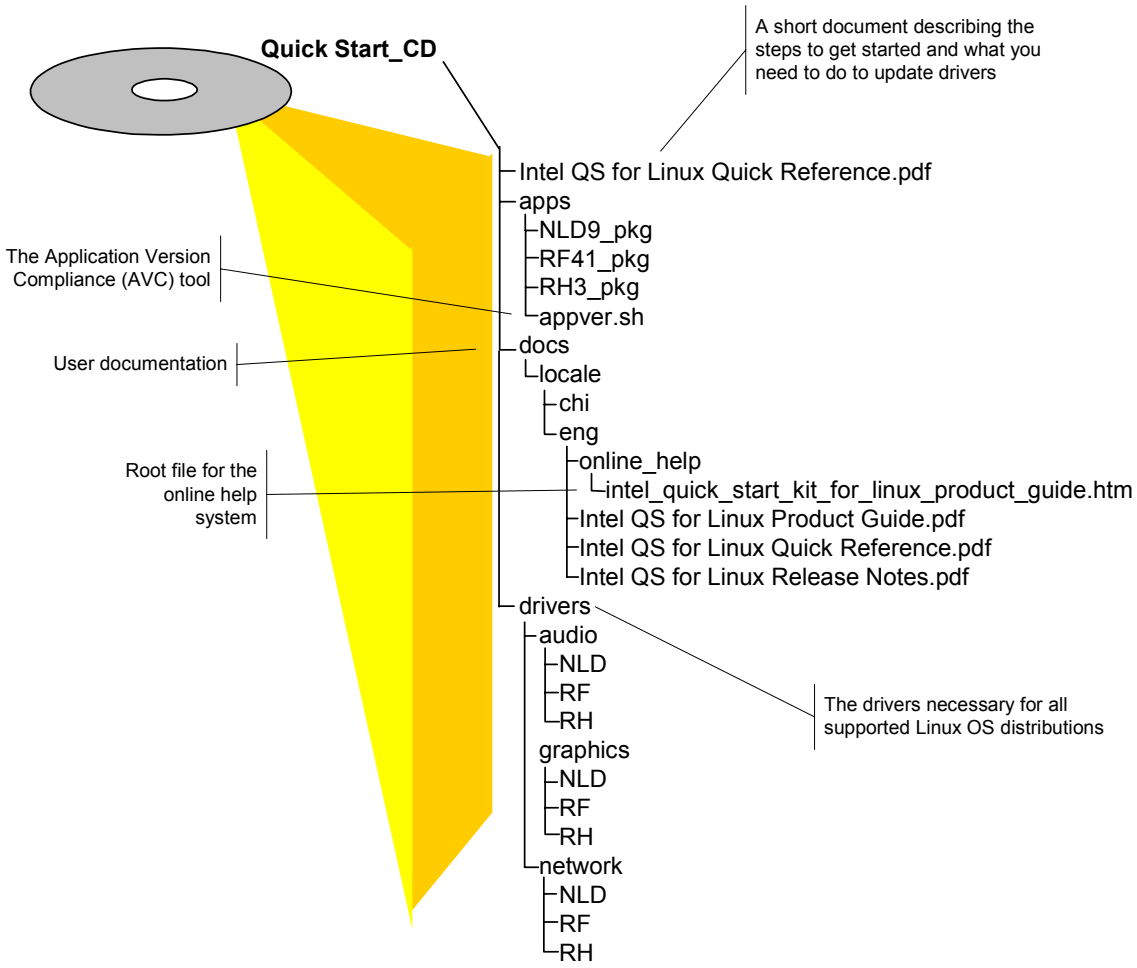

Figure 1. CD Contents

Using detailed documentation provided with your Intel desktop board and/or from the Intel Desktop Boards website , you first build your motherboard into a basic system by adding a case, power supply, memory, CPU, storage devices, keyboard, mouse, and monitor. The system must be based on supported hardware described in "Hardware Requirements" on page 9. Next, be sure you are familiar with the BIOS upgrade and driver installation processes described in this manual. Once you are familiar with these processes, check the Intel Desktop Boards website to see if your Intel desktop board is running the latest BIOS. If it isn't, follow the website instructions to update the BIOS to the latest revision.

After ensuring the BIOS is up to date, install the selected Linux onto the system using instructions from the Linux distributor. To obtain more information you can go to http://intel.com/go/linux where you can find links to the supported Linux distributions. Once the system boots Linux successfully, log into the system with the user name of root and install the drivers that are required by your particular Linux distribution and motherboard combination. For information on how to install the drivers from the CD, see "Installing Drivers" on page 13. After a final boot of the system, run the Application Version Compliance (AVC) Tool to be sure all the Basic Office Applications have the correct versions. Figure 2 illustrates the general process.

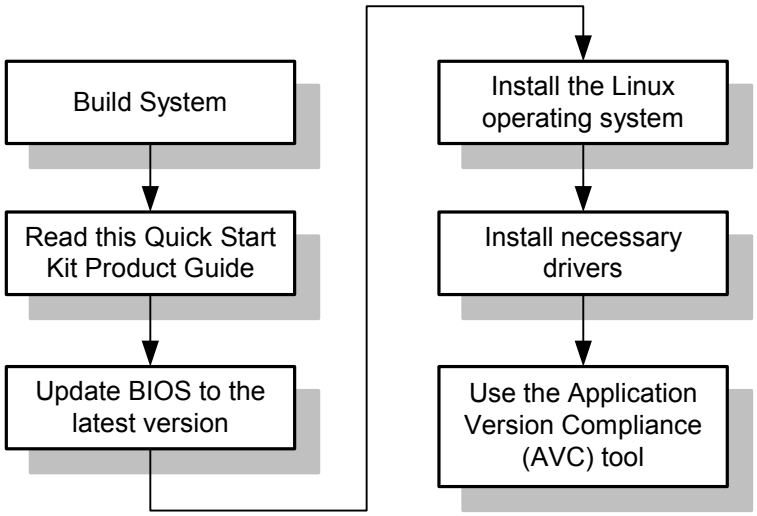

Figure 2. Using the Intel Quick Start Kit for Linux

Hardware Requirements

Intel desktop boards are one of your most powerful advantages when building a PC today. Intel desktop boards provide integrity and ease of integration when working with legacy systems, next generation technology, and value added components. Intel Channel Partners market desktop systems built with Intel Corporation's manufactured motherboards.

Intel Quick Start Kit for Linux is designed and validated for the following families of Intel® motherboards:

- **Intel® Desktop Boards based on the Intel® 845 chipset** – These Intel processor-based boards deliver an exceptional value with a variety of key features. The boards are designed to reduce your overall platform cost. Table 1 lists these boards.

Table 1. Intel Desktop Boards Based on the Intel 845 Chipset

Supported Motherboards	Further Information
D845GVFNL	http://developer.intel.com/design/motherbd/fn/index.htm
D845GVSRL	http://developer.intel.com/design/motherbd/sr/index.htm

These boards include features such as the Intel® Extreme Graphics for Intel® 845GV chipset and support for up to 2 GB of DDR333/266/200 SDRAM memory, on-board 10/100 LAN Network Connection, up to 6 USB 2.0 ports, and AC'97 audio. These features provide the essential building blocks for the value oriented customer to use on a low-cost platform. As you have come to expect, this product delivers the stability and reliability associated with all Intel desktop boards.

- **Intel® Desktop Boards based on the Intel® 865 chipset** – These Intel Pentium 4 processor based boards support Hyper-Threading Technology. The boards use the Intel® Extreme Graphics 2 for Intel 865G chipset.

  These boards support up to 800-MHz system bus and 4GB of dual-channel DDR400/333/266 SDRAM memory, offering flexible six channel audio with jack sensing, support for native SATA150 storage drives, optional integrated Intel® PRO/1000 CT Desktop Connection (on selected boards), and up to 6 PCI expansion slots providing a flexible mainstream consumer and corporate solution.

  Table 2 lists the supported boards.

Table 2. Intel Desktop Boards Based on the Intel 865 Chipset

Supported Motherboard	Further Information
D865GBFL	http://developer.intel.com/design/motherbd/bf/index.htm
D865GLCL	http://developer.intel.com/design/motherbd/lc/index.htm
D865GVHZL	http://developer.intel.com/design/motherbd/hz/index.htm

- **Intel® Desktop Boards based on the Intel® 915 chipset** – These Intel Pentium 4 based boards support Hyper-Threading Technology and optimize a broad range of usage models in the office and at home. These desktop boards feature Intel® High Definition Audio, PCI Express* expansion slots and optional features on some boards such as Gigabit LAN and Trusted Platform Module. In addition, these desktop boards deliver exceptional platform flexibility with both PCI Express x16 graphics and Intel® Graphics Media Accelerator 900, and support for dual-channel DDR2-533 memory.

  Table 3 lists the supported boards.

Table 3. Intel Desktop Boards Based on the Intel 915 Chipset

Supported Motherboard	Further Information
D915GAGL	http://developer.intel.com/design/motherbd/ag/index.htm
D915GAGLK	http://developer.intel.com/design/motherbd/ag/index.htm
D915GAVL	http://developer.intel.com/design/motherbd/av/index.htm
D915GUXL	http://developer.intel.com/design/motherbd/ux/index.htm
D919GEVLK	http://developer.intel.com/design/motherbd/ev/index.htm

Linux Distributions

The Intel Quick Start Kit for Linux is validated to support the following operating systems:

- **Novell Linux Desktop 9** – distributed by Novell. Established in 1992, SUSE LINUX is one of the world's leading providers of Linux software and services. With the largest dedicated Linux research and development team, Novell delivers enterprise-ready software and services that harness the innovation, speed-to-market and independence of the open source community. Novell Linux Desktop 9 provides a leading end-user productivity environment designed specifically to empower businesses to leverage Linux and open source with confidence. Novell Linux Desktop serves as a general-purpose desktop platform, or can be tailored to serve in fixed-function or special-purpose roles, such as information kiosks. For more information on NLD see http://www.novell.com/products/desktop/intel.html

- **Red Flag Desktop 4.1** – distributed by Red Flag Software. Red Flag focuses on the development and promotion of Linux-based operating systems and applications. Product lines include desktop, server, high performance computing OS, security operating system, and embedded systems. By offering cutting edge Red Flag Linux distributions and first-class technical support services, Red Flag Software enables computers to run at maximum performance levels, with reliable and efficient results. For more information on Red Flag Software see http://www.redflag-linux.com/intel/co-branded/

- **Red Hat Desktop 3 Update 3** – Red Hat Desktop with Intel Desktop boards offer your customers the secure, managed client solution for small to large scale deployments in environments such as Government, Academic and Enterprise businesses. Including the applications most needed by desktop users, Red Hat Desktop provides a customizable secure environment for most desktop needs. Whether your customers require a development platform with tools and communication solutions (e-mail, instant messaging), or a desktop platform for business users needing office productivity solutions. From the server to the desktop, Red Hat gives your customers certified ISV application support, the flexible capabilities of the Linux platform combined with the assurance of stability and supportability from the leading provider of open-source solutions. For more information on Red Hat Software see http://www.redhat.com/promo/intel

NOTE

Future Intel releases might include validation support for additional distributors of Linux based on market and application-specific requirements. For new updates regarding this support, visit http://www.intel.com/go/linux.

Device Drivers

Driver validation is a key part of the Intel desktop board test and manufacturing process. Most notably, you can successfully install a device, but if the driver is not functional you cannot access the device. Intel's robust driver validation ensures the Intel desktop board will function well with drivers and the components they support.

Linux drivers required for a complete system depends on the OS distribution selected. Table 4 summarizes the drivers included in this release.

Table 4. Linux Drivers Required by Intel Desktop Boards

Motherboard	Novell Linux Desktop 9	Red Hat Linux Desktop v3 u3	Red Flag Linux Desktop 4.1
Intel Desktop Boards based on the Intel 845 chipset	No driver update required	No driver update required	No driver update required
Intel Desktop Boards based on the Intel 865 chipset	No driver update required	AC '97 Audio Driver	No driver update required
Intel Desktop Boards based on the Intel 915 chipset	• Intel High Definition Audio Driver • Marvell* Yukon Gigabit Driver • Intel Graphics Media Accelerator 900	• Intel High Definition Audio Driver • GbE LAN Driver • Intel Extreme Graphics Driver	• Intel High Definition Audio Driver • Intel Graphics Media Accelerator 900

Installing Drivers

Before installing drivers you must determine which kernel your system is running. Systems running a kernel that support more than one processor might require a different set of drivers as compared to systems using a single processor (e.g., Intel Pentium 4 processor supporting Hyper-Threading Technology).

To determine the configuration of your system, login as root and run the following command:

```
# uname -r
```

This command shows if the system is running with the smp (multi-processor) Linux kernel or the up (single processor) Linux kernel. After determining what kernel is running you can install the drivers. The following sections show the commands you must run to install drivers on each supported motherboard.

Intel® Desktop Boards Based on the Intel® 845 Chipset

The Linux distributions listed in "Linux Distributions" on page 11 supply all drivers (*e.g.*, audio, graphics, and LAN) for devices integrated into the chipset and motherboard of systems built with these boards. You do not need to install additional drivers for devices integrated into the chipset or onto the board for this product. However, add-in peripheral adapters that can be plugged into available PCI Slots on the board could require vendor-specific drivers.

Intel® Desktop Boards Based on the Intel® 865 Chipset

The Red Hat Linux Desktop Version 3 Update 3 distribution supplies the LAN and graphics drivers for devices integrated into the chipset and motherboard on systems built with these boards. This distribution does not supply the AC '97 Audio Driver.

NOTE

Add-in peripheral adapters that can be plugged into available PCI Slots on the board could require vendor-specific drivers.

Follow these steps to install the AC '97 Audio Driver:

Table 5 shows the procedures for updating the drivers given the Red Hat Linux Desktop v3 u3 distribution.

Table 5. Driver Upgrade Procedures for the Red Hat Linux Desktop v3 u3 Distribution on Intel Desktop Boards Based on the Intel 865 Chipset

Driver	Procedure
AC '97 Audio Driver	1. Load the Intel Quick Start Kit for Linux product CD into your system's CDROM drive. 2. Log onto the system as root. 3. At the Linux shell prompt, change directory to `<cdrom_drive>/drivers/audio/RH` 4. Run the sound installation and configuration script `./audio_install` 5. Remove the CD from the CD ROM drive. 6. Reboot the system.
Graphics Driver	No update required.
LAN Driver	No update required.

Intel® Desktop Boards Based on the Intel® 915 Chipset

The Linux distributions listed in “Linux Distributions” on page 11 do not supply the LAN, graphics, or audio drivers for devices integrated into the chipset and motherboard of systems built with these boards. You must install all three of these drivers in the following order: audio, graphics, and network.

NOTE

Add-in peripheral adapters that can be plugged into available PCI Slots on the board could require vendor-specific drivers.

Follow these steps to install the drivers:

Table 6 shows the procedures for updating the drivers given the Novell Linux Desktop 9 distribution.

Table 6. Driver Upgrade Procedures for the Novell Linux Desktop 9 Distribution on the Intel Desktop Boards Based on the Intel 915 Chipset

Driver	Procedure
Intel High Definition Audio Driver	1. Load the Intel Quick Start Kit for Linux product CD into your system's CDROM drive. 2. Log onto the system as root. 3. At the Linux shell prompt, change directory to the following, where *cdrom_drive* could be `/media/cdrom`, `/media/cdrecorder`, `/media/dvd`, or `/media/dvdrecorder`, depending on the type of drive in your system. `<cdrom_drive>/drivers/audio/NLD` 4. Run the sound installation and configuration script `./audio_install` 5. Reboot the system.
Intel Graphics Media Accelerator 900	1. Log into the system as root. 2. Copy `i915Graphics-1.0-0.i386.rpm` from the Intel Quick Start Kit for Linux product CD (`<cdrom_drive>/drivers/graphics/NLD`) to your system's root partition. 3. Make sure X11 is not running by bringing up a shell prompt and typing "init 3". 4. Switch to console 1 by typing Ctrl+Alt+F1 and then logging into the system again as root. 5. Verify that you are in the root directory ("/"). 6. Enter the following command to install the RPM: `rpm -ihv i915Graphics-1.0-0.i386.rpm` 7. Reboot the system. 8. Log into the system as root. 9. Run your distribution-specific display configuration utility. For NLD 9, you do this from "yast2." 10. Select the 915 G driver and turn on Accelerated Graphics. 11. Reboot the system.

Marvell* Yukon Gigabit Driver	1. Load the Intel Quick Start Kit for Linux product CD into your system's CDROM drive.
	2. Log onto the system as root.
	3. At the Linux shell prompt, change directory to `<cdrom_drive>/drivers/network/NLD`
	4. Install the driver. Depending on the name of the driver, use one of the following two commands:
	`rpm -ivh sk98lin-7_08-nld9-2.6.5-7.111.1586.rpm`
	`rpm -ivh sk98lin-7_08-nld9-2.6.5-7.111-smp.1586.rpm`
	5. Reboot the system.

Table 7 shows the procedures for updating the drivers given the Red Flag Desktop 4.1 distribution.

Table 7. Driver Upgrade Procedures for the Red Flag Desktop 4.1 Distribution on the Intel Desktop Boards Based on the Intel 915 Chipset

Driver	Procedure
Intel High Definition Audio Driver	1. Load the Intel Quick Start Kit for Linux product CD into your system's CDROM drive. 2. Log into the system as root. 3. At the Linux shell prompt, change directory to `<cdrom_drive>/drivers/audio/RF` 4. Run the sound installation and configuration script `./audio_install` 5. Reboot the system.

Intel Graphics Media Accelerator 900	1. Log into the system as root.
	2. Make sure X11 is not running by bringing up a shell prompt and typing "init 3". You might have to re-login to the system after running init 3.
	3. At a Linux shell prompt, change directory to
	`<cdrom_drive>/drivers/graphics/RF`
	4. Enter the following command to Install the RPM:
	`rpm –ihv i915Graphics-1.0-0.i386.rpm`
	5. Reboot the system to run level 3.
	6. Log into the system as root.
	7. Run Xconfigurator.
	8. Select the i915 G driver and turn on Accelerated Graphics. **NOTE:** If you use USB mouse, Xconfigurator might not pass the "starting X test" step. If this is the case, skip this step and run mouseconfig to configure the mouse later.
	9. Run your distribution-specific display configuration utility.
	10. Select the i915 G driver and turn on Accelerated Graphics.
	11. Reboot the system

LAN Driver	No update required.

Table 8 shows the procedures for updating the drivers given the Red Hat Linux Desktop v3 u3 distribution.

Table 8. Driver Upgrade Procedures for the Red Hat Linux Desktop v3 u3 Distribution on Intel Desktop Boards Based on the Intel 915 Chipset

Driver	Procedure
Intel High Definition Audio	1. Load the Intel Quick Start Kit for Linux product CD into your system's CDROM drive. 2. Log onto the system as root. 3. At the Linux shell prompt, change directory to `<cdrom_drive>/drivers/audio/RH` 4. Run the sound installation and configuration script `./audio_install` 5. Reboot the system.
Intel Graphics Media Accelerator	1. Log in as root. 2. Insert the Intel Quick Start Kit for Linux product CD into your system's CDROM drive. The CD should automatically mount to `/mnt/cdrom` or, in the case where you insert the CD into a second CDROM drive, to `/mnt/cdrom1`. 3. Make sure X11 is not running by bringing up a shell prompt and typing "init 3". 4. Be sure you are in the `<cdrom_drive>/drivers/graphics/RH` directory. 5. Enter the following command to install the RPM: `rpm –ihv i915Graphics-1.0-0.i386.rpm` 6. Reboot the system. 7. Log into the system as root. 8. Run your distribution-specific display configuration utility. For Red Hat, you do this from the `redhat-config-xfree86` command. 9. Select the i915 G driver and turn on Accelerated Graphics. 10. Reboot the system.

GbE LAN Driver	1. Load the Intel Quick Start Kit for Linux product CD into your system's CDROM drive.
	2. Log onto the system as root.
	3. At a Linux shell prompt, change directory to
	`<cdrom_drive>/drivers/network/RH`
	4. Install the driver. Use the first command for SMP systems. For UP (non-SMP) systems, use the second command.
	`rpm –ihv sk98lin-7_08-rh3-2.4.21-20.EL.i386.rpm`
	`rpm –ihv sk98lin-7_08-rh3-2.4.21-20.EL.i386.rpm`
	5. Reboot the system.
	6. Once the system reboots, it should detect the LAN adaptor hardware. A prompt appears asking you for configuration details. Most configurations use the DHCP option. For more details on LAN configurations, refer to the Linux OS documentation.

Basic Office Automation Application Stack

The Intel Quick Start Kit for Linux defines a Basic Office Automation application stack that has been validated on the desktop systems based on Intel desktop boards, running updated device drivers for the supported Linux distributions. The Basic Office Automation application stack consists of applications that are required in order to conduct business in a typical office environment. Table 9 lists these applications:

Table 9. Basic Office Automation Applications

Application Type	Description
Office Applications	Set of applications used in an office environment for activities such as Word Processing, Spreadsheet work, Presentation preparation, and Drawing.
Web Browser	Allows you to access and browse the Internet.
Email Tool	Allows you to send and receive email messages.
Desktop	The Desktop* suite and development platform.
Instant Messaging (IM)	A type of communications service that enables you to communicate in real time over the Internet with other Internet users.
PDF Reader	A viewer for Portable Document Format (PDF) files. (These files are also sometimes also called 'Acrobat' files, derived from the name of Adobe's PDF software.)
Flash Player	A plug-in that plays embedded audio and video on various web portals. Macromedia flash player is the most widely used application.
Streaming Audio Video Player	A multi-format audio/video player/organizer for Windows* that tags, rips, and burns files and integrates with the RealRhapsody music store. Free and paid-for versions exist.
Anti-virus Application	Prevents viruses and other malicious programs from harming the desktop system.

Intel has identified applications that correspond to the above application types for each supported Linux distribution and has performed basic functional validation to ensure that these applications run on desktop systems based on Intel desktop boards. To help you make this determination, Intel provides a tool called Application Version Compliance (AVC) tool with this release. You can run this tool on any Linux desktop system to verify Basic Office Automation application versions. The tool generates a report that identifies any non-compliant application. Should a non-compliant case be identified, the tool also indicates the correct version of the application and the Internet location from which you can download the application.

NOTE

Intel performs limited functional validation of the applications identified in Table 9. This is to ensure that the applications can be installed and run with any updated device drivers that may be needed for the supported distributions. Intel does not perform full functional validation of all features supported by these applications and is not responsible for providing technical support. If you have any questions or need technical support for these applications, please contact the OS and application vendors directly.

NOTE

Intel does not limit or preclude the use of other office productivity applications for Linux. The intent of identifying the above Basic Office Automation applications is to confirm that Intel has expressly performed limited functional validation of these applications successfully and that they work satisfactorily on Intel-based desktop systems.

Table 10 lists the specific applications and application versions validated and supported in the Intel Quick Start Kit for Linux product release for the supported Linux distributions:

Table 10. Validated Applications

Application	Red Hat	Novell	Red Flag
Office Applications	OpenOffice* v1.1.0	Open Office v1.1.3	Open Office v1.1.1
Email Tool	Evolution* v1.4	Evolution 1.4	Kontact* 1.0
Web Browser	Mozilla* v1.4.3	Mozilla* Firefox* v0.9.1	Mozilla* v1.7
Desktop	Gnome* 2.2	Gnome* v2.6	KDE* 3.2.1
Instant Messaging	GAIM*	GAIM	Kopete* v0.8.1
PDF Reader	xPDF* and Adobe* Reader* 6.0	Adobe Reader 5.0	xPDF 3.00 (Enhanced by Red Flag for Chinese support)
Flash Player	Macromedia* Flash v7.0	Macromedia Flash v7.0	Macromedia Flash v7.0
Streaming Audio/Video	Real Player* v10	Real Player v10	Real Player v10
Anti-virus Application	Grisoft* AVG	Grisoft AVG	Grisoft AVG

NOTES

In future releases, Intel might include additional office productivity applications in the office automation application suite. Intel might also define and validate additional solution stacks based on Linux for other vertical segments. For new updates related to this, please visit http://www.intel.com/go/linux.

OpenOffice (office productivity applications), Mozilla (Web browser), Evolution (email tool), Gnome & KDE (desktops), GAIM & Kopete (Instant Messenger) and xPDF are open source applications generally bundled in the OS distributions.

Adobe Acrobat Reader, Macromedia Flash Player, Real Player and AVG anti-virus software are third-party software applications that are not open source. All these applications are generally available as a free download with appropriate licensing. Further details on these applications and download information are provided at these locations:

- *Adobe Acrobat Reader –* http://www.adobe.com/products/acrobat/readstep2.html
- *Macromedia Flash Player –* http://www.macromedia.com/shockwave/download/download.cgi?P1_Prod_Version=ShockwaveFlash
- *Real Player –* http://www.real.com/linux/
- *AVG anti-virus software from Grisoft –* http//www.intel.com/design/motherbd/software.htm

Value Added Intel® Tools

The Intel Quick Start Kit for Linux comes with several value added tools. This section provides a brief explanation of the tools and links to where you can download these tools and find more information on each tool.

iFlash BIOS Update

Desktop boards manufactured by Intel incorporate the system BIOS in a Flash memory component. Flash BIOS allows easy upgrades without the need to replace an EPROM component. The upgrade utility fits on a floppy diskette and provides the capability to save, verify, and update the system BIOS.

Upgrade the System BIOS

NOTE

In the unlikely event that a BIOS upgrade is interrupted catastrophically, it is possible the BIOS is left in an unusable state. To recover from this situation see the steps in "Recover the System BIOS" on page 25.

To upgrade the BIOS you must do the following:

1. Save the BIOS default settings.
2. Create a BIOS Upgrade Floppy Diskette.
3. Perform the upgrade.
4. Reset the CMOS.

Save the BIOS Default Settings

CAUTION

If you do not choose to save your BIOS defaults as custom defaults, you will need to manually reenter these settings after you have upgraded to the latest BIOS.

1. During the boot operation press the **F2** key to enter the BIOS Setup Utility.
2. Write down all of your current CMOS settings.
3. Go to the Exit menu and choose the **Save Custom Defaults** options.
4. Choose **Yes** to cause the current BIOS settings to be saved as a custom default setting. When the CMOS memory is cleared during the BIOS upgrade the BIOS settings default to these custom default settings.

Create the BIOS Upgrade Floppy Diskette

1. Download the BIOS update file from http://downloadfinder.intel.com/scripts-df/support_intel.asp?iid=Corporate+Header_Supp_downloads&. Choose Desktop Boards from the left menu and then choose the appropriate board based on your mother board type.
2. Open Windows* Explorer and locate the downloaded file.
3. Double-click the executable file and a DOS window appears.
4. Press **Y** to extract the files to your current directory. Pressing **N** quits the process.
5. Double-click the *License.txt* file in the current directory and read the end-user license agreement.
6. Insert a formatted floppy diskette into the floppy drive.

⚠ CAUTION

All existing data on the floppy diskette will be erased.

1. Double-click the *Run.bat* file to begin creating the BIOS update floppy disk.
2. Follow the instructions in the DOS window.

Perform the Upgrade

1. Place the bootable floppy you created in the previous section, which contains the BIOS, into Drive A: of the system that you want to upgrade.
2. Boot the system.
3. Follow the onscreen prompts.

Reset CMOS after Upgrading the BIOS

1. Reboot the system and watch the BIOS identifier to make sure the new BIOS version was properly installed.
2. Press the **F2** key during the boot operation to enter the BIOS Setup Utility.
3. Press the **F9** key to return the CMOS settings to the factory defaults.
4. Press the **ENTER** key to load setup defaults.
5. If you saved your CMOS settings as custom defaults before the BIOS upgrade, then go to the Exit menu and choose the **Load Custom Defaults** option to return the default values to your previously saved custom settings.
6. If you did not save your CMOS settings as custom defaults before the BIOS upgrade, then go through each screen of options and re-enter the CMOS settings to the values that you wrote down prior to upgrading the BIOS.
7. Press the **F10** key to save the settings.
8. Press the **ENTER** key to accept the changes.

Recover the System BIOS

A loss of power or other similar event during a BIOS upgrade can leave the BIOS in an unusable state. To recover the BIOS, follow these steps:

1. Be sure a power supply and speaker have been attached to the motherboard.
2. Be sure a floppy drive is connected as Drive A:
3. Change Flash Recovery jumper to the recovery mode position.
4. Install the bootable upgrade diskette into Drive A:
5. Reboot the system.
6. Because of the small amount of code available in the non-erasable boot block area, no video is available to direct the procedure. Consequently, you must monitor the procedure by listening to the speaker and looking at the LED on the floppy disk drive. When the system beeps and the LED is lit, the system is copying the recovery code into the FLASH device. As soon as the LED goes off, the recovery is complete.
7. Turn the system off.
8. Change the Flash Recovery jumper back to the default position.
9. Remove the upgrade floppy in Drive A:
10. Turn the system on.

NOTE

*If the error message "CMOS/GPNV Checksum Bad. Press F1 to Run SETUP" appears during the boot operation, press the **F1** key to enter the BIOS Setup Utility. After entering the utility, press the **F9** key to load the setup defaults. Finally, press the **F10** key to save and exit.*

For further details and information on Intel Desktop boards, please visit http://developer.intel.com/design/motherbd/

More Information

For more information about the iFlash BIOS Update utility see http://developer.intel.com/design/motherbd/standardbios.htm.

Intel® Integrator Toolkit

This comprehensive solution for PC OEMs and professional system integrators allows your business to run smoother and more efficiently. With this kit you can more easily streamline manufacturing floor processes, which saves time and labor costs; increase quality and reduce human error through automation; and reduce support costs by allowing sensitive BIOS settings to be made tamper resistant. In addition, you can promote your brand using the Flex Module technology, optimize system settings for stability and performance, and replicate and verify customized system configuration across multiple systems.

More Information

For general information on the Intel® Integrator Toolkit see http://www.intel.com/design/motherbd/itk.htm. For information on how to use this toolkit, see the detailed training course at http://www.intel.com/design/motherbd/software/itk/accesslevel02/.

RPM Package Manager

The RPM Package Manager (RPM) is a powerful command line driven package management system capable of installing, uninstalling, verifying, querying and updating computer software. The Intel Quick Start Kit for Linux drivers are packaged in RPM format for ease of installation.

NOTE

You must have root-level access to install a device driver using the RPM package.

The device driver RPM contains a pre-compiled binary driver, as well as supported documentation such as a driver man page. The driver contained in the RPM is pre-compiled against a specific Linux OS distribution, so it is important to make sure you're using the correct RPM package on the correct Linux OS distribution. The name of the RPM package encodes the target Linux OS distribution as shown in Figure 3.

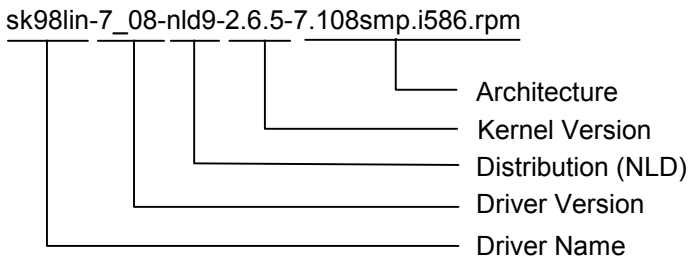

Figure 3. RPM Package Naming

Installing Drivers

To install a driver using the RPM Package Manager, log in as root and run the command as follows:

```
# rpm -ihv <file>
```

where <*file*> is one of the device driver RPM package files. For example, the following command installs the sk98lin driver:

```
# rpm -ihv sk98lin-7_08-nld9-2.6.5.7.108smp.i586.rpm
Preparing...        ################################### [100%]
1:sk98lin           ################################### [100%]
```

Updating Drivers

Updating an RPM package using the RPM Manager is similar to installing one. The only difference is use of the –u option instead of the –i option. The following example updates the sk98lin driver:

```
# rpm -Uhv sk98lin-7_08-nld9-2.6.5.7.108smp.i586.rpm
Preparing...        ################################### [100%]
1:sk98lin           ################################### [100%]
```

Removing Drivers

Remove (uninstall) a device driver by using the –e option and specifying the driver to remove. The following example removes the sk98lin driver:

```
# rpm -e sk98lin
```

More Information

For information on how to use the RPM Package see page 26. For more information on the RPM Package Manager see http://www.rpm.org/.

Application Version Compliance (AVC) Tool

Intel validates a Basic Office Automation application stack with this release of Intel Quick Start Kit. You can use the AVC Tool to ensure that the versions of applications installed on a desktop system are the same versions that have been validated for various distributions with respect to each desktop board.

You can also use this tool to supply technical support to system integrators and OEMs. For example, if a problem is reported with any application contained in the Basic Office Automation application suite, you can use the tool to rule out the possibility of an unsupported version of the application on the system.

Using the AVC Tool

To use the tool execute the *appver.sh* script from the command line. Once you start the script, the tool reports any non-compliance in application versions with respect to baseline versions. If all the application versions and their dependent packages are found to be the correct versions, the script reports that all the application versions are correct and no problem was found.

The following command starts the tool:

```
./appver.sh
```

If the script does not encounter any non-compliance issues, a report similar to the following appears at the screen:

```
[danke@dvk-rhs testpark]$ ./appver.sh
appver 1.0 Intel(R) Quick Start Kit for Linux Release 1.0
Checking versions and dependencies for Basic Office Automation applications.
Please wait..................Done.
Success!
The Basic Office Automation packages are installed with correct versions.
```

If the script does encounter a non-compliant version of an application, the script reports a message indicating the non-compliant application and suggests a remedy. For example, the following report indicates that there is a non-compliance for the Real Player and Evolution applications:

```
dkeskar@dvklinwin:~/proj> ./appver.sh
appver 1.0 Intel(R) Quick Start Kit for Linux Release 1.0
Checking versions and dependencies for Basic Office Automation applications.
Please wait.................Done.
****************************************************
Note:
Please follow steps below for a complete Basic Office Automation system.
****************************************************

----------------- Packages Missing -----------------
Install these currently missing packages.
In most cases, these packages may be part of the Linux distribution CD.

 + RealPlayer-10-0.1 (See www.real.com/linux)
 + evolution-data-server-0.0.99-2.1
----------------------------------------------------
```

More Information

For more information on the Intel® Application Version Compliance (AVC) tool see http://www.intel.com/go/linux.

Documentation

The Intel Quick Start Kit for Linux contains the following end-user documentation:

- **Product Guide** – The guide you are reading. This guide provides a detailed description of the various components of the kit. The guide describes the supported motherboards, Linux OS distributions, device drivers with installation steps, and various value-added tools. This guide also describes the Basic Office Automation stack that has been validated with this Quick Start Kit. The guide also details how to obtain technical support.
- **Online Help** – An online help version of the Intel Quick Start Kit for Linux* Product Guide (this manual). The root file of this help system is named `intel_quick_start_kit_for_linux_product_guide.htm` and is located in the `online_help` folder as shown in "How to Use the Kit" on page 7. You can launch online help directly from the kit's CD by opening the root file using your local Web browser. You can also install the online help onto a local system by copying the contents of `online_help` from the kit's CD to any location (except the system's root folder) on your local hard drive. Be sure to maintain the file hierarchy during the copy operation. Once the file system is copied to your hard drive you can launch online help by opening the root file using your local Web browser.
- **Quick Reference** – A short document shipped with the system that provides a quick reference for Intel Quick Start Kit for Linux product release.
- **Release Notes** – A document shipped on the CD that details known issues, bugs, and items scheduled for the next release. Release notes describe the steps performed during Basic Office Automation applications validation as well as known issues and bugs.
- **Marketing Brochure** – A marketing document providing a high-level overview of the Intel Quick Start Kit for Linux release. This document has the necessary contact information for technical support and marketing queries.

Technical Support

For technical issues relating to the basic system build using the Intel Quick Start Kit for Linux, including support for the supplemental Device drivers provided in this kit, see http://www.intel.com/go/Linux/.

For operating system specific issues relating to Novell Linux Desktop 9 see http://www.novell.com/products/desktop/intel.html.

For operating system specific issues relating to Red Hat Desktop 3 Update 3 see http://www.redhat.com/promo/intel/.

For operating system specific issues relating to Red Flag Desktop Linux 4.1 see http://www.redflag-linux.com/intel/co-branded/

Frequently Asked Questions (FAQ)

This chapter lists frequently asked questions and their answers.

- **What is the state of the system before using the Intel Quick Start Kit for Linux Release CD. For example, should the hardware be installed with the operating system installed and successfully booted?**

  You should have all the hardware installed, the OS installed, and the system successfully booted.

- **What is the sequence in which I should use the items on the CD?**

  Install applicable drivers in this order: audio, Graphics, and LAN. For information on how to use the Intel Quick Start Kit for Linux see "How to Use the Kit" on page 7. For steps on how to install individual drivers supplied with the kit see "Installing Drivers" on page 13.

- **What device drivers are provided on the CD?**

  The CD provides the following drivers:

  - Driver: 865 AC97 Audio Driver for Red Hat Desktop 3 Upd 3

  - Driver: 915 Marvell LAN Driver for NLD9, Red Hat Desktop 3 Upd 3

  - Driver: 915 Audio Driver for Red Flag Desktop 4.1, NLD9, Red Hat Desktop 3 Upd 3

  - Driver: 915 Graphics Driver for NLD 9, Red Hat Desktop 3 Upd 3, Red Flag Desktop 4.1

- **Which distributions need a driver updated and which distributions do not need an update?**

  Table 4 on page 13 lists which operating system distributions need driver updates and which do not.

- **Where can I find information on the Internet about driver updates and bug fixes?**

  Please visit: http://www.intel.com/go/Linux