



Altera Software Installation and Licensing

Version 10.0



QUARTUS® II

Altera Software

Installation and Licensing

Version 10.0



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QUARTUS® II

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Preface

The *Altera Software Installation and Licensing* manual provides comprehensive information for installing and licensing Altera software, including the Quartus II software, ModelSim-Altera Edition software, Nios II Embedded Design Suite, and related software on Windows and Linux operating systems. This manual also includes information about other related documentation and technical support.

Additionally, this manual includes Linux workstation configuration information that allows you to properly configure a Linux workstation for use with Altera software.




Documentation Conventions

The *Altera Software Installation and Licensing* manual uses the following conventions to help you find and interpret information.

Typographic Conventions

Quartus II software documentation uses the typographic conventions shown in the following table:

Visual Cue	Meaning
Bold Initial Capitals	Command names, dialog box titles, and button names are shown in bold type, with initial capital letters. Examples: Find Next command, Save As dialog box, and Start button.
bold type	Directory names, project names, disk drive names, filenames, filename extensions, and software utility names are shown in bold type. Examples: quartus directory, D: drive, chiptrip.gdf file. These items are not case-sensitive in the Windows environment; however, they are case-sensitive in the Linux workstation environment. Altera documentation shows these items in the case appropriate to the workstation environment.
Initial Capitals	Keyboard keys, user-editable application window fields, and menu names are shown with initial capital letters. Examples: Delete key, the Start Time field, the Options menu.
“Subheading Title”	Subheadings within a manual section are enclosed in quotation marks.
<i>Italic Initial Capitals</i>	Help categories, manual titles, section titles in manuals, and application note and brief names are shown in italics with initial capital letters. Example: <i>Introduction to the Quartus II Software</i> manual.
<i>italic type</i>	Variables are enclosed in angle brackets (<>) and shown in italic type. Example: <file name> and <DVD drive>.
Courier font	Anything that must be typed exactly as it appears is shown in Courier. Example: \quartus\bin\lmutil lmhostid.
↵	Enter or return key.
■	Bullets are used in a list of items when the sequence of the items is not important.
✓	The checkmark indicates a procedure that is one step only.

Visual Cue	Meaning
	The hand points to information that requires special attention.
	The feet show you where to go for more information on a particular topic.
	The exclamation mark points to information or action that you take that can cause harm to your computer or cause you to lose data.

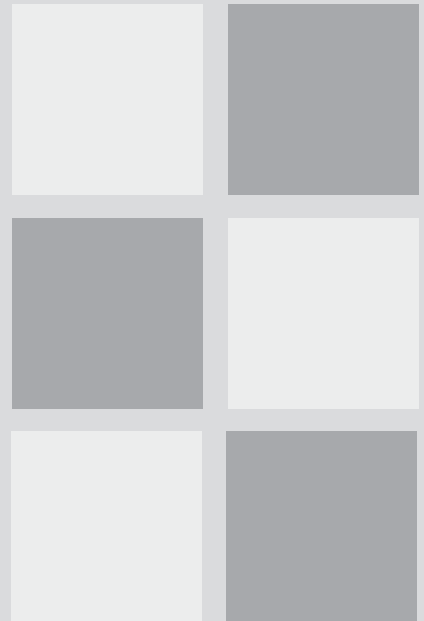
Terminology

The following table shows terminology that is used throughout this manual:

Term	Meaning
click	Indicates a quick press and release of the left mouse button. It also indicates that you need to use a mouse or key combination to start an action.
double-click	Indicates two clicks in rapid succession.
select	Indicates that you must highlight text and/or objects or an option in a dialog box with a key combination or the mouse. A selection does not start an action. Example: Select Chain Description File , and then click OK .
point	Indicates that you must position the mouse pointer, without clicking, at an appropriate location on the screen, such as a menu or submenu. Example: On the Help menu, point to Alterra on the Web , and then click Quartus II Service Request .
turn on/turn off	Indicates that you must click a check box to turn a function on or off.

Chapter One

Installing Altera Software



What's in Chapter 1:

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1

Introduction

This chapter describes the requirements and procedures for installing Altera software, which is available from the [Download Center](#) of the Altera website and the Altera Complete Design Suite DVD, which is available by request via the [Altera IP and Software DVD Request Form](#), for both the Windows and Linux operating systems.

You can download the following software from the Download Center of the Altera website:

- **Altera Installer**—an on-demand download manager that downloads and installs the software that you specify, including any of the software listed under **Individual Software**.
- **Individual Software**—allows you to individually download and install the following software:
 - Quartus II Subscription Edition software v10.0 (includes IP Library) (32-bit and 64-bit) for Windows or Linux
 - Quartus II Web Edition software v10.0 (includes IP Library) (32-bit) for Windows or Linux
 - ModelSim-Altera Starter Edition software v6.5e for Quartus II software v10.0 (32-bit) for Windows or Linux
 - ModelSim-Altera Edition software v6.5e for Quartus II software v10.0 (32-bit) for Windows or Linux
 - Nios® II Embedded Design Suite for Windows v10.0 (32-bit) or Linux (32-bit and 64-bit)
 - DSP Builder v10.0 (32-bit) for Windows or Linux

The Altera Complete Design Suite Version 10.0 DVD includes all the software listed under **Individual Software**, except for the Quartus II Web Edition software v10.0 for Linux.

System Requirements

To successfully install and run Altera software, your system must meet the minimum requirements described in this section.

Hardware

- Intel Pentium III PC running at 866 MHz or faster with 256 MB system memory running Microsoft Windows.
 - PCs running Windows XP are capable of running the 32-bit version of the Quartus II software with access to virtual memory of 2 GB.
 - PCs running Windows XP Professional x64 Edition or Windows Vista are capable of running the 32-bit version of the Quartus II software with access to virtual memory of up to 4 GB and the 64-bit version of the Quartus II software with access to virtual memory of more than 4 GB.
- One of the following Linux workstations:
 - Intel Pentium III or compatible processor-based PC operating at 450 MHz or faster with 256 MB of system memory, running Red Hat Enterprise Linux, CentOS, or SUSE Linux Enterprise (32-bit).



Running the Quartus II Software on 32-bit Linux Workstations

32-bit Linux workstations are capable of running the 32-bit version of the Quartus II software with access to virtual memory of up to 4 GB. If your Quartus II project requires addressability of virtual memory greater than 4 GB, you must use the 64-bit version of the Quartus II software on a 64-bit Linux workstation.

- AMD64 processor, Intel EM64T processor, or compatible processor-based PC with 1 GB of system memory, running Red Hat Enterprise Linux, CentOS, or SUSE Linux Enterprise Server (64-bit).
- Adequate disk space as described in the **readme.txt** file. For device-specific memory requirements, refer to the *Quartus II Software Device Support Release Notes*. For more information, refer to [Chapter 4, "References."](#)
- Microsoft Windows-compatible SVGA monitor (Windows only).
- DVD drive (DVD installation only).

Cables and Ports

- Parallel port for connecting a ByteBlaster™ II or ByteBlasterMV™ parallel port download cable or parallel port software guard (Windows XP only). If you want to use a ByteBlaster cable on a system running Windows Vista 32-bit, you must first manually install the ByteBlaster cable driver.
- Serial port for connecting a MasterBlaster™ communications cable.
- USB port for connecting a USB-Blaster™ download cable, a MasterBlaster communications cable, the Altera Programming Unit (APU), or a USB software guard.
- 10/100 Mb Ethernet connection for connecting a EthernetBlaster download cable.

Software

- A web browser with an Internet connection for Quartus II software Internet resources. Either Firefox, version 2.0 or later, or Microsoft Internet Explorer, version 5.0 or later is required.
- Flash Player 7.0 with Mozilla 1.2 or later, for the Quartus II Interactive Tutorial.
- The KDE or GNOME window manager (must be the version that is included with your Linux operating system installation).
- The native XServer software for Linux.
- The Hummingbird Exceed XServer software is required if you want to make the Quartus II software for Linux accessible by a Windows workstation over a network.

Supported Operating Systems

Refer to www.altera.com/support/software/os_support/oss-index.html for the most current Altera software operating system support.

Altera software supports the 32-bit and 64-bit versions of certain operating systems. You can run 32-bit Altera software in the 32-bit or 64-bit versions of supported operating systems; however, you can run 64-bit Altera software only in 64-bit versions of supported operating systems. Altera software operating support is described in [Table 2](#).

Table 2. Supported Operating Systems

Altera Software	Supported Operating Systems
Quartus II Subscription Edition software version 10.0	Windows 7 (32-bit and 64-bit) Windows Vista (32-bit and 64-bit) Windows XP (32-bit and 64-bit) Red Hat Enterprise Linux 4.0 and 5.0 (32-bit and 64-bit) CentOS-4 and CentOS-5 (32-bit and 64-bit) SUSE Linux Enterprise Server 10 and 11 (32-bit and 64-bit)
Quartus II Web Edition software version 10.0	Windows 7 (32-bit) Windows Vista (32-bit) Windows XP (32-bit) Red Hat Enterprise Linux 4.0 and 5.0 (32-bit) CentOS-4 and CentOS-5 (32-bit) SUSE Linux Enterprise Server 10 and 11 (32-bit)
ModelSim-Altera Starter Edition software version 6.5e and ModelSim-Altera Edition software version 6.5e	Windows Vista (32-bit) Windows XP (32-bit) Red Hat Enterprise Linux 4.0 and 5.0 (32-bit) SUSE Linux Enterprise Server 10 (32-bit)
Nios II Embedded Design Suite version 10.0	Windows 7 (32-bit) Windows Vista (32-bit) Windows XP (32-bit) Red Hat Enterprise Linux 4.0 and 5.0 (32-bit and 64-bit) SUSE Linux Enterprise Server 10 and 11 (32-bit and 64-bit)
DSP Builder version 10.0	Windows Vista (32-bit) Windows XP (32-bit) Red Hat Enterprise Linux 4.0 and 5.0 (32-bit) CentOS-4 and CentOS-5 (32-bit)

Uninstalling and Modifying Altera Software

To uninstall a previous version of Altera software for Windows, follow these steps:

1. On the Windows Start menu, point to **Programs**, point to **Altera**, point to *<software name> <version number>*, and then click **Uninstall <software name> <version number>**.
2. Select **Uninstall** to uninstall the software.

To uninstall a previous version of Altera software for Linux:

- ✓ Delete the Altera software directory (default name is **altera <version number>**).

You can modify installed versions of Altera software to add Quartus II software device family support, as well as any product available with the Altera Installer.

To modify your existing installation of the Altera software, perform the following steps.

1. For Windows, on the Windows Start menu, point to **Programs**, point to **Altera**, and then click **Modify Altera Complete Design Suite <version number>**.

or

For Linux, type the following command at a command prompt:

```
altera_installer_cmd -update --gui
```

The Altera Installer opens.

2. On the **Select Components** page, select the products or device support that you want to install.
3. On the **Installation Summary** page, review all of your installation options. Make any necessary changes, and then proceed with the installation.

Altera.com Download Center

You can download the following items from the Download Center of the Altera website at www.altera.com/download:

- Software listed in “Introduction” on page 2
- Programming software
- Board layout and test software
- Altera legacy design software
- License daemons

Altera Installer

The Altera Installer allows you to download and install Altera software on-demand with one custom download and installation manager. The Altera Installer is available for Windows or Linux operating systems.

You can choose to download and install the following software:

- Quartus II Subscription Edition software (includes IP library)
- Quartus II Web Edition software (includes IP library)
- ModelSim-Altera Starter Edition software
- ModelSim-Altera Edition software
- Nios II Embedded Design Suite
- DSP Builder
- Stand-Alone Quartus II Programmer

You can customize your Altera software installation by specifying the software and device family support you want to install. Additionally, you can specify the directories where you want to install the software and set up proxy server options.

After you finish customizing your software installation, you can review the installation summary, which lists all of the options that you specified during the setup process, before initiating the download and installation process.

You can turn on the TalkBack feature by turning on **Turn on the Quartus II software TalkBack feature** in the **TalkBack Options** dialog box, which appears at the end of the installation process if the option is not already turned on. You can also turn the TalkBack feature on or off, after you install the Quartus II software, in the **Quartus II TalkBack** dialog box, which is available from the **Internet Connectivity** page in the **Options** dialog box.

The TalkBack feature in the Quartus II software allows Altera to receive limited design compilation information, not including design logic, which helps Altera to understand how customers use the Quartus II software and devices, so that Altera can focus on improving features most important to users.

You can also perform installations on multiple systems at the command line using the same set of installation files that you download once, and then use to install software on multiple systems. This method reduces overall download time when installing software on more than one computer.

Individual Software

You can choose to download and install the following software individually from the Download Center:

- Quartus II Subscription Edition software (includes IP Library)
- Quartus II Web Edition software (includes IP Library)
- Nios II Embedded Design Suite
- ModelSim-Altera Starter Edition software
- ModelSim-Altera Edition software
- Stand-Alone Quartus II Programmer

Each software package is individually downloaded and installed with the Altera Installer, which automatically starts once you begin the installation process. The Altera Installer allows you to specify installation options, as described in “[Altera Installer](#)” on page 7, and guides you through the installation process. Individual software is available for Windows and Linux systems.

Installing Downloaded Altera Software

This section describes installation prerequisites and instructions for installing downloaded Altera software for Windows or Linux.

Installation Prerequisites

You should be aware of the following information before you install Altera software:

- You must have system administration (Administrator) privileges (Windows only).
- Commands that do not fit on a single line in this manual are indicated by indentations of subsequent lines (Linux only).
- By default, the Altera Installer installs Altera software in the `<drive>:\altera\<version number>` system directory for Windows, and the `<home directory>/altera/<version number>` directory for Linux, where `<home directory>` is the default directory of your Linux workstation, or is set by your system administrator, and `<version number>` is the number of the Altera software version. If you use a different directory name, substitute the appropriate name for `<system directory>` in the installation steps.
- When you specify the installation directory, ensure that you use only alphanumeric characters and do not type any special characters or symbols, such as `!$%^&*<>`, empty spaces, or non-English characters into the installation directory. Including special characters may invalidate the installation location.
- Ensure there is at least 10 GB of free disk space to contain copies of the uncompressed versions of the installation files. An additional 40 MB of disk space is required for temporary installation files. Free disk space requirements for individual software are described on the Download Center of the Altera website.
- You can install multiple copies of the same version of Altera software on the same computer. Subsequent installations of the software can have a user-defined name. When you install an Altera software service pack on a computer that has multiple copies of the same version of the Altera software installed, you can choose the copy of the Altera software that receives the service pack.
- If you want to preserve project compilation databases from an earlier version of the Quartus II software before installing a newer version, Altera recommends that you open the design in the earlier version of the software and export a version-compatible database for the design by clicking **Export Database** on the Project menu. After you install a newer version of the Quartus II software, you can import the database by clicking **Import Database** on the Project menu.



For Information About

Importing and exporting version-compatible databases

Refer To

Managing Quartus II Projects chapter in volume 2 of the *Quartus II Handbook*

- To run the Quartus II software using a network (multiuser) license, make sure that the license server uses version 8.0 or later of the FLEXlm license manager server software. By default, the Quartus II software installs version 9.5 of the FLEXlm software on the user workstation. For more information, refer to [“Upgrading or Setting Up a License Manager Server”](#) on page 53.

Installation Instructions

To install downloaded Altera software for Windows or Linux, follow the procedures in this section.

Installing Software with the Altera Installer

Follow these steps to download and install software with the Altera Installer:

1. Verify that you have sufficient free disk space to contain copies of uncompressed versions of the software files.
2. Launch the Altera Installer for Windows or Linux from the Download Center of the Altera website.
3. Click **Run** in the **File Download** dialog box. The Altera Installer guides you through the download and installation process.

Installing Individually Downloaded Software

Follow these steps to download and install Altera software for Windows or Linux:

1. Verify that you have sufficient free disk space (as indicated for each software package on the Download Center) to contain copies of uncompressed versions of the software files.

2. Download any software listed in “Individual Software” on page 8 from the Download Center.
3. For Windows, double-click the Altera software installation application (`<version_software>_windows.exe` file to launch the Altera Installer. The Altera Installer guides you through the download and installation process.
4. For Linux, extract and run the `<version_software>_linux.sh` file for Linux) to launch the Altera Installer. Follow these steps:
 - a. At a new terminal window, ensure that the `DISPLAY` variable is set with a valid X display for a GUI.
 - b. Navigate to the directory where the `10.0_<product_name>_linux.sh` file is located. Make sure the directory is writable and has sufficient disk space.
 - c. Type the following command at a command prompt:

```
$ ./ 10.0cb_quartus_linux.sh ↵
```

This command extracts the `<version_software>_linux.sh` file. The Altera Installer then launches and guides you through the download and installation process.

Installing Software at the Command Prompt

You can install Altera software for Windows or Linux at the command line with a custom installation script using command-line arguments. You can download and immediately install software, or download software first, and then install later.

To install Altera software from the command line, write a custom installation script that installs the software with options that you specify. You can run the Altera Installer executable, `altera_installer_cmd.exe<subcommand>[options]` (Windows) or `altera_installer_cmd <subcommand>[options]` (Linux), iteratively, using command-line arguments for different functions.

For example, the `altera_installer_cmd.exe -all --net` command installs all software available from the Altera Installer for Windows via an Internet connection. Also, the `altera_installer_cmd --help` command shows Help for the Altera Installer for Linux.

The available command-line arguments for the Altera Installer are described in [Table 3](#).

Table 3. Altera Installer Command-line Arguments (Part 1 of 2)

Option	Description
-a, --all	Directs the Altera Installer to install all of the following Altera software: <ul style="list-style-type: none"> ■ quartus—Quartus II Subscription Edition software ■ quartus_free—Quartus II Web Edition software ■ nios2eds—Nios II Embedded Design Suite ■ modelsim_ae—ModelSim-Altera Edition software ■ modelsim_ase—ModelSim-Altera Starter Edition software ■ programmer—Stand-Alone Quartus II Programmer
--download_only	Directs the Altera Installer to download, but not install, specified Altera software.
-f, --full	Directs the Altera Installer to install the Quartus II Subscription Edition software.
--gui	Launches the Altera Installer graphical user interface (GUI).
-h, --help	Shows Help.
-i INSTALL, --install=INSTALL	Directs the Altera Installer to install any specified Altera software. Available Altera software command-line options are described next to the -a, --all option.
-s INSTALLER_DIR, --source=INSTALLER_DIR	Directs the Altera Installer to install Altera software from a disk.
-n, --net	Directs the Altera Installer to install Altera software via an internet connection.
--no_space_check	Directs the Altera Installer to skip the disk space check.
-program_folder	Specifies the program folder. The default folder is named “Altera.”
--proxyhost=PROXYHOST	Specifies the proxy server address and port number.
--username=PROXYUSER	Specifies the username for the proxy server.
--username=PROXYPASS	Specifies the password for the proxy server.
-t TARGET-DIR, --target=TAERGET_DIR	Specifies the target installation directory.

Table 3. Altera Installer Command-line Arguments (Part 2 of 2)

Option	Description
--temp=TEMP_DIR	Specifies the temporary directory to store downloaded installation files. The default temporary directory is defined by the TMP environment variable.
--remove_temp=REMOVE_TEMP	Directs the Altera Installer to remove temporary files after installation is complete.
--update	Directs the Altera Installer to update installed features.
--version	Displays the software's version number.
-w, --web	Directs the Altera Installer to install the Quartus II Web Edition software.

Installing Altera Software on Multiple Systems at the Command Prompt

You can install Altera software on multiple systems using the same installation files that you download once, which reduces overall download and installation time. To use the same installation files for multiple system installations, you must first download and save the installation files to a location that is accessible by each system on which you want to install Altera software, and then write and run a custom installation script.

You can run the Altera Installer executable, **altera_installer_cmd.exe**<subcommand>[options] (Windows) or **altera_installer_cmd** <subcommand>[options] (Linux), iteratively, using command-line arguments for different functions.

For example, the **altera_installer_cmd.exe --all --net --download_only --temp=d:/altera/download_only** command, downloads all software available from the Altera Installer for Windows to a temporary directory named **d:/altera/download_only** via an Internet connection.

Also, for example, the **altera_installer_cmd.exe --all --source=<installation directory>** command, installs all software available from the Altera Installer for Windows using installation files in a local source directory.

The available command-line arguments are described in [Table 3](#).

Installing Software with the Altera Complete Design Suite

The Altera Complete Design Suite includes the Altera Installer, which allows you to install Altera software from one DVD, and is available by request for Windows and Linux.

You should be aware of the preinstallation information described in “[Installation Prerequisites](#)” on page 9 before you install Altera software.

To install Altera software with the Altera Complete Design Suite for Windows or Linux, follow these steps:

1. Insert the Altera Complete Design Suite DVD into your DVD drive.
2. For Windows, if the setup program does not automatically launch, start the setup program by performing the following steps:
 - a. On the Windows Start menu, click **Run**.
 - b. In the **Run** dialog box, type `<DVD drive>:\install`.
 - c. Click **OK**.

or

For Linux, mount the DVD into your DVD drive. Refer to “[Mounting and Unmounting DVDs](#)” on page 67.

3. The Altera Complete Design Suite installation window appears automatically. Click **Install subscription package** to install the Quartus II Subscription Edition software and related software, or click **Install Free Package** (Windows) or **Download and install free package** (Linux) to install the Quartus II Web Edition software and related software. Installing the subscription software requires a paid subscription license.

Clicking **Download and install free package** for the Quartus II Web Edition for Linux, accesses the Download Center on the Altera website. You can then download and install the software from the Download Center.

You can click **Help me choose** to access the **Help Me Choose** page, which compares the features of the Quartus II Subscription Edition software with the Quartus II Web Edition software.

4. If you want to install any of the following software, click **Install** next to the software. The Altera Installer launches and guides you through the installation process.
 - ModelSim-Altera Edition software
 - DSP Builder
 - Quartus II software Stand-Alone Programmer
5. If you intend to run the Quartus II software with a network (multiuser) license, click **Install** next to **FLEXlm Server** to install the FLEXlm License Manager server software on the license server only. The setup program installs the FLEXlm License Manager server software version 9.5 on the user workstation.

The Quartus II software supports network license servers on computers running Windows or Linux. Refer to [“Upgrading or Setting Up a License Manager Server” on page 53](#) for more information.

6. You can view educational and reference materials by clicking **View** next to one of the following options under **View educational and reference materials**:
 - **Literature /install manuals**— Accesses the **Literature** page, where you can find Altera software reference literature located on the Altera Complete Design Suite DVD.
 - **Quartus II video demos (Internet access required)** — Accesses the Demonstration Center of the Altera website, where you can find Quartus II software demonstrations.
 - **Reference designs (Internet access required)** — Accesses the Reference Designs page of the Altera website.
7. Select the software that you want to install. The Altera Installer launches and guides you through the installation process.
8. You can turn on the TalkBack feature by turning on **Enable sending TalkBack data to Altera** in the **Quartus II TalkBack** dialog box, which appears at the end of the installation process if the option is not already turned on. For more information about the TalkBack feature, refer to [“Altera Installer” on page 7](#).
9. For Linux, unmount the DVD drive.

To install Altera software with the Altera Complete Design Suite for Windows or Linux from the command line, follow these steps:

1. Insert the Altera Complete Design Suite DVD into your DVD drive.
2. For Linux, mount the DVD into your DVD drive. Refer to “[Mounting and Unmounting DVDs](#)” on page 67.
3. Type the following command at the command prompt:

Windows:

```
<DVD drive> altera_installer\bin\  
altera_installer_cmd.exe -- source <DVD drive>
```

Linux:

```
/mnt/dvd$ altera_installer/bin/altera_installer_cmd  
--source /mnt/dvd - i [options]↵
```

The available command-line arguments are described in [Table 3](#). The Altera Installer launches and guides you through the installation process.

4. For Linux, unmount the DVD drive.

Installing the TCP/IP Protocol

If you do not already have the TCP/IP protocol installed on the computers running Windows in your network, you must add it to your networking configuration.



For Information About

Installing the TCP/IP protocol on PCs running Windows

Refer To

Windows documentation or to the Microsoft website.

Setting up the Quartus II Software with a JTAG Server on a Network

If you install the Quartus II software for Windows on a network drive and have a JTAG server, you must set up the Quartus II software to allow the JTAG server to run JTAG services.



Administrator Privileges

You must have system administration (Administrator) privileges to set up the Quartus II software to allow the JTAG server to run JTAG services.

To set up the Quartus II software to enable the JTAG server to run JTAG services, follow these steps:

1. On Windows Start menu, click **Run**.
2. In the **Run** dialog box, type `<drive>:\<Quartus II software system directory path>\:jtagserver --install <username> <password>`. Where the `<username>` `<password>` are the username and password of the JTAG server.

or

Install the Quartus II software on a local drive.

Using the 64-bit Version of the Quartus II Software for Linux

If your project requires addressability of computer memory greater than 4 GB for command-line executables, such as `quartus_map`, `quartus_fit`, `quartus_sta`, `quartus_tan`, and `quartus_cdb`, you can use the 64-bit version of the Quartus II software for Linux. Compiling designs with the 64-bit version of the Quartus II software requires more system memory and you may notice an increase in compilation times if there is not sufficient physical memory to accommodate the increased memory usage. You can mitigate this effect by increasing the total physical memory on the system.

When you install the Quartus II software, the 64-bit version of the Quartus II software is installed automatically.

- To turn on 64-bit processing with the `QUARTUS_64BIT` environment variable, refer to “[QUARTUS_64BIT](#)” on page 65.
- To turn on 64-bit processing for individual Quartus II command-line executables, pass the `--64bit` option to the command-line executable. For example, you can enable 64-bit processing with the `quartus_map` executable by typing the following command at the command prompt:

```
quartus_map --64bit ↵
```

- To turn on 64-bit processing when opening the Quartus II software GUI, type the following command at a command prompt:

```
quartus --64bit <project name>.qpf
```

If the Quartus II software is invoked using the `--64bit` option, all subprograms started via the GUI or Tcl console will also be passed the `--64bit` option.

- You can also run Tcl commands through the interactive Tcl Console window using the `-s` and `--64bit` command-line options to enable 64-bit processing. When you start an interactive shell with the `-s` option in conjunction with the `--64bit` option, subsequent commands within the Tcl shell console also use 64-bit processing. For example, to turn on 64-bit processing with the Tcl Console window, type the following command at the command prompt:

```
quartus_sh --64bit -s
```

Configuring the Linux User Environment

Ensure that you perform the following steps for each user before starting the Quartus II software for Linux for the first time:

1. Update each user’s `PATH` environment variable in the `.cshrc` file or `.bashrc` file, which is located in the home directory, to include the `bin` directory in the Quartus II system directory, which is usually the

`<home directory>/altera<version number>/quartus/bin` directory for Linux. Where `<home directory>` is the default directory of your Linux workstation, or is set by your system administrator.

To update the `PATH` environment variable using the C shell, type the following command at a command prompt:

```
setenv PATH ${PATH} : /<Quartus II system directory>/bin ↵
```

To update the `PATH` environment variable using the Bash shell, type the following command at a command prompt:

```
export PATH=${PATH} : /<Quartus II system directory>/bin ↵
```



Setting the `PATH` Environment Variable

If you run the Quartus II software for Linux with a script, you can run the latest installed version of the Quartus II software with the **quartus** executable by either specifying the latest version of the Quartus II software, or by specifying the full path for the **quartus** executable in `PATH` environment variable.

2. Review and update as appropriate, each user's `QUARTUS_ROOTDIR_OVERRIDE` environment variable, which specifies the name of the Quartus II system directory. For more information about the `QUARTUS_ROOTDIR_OVERRIDE` environment variable, refer to [“QUARTUS_ROOTDIR_OVERRIDE” on page 65](#).
3. Review and update as appropriate, each user's Quartus II general environment variables, as described in [“Quartus II General Environment Variables” on page 65](#).
4. Save the changes to the `.cshrc` file or `.bashrc` file, and then type the following at a command prompt:

C shell:

```
cd ↵  
source .cshrc ↵
```

Bash shell:

```
cd ↵  
. ~/.bashrc ↵
```

Starting the Quartus II Software

You can start the Quartus II software after installation is complete. To enable Quartus II software features, however, you must specify the license file.

When you start the Quartus II software, if the software cannot detect a valid license file, you are prompted with licensing options, which are described in [“Quartus II Software Evaluation Period” on page 26](#).

Starting the Quartus II Software in Windows

You can start either the 32-bit or 64-bit version of the Quartus II software for Windows, if you have installed the Quartus II software 64-bit components and if your system is capable of running the 64-bit version of the Quartus II software. The 64-bit version of the Quartus II software is installed automatically during a Quartus II software installation. Refer to [“System Requirements” on page 3](#) for system requirements.

To start the Quartus II software, follow these steps:

- ✓ On the Windows Start menu, point to **Programs**, point to **Altera**, point to **Quartus II <version number>**, and then point to **Quartus II <version number> (32-bit)** or **Quartus II <version number> (64-bit)**.

or

Type the following command at a command prompt:

```
<drive> : \<Quartus II system directory>\bin<32 or 64>\quartus ↵
```

Starting the Quartus II Software in Linux

After you have followed all the guidelines for configuring each workstation and user environment, you can start the Quartus II software by typing the following command at the command prompt:

```
quartus ↵
```



Do Not Start the Quartus II Software from the Linux Directory

Make sure you do not start the **quartus** command in the /<Quartus II system directory>/linux directory. If you start the Quartus II software in a platform-specific directory, the software may not function correctly.

Programming Cable Drivers

You must install the appropriate programming cable drivers before you can use an Altera download cable or programming unit to program devices with the Quartus II software.

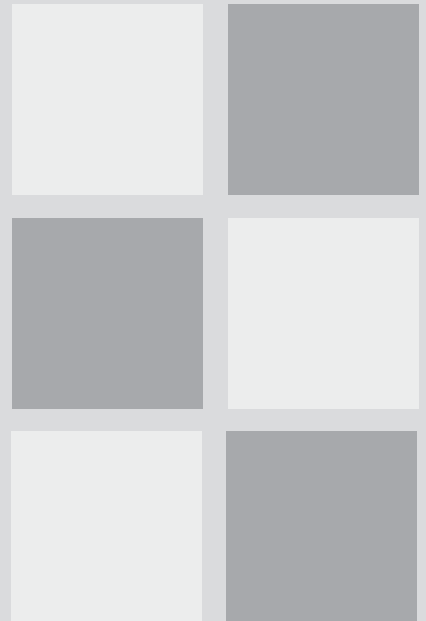
The programming cable drivers are located in the following directories:

- Windows: <drive>:\altera\<version number>\quartus\drivers
- Linux: <home directory>/altera <version number> /quartus/drivers

You can find detailed programming cable driver information, including programming cable user guides, on the Altera Programming Cable Driver Information page at www.altera.com/support/software/drivers/driver-index.html.

Chapter Two

Licensing Altera Software



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2

Introduction

This chapter describes Altera software licensing options and procedures. To set up your license for Altera software, follow these steps:

1. Select a licensing option, which are described in “[Licensing Options](#)” on page 23.
2. Obtain a license file as described in “[Obtaining a License File](#)” on page 27.
3. Set up the license file as described in “[Setting Up the License File](#)” on page 40.
4. If you are using a network license, set up the FLEXlm license manager server as described in “[Upgrading or Setting Up a License Manager Server](#)” on page 53.

Licensing Options

Altera provides specific licenses for each Altera software product. These licensing options are described in this section.

When you purchase a Quartus II software license, the license file supports the version of the Quartus II software you purchase, all previous versions, and all versions released within a year of the purchase date. You can use the version of the Quartus II software you purchase, and all related software, including the ModelSim-Altera Edition software, SOPC Builder, and IP library, indefinitely.

Supported Licensed Software

An Altera software subscription enables the following software:

- Quartus II software (including SOPC Builder software and IP Library)
- ModelSim-Altera Starter Edition software
- MAX+PLUS II software

Supported Software Subscriptions

Altera offers the following types of software subscriptions:

- Fixed license—a stand-alone (node-locked, single-user) PC license tied to the network interface card (NIC) ID.
- Floating license—a floating network (multiuser) license for users running the Quartus II software on Microsoft Windows, RedHat Linux, SUSE Linux Enterprise, or CentOS operating systems. Floating licenses are not operating system-specific.

If necessary, you can purchase additional seats to add to your floating license after its original purchase.



Licenses for Quartus II Software Version 6.1 and Earlier

Floating licenses for the Quartus II software version 6.1 and earlier are operating system-specific. If you are a subscriber to the Quartus II software version 6.1 and earlier, Altera continues to support operating system-specific licenses. For more information, refer to [“License File” on page 87](#).

You can find examples of license files in [“License File Format and Examples” on page 91](#).

Table 1 summarizes the software enabled by each license type described in this section.

Table 1. Supported Software for Each License Type (1)

License Type	Quartus II	MAX+PLUS II	IP Base Suite
Fixed license	✓	✓	✓
Floating license	✓	✓	✓
Quartus II software 1-year license (2)	✓	—	—

Notes:

- (1) Quartus II Web Edition versions 8.1 and later and the ModelSim-Altera Starter Edition software do not require license files.
- (2) Some Altera development kits include a license to use the Quartus II software. Refer to [“Development Kits Containing the Quartus II Software” on page 25](#).

The SOPC Builder software is automatically installed with the Quartus II software and does not require a separate license file. Other components that are not available in the default installation of the SOPC Builder software, are included with the IP Library.

The ModelSim-Altera Edition software is available for purchase and does not require a separate license file, however, you must specify your license file by following the steps in “Specify the License for the ModelSim-Altera Edition Software” on page 51.

You can obtain or purchase Intellectual Property (IP) and Development Kit licenses from the Altera IP MegaStore at www.altera.com/ipmegastore, or through your local Altera sales office or distributor.



For Information About

Refer To

OpenCore and OpenCore Plus IP evaluation programs

AN 320: OpenCore Plus Evaluation of Megafunctions and *AN 343: OpenCore Evaluation of AMPP Megafunctions*

Development Kits Containing the Quartus II Software

Development kits that contain the Quartus II software include instructions for obtaining a license for that software.

When you order a development kit, make sure that the network interface card (NIC) ID provided with the order is associated with the computer on which the development kit software will be installed. Providing the correct NIC ID allows you to automatically download your development kit software license from the Altera website. To provide an updated NIC ID for your license file, refer to “Rehosting a License” on page 35.

Non-Licensed Software

Altera also offers the Quartus II Web Edition and ModelSim-Altera Starter Edition software, which do not require license files. Entry-level software supports selected devices and provides limited feature support.



Quartus II Web Edition Software and ModelSim-Altera Starter Edition Software Licensing

Quartus II Web Edition software version 8.0 and the ModelSim-Altera Starter Edition software version 6.1g and earlier require a license file. However, a NIC-based license file is required if you have additional purchased IP cores.

Altera University Program Software Licenses

The Altera University Program offers Altera software to participating schools, licensed by one of the following methods:

- Fixed (NIC ID-based) or floating (network) licenses for universities and colleges that are members of the Altera University Program. The licensing process for these University Program licenses is the same as Altera software subscriptions.
- The MAX+PLUS II Student Edition software is no-cost Windows software for students.



For Information About

The Altera University Program

Refer To

Altera website at www.altera.com

Quartus II Software Evaluation Period

The Quartus II software for Windows includes a 30-day licensing evaluation period. When you upgrade the version of your Quartus II software, you are allowed up to 30 days to install the updated license file.

When you start the Quartus II software, if the software cannot detect a valid license file, you see a prompt with the following options:

- **Start the 30-day evaluation period with no license file (no device programming file support)**—allows you to use the Quartus II software for 30 days without programming file support. After 30 days, you must have a valid license file to continue using the software.
- **Perform automatic web license retrieval**—If you are using a fixed license, this option allows the Quartus II software to automatically retrieve the license file from the Altera website. If you are using a

floating license, or if the Quartus II software is not able to retrieve a license file, you are guided through the licensing procedure. See [“Obtaining a License File” on page 27](#) for more information.

- **If you have a valid license file, specify the location of your license file**—displays the **License Setup** page of the **Options** dialog box, which allows you to specify the location of your license file. See [“Setting Up the License File,”](#) for more information.

After you install an updated license file (refer to [“Setting Up the License File” on page 40](#) for more information), the 30-day evaluation period ends automatically.

Obtaining a License File

This section describes how to obtain an Altera **license.dat** license file.

Table 2. Required Information for Each License Type

License Type	Requirements
Fixed license	Altera ID, NIC ID, software guard ID (1)
Floating license	Altera ID, NIC ID for Windows or RedHat Linux license servers Altera ID, host ID for UNIX license server
Quartus II Web Edition	NIC ID (2)
MAX+PLUS II BASELINE	NIC ID Hard-disk serial number (3)
MAX+PLUS II Student Edition	Hard-disk serial number (3)
Intellectual Property (IP) and Development Kit License	Variable (4)

Notes:

- (1) Software guards are supported for the Quartus II software version 7.2 and earlier.
- (2) The Quartus II Web Edition and ModelSim-Altera Starter Edition versions 8.1 and later do not require a license file. Refer to [“Non-Licensed Software” on page 25](#).
- (3) If the computer has more than one hard disk, select the hard-disk where Windows is installed.
- (4) Because Intellectual Property (IP) and Development Kit licenses are added as feature lines in the Quartus II software license file, the licensing requirements depend on the Quartus II software license type.

Licensing Requirements

You can obtain a license file, **license.dat**, from the Self Service Licensing Center of the Altera website at www.altera.com/licensing with the information described in this section.



Legacy Altera Software and IP Licenses

If you want to obtain a license file for a Altera software or IP license with an expiration date prior to January 1, 2009, go to the [Get My Legacy Altera License page](#).

Altera ID

An Altera ID number is assigned by Altera when you purchase software. This six-digit number allows Altera to identify customers when they purchase an Altera product or request technical support. For new Quartus II or MAX+PLUS II software users, the Altera ID number can be downloaded from the mySupport section of the Altera website at www.altera.com/mysupport, or is printed on the software's shipping label and packing slip.

If you did not originally purchase the license, register as a secondary user of the software on the mySupport section of the Altera website. If you do not know the Altera ID used for the license, use six zeros (000000) to request a license file.

NIC ID

A Network Interface Card (NIC) ID is a 12-digit hexadecimal string embedded in the network interface card that Altera uses to uniquely identify the PC where the software is installed.

You can use a NIC ID to obtain a license file if you have a fixed or floating license for the Quartus II software, or floating licenses on PC license servers.

- ✓ To find your Windows NIC ID using FLEXlm utilities, type the following command at a command prompt:

```
<drive> : <Quartus II system directory> \bin \lmutil lmhostid ←
```

- ✓ To find your NIC ID with your physical address, type the following command at a command prompt:

```
ipconfig /all ↵
```

In the output of the command, the NIC ID is the physical address without the dashes. If your PC has more than one network card, you can use any card NIC ID if the selected network card is connected to the computer.

You can use the FLEXlm licensing scheme to configure up to three redundant license servers. The first server specified is the master. Use the master server's NIC ID or host ID when obtaining a license.

- ✓ To find your Linux NIC ID, type the following command at a command prompt:

```
/sbin/ifconfig eth0 ↵
```

In the output of the command, the NIC ID is the ID to the right of **HWaddr**, without the colons.

- ✓ To find your NIC ID if the Quartus II software is installed on your computer, on the Tools menu, click **License Setup**. Your NIC ID appears under **Local System info** in the **Network Interface Card (NIC) ID** field.
- ✓ To find your NIC ID if the MAX+PLUS II software is installed on your computer, on the Options menu, click **License Setup**, then click **System Info**.

Hard-Disk Serial Number

The hard-disk serial number is an eight-character hexadecimal ID that identifies the PC with the Altera license. If the ID is not eight characters long, include a leading zero.

- ✓ To find the hard-disk serial number on a Windows PC, type the following command at a command prompt:

```
vol c: ↵
```

In the output of the command, the hard-disk serial number is the volume serial number.

- ✓ To find the hard-disk serial number if the Quartus II software is installed, on the Tools menu, click **License Setup**. The hard-disk serial number appears under **Local Systems info** in the **C: drive serial number** field.
- ✓ To find the hard-disk serial number if the MAX+PLUS II software is installed, on the Options menu, click **License Setup**, and then click **System Info**. The **System Information** dialog box appears and lists the hard-disk serial number in the **C: drive serial number** field.

Verifying the hard-disk serial number with the Quartus II software or MAX +PLUS II software ensures that you use the correct hard-disk serial number if your PC has multiple hard drives.

License Server Host ID Number

The server host ID is an 8- or 12-digit hexadecimal number, which identifies the Windows or Linux workstation that serves Quartus II or MAX+PLUS II software licenses.

You can use your license server host ID to obtain a license file, if you have a floating license.

- ✓ To find your Linux network license server host ID number with FLEXlm utilities, type the following command at a command prompt:

```
<Quartus II system directory>/linux/lmutil lmhostid ←
```



For Information About

Additional methods of finding your host ID number

Refer To

Altera website at www.altera.com

Software Guard ID

If you have a fixed license file, you can use a software guard to license the Quartus II software for Windows, versions 7.2 or earlier. Your software guard ID is a ten-character alphanumeric number beginning with the letter T.

You can find the software guard ID on the printed label on the guard, or if the Quartus II software is installed and the guard is attached, on the **License Setup** dialog box on the Tools menu. Your software guard ID appears under **Local System info** in the **Software Guard ID** field.

Requesting a License File

You can direct the Quartus II software to automatically retrieve license file information, or you can manually request a license file from the Self Service Licensing Center of the Altera website at www.altera.com/licensing, where you can also view information about software licensed to you.



Legacy Altera Software and IP Licenses

If you want to obtain a license file for a Altera software or IP license with an expiration date prior to January 1, 2009, go to the [Get My Legacy Altera License page](#).

To obtain a license file, follow these steps:

1. Start the Quartus II software as described in the “[Starting the Quartus II Software](#)” on page 20.
2. Select **Perform automatic web license retrieval** to request a license file automatically from the Altera website.

or

To manually request a license file, use the procedures in “[Self Service Licensing Center](#)” on page 32.

If you have a redundant license server, you must manually request a license file.

If the Quartus II software is able to retrieve a fixed license file successfully from the Altera website, you can skip the remaining steps of this procedure. If not, you are guided through the licensing procedure.

3. You will receive an e-mail from Altera with the license file text and an attached **license.dat** file. Altera recommends that you use the attached license file if you are using a fixed license. If you are using a floating

license, you may either use the attached license file, or copy all the lines from the attached license file to an existing license file. If you are using the **license.dat** file with both the Quartus II software and the MAX+PLUS II software, Altera recommends that you save the **license.dat** file in a top-level directory named `<drive>\flexlm`.



Requesting a License File

Network congestion can cause delays in email delivery. If you do not receive an email from Altera within 12 hours of your license request, or if you do not know all the required information to complete the process, file a service request on the mySupport section of the Altera website at www.altera.com/mysupport.

The FLEXlm licensing scheme allows you to set up three redundant license servers to serve a floating license. You can request a license file for redundant servers from the Self Service Licensing Center.

7. Set up your license file with procedures in “Setting Up the License File”.

Self Service Licensing Center

The Self Service Licensing Center is an online licensing center that allows you to view, obtain, activate, and manage your Altera software licenses. You can perform the following tasks using the Self Service Licensing Center:

- Obtain license files—you can obtain license files for your existing and new licenses. For more information, refer to “Obtaining a License File” on page 33.
- View existing licenses—you can view all of your existing licenses, including their expiration dates, available rehosts, and licensed users.
- Renew licenses—you can renew your existing licenses. For more information, refer to “Renewing a License” on page 38.
- Rehost licenses—you can transfer your existing licenses from one computer to another. You have a total of three rehosts for each license. For more information, refer to “Rehosting a License” on page 35.
- Activate a new license—you can activate new licenses. For more information, refer to “Activating a License” on page 39.
- Obtain companion license files—you can obtain companion license files for your existing fixed licenses. For more information, refer to “Obtaining a Companion License” on page 36.

- Add seats to a floating license—you can add seats to your existing floating licenses. For more information, refer to [“Adding Floating Seats” on page 37](#).
- Split a floating license—you can split your existing floating licenses. For more information, refer to [“Splitting a Floating License” on page 38](#).
- Obtain a checkout (temporary) license—you can obtain a checkout license for each seat in a floating license. For more information, refer to [“Obtaining a Check-Out License” on page 40](#).
- Manage license users—you can specify the licensed user for each of your existing licenses. For more information, refer to [“Managing Licensed Users” on page 39](#).
- View license history—you can view the license file history for each computer that you add to your myAltera account.

You must have a myAltera account to access the Self Service Licensing Center. For more information about a myAltera account, refer to [“Registering for a myAltera Account” on page 71](#).

You can access the Self Service Licensing Center from the Altera Licensing page, the mySupport page, or from the Download Center.

Obtaining a License File

You can obtain a license file for an existing, new, or renewed license. If you want to obtain a license file for a new license, you must first activate the new license using the procedure in [“Activating a License” on page 39](#). If you want to obtain a license file for a renewed license, you must first renew your license using the procedure in [“Renewing a License” on page 38](#).

1. Access the Self Service Licensing Center from the Altera website.
2. Log on to your myAltera account.
3. Click **Create New License** to access the Create New License page.
4. Select one or more licenses from the **My Software & IP Licenses** table, and then click **Assign Computer**.
5. On the Assign Computer page, select a computer from the **My Computers** table to which you want to assign your license, and then click **Get License**.

Your license file is sent to the email address specified for your licensed user. If you have not specified an email address for your licensed user, your license file is sent to the email address in your myAltera account profile. Your computer license type must match the license type of any license to which you want to want to assign your computer.

To add computers to your myAltera account profile, follow the procedure in [“Creating a Computer” on page 34](#).

Creating a Computer

You can create computer profiles for your myAltera account to which you can assign licenses.

1. Access the Self Service Licensing Center from the Altera website.
2. Log on to your myAltera account.
3. Click **Manage Computers**.
4. Click **Create New Computer** in the **Manage Computers** table.
5. Select the **License Type** for your computer. Your computer license type must match the license type of any license to which you want to want to assign your computer.
6. Select the **Primary Computer Type** for your computer. Your primary computer type is your NIC ID, Host ID, or software guard ID. For more information, refer to [“Licensing Requirements” on page 28](#).
7. Type your computer name in the **Primary Computer Name** box. You can specify any name meaningful to you in this box.
8. Type your NIC ID, Host ID, or software guard ID number in the **Primary Computer ID** box.
9. If you have a fixed license, and want to use your license for multiple computers, you can specify up to two companion IDs in the **Companion ID** and **Companion ID** boxes. Your companion ID is your NIC ID, Host ID, or software guard ID. You can use your license or associated companion license only on one computer at a time.

- 10.** If you have a floating license, you can set up your license on up to three redundant license servers. Type the NIC ID or Host ID for redundant servers in the **Redundant Server ID 2** and **Redundant Server ID 3** boxes.
- 11.** Click **Save**.
- 12.** To edit an existing computer, follow these steps:
 - a.** Click the edit icon next to the computer that you want to edit in the **Manage Computers** table.
 - b.** Make changes in the Manage Computers page.
 - c.** Click **Update** when you are finished making changes.
- 13.** To obtain a license file for the computer you created, follow the procedure in [“Obtaining a License File” on page 33](#).

Rehosting a License

You can rehost, or transfer, a license from one computer to another. You can rehost each license up to three times.

- 1.** Access the Self Service Licensing Center from the Altera website.
- 2.** Log on to your myAltera account.
- 3.** Click **Create New License** to access the Create New License page.
- 4.** Select one or more licenses from the **My Software & IP Licenses** table, and then click **Assign Computer**.
- 5.** On the Assign Computer page, select a computer from the **My Computers** table to which you want to rehost your license, and then click **Get License**.

Your license file is sent to the email address specified for your licensed user. If you have not specified an email address for your licensed user, your license file is sent to the email address in your myAltera account profile. Your computer license type must match the license type of any license to which you want to assign your computer.

If you do not have any computers listed in the **My Computers** table, you can add computers with the procedure in [“Creating a Computer” on page 34](#).

To obtain a license file for the rehosted license, follow the procedure in [“Obtaining a License File” on page 33](#).

Obtaining a Companion License

If you use Altera software on more than one computer, you can obtain a companion license for one or two computers, for use of the license on up to three computers, including the primary computer. However, you can only use the license on one computer at a time. Companion licenses are available for fixed licenses only. You can also use this procedure to edit an existing companion license.

1. Access the Self Service Licensing Center from the Altera website.
2. Log on to your myAltera account.
3. Click **Create New License** to access the Create New License page.
4. Click **companion license** above the **My Software & IP Licenses** table.
5. On the Add Companion License page, click **Add** next to the primary computer to which you want to add a companion ID.

If you do not have any computers listed in the table, you can add computers with companion IDs with the procedure in [“Creating a Computer” on page 34](#).

6. Type up to two companion IDs in the **Companion ID** and **Companion ID** boxes. Your companion ID is your NIC ID, Host ID, or software guard ID. You can use your license or associated companion license only on one computer at a time.



Adding or Changing a Companion License

When you add or change a companion license for a fixed license, you consume a rehost for that license. You have up to three rehosts for each fixed license.

7. Click **Get License**. Your updated license file, including companion license information, is sent to the email address specified for your licensed user. If you have not specified an email address for your licensed user, your license file is sent to the email address in your myAltera account profile. Your computer license type must match the license type of any license to which you want to assign your computer.

Adding Floating Seats

You can add floating seats to an existing floating license to increase the number of users available for a floating license. Adding additional seats to an existing floating license may affect its maintenance expiration date.

1. Access the Self Service Licensing Center from the Altera website.
2. Log on to your myAltera account.
3. Click **Add Floating Seats** to access the **Add Floating Seats** page.
4. On the **Add Floating Seats** page, click **Add Seats** next to the additional seats in the **Additional Floating Seat Products** table that you want to add to an existing floating license.
5. On the **Add Floating Seats - Select Product License** page, click **Add Seats** next to the floating license in the **Select a Floating Server** table to which you want to add the additional seats.
6. On the **Add Floating Seats - Select Seats** page, type the number of additional seats you would like to add to your floating license in the **How many seats do you want to add this time?** box.

When you add additional seats to an existing floating license, the new maintenance subscription term of the floating license is calculated by adding the total number of maintenance months for the existing and new seats, and then dividing by the total number of seats. Any partial number is rounded up to the nearest whole number.

For example, if you have an existing floating license with ten seats that expires in five months and you purchase two additional seats, your updated floating license maintenance subscription would expire in seven months for all twelve seats.

Splitting a Floating License

You can split an existing floating license to use the license on two computers or servers. You can allocate any number of seats, up to the total amount of seats you have purchased, on either computer or server.

1. Access the Self Service Licensing Center from the Altera website.
2. Log on to your myAltera account.
3. Click **Split Floating Licenses** to access the Split Floating Product Licenses page.
4. Click **Split** next to the floating license in the **Floating Product License** table that you want to split.
5. Type the number of seats you would like to split from your floating license in the **How many seats do you want to split from the floating system?** box.
6. Turn on the **Check to confirm split of floating system** box.
7. Click **Split Seats**. Your floating license is split.

To obtain a new license file for the split floating licenses, follow the procedure in [“Obtaining a License File” on page 33](#).

Renewing a License

You can renew an existing license with the Self Service Licensing Center. You must first purchase your license renewal, for example, from the Buy Design Software page of the Altera website, before applying a renewal.

1. Access the Self Service Licensing Center from the Altera website.
2. Log on to your myAltera account.
3. Click **Apply Renewals** to access the Apply Renewals page.
4. Click **Apply Renewal** next to the license you want to renew in the **My Renewals** table.
5. To obtain a license file for the renewed license, follow the procedure in [“Obtaining a License File” on page 33](#).

Activating a License

You can activate a new license with the Self Service Licensing Center. You must first purchase your new license, for example, from the Buy Design Software page of the Altera website, before activating the new license.

1. Access the Self Service Licensing Center from the Altera website.
2. Log on to your myAltera account.
3. Click **Activate Products** to access the Activate Products page.
4. Type your license activation code in the **License Activation Code** box. If you have a Quartus II software serial number, you can type the serial number in the **License Activation Code** box.
5. Click **Go**.
6. Select one or more products that you want to activate in the **Activate Products** table.
7. Click **Activate**.
8. To obtain a license file for the new license, follow the procedure in [“Obtaining a License File” on page 33](#).

Managing Licensed Users

You can assign or change users for your existing licenses. Licensed users are granted access to their assigned licenses.

1. Access the Self Service Licensing Center from the Altera website.
2. Log on to your myAltera account.
3. Click **Manage Users** to access the Manage Users page.
4. Select one or more licenses from the **My Software & IP Licenses** table, and then click **Assign User**.
5. On the **Add A Licensed User** page, type the name and email address of the licensed user.

6. Click **Assign User**. The licensed user receives an email notifying them that they have been added as a licensed user, and now have access to the specific license that they have been assigned.

Obtaining a Check-Out License

You can obtain a check-out, or temporary, license for each seat in an existing floating license. The check-out license is valid for two weeks and licenses all software available on your associated floating license.

1. Access the Self Service Licensing Center from the Altera website.
2. Log on to your myAltera account.
3. Click **Create New License** to access the Create New License page.
4. Click **temporary check-out license** above the **My Software & IP Licenses** table.
5. On the Get Check-out License page, click **Enter NIC ID** next to the primary computer from which you want to obtain a check-out license.

If you do not have any computers listed in the table, you can add computers with companion IDs with the procedure in [“Creating a Computer” on page 34](#).

6. On the Provide Check-out License Computer page, type the NIC ID of the computer for which you want to obtain a temporary license in the **Fixed Computer Information** box.
7. Click **Get Check-out License**. Your check-out license file is sent to the email address specified for your licensed user. If you have not specified an email address for your licensed user, your license file is sent to the email address in your myAltera account profile. Your computer license type must match the license type of any license to which you want to assign your computer.

Setting Up the License File

After you receive your license file, you must modify the **license.dat** file for your specific licensing options.

License File Conditions

When you modify the **license.dat** file, always ensure that the following conditions are met:

- The text editor does not append **.txt** or any other file extension to the file name, for example **license.dat.txt**.
- A carriage return (new line) is present at the end of the last **FEATURE** line.
- Any **FEATURE** line that wraps to a second or third line contains a backslash (****) at the end of each line to indicate that it continues. However, there is no backslash (****) at the end of the lines if the **VENDOR_STRING** line wraps to multiple lines. The backslash should only be added outside the line with double quotation marks (**"**).
- If you are using a 64-bit version of the Quartus II software, ensure that you manually add a space between the closing double quotation mark (**"**) and backslash (****) at the end of the **VENDOR_STRING** line.
- No hidden control characters exist in the license file.
 - If you open the license file with any software other than a plain text editor, the software may add hidden characters. For example, WYSIWYG editors such as Microsoft Excel, Word, or WordPad, may insert special control characters such as a tab or carriage return. If special control characters are pasted into another plain text document, the license file can be corrupted by characters that may not be visible in a plain text editor.
 - If you edit the license file in one operating system, then copy the license file in another operating system, and then copy the license file to the Windows operating system, the second operating system may insert unwanted control characters into the license file if you do not follow the correct file conversion procedure.

Setting Up a Fixed License

To set up a fixed license file, follow these steps:

1. Make a backup copy of any existing **license.dat** file for reference.
2. Save the new **license.dat** file on your local hard drive. Altera recommends saving and using the **license.dat** file attached to the email you received.
3. If you are using the Quartus II software version 7.2 or earlier, attach the software guard to a parallel or USB port on your computer.

The Sentinel driver for software guard-based licensing is installed automatically with the Quartus II and MAX+PLUS II software. PCs running Windows require that you install the Sentinel driver. Follow the instructions described in [“Installing the Sentinel Driver” on page 61](#) to install a Sentinel driver.

4. Specify the license file location. The license file location is *<path to license file>\license.dat*, where *<path to license file>* is the full directory path to the license file, starting with the drive letter. For example, **D:\flexlm\license.dat**.

The license is now set up and you can begin using the software.



License File Location

When you specify the license file location, ensure that you use only alphanumeric characters and do not type any special characters or symbols, such as `!$%^&* <>`, empty spaces, or non-English characters into the license file directory. Including special characters may invalidate the license file location.

Setting Up Floating Network Licenses

This section describes how to set up a floating license. For instructions about how to set up a floating license server (typically performed by a system administrator), refer to [“Setting Up the Floating Network Licenses on the License Server” on page 47](#).

To set up the floating license, follow these steps:

1. Obtain the port number and host name from the network or system administrator. This information can also be found in the license file line beginning with the word **SERVER**.

```
SERVER <hostname> <8 or 12 character host or NIC ID> <port>
```

The license location for the user is *<port>@<hostname>*.

If a port is not listed in the **license.dat** file, specify *<port>@<hostname>*.

2. After you obtain the port number and host name, proceed to one of the following procedures to set up your license. Each procedure provides an alternative method to set up your license file.

- “Specifying the License File Using the LM_LICENSE_FILE Environment Variable”
- “Setting the LM_LICENSE_FILE Environment Variable in the Windows Control Panel”
- “Setting the LM_LICENSE_FILE Environment Variable in the Linux Workstation C Shell Resource File (.cshrc)”

Specifying the License File Using the LM_LICENSE_FILE Environment Variable

Altera recommends specifying the Quartus II and MAX+PLUS II software license location with the LM_LICENSE_FILE environment variable. Additionally, third-party tools provided by Altera require that you specify the license location with the LM_LICENSE_FILE environment variable.

The license file specification in the Quartus II or MAX+PLUS II **License Setup** dialog box supersedes the LM_LICENSE_FILE environment variable setting for that particular software.

The Quartus II software does not support the VENDOR_LICENSE_FILE environment variable (where VENDOR is the vendor daemon name).

Setting the LM_LICENSE_FILE Environment Variable in the Windows Control Panel

You can specify the location of your license file outside the Quartus II software for Windows by setting system variables in the Windows **System** Control Panel.



Specifying the License File in System Control Panel

Specifying the license file in the **System** Control Panel requires that you have system administration (Administrator) privileges.

To set the LM_LICENSE_FILE environment variable with the Windows **System** Control Panel, perform the following steps:

1. On the Windows Start menu, click **Control Panel**.
2. Double-click the **System** icon in the Control Panel window.
3. Click the **Advanced** tab in the **System Properties** dialog box.

4. Click **Environment Variables**.
5. Select `LM_LICENSE_FILE` in the **System Variable** list, and then click **Edit**. If the `LM_LICENSE_FILE` environment variable does not exist, select **New** and type the variable `LM_LICENSE_FILE`.
6. In the **Variable** box (**Variable Value** for Windows Vista), type either `<drive>:\flexlm\license.dat` or a name in the format `<port>@<host>`, where `<host>` is the name of the server and `<port>` is the port listed in the `license.dat` file. If there is no port listed in the `license.dat` file, you can specify `@<host>`.

To specify more than one license location with the `LM_LICENSE_FILE` environment variable, modify the existing `LM_LICENSE_FILE` environment variable and separate the different paths with semicolons (;), as shown in the following example:

```
C:\flexlm\license.dat;1800@myserver
```

7. Click **OK**.

The license is now set up and you can begin using the software.

If you want the Quartus II software to use the `LM_LICENSE_FILE` environment variable setting from your **System** Control Panel rather than from another license file setting, make sure the **Use LM_LICENSE_FILE variable** is turned on in the **License Setup** page of the **Options** dialog box in the Quartus II software. Refer to “[Specifying the License File within the Quartus II Software](#)” on page 45.

Setting the LM_LICENSE_FILE Environment Variable in the Linux Workstation C Shell Resource File (.cshrc)

To specify the license file in the C shell resource file (`.cshrc`) on each client (user) workstation, make sure that you update the `LM_LICENSE_FILE` environment variable that is specified in the `.cshrc` file located in each user’s home directory.

1. Set the `LM_LICENSE_FILE` environment variable in the `.cshrc` for each user to the full directory path name of the license file. To update this environment variable, add the following line to the `.cshrc` file for each user:

```
setenv LM_LICENSE_FILE /usr/local/flexlm/licenses/  
license.dat
```

or

Type the following environment variable on a separate line in the login initialization file to specify the license location:

```
setenv LM_LICENSE_FILE <port>@<hostname>
```

Where *<host>* is the name of the server and *<port>* is the port listed in the **license.dat** file.

2. Save the **.cshrc** file.
3. Type the following commands at the command prompt:

```
cd ←  
source .cshrc ←
```

To specify more than one license location with the `LM_LICENSE_FILE` environment variable, modify the existing `LM_LICENSE_FILE` environment variable and separate the different paths with colons (:), as shown in the following example:

```
/usr/licenses/license.dat:1800@myserver
```

4. If you want the Quartus II software to use the `LM_LICENSE_FILE` environment variable setting from your **.cshrc** file, make sure **Use LM_LICENSE_FILE variable** is turned on in the **License Setup** page of the **Options** dialog box.

The license is now set up and you can begin using the software.

Specifying the License File within the Quartus II Software

To specify the license file within the Quartus II software, follow these steps on each computer running the Quartus II software:

1. Start the Quartus II software, as described in [“Starting the Quartus II Software” on page 20](#).

2. Select **Specify valid license file**. The **License Setup** page of the **Options** dialog box appears. If you do not want to specify the license file at this time, you can return to the **License Setup** page at another time by clicking **License Setup** on the Tools menu.
3. In the **License file** box, specify the full path name of the **license.dat** file. Altera recommends that you store the **license.dat** file in a directory named **C:\licenses:flexlm** (Windows) or **/usr/local/flexlm/licenses** (Linux).



License File Location

When you specify the license file location, ensure that you use only alphanumeric characters and do not type any special characters or symbols, such as `!$%^&*<>`, empty spaces, or non-English characters into the license file directory. Including special characters may invalidate the license file location.

You can also specify the location of the license file by typing a name in the format `<port>@<host>` instead of a license file path name, where `<host>` is the name of the machine running the license server and `<port>` is the port listed in the **license.dat** file. Refer to [Table 3 on page 49](#) for more information about port numbers. If there is no port listed in the **license.dat** file, you can specify `@<host>`.



Specifying Multiple License Files and/or Servers

If you have more than one license file or server, separate the port and host specifications with colons (:), with no spaces between the names and numbers. For example:

```
1800@king:/usr/local/lib/license.dat:270000@queen
```

If you want to use the `LM_LICENSE_FILE` environment variable specified in the **System** Control Panel (Windows) or the `.cshrc` file (Linux), turn on **Use LM_LICENSE_FILE variable**.

4. If you want the Quartus II software to check the Altera website for license file updates, click **Web License Update**.
5. If you want to use the Quartus II software for Windows in the subscription evaluation period, click **Begin 30-day Grace Period**. For more information about the Quartus II software evaluation period, refer to [“Quartus II Software Evaluation Period” on page 26](#).

6. If you want the Quartus II software for Windows to automatically check the Altera website for license file updates upon startup, turn on **Check the Altera web site for license updates at startup** in the **Internet Connectivity** page of the **Options** dialog box.

Setting Up the Floating Network Licenses on the License Server

To set up an Altera floating network license on a Windows, Solaris, or Linux license server using the FLEXlm license manager software provided by Altera, follow the steps described in this section. Setting up a floating license server is typically performed by a system administrator.



Operating System Support

The Quartus II software versions 8.0 and later do not support the Sun Solaris operating system; however, Altera software supports Sun Solaris license servers.

1. Make a backup copy of any existing **license.dat** file for reference.
2. Modify the **license.dat** file obtained from Altera (as described in [“Modifying the Network License File” on page 49](#)) and save the file to your hard drive. The license email from Altera includes the recommended default directory location.

The files required for the FLEXlm license manager are installed with the Quartus II and MAX+PLUS II software. On Windows, the FLEXlm files are in the *<Quartus II system directory>\bin* directory or the *<MAX+PLUS II system directory>\adm* directory. On UNIX and Linux, the FLEXlm files are in the *<Quartus II system directory>/<solaris or linux> <MAX+PLUS II system path>/adm* directory.

If the Quartus II or MAX+PLUS II software is already installed on the license server, go to step 6. To install the FLEXlm software separately on the license server machine, continue with step 3.

3. Create a directory on the license server to contain the FLEXlm files. For a Windows license server, Altera recommends that you create a **C:\flexlm** directory for the files. Some daemons for floating licenses might not run unless the **C:\flexlm** directory exists.

4. Copy the following files from the appropriate directory described in step 2 into the new directory:
 - **lmgrd**
 - **lmutil**
 - **alterad**
5. To start the license server, type the following command at a command prompt :

```
<FLEXlm location>/lmgrd -c <path to license file>/license.dat \[-l <log file name>] ←
```



License File Location

When you specify the license file location, ensure that you use only alphanumeric characters and do not type any special characters or symbols, such as !\$%^&*<>, empty spaces, or non-English characters into the license file directory. Including special characters may invalidate the license file location.

6. To verify the license server is running, type the following command at a command prompt:

```
lmutil lmstat -a -c <port>@<hostname> ←
```

Where *<port>* is the license port number and *<hostname>* is the server's host name as defined in the [“Modifying the Network License File” on page 49](#).

7. After you have set up the license manager server, you must specify the license for each client or user. Proceed to [“Setting Up the Floating Network Licenses on the License Server” on page 47](#).

The FLEXlm software can work with internet firewalls that require you to specify port numbers. You must specify a port number on the SERVER line in the license file. You must also specify different port numbers on each VENDOR or DAEMON line with the PORT=<number> syntax. Additionally, you must allow firewall access to those port numbers.

Altera software uses the FLEXlm software to administer licensing for single or multiple users in a network installation. Follow the procedure in [“Modifying the Network License File” on page 49](#) to modify the license file and then set up and start the FLEXlm license manager.

Modifying the Network License File

The `license.dat` file must be modified before it can be used by the license server. Refer to “[License File Format and Examples](#)” on page 91 for a detailed description of the license file.

To modify and save the license file, perform the following steps:

1. In the `license.dat` file, type the variables that are described in [Table 3](#). The host or NIC ID is already entered in the license file.

Table 3. Variables to Modify in the License File (`license.dat`) (Part 1 of 2)

Variable Name	Description
<code><host name></code>	The host name of the server; for example, <code>my_server</code> .
<code><port number></code> (1)	The port number for the license manager service on the server; for example, 1800. The port number is optional and should be different from the port number for any other service on the machine.
<code>alterad "<path to daemon executable>"</code> (2)(3)	Path to the Altera vendor daemon executable alterad . Windows: <code>\<Quartus II system directory>\bin\alterad.exe</code> , or <code>\<MAX+PLUS II system directory>\alterad.exe</code> (5) Linux: <code>/<Quartus II system directory>/linux/alterad</code> Solaris (6): <code>/<Quartus II system directory>/solaris/alterad</code> , or <code>/<MAX+PLUS II system directory>/adm/alterad</code> (5)
<code>mgcld "<path to daemon executable>"</code> (2)(3)(4)	Path to the Mentor Graphics vendor daemon executable mgcld . Windows: <code>\<ModelSim-Altera system directory>\win32aolem\mgcld.exe</code> Linux: <code>/<ModelSim-Altera system directory>/linuxaloem/mgls/lib/mgcld</code> Solaris (6): <code>/<ModelSim-Altera system directory>/sunos5aloem/mgls/lib/mgcld</code>

Table 3. Variables to Modify in the License File (license.dat) (Part 2 of 2)

Variable Name	Description
---------------	-------------

Notes:

- (1) You can specify a port number in the license file to prevent port number conflicts. If you do not specify a port number, the FLEXlm license manager automatically chooses a free port between 27000 and 27009.
- (2) In some network environments, the license server does not have a software tool(s) installation that provides the necessary vendor daemon (**alterad** or **mgclid**). In this case, copy the required daemon from another machine, save the file in a similarly named directory, or any other location on the license server, and specify the daemon location on the license server in the license file.
- (3) If the path server has spaces in it, enclose the full path in quotation marks.
- (4) If you are not using a license file for the ModelSim-Altera software, you may delete this line.
- (5) The MAX+PLUS II software installs the FLEXlm software in the **/adm** directory, depending on what the user specified during installation.
- (6) Quartus II software versions 8.0 and later do not support the Sun Solaris operating system. However, Altera software does support Sun Solaris license servers.

2. When you complete all modifications, ensure the conditions described in [“License File Conditions”](#) on page 41 are met.

Specifying the License for Intellectual Property (IP) Cores, DSP Builder, or Intellectual Property (IP) and Development Kits

If you have installed and set up your license for the Quartus II software, you can modify the **license.dat** file to include licensing information for intellectual property (IP) cores, DSP Builder, or intellectual property and development kits.

If you have not installed and set up your license for the Quartus II software, first follow the instructions in [“Setting Up the License File”](#) on page 40.

Follow these steps to add each IP core, DSP Builder, or intellectual property and development kit feature line, to an existing Altera license file.

1. Open the license email you received from Altera after purchasing an IP core, DSP Builder, or intellectual property and development kit. The license email contains the **FEATURE** lines required for licensing.
2. Open your Quartus II **license.dat** file in a text editor.

3. Copy the FEATURE lines from the email and paste it at the end of your license file.

For DSP Builder, the required FEATURE line begins with C4D5_512A.



Modifying the Altera License File

Do not delete any FEATURE or INCREMENT lines from the existing Altera license file. Doing so results in a unusable license file.

4. Save the license file and ensure the conditions described in “License File Conditions” on page 41 are met.
5. Start the Quartus II software, and on the Tools menu, click **License Setup**.
6. Confirm that the path to your license file appears in the **License file** box.
7. Perform [step 1](#) through [step 6](#) for each IP core, DSP Builder, or intellectual property and development kit you want to license.

The license is now set up and you can begin using the IP core, DSP Builder, or intellectual property and development kit.



For Information About

Refer To

Licensing AMPP Megafunctions

AN 320: OpenCore Plus Evaluation of Megafunctions on the Altera website

Specify the License for the ModelSim-Altera Edition Software



ModelSim-Altera Starter Edition Software Versions 6.4g and later

The ModelSim-Altera Starter Edition software versions 6.4g and later do not require a license.

The ModelSim-Altera Edition software supports licenses using the Mentor Graphics license daemon **mgld**. You can find the **mgld** daemon in the following directories:

Windows: *<ModelSim-Altera system directory>\win32aloem*

Linux: *<ModelSim-Altera installation directory>/linuxaloem*

or

<Quartus II system directory>/linux/linuxaloem (when installed using the Altera Complete Design Suite for Linux DVD)

Before starting the ModelSim-Altera software, you must set the `LM_LICENSE_FILE` environment variable to the location and file name of the ModelSim-Altera license file. For example, `LM_LICENSE_FILE (<ModelSim-Altera installation directory>/licenses/eda/license.dat)` or with the `<port>@<host>` notation (**1900@set**), Where `<port>` is the license port number and `<hostname>` is the server's host name as defined in the "Modifying the Network License File" on page 49.

To set the `LM_LICENSE_FILE` environment variable to the location and file name of the ModelSim-Altera license file for Windows or Linux, refer to "Specifying the License File Using the `LM_LICENSE_FILE` Environment Variable" on page 43.

The ModelSim-Altera Edition software license expires 15 months after the date of purchase, at which point you can no longer use the software. You must obtain an updated Quartus II software subscription license file from the Self Service Licensing Center of the Altera website at www.altera.com/licensing every 15 months to renew your license for the specific ModelSim-Altera Edition software version that you purchase. You can use only the version of ModelSim-Altera Edition software that you purchase with the updated license.

After receiving the updated Quartus II software license file, you must perform the procedure described earlier in this section to specify the license for the ModelSim-Altera Edition software.

Licensing for the Nios II Embedded Design Suite

You can create, compile, and generate time-limited FPGA programming files for Nios II hardware systems without obtaining a license file. To generate non-time-limited FPGA programming files and flash programming files, you must obtain a license for the Nios II processor core or Nios II development kit, in addition to the license for the Quartus II software. You do not need a license to develop software using only the Nios II Software Build Tools for Eclipse.

Transferring a License File

If you want to transfer your license file to another computer, you can rehost your license. Refer to the procedure in [“Rehosting a License” on page 35](#).

Upgrading or Setting Up a License Manager Server

The Quartus II software uses the FLEXlm license manager software to administer licensing for single or multiple users in a network installation. This section provides instructions for upgrading or setting up the FLEXlm server software for Windows and instructions for configuring network licensing for the Quartus II software for Linux.



Operating System Support

Quartus II software versions 8.0 and later do not support the Solaris operating system. However, Altera software does support Solaris license servers.

A system administrator should perform these steps to configure license servers after the Quartus II software is installed.

Upgrading the FLEXlm License Manager Server Software

To support network licensing, the Quartus II software requires the FLEXlm license manager server software version 8.0 or later.

The Altera Installer for Windows installs the FLEXlm software version 9.5 on Windows 32-bit systems or version 11.1.1 on Windows XP Professional x64 Edition and Windows Vista (64-bit) systems. The Altera Installer for Linux automatically installs version 9.5 of the FLEXlm software on Linux workstations. However, you should also verify that the FLEXlm software version of the license server is 8.0 or later.

Refer to “Installing Software with the Altera Complete Design Suite” on page 14 for more information about installing the FLEXlm software. If the FLEXlm software is version 8.0 or later, skip to “Rereading an Existing License File” on page 57.

To determine which version of the FLEXlm software you are using:

- ✓ On the computer running the FLEXlm software, type the following commands at a command prompt:

Windows:

```
<FLEXlm system directory>\lmgrd -v ↵  
<FLEXlm system directory>\alterad -v ↵
```

Linux or Solaris:

```
/<FLEXlm system directory>/lmgrd -v ↵  
<FLEXlm system directory>/alterad -v ↵
```

If the **lmgrd** or **alterad** daemons are not from the FLEXlm software version 8.0 or later, you must upgrade both daemons with the versions provided with the Quartus II software.

To upgrade an older version of the FLEXlm software, follow these steps:

1. Make a backup copy your current **lmgrd** and **alterad** daemons.
2. Copy the new versions of the files to the computer running the license server over your current daemons. You may have to shut down the license server software to complete this step.

If you installed the FLEXlm software using the Altera Installer, the current version of the **lmgrd** and **alterad** daemons are located in the following directories:

Windows:

```
<drive>:\<Quartus II system directory>\bin\alterad  
<drive>:\<Quartus II system directory>\bin\lmgrd
```

Linux or Solaris:

```
/<Quartus II system directory>/<operating system>/alterad  
<Quartus II system directory>/<operating system>/lmgrd
```

Where *<operating system>* is **linux** or **solaris**.

3. Copy the FLEXlm software utility **lmutil** from the Quartus II system directory to the license server computer.
4. Restart the FLEXlm license server by typing the following commands at a command prompt:

Windows:

```
<FLEXlm system directory>\lmutil -c lmdown <license file path> ␣  
<FLEXlm system directory>\lmgrd -c <license file path> [-l <optional  
log path>] ␣
```

Linux or Solaris:

```
/<FLEXlm system directory>/lmutil -c lmdown <license file path> ␣  
<FLEXlm system directory>/lmgrd -c <license file path>  
[-l <optional log path>] ␣
```

Configuring a New License Server

The Quartus II software uses the FLEXlm license manager server software to administer licensing for single or multiple users in a network installation. If you do not have an existing FLEXlm license server, you must configure a new license server before starting the Quartus II software for the first time.



Before You Configure a New License Server

You should be aware of the following information before you configure a new license server:

- You must have system administration (Administrator) privileges on Windows.
- If you have an existing FLEXlm license server, refer to “[Rereading an Existing License File](#)” on page 57.
- You must have a valid license file according to the guidelines in “[Obtaining a License File](#)” on page 27, and modified the license file according to the guidelines in “[Setting Up the License File](#)” on page 40.
- These instructions assume that you saved the **license.dat** file in the **<drive>:\flexlm** directory (Windows) or the **/usr/local/flexlm/licenses** directory (Linux). If you installed the license file in a different directory, substitute the directory path.

To launch a new license server:

- ✓ Type the following command at a command prompt:

Windows:

```
<Quartus II system directory>\bin\lmgrd -c  
<drive>:\flexlm\license.dat ↵
```

Linux or Solaris:

```
/<Quartus II system directory>/<operating system>/lmgrd -c  
/usr/local/flexlm/licenses/license.dat ↵
```

Where *<operating system>* is linux or solaris.

To configure a new license server as a Windows service, follow these steps:

1. Type the following command at a command prompt:

```
lmtools ↵
```
2. In the LMTOOLS dialog box, click **Configuration using Services**.
3. Click the **Config Services** tab.
4. In the **Service Name** box, type Flexlm License Server

5. In the **Path to the lmgrd.exe file** box, type the location of your **lmgrd** file, usually the `<drive>:\<Quartus II system directory>\bin` directory.
6. In the **Path to the license file** box, type the location of your **license.dat** file, usually the `<drive>:\flexlm` directory.
7. In the **Path to the debug log file** box, type the location of your debug log file, usually the `<drive>:\flexlm\debug.log` directory.
8. Click **Save Service**.

Rereading an Existing License File

If you change the license file, you must reread the license file or restart the license server before you can run the Quartus II software for the first time. If you have an existing FLEXlm license server with an existing license file for the MAX+PLUS II software, or software from another vendor, and the FLEXlm license manager server software is version 8.0 or later, you can copy and paste the Altera **FEATURE** lines from your Quartus II **license.dat** file into your existing license file. Make sure you modify the license file according to the guidelines in [“Setting Up the License File” on page 40](#).

Refer to [“Upgrading the FLEXlm License Manager Server Software” on page 54](#) to verify that you are using the latest supported version of the FLEXlm software.



Configuring a New License Server

If you do not have an existing FLEXlm license server, or you need to configure a new license server, go to [“Configuring a New License Server” on page 55](#).

To reread your license file on a license server:

- ✓ To reread your license file on a license server for Windows, type the following command at a command prompt:

```
<Quartus II system directory>\bin\lmutil lmreread ↵
```

or

Follow these steps:

- a. In the LMTOOLS dialog box, click **Configuration using Services**.
 - b. Select the name of the license server, usually **Flexlm License Server**.
 - c. Click the **Start/Stop/Reread** tab.
 - d. Click **ReRead License File**.
- ✓ To reread your license file on a license server for Linux or Solaris, type the following command at a command prompt:

```
/<Quartus II system directory>/<operating system>/lmutil  
lmreread ↵
```

Where *<operating system>* is `linux` or `solaris`.

or

Restart the license server.



Viewing FLEXlm Options

Type `lmgrd -help` at a command prompt to see a list and description of the available FLEXlm options.

Starting and Stopping the License Server

When configuring the license server, you can start and stop the license server with the LMTOOLS dialog box. Before you start or stop the license server, you must configure a new license server as a Windows service. Refer to [“Configuring a New License Server” on page 55](#) for more information.

To start or stop the license server with the LMTOOLS dialog box, follow these steps:

1. Type the following command at a command prompt:

```
<Quartus II system directory>\bin\lmtools ↵
```

2. In the LMTOOLS dialog box, click **Configuration using Services**.

3. Select the name of the license server, usually **Flexlm License Server**.
4. Click the **Start/Stop/Reread** tab.
5. Click **Start Server** or **Stop Server**.

Starting the License Server Automatically at Startup

When configuring the license server, you can set up the license server to start automatically at startup with the **LMTOOLS** dialog box. Before you set up the license server to start automatically at startup, you must configure a new license server as a Windows service. Refer to “[Configuring a New License Server](#)” on page 55 for more information.

To start the license server automatically at startup with the **LMTOOLS** dialog box, follow these steps:

1. Type the following command at a command prompt:

```
<Quartus II system directory>\bin\lmttools ←
```
2. In the **LMTOOLS** dialog box, click **Configuration using Services**.
3. Select the name of the license server, usually **Flexlm License Server**.
4. Click the **Config Services** tab.
5. Turn on **Use Services**.
6. Turn on **Start Server at Power Up**.

Installing the FLEXlm License Manager Server Software on Another License Server

To install the FLEXlm license manager server software on an additional license server, follow these steps:

1. Create one of the following directories on the additional license server.

Windows: `<drive>:\<Quartus II system directory>\`

Linux or Solaris: `!<Quartus II system directory>!<operating system>`

Where `<operating system>` is **linux** or **solaris**.

2. Copy the following files from the `<drive>:\<Quartus II system directory>\`, `!<Quartus II system directory>!linux`, or `!<Quartus II system directory>!solaris` directory of your original Quartus II software into the new directory:

- **lmgrd**
- **lmutil**
- **alterad**
- **lmtools** (Windows)

You can also install the FLEXlm software on another license server with the **Install** button next to **FLEXlm Server** in the setup program for Windows. Refer to “[Installing Software with the Altera Complete Design Suite](#)” on [page 14](#) for more information.

Installing a Sentinel Software Guard

If your installation of the Quartus II software for Windows uses a node-locked (single-user) fixed license and includes a Sentinel software guard, before you specify a license file, you must install the Sentinel driver and software guard.



Before You Install the Sentinel Software Guard

You can use a USB software guard to license the Quartus II software for Windows versions 7.2 or earlier. If you are licensing the Quartus II software versions 8.0 or later, you must use a NIC ID. Parallel port software guards are still supported for backward compatibility; however, they are not supported on 64-bit systems.

USB software guards are not supported for Linux operating system installations.

Installing the Sentinel Driver

The Sentinel driver is required for all Quartus II software systems running on Windows that use a USB software guard. The Sentinel driver is installed automatically with the Quartus II software for Windows.



Sentinel Driver Installation Requirement

Installing the Sentinel driver requires that you have system administration (Administrator) privileges.

To install the Sentinel driver on Windows XP or Windows Vista (32-bit) systems, following these steps:

1. On the Windows Start menu, click **Run**.
2. Type the following command in the **Run** dialog box:

```
<drive>:\<Quartus II system directory>\drivers\sentinel\  
setup.exe /usb /q3 ↵
```

or

For the MAX PLUS II software:

```
<drive>:\<MAX+PLUS II system directory>\drivers\setupx86 ↵
```

3. In the Sentinel Driver Setup Program window, on the Functions menu, click **Install Sentinel Driver**.
4. In the **Sentinel Install** dialog box, click **OK**.
5. Restart your computer when prompted.

To install the Sentinel driver on Windows XP Professional x64 Edition or Windows Vista (64-bit) systems, follow these steps:

1. On the Windows Start menu, click **Run**.
2. Type the following command in the **Run** dialog box:

```
<drive>:\<Quartus II system directory>\drivers\sentinel\  
win_xp64\sentinst71xp64.exe /S /v"/qn"↵
```

Do not connect disk drives or any devices that use the parallel port, other than a printer or Altera parallel port download cable, to either end of the software guard. Disk drives can destroy a software guard by drawing power that exceeds the guard's capacity.

Disconnect the software guard before using the parallel port to transfer data between computers using a data-transfer program. Failure to do so can cause damage to the software guard.

Setting Up USB Software Guard Support for Remote Desktop

If you want to use a USB software guard with the 64-bit version of the Quartus II software for Windows, and you want to run the Quartus II software with Remote Desktop, you must set up the software guard with the following procedure.



Before You Install the USB Software Guard for Remote Desktop Support

You must have system administration (Administrator) privileges and the USB software guard installed on the client machine.

To set up USB software guard support, follow these steps:

1. If the 64-bit version of the Quartus II software is not already installed on a local drive, copy the following executable to the local drive:

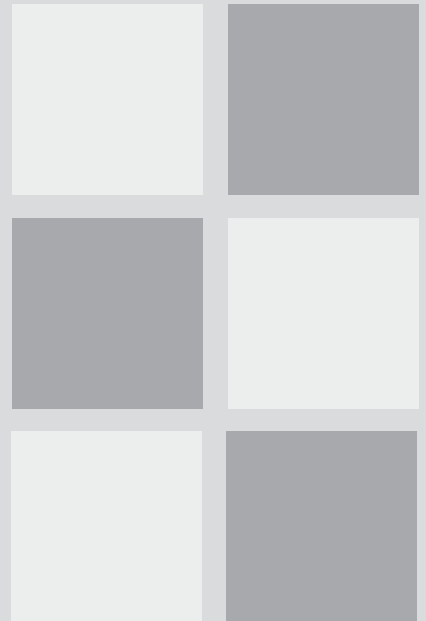
```
<drive>:\<Quartus II system directory>\drivers\sentinel\  
win_xp64\sentprotserv64xp64.exe
```

2. On the Windows Start menu, click **Run**.
3. Type the following command in the **Run** dialog box:

```
<drive>:\<Quartus II system directory>\drivers\sentinel\  
win_xp64\sentprotserv64xp64.exe -i
```


Chapter Three

More Configuration Information



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Mounting and Unmounting DVDs	67

3

Introduction

This chapter includes additional configuration information and procedures, including Quartus II environment variables, language settings, fonts, and mounting and unmounting the Altera Complete Design Suite DVD procedures.

Quartus II Environment Variables

The Quartus II software installation process initializes general and NativeLink environment variables.

Setting Environment Variables in Linux

If you are using the C shell in Linux, environment variables are located in your `.cshrc` file and have the following format:

```
setenv <environment variable> <value>
```

If you are using the Bourne or Korn shell in Linux, environment variables are located in your `.profile` file and have the following format:

```
set <environment variable> = <value>
```

If you are using the Bash shell in Linux, environment variables are located in your `.bashrc` file and have the following format:

```
export <environment variable> = <value>
```

Setting Environment Variables in Windows

To set environment variables in Windows, follow these steps:

1. Click **Control Panel** on the Windows Start menu.

2. Double-click the **System** icon in the Control Panel window.
3. Click the **Advanced** tab in the **System Properties** dialog box.
4. Click **Environment Variables**.
5. Select a variable from the **variables** list in the **Environment Variables** dialog box.
6. Click **Edit**.
7. Type a value in the **Variable value** box in the **Edit Variable** dialog box

Quartus II General Environment Variables

The Quartus II software installation process initializes the following variables, but you can change them to optimize your system performance.

QUARTUS_ROOTDIR_OVERRIDE

The `QUARTUS_ROOTDIR_OVERRIDE` environment variable specifies the name of the Quartus II system directory. The default directory is *<home directory> /altera <version number>* (Linux) or *<Quartus II system directory> \altera \ <version number> \quartus* (Windows).

If the system displays an error message indicating that Quartus II software files cannot be found when you start the program, you should set the `QUARTUS_ROOTDIR_OVERRIDE` environment variable to the name of the Quartus II system directory.

QUARTUS_64BIT

The `QUARTUS_64BIT` variable specifies the 64-bit version of the Quartus II software. To turn on 64-bit processing in the Quartus II software, set the environment variable to 1 before running the Quartus II software. This variable is supported only by systems with 64-bit processing.

QUARTUS_LIBRARY_PATHS

The `QUARTUS_LIBRARY_PATHS` variable specifies user-defined library paths. You can use this environment variable to define multiple library paths at the same time instead of individually adding each path to the user library.

Quartus II NativeLink Environment Variables

The Quartus II software installation process initializes the following variables, but you must set them to use the NativeLink features of the Quartus II software.

QUARTUS_INIT_PATH

The `QUARTUS_INIT_PATH` variable specifies the paths of the other EDA tools launched from within the Quartus II software. You must set this variable to launch other EDA tools from within the Quartus II software.

QUARTUS_INIT_LIBPATH

The `QUARTUS_INIT_LIBPATH` variable specifies the `LD_LIBRARY_PATH` variable required by some EDA tools. You should set this variable to the EDA tool's `LD_LIBRARY_PATH` variable if the EDA tool requires an `LD_LIBRARY_PATH` variable.

Identifying and Terminating Nonresponding Linux Processes

If the Quartus II software for Linux stops responding due to an internal error, determine whether any of the following processes are running:

<code>mwrpcss</code>	<code>quartus_sim</code>
<code>quartus</code>	<code>quartus_pow</code>
<code>quartus_map</code>	<code>quartus_stp</code>
<code>quartus_fit</code>	<code>quartus_pgm</code>

quartus_tan	quartus_cpf
quartus_asm	quartus_sh
quartus_drc	quartus_cmd
quartus_cdb	quartus_sta
quartus_eda	quartus_si
quartus_jbcc	quartus_jli

You can determine which processes are running by typing the following command at the command prompt:

```
/usr/bin/ps -ef ↵
```

You must then terminate these processes by typing the following command at the command prompt:

```
kill -9 <process ID number> ↵
```

Mounting and Unmounting DVDs

This section describes how to mount and unmount the Altera Complete Design Suite DVD on Linux workstations. Mounting and unmounting DVDs is necessary only if your Linux operating system does not automatically mount DVDs when inserted into your DVD drive.



Before You Mount a DVD

You must have superuser or “root” privileges to mount and unmount the DVD drive. If you are logged in, you do not need to have root privileges to mount a DVD.

To mount a DVD, follow these steps:

1. If the **/mnt/dvdrom** directory does not exist, type the following command at the command prompt:

```
mkdir /mnt/dvdrom ↵
```

2. Insert the DVD into your DVD drive.
3. To mount the DVD drive, type the following command at the command prompt:

```
/bin/mount /mnt/dvdrom ↵
```

If you previously mounted and unmounted this DVD, a number may be appended to the DVD device name, in which case you should use the complete name and number for *<DVD device name>*. For example, if the device name appears as `modelsim2`, use that name.

To unmount a DVD on a Linux workstation:

- ✓ Type the following command at the command prompt:

```
/bin/umount /mnt/dvdrom ↵
```

To successfully unmount the DVD drive, you must make sure that no one is accessing the directory structure at or below the **dvdrom** directory. If another user is using the DVD drive, you may receive the following message:

```
umount:/mnt/dvdrom : Device busy
```

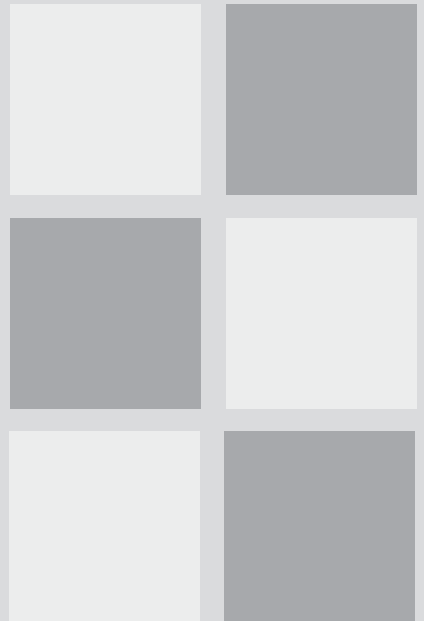
To determine whether you are accessing the DVD drive yourself, type the following command at the command prompt:

```
pwd ↵
```

You should see the `/` prompt on your screen. If you do not, type `dvdrom/ ↵` again.

Chapter Four

Documentation and Technical Support



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4

Starting the Quartus II Interactive Tutorial

The Quartus II software includes the Flash-based Quartus II Interactive Tutorial. The modules of this tutorial teach you how to use basic and advanced features of the Quartus II design software, including design entry, compilation, timing analysis, programming, incremental compilation, and debugging.

This tutorial includes audio and Flash animation components. For best results, use the tutorial on a system that includes a sound card, speakers, and at least 1024x768 display resolution.

To start the Quartus II tutorial after you successfully install the Quartus II software:

- ✓ On the Help menu, click **Tutorial**.

Once you start the tutorial, you can jump directly to any tutorial module by clicking **Contents**. Once you select a tutorial module, you can click **Show Me**, **Guide Me**, or **Test Me** at any time to jump directly to the tutorial mode that best suits your learning style.

Your system must meet the requirements described in the “[System Requirements](#)” on page 3 to run the tutorial.

Using Quartus II Help

The Quartus II software includes a platform-independent Help system that provides comprehensive documentation for the Quartus II software and more details about the specific messages generated by the software. You can view Help in one of the following ways:

- Click the **Help** button when available in an active dialog box.
- On the Help menu, click any of the following menu options:
 - **Search**: The Search finds a maximum of 500 topics containing the search keyword.

- **Message List:** The Messages list provides an alphabetical list of all messages and offers detailed Help on each message. To view Help on an individual message, in the Messages window, right-click the message on which you want to receive Help, and then click **Help**.
- **Devices and Adapters:** The **Devices and Adapters** command opens the Devices and Adapters topic in Help, which provides a list of devices and configuration devices available in the Quartus II software.
- **EDA Interfaces:** The **EDA Interfaces** command opens the About Using the Quartus II Software with Other EDA Tools topic in Help, which provides an overview of EDA tool functionality within the Quartus II software.
- **What's New:** The **What's New** command opens the New Features topic in Help, which provides an overview of new features in the current version of the Quartus II software.



For Information About	Refer To
Using Quartus II Help	"Using Quartus II Help Effectively" in Quartus II Help

Registering for a myAltera Account

Your copy of the Quartus II software is registered at the time of purchase; however, to use the mySupport website to view and submit service requests, you must also register for a myAltera account and an Altera user name. You can use your Altera user name to access your myAltera account. A myAltera account makes it easier for you to use many other Altera website features, such as the Download Center, the Altera Licensing page, Altera Technical Training online class registration, or Buy On-Line-Altera eStore features.

To register for an myAltera account, follow these steps:

1. Go to the mySupport website by pointing your web browser to the mySupport website at www.altera.com/mysupport.

or

In the Quartus II software, on the Help menu, point to **Altera on the Web**, and then click **Quartus II Service Request**.

2. Follow the instructions on the mySupport website to register for a myAltera account.

You can register for a myAltera account even if you are not a current Altera subscription user.

Contacting Altera

You can contact Altera for technical support and product information.

Table 1. Quartus II Technical Support Resources

Resource	Description
Altera website:	www.altera.com
mySupport website:	www.altera.com/mysupport Or, in the Quartus II software, on the Help menu, point to Altera on the Web , and then click Quartus II Service Request . This website allows you to submit, view, and update technical support service requests.
Telephone:	(800) 800-EPLD (7:00 a.m. to 5:00 p.m. Pacific time, M–F) You will need your 6-digit Altera ID to access the hotline. (408) 544-8767 (7:00 a.m. to 5:00 p.m. Pacific time, M–F)



Registering for an Altera.com Account

To use the mySupport website to view and submit service requests, you must register for a myAltera account. For more information, refer to “[Registering for a myAltera Account](#)” on page 71

Product Information

If you need the latest Altera product information or literature, go to the Literature section of the Altera website at www.altera.com/literature.



For Information About

Refer To

Altera technical support services

The Contact Altera section of the Altera website

References



For Information About

Refer To

Specific disk space and memory requirements

Adequate disk space as described in the **readme.txt** file, which is available from the Quartus II Help menu and in the Quartus II system directory after installation.

Updated information about system requirements and the most current version of this manual

The *Altera Software Installation and Licensing* manual on the Altera website

Latest information on new features, EDA tool support, and known issues and workarounds for the Quartus II software

The *Quartus II Software Release Notes* document on the Altera website

Latest information about device support for the Quartus II software

The *Quartus II Software Device Support Release Notes* document on the Altera website

Quartus II software features and design flows

The *Introduction to Quartus II Software* manual on the Altera website and the Quartus II Interactive Tutorial. After installation, the Quartus II Interactive Tutorial is available from the Quartus II Help menu and in the Quartus II system directory

Introduction, design flow, and licensing for the OpenCore Plus evaluation feature of Megafunctions

AN 320: OpenCore Plus Evaluation of Megafunctions document on the Altera website

Introduction, design flow, and licensing for the OpenCore evaluation feature of AMPP Megafunctions

AN 343: OpenCore Evaluation of AMPP Megafunctions document on the Altera website

Introduction, installation, licensing, and design flow information for the MAX+PLUS II software.

The *MAX+PLUS II Getting Started* manual on the Altera website



For Information About

Refer To

Altera programming hardware

ByteBlaster II Download Cable User Guide, ByteBlasterMV Download Cable User Guide, EthernetBlaster Communications Cable User Guide, MasterBlaster Serial/USB Communications Cable User Guide, and USB-Blaster Download Cable User Guide on the Altera website

Document Revision History

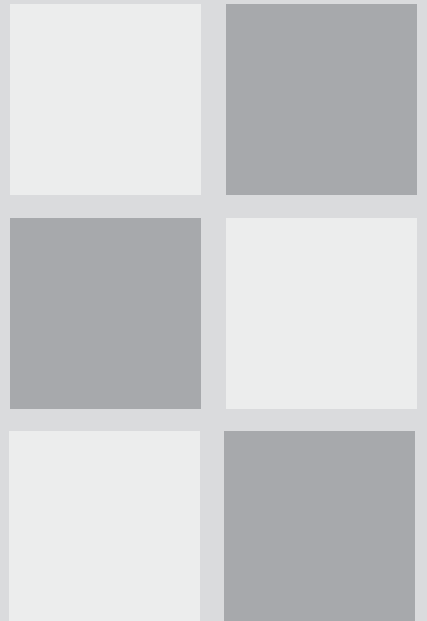
Table 2 shows the revision history for this document.

Table 2. Document Revision History

Date and Document Version	Changes Made
November 2009 v.9.1.0	The new manual merges content from the <i>Quartus II Software Installation & Licensing for Windows and Linux Workstations</i> manual and <i>AN 340: Altera Software Licensing</i> .
July 2010 v.10.0.0	Updated the manual to incorporate changes made to the Altera Installer and the Self Service Licensing Center.

Appendix A

Quartus II Software File Organization



A

What's in Appendix A:

Quartus II Software and Related
Software File Organization

Quartus II Software and Related Software File Organization

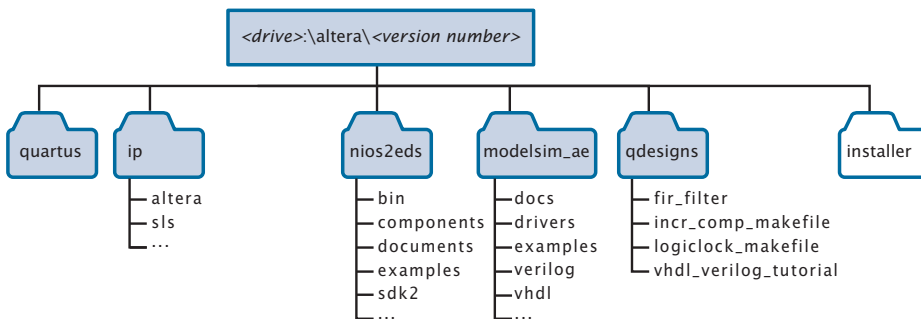
During the Quartus II software and related software installation, one top-level directory is created for either Windows or Linux. The detailed file organization is described in this chapter.

Windows File Organization

During the Altera software installation, the top-level directory, `\altera\<version number>` is created. The directory contains system software and data files and includes the subdirectories shown in Figures 1 and 2.

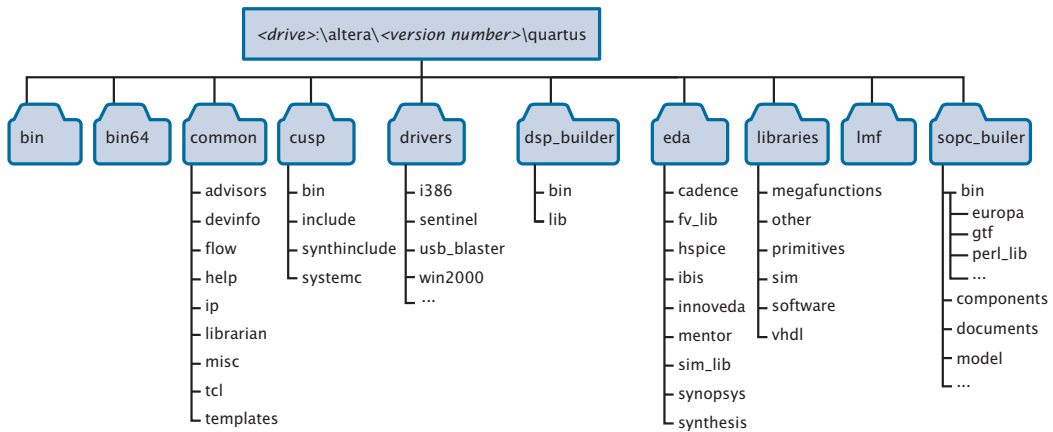
The main `\altera\<version number>` directory includes the subdirectories and data files shown in Figure 1. The `installer` directory is present only if you install Altera software with the Altera Installer.

Figure 1. Altera Software Directory (*<drive>*:\altera*<version number>*)



The `\altera\<version number>\quartus` directory includes the subdirectories shown in Figure 2.

Figure 2. Quartus II Software Directory (<drive>:\altera\<version number>\quartus)

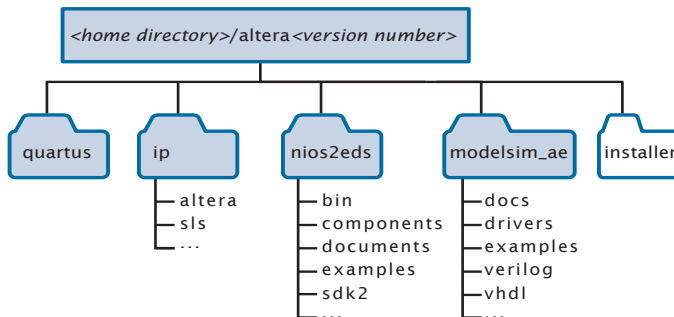


Linux Workstation File Organization

During the Altera software installation, the top-level directory, `<home directory>/altera<version number>`, is created. The directory contains system software and data files and includes the subdirectories shown in Figures 3 and 4.

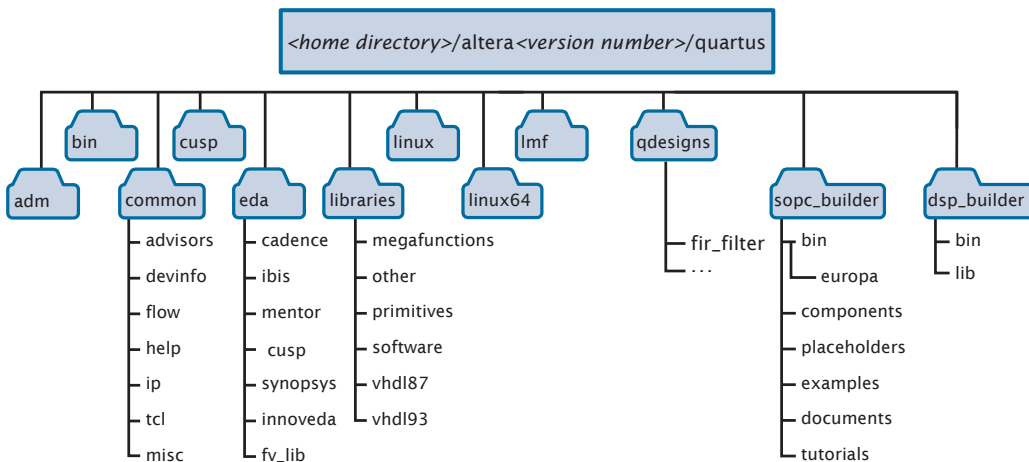
The `<home directory>/altera<version number>` directory includes the subdirectories and data files shown in Figure 3. The `installer` directory is present only if you install Altera software with the Altera Installer.

Figure 3. Altera Software Directory (<home directory>/altera<version number>)



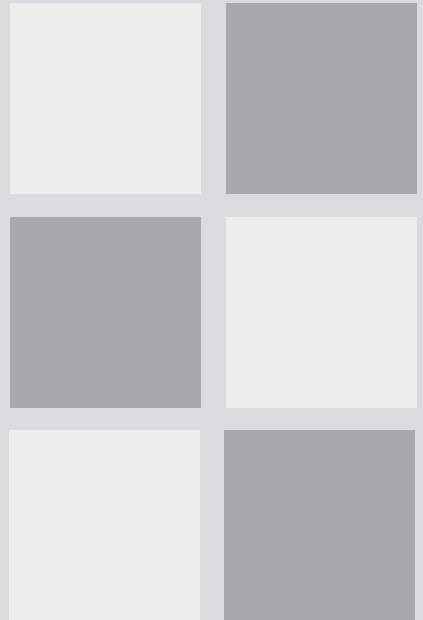
The <home directory>/altera<version number>/quartus directory includes the subdirectories and data files shown in Figure 4.

Figure 4. Quartus II Software System Directory (<home directory>/altera<version number>/quartus)



Appendix B

Licensing Troubleshooting and FAQs



B

What's in Appendix B:

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License File Troubleshooting	80
Frequently Asked Questions	85
License File Format and Examples	91

Introduction

This appendix includes tips to troubleshoot licensing problems, answers to common questions about licensing, and detailed information about Altera license file formats. For more information, use the [Software Licensing Troubleshooter](#) available in the [Support Center](#) at the Altera website or visit the [Altera Licensing](#) page.

License File Troubleshooting

This section provides troubleshooting information for the `license.dat` file and related licensing files.

LM_LICENSE_FILE Environment Variable

Multiple software tools on a system can use the `LM_LICENSE_FILE` environment variable to specify the license locations. Use a semicolon (;) on Windows and a colon (:) on UNIX or Linux systems to separate multiple locations in the variable. For example, the full version of the ModelSim software uses the same `LM_LICENSE_FILE` environment variable. When modifying the variable to add the Altera license location, do not remove any existing license locations required for software from other vendors.

license.dat File

Refer to “[License File Format and Examples](#)” on page 91 for details for each entry in the `license.dat` file. If you are experiencing problems with the license, verify that the following conditions are met:

- Conditions listed in “[License File Conditions](#)” on page 41
- No features are expired.
- In network licenses, all paths to license daemons are correct. If the path name has spaces in it, enclose the full path in quotation marks, not Microsoft smart quotation marks.

Quartus II Software

If the **license.dat** file contains an error in the license server name, or if the path to the **license.dat** file is incorrect, the Quartus II software user interface might run more slowly while the computer searches the network for the non-existent license. If this problem occurs, edit the license file to correct the error, or specify the correct path for the **license.dat** file.

To direct the Quartus II software to check the Altera website for an updated license file, on the Tools menu, click **License Setup**. In the **License Setup** page, click **Web License Update**. If an updated license file exists, the Quartus II software automatically downloads and installs the correct license.



Using the Web License Update Feature

The automatic license update feature is supported for fixed licenses only.

Network Licensing Error: Quartus II or MAX+PLUS II License File

You may receive the following message if you use the `<port>@<hostname>` notation to specify the location of your Quartus II or MAX+PLUS II license file. This error may occur if there is contention for the same port on the license server machine.

```
Can't connect to daemon on license server -- make sure  
lmgrd is running on server host and that it has the  
correct port number.
```

To correct the error, verify that the port specified for the license server is not in use by another application.

ModelSim-Altera Software

The ModelSim-Altera Edition software requires that the location of the license file is set by the `LM_LICENSE_FILE` environment variable; however, the location of the license file can also be set by the `MGLS_LICENSE_FILE` environment variable.

For Mentor Graphics applications, including the ModelSim-Altera Edition software, the locations of license files and servers can be specified in five places. If multiple values are set, only the first value found is used. The following search order is used:

1. MGLS_LICENSE_FILE set in the environment
2. MGLS_LICENSE_FILE set in the registry
3. LM_LICENSE_FILE set in the environment
4. LM_LICENSE_FILE set in the registry
5. C:\flexlm\license.dat (FLEXlm default license file location)

If the Mentor Graphics license is installed on a PC, the MGLS_LICENSE_FILE environment variable settings takes precedence over LM_LICENSE_FILE environment variable settings. If both are specified, you should use the LM_LICENSE_FILE environment variable to point to the ModelSim license server and use the MGLS_LICENSE_FILE environment variable to point only to the license server for other Mentor Graphics applications. Also, if you use the MGLS_LICENSE_FILE environment variable, the ModelSim license server and other Mentor Graphics applications license servers should be on the same machine.

Specifying ModelSim-Altera Edition License Files and Servers

If you license the ModelSim-Altera Edition software with a floating license running on a Windows license server, you might receive an error message that the server cannot start **mgcld** because there might be another copy of **mgcld** running. To resolve this problem, create a directory called **C:\flexlm** on the license server, and place the license file in this directory.

Specifying Licensed HDL

If you can open the ModelSim-Altera Edition software, but a licensing error occurs when you try to load or compile a design, the error may occur because the OEM software tool (versions 6.1g and earlier) can be licensed for either VHDL or Verilog HDL, but not both. The Quartus II software issues an error message when trying to compile a Verilog HDL design if the license file is enabled for VHDL support only or vice versa.



ModelSim-Altera Editions

ModelSim-Altera Edition software (version 6.4a and later) corresponding to the Quartus II software versions 9.0 and later supports both VHDL and Verilog HDL simulation. However, the OEM software tool does not support mixed-language simulation.

Unable to Check Out License

If you have a floating license and the **mgcld** license daemon is expired or not compatible with the required ModelSim-Altera **mgcld** daemon, you will receive a fatal error message that the license cannot be checked out.

To resolve this problem, you must use the **mgcld** daemon in the *<ModelSim-Altera installation directory>\win32aloem* instead of the **mgcld** daemon that is included with the Quartus II software version in the *<Quartus II installation directory>\win* directory. If you require the **mgcld** daemon for a different operating system, download the appropriate file at the [License Daemon Downloads](#) on the Altera website.

You might encounter a similar error if the **lmgrd** and **lmutil** daemon versions are not compatible with the ModelSim-Altera software. You can find the compatible daemons in the *<ModelSim-Altera installation directory>\win32aloem* directory. However, for the Quartus II software, you must use the daemons in the *<Quartus II installation directory>\win* directory.

ModelSim-Altera Edition Software on a PC for Versions Prior to 5.5e

The ModelSim-Altera Edition software for versions prior to 5.5e licensing requires additional steps for a PC license, which are not required for UNIX workstations, or versions 5.5e and later, in which case the `LM_LICENSE_FILE` environment variable setting is sufficient.

In the applicable software versions, the PCLS utility runs during the software installation and allows you to specify the license file for the ModelSim software. If the license file was not properly set up when the software was first installed, run the PCLS utility after installation to correctly specify the license file. To run the PCLS utility after software installation, run the **setup.exe** file located in the *<ModelSim installation directory>\drivers\pcls* directory.

To use the PCLS utility to set up the license file, follow these steps:

1. In the Mentor Graphics licensing window, click **Next** to transfer the required files to the computer.
2. In the Configure Licensing window, click **Custom**.
3. In the Select configuration options window, ensure that only **3. Define product license locations** is turned on.
4. Click **Next**.
5. In one of the following forms, type the location of the license file in the window that appears:

<path to license file>\license.dat

or

<port>@<hostname>

6. Click **Next**, then click **Finish**.
7. Restart the PC.



License Server Port

The port that you specify for the license server must not be used by another application. Otherwise, it will cause contention for the same port on the license server machine and you will receive a network license error.

Network License Port

You can optionally specify a port number in the **license.dat** file. In general, using the `PORT` number is faster than using the auto port, which is used when no port number is specified. If a port number is specified, ensure that the port number on that machine is unique to avoid port conflicts with other applications. If the port appears in the **license.dat** file, specify the port in the *<port>@<hostname>* format or the license will not work.

FLEXlm optionally generates a network license debug log file. If you encounter problems, return to the license setup and generate a debug log file. Attempt to restart the license service and review the log file for pertinent error messages.

Refer to “Setting Up the Floating Network Licenses on the License Server” on page 47 for information about generating the debug log.

Network License Daemons

In some network system environments, the license server computer does not have an installation of the software tools that provides the necessary vendor daemons (**alterad**, **mgcltd**, or **armlmd**). In this case, copy the required daemon from another computer with the software installed. You can find the required daemon in the directory location specified in Table 3 on page 49. Save the file in a similarly named directory, or any other location on the license server; the correct daemon location on the license server must be specified in the license file.



Transferring License Daemons Between Computers

If you are using FTP to transfer the daemons from one computer to another, ensure that you specify the “binary” transfer mode.

To determine the version number of a license daemon, run the daemon at a command prompt with the `-v` option.

To debug a problem with a floating license server, use the following command to report the status of a floating license on a license server, including whether the license is up and how many seats are available:

```
lmutil lmstat -a -c <port>@<host> ↵
```

Frequently Asked Questions

This section contains frequently asked questions related to Altera software licensing.

Software Versions

Q: Do I need a new license file for every version of the Quartus II or MAX+PLUS II software that I purchase?

A: If you purchase a subscription license for the Quartus II or MAX+PLUS II software, the license file that you receive from Altera is valid for the current version and earlier of the Quartus II or MAX+PLUS II software when you purchase the software, for up to one year from the date of purchase.

You can find version information in your `license.dat` file. [Figure 1](#) shows a FEATURE line from a sample `license.dat` file:

Figure 1. Quartus II Software Feature Line Example

```
FEATURE quartus alterad 2009.12 permanent uncounted 2BC9FE52E0F3
```

The 2009.12 in the license file in [Figure 1](#) is the version information for the Quartus II software. In this license file example, any version of the software released up to and including September 2009 is enabled. Additionally, the inclusion of permanent in the FEATURE line indicates that the license file never expires or stops working for enabled versions of the Quartus II software.

You can check the version of the Quartus II software by clicking **About Quartus II** on the Help menu. The software version is at the top of the **About Quartus II** dialog box.

You can check the version of the MAX+PLUS II software by clicking **About MAX+PLUS II** on the Help menu. The software version is in parentheses at the top of the **About MAX+PLUS II** dialog box.

Q: I just upgraded to the latest version of the Quartus II software. Now my Altera software says the license is not valid, but I know I have purchased an Altera software subscription. What should I do?

A: To direct the Quartus II software to check the Altera website for license file updates, on the Tools menu, click **License Setup**. In the **License Setup** page, click **Web License Update**. If an updated license file exists, the Quartus II software automatically downloads and installs the correct license.



Automatic Web License Update Feature

The automatic **Web License Update** feature is supported for fixed licenses only.

Alternatively, go to the Altera website and request a new license file as described in the instructions in “[Obtaining a License File](#)” on page 27. If your license file expires and you renew your subscription, you must get a new license file with the new expiration date.

License File

Q: Can I enter a comment in an Altera license file (FLEXlm)?

A: Yes. Comments can be specified in Altera **license.dat** files using the # symbol as shown in [Figure 2](#).

Figure 2. License.dat File Using # Symbol Example

```
# Altera Baseline license file tied to hard disk  
FEATURE maxplus2 alterad 2006.12 permanent uncounted B4EF65C4F538 \
```

Q: Can I combine my Altera network license with other software tool licenses so that I require only one license file?

A: Altera recommends using a separate license file for Altera software to avoid potential problems and confusion. In a UNIX environment, you can start multiple services for the **lmgrd** daemon using different port numbers. For PCs, use the FLEXlm control panel and change the **Service Name** under the **Setup** tab to a different name for each copy of the **lmgrd.exe** file.

You can combine the Altera license with other licenses if the other software tools use the same version of the **lmgrd** daemon. Always use the latest version of the **lmgrd** daemon, which is typically the version included with the latest version of the Quartus II or MAX+PLUS II software.

If the license server is on a UNIX system, use the **lmver <filename>** utility to check the versions of the **lmgrd** and **alterad** daemons. The default file names are **lmgrd.exe** and **alterad.exe**.

If the license server is on a PC, the version of the **lmgrd** daemon is the same as the FLEXlm License Manager version installed with the Quartus II or MAX+PLUS II software. To verify the version of the **lmgrd** daemon, open the FLEXlm License Manager through the PC server Control Panel window from the Start menu. The version information is on the **About** tab.

If you have an **lmgrd** daemon version conflict between Altera software and another software tool, you must use a separate Altera **license.dat** file.

Q: What is the difference between SW-QUARTUS-SE-FLT, FLOATALL, FLOATPC, FLOATNET and FLOATLNX?

A: Currently, Altera offers only the SW-QUARTUS-SE-FLT floating network license, which provides the license to all operating systems supported by Altera software. However, Altera continues to support existing FLOATALL, FLOATPC, FLOATNET, and FLOATLNX subscribers. No changes are required for the operating systems supported by these licenses. Refer to [“Licensing Options” on page 23](#) for information regarding floating network licenses.

If you have a FLOATALL, FLOATPC, FLOATNET, or FLOATLNX license, when you add new seats, your license file will contain an INCREMENT line that signifies the same support as a SW-QUARTUS-SE-FLT floating network license. If you only renew an existing FLOATALL, FLOATPC, FLOATNET, or FLOATLNX license, your license support remains the same.

Software Guard, NIC ID, and Hard Disk Serial Number

Q: How can I check if the Quartus II software recognizes my software guard (T-guard), NIC ID, or hard disk serial number?

A: On the Tools menu, click **License Setup** and look under **System info** for the Network Interface Card (NIC) ID, C: drive serial number, and **Software Guard ID**. The Quartus II software versions 8.0 and later do not support the software guard.

Q: Why does the **Local System info** section indicate **Not found** for the software guard ID?

A: The Quartus II software versions 8.0 and later do not support a software guard. If you are using the Quartus II software version 7.2 and earlier, the Quartus II software indicates **Not found** if there are communication problems with the parallel port. Try rebooting your computer with the software guard attached to ensure that your computer recognizes the software guard.

Networks and Servers

Q: Can my Linux network license for the Quartus II software work without an internet connection?

A: If you use a network license for the Quartus II software on a private network that is not connected to the internet, you should use the license server IP address instead of its hostname in the SERVER line of the license file, and the LM_LICENSE_FILE environment variable on client computers. Alternatively, if you use the hostname of the license server, ensure that there is an entry in the **/etc/hosts** file for the license server.

Q: Can I host both my existing and new floating Quartus II Subscription Edition license on one server?

A: No, you cannot host two licenses with an identical FEATURE line (old and new licenses) on one server. You must use a different license server to host the licenses separately.

Q: Can I use the Windows Terminal Server remote client to run the Quartus II software?

A: Yes, the Quartus II software versions 3.0 and later support the Windows Terminal Server remote client for users with floating or fixed licenses.

If you have a fixed license that was generated for the Quartus II software versions 7.1 and earlier and you want to use the Windows Terminal Server remote client to run the Quartus II software, you must obtain an updated license file from the Self Service Licensing Center at www.altera.com/licensing. You will receive an updated license file containing the TS_OK element of the license file that supports Windows Terminal Services for the Quartus II software versions 3.0 and later.

IP

Q: Can my Quartus II software licensing option be different from the IP licensing options (For example, the Quartus II software has a fixed license and IP has a floating license)?

A: No, the IP and the Quartus II software licensing options are tied. If you use the Quartus II Web Edition software, you can use only the fixed licensing option. However, you can move your IP between systems using the licensing option of the Quartus II software to which that the IP is tied.

Q: I am using the Quartus II Web Edition software. Can I purchase any Altera IP? What IP licensing options do I have?

A: Altera delivers all IP cores, including the Nios II embedded processor, as a single MegaCore IP library package. For the Quartus II Web Edition software, you can purchase both Altera IP and third-party IP cores. The IP and Quartus II software licensing options are tied. For the Quartus II Web Edition software, you can use only the fixed licensing option.

Messages

Q: Why do I receive the The Serial Number you entered does not exist in our databases message when I request a new license on the Altera website?

A: If you are using a new software guard ID (T-Guard) to request a new license, go to the Self Service Licensing Center at www.altera.com/licensing, and request a license as described in “Obtaining a License File” on page 27.

Q: Why did I receive an email with the content message: The information you entered is not in Altera’s database?

A: If you recently purchased the Quartus II software and you are using a NIC ID to request a license, go to the Self Service Licensing Center at www.altera.com/licensing, and request a license as described in “Obtaining a License File” on page 27.

Q: Why is my NIC ID reported as all zeros (000000000000) when using the Netbios NET CONFIG command?

A: If the Quartus II software is not installed, you can use the `ipconfig /all` command to obtain the physical address of the NIC. If you have installed the Quartus II software, use the `lmutil lmhostid` command as described in “NIC ID” on page 28. If you are currently using the Netbios protocol for a LAN rather than TCP/IP, this command returns 000000000000 as the physical address of all NIC IDs.



Using the TC/IP Protocol with Altera Floating Licenses

You must be running the TCP/IP protocol to use Altera floating licenses. This license does not work with any other protocols, such as IPX or Netbios.

Q: Why do I receive the message: Error: Unable to check out a license when I attempt to load Altera's original equipment manufacturer (OEM) version of the ModelSim software?

A: This error occurs if you have not completed the license install portion of the ModelSim software installation process. This error applies only to the ModelSim-Altera software for versions prior to 5.5e.

Reinstall the ModelSim OEM software if the path to your ModelSim OEM license is not correctly specified. Follow the steps in ["ModelSim-Altera Edition Software on a PC for Versions Prior to 5.5e" on page 83](#).

Additionally, ensure that your floating license and the **mgcld** license daemon are valid and compatible with the required ModelSim-Altera **mgcld** daemon. Refer to ["Unable to Check Out License" on page 83](#) for more information.

License File Format and Examples

This section describes the lines in the Altera license file in detail and shows example Altera license files.

Header

Both floating network and fixed license files have headers that contain useful information, such as the type of license, the primary computer and companion IDs, issue and expiration dates, and a product license summary.

[Figure 3](#) shows the header of a fixed license file that contains a license for the Quartus II and MAX+PLUS II software, and the ModelSim-Altera Edition software. This license file works on a PC that has software guard number T000012345 attached to its parallel port.

The license was issued on May 13, 2010, is a perpetual license, with no defined companion IDs, and a maintenance expiration date of April 2011.

Figure 3. License Header Example

```
# Altera Corporation Software and/or Intellectual Property License File
# Issued 13 May 2010
# Perpetual-No License Expiration
# Upgrade to these products will no longer be available after the
# Maintenance Expiration date unless licenses are renewed.
# Fixed Node License
# Primary Machine Name-scenario 1
# Primary Machine ID-Guard ID T000012345
# Companion ID-N/A
# Companion ID 2-N/A
# Product License Summary:
# - ModelSim-Altera Edition Software, 1 Seat(s)
# Maintenance Expiration of 2011.04
# - Quartus II SE Fixed, 1 Seat(s)
# Maintenance Expiration of 2011.04
```

SERVER, VENDOR, and USE_SERVER Lines

A floating license file starts with `SERVER`, `VENDOR`, and `USE_SERVER` lines to describe the license server. Fixed license files do not contain these entries. These license lines for floating licenses are structured, as shown in the following example:

```
SERVER <hostname> <8 or 12 character host or NIC ID> <port>
VENDOR <daemon> "<path>"
USE_SERVER
```

The `USE_SERVER` line designates the license file as a floating license.

You can configure up to three redundant network license servers with the FLEXlm licensing scheme. In this case, there are three `SERVER` lines, one for each license server machine. The first server specified is the master.

Typically, a license file contains multiple `VENDOR` lines; one for each required license vendor daemon. Some license files might use the `DAEMON` keyword instead of `VENDOR`.

[Table 1](#) lists the elements of the `SERVER` and `VENDOR` license lines.

Table 1. Elements of SERVER and VENDOR Lines for Floating Licenses

Element Name	Editable	Description
hostname	yes	The host name of the server in the license.dat file.
8- or 12-character host or NIC ID	no	The PC NIC or UNIX Host ID of the server. You must supply this ID to Altera when purchasing the license.
port	n/a	The port number. Refer to “ Network License Port ” on page 84 .
daemon	no	The vendor daemon name. alterad daemon = Quartus II and MAX+PLUS II software mgcld daemon: ModelSim-Altera software armlmd daemon: ARM features of the ARM Development Suite (ADS)
path	yes	The path to the vendor daemon on the server. You must edit this entry. Refer to “ Network License Daemons ” on page 85 .

FEATURE and INCREMENT Lines

All Altera license files contain FEATURE, and possibly INCREMENT lines, to describe the software features that are licensed by the **license.dat** file. Certain features use INCREMENT, which are structured similarly as FEATURE lines. The FEATURE line, shown in the following example, is structured as follows:

```
FEATURE <name> <daemon> <version> <expiration> <# of licenses>
<authcode> [<vendor_string>] [<hostid_lock>] [SIGN] [SUPERCEDE]
[<issuer>]
```

A backslash (\) character indicates that the FEATURE or INCREMENT line continues on the next line in the text file. The last line of each FEATURE line does not require the backslash. Elements in brackets [] are present only in some license FEATURE or INCREMENT lines. [Figure 4](#) shows a FEATURE line, followed by an INCREMENT line.

Figure 4. FEATURE Line Followed by an INCREMENT Line Example

```
FEATURE START
# The following is a feature line for Quartus II Subscription Edition Fixed
# Number of seat licenses is 1
# No license expiration date
FEATURE maxplus2 alterad 2011.04 permanent uncounted 6D103456930D \
    HOSTID=GUARD_ID=T000012345 SIGN="0116 7EF5 F487 4771 3456 9278 \
    4DA6 80CF 4131 95C6 1F1E D54F 8429 C807 6A8B 0A13 BC80 A11D \
    0F6E AC08 4FA8 0B6E C267 9BBB 5791 C037 0FAD FB9E FFD8 5CF4"
FEATURE quartus alterad 2011.04 permanent uncounted 08E2123438D3 \
    HOSTID=GUARD_ID=T000012345 TS_OK SIGN="0403 403E CF63 6460 \
    3C3D 2AA7 60B3 A074 77A7 670A 3C5D BF03 9391 3476 D1DA 14E7 \
    56FA 0F63 1EE2 77C8 41C9 3495 A238 FF7C F507 6573 54FA F46C \
    D42B C0B3"
# FEATURE END
#####
INCREMENT alteramtivsim mgcld 2011.04 13-aug-2011 uncounted \
    6D7CE8FDD113FDB05C51 \
    VENDOR_STRING=2A865E73 HOSTID=GUARD_ID=T000012345 ISSUER="Altera " \
    SN=23912821 SIGN2="03BB 4774 F8FA 6E7A 4B71 5E3B FB9C 92B5 7B2F 3581\
    49EF 4558 0945 260B 23C6 1DE0 2BD4 3709 6945 5A70 CAD6 C22B 7A4E 67B7\
    C8FF 90BB B360 022C E3DC 32F8"
# FEATURE END
```

Table 2 explains the different elements of the FEATURE and INCREMENT lines.

Table 2. Elements of the FEATURE and INCREMENT Code Lines

Element Name	Description
name	The feature name.
daemon	The name of the vendor daemon that manages the feature. This name corresponds to a VENDOR line in Network/Server licenses.
version	Any version of software released up to and including this date is licensed. Software with a later version date does not function using this license file.
expiration	The date after which the software or service pack, cannot be used. The expiration date applies to trial licenses. For Altera license subscriptions, the expiration is “permanent.”
# of licenses	The number of concurrent users that can run each feature. For some license types, the entry is “uncounted.”
authcode	An authorization code generated by Altera.
vendor_string	Specified for certain third-party license features.

Table 2. Elements of the FEATURE and INCREMENT Code Lines

Element Name	Description
hostid_lock	Specified if a feature is node-locked to a software guard, NIC ID, or hard-disk serial number. Intellectual property (IP) MegaCore functions often contain node-locked feature lines in floating licenses. Software guard: HOSTID=GUARD_ID=<Software guard number> Network interface card (NIC): HOSTID=<NIC ID> Hard-disk serial number: HOSTID=DISK_SERIAL_NUM=<Hard-disk ID>
issuer	The name of the ModelSim license issuer.
sign	An authorization code generated by Altera.
TS_OK	Enables remote login for fixed license Quartus II software (includes Altera IP, Nios II Software Build Tools for Eclipse, and DSP Builder).

Table 3 shows the available Altera license features.

Table 3. Available Altera License Features (1)

Feature Name	Description
quartus	Quartus II software
maxplus2	MAX+PLUS II software
maxplus2web	The no-cost MAX+PLUS II BASELINE (and Student Edition) software
maxplus2vhdl	VHDL support in the MAX+PLUS II software (2)
maxplus2verilog	Verilog HDL support in the MAX+PLUS II software (2)
alteramtivsim	ModelSim-Altera VHDL and Verilog HDL Simulator (3)
alteramtivlog	ModelSim-Altera Verilog HDL Simulator (4)

Notes:

- (1) This table does not include license features for any intellectual property (IP), development kits, or special license codes used for the Quartus II Limited Edition software.
- (2) VHDL and Verilog HDL support is included only with certain MAX+PLUS II licenses.
- (3) The ModelSim-Altera alteramtivsim license subscription supports both VHDL and Verilog HDL, but the software does not support mixed language simulation, for ModelSim-Altera version 6.4a and later. The ModelSim-Altera alteramtivsim license subscription supports VHDL only for ModelSim-Altera version 6.3g_p1 and earlier.
- (4) The ModelSim-Altera alteramtivlog license subscription supports Verilog HDL only and is available for ModelSim-Altera Edition version 6.3g_p1 and earlier.

Example license.dat Files

This section includes the text from several example **license.dat** files. License files vary, depending on the type of licenses and the software that is enabled. License examples in this section should be used only for reference; they are not valid for actual licensing.

Example of Fixed PC Software Guard License

Figure 5 shows a **license.dat** file that contains a license for the Quartus II and MAX+PLUS II software, and the ModelSim-Altera Edition software. This license file works on a PC that has software guard number T000012345 attached to its parallel port.

Figure 5. Fixed PC Software Guard License Example

```
#####
FEATURE START
# The following is a feature line for ModelSim Altera Edition
# Number of seat licenses is 1
# No license expiration date
INCREMENT alteramtivsim mgcld 2011.04 13-aug-2011 uncounted \
    6D7CE8FDD113FDB05C51 \
    VENDOR_STRING=2A865E73 HOSTID=GUARD_ID=T000012345 ISSUER="Altera " \
    SN=23912821 SIGN2="03BB 4774 F8FA 6E7A 4B71 5E3B FB9C 92B5 7B2F 3581\
    49EF 4558 0945 260B 23C6 1DE0 2BD4 3709 6945 5A70 CAD6 C22B 7A4E 67B7 \
    C8FF 90BB B360 022C E3DC 32F8"
# FEATURE END
#####
FEATURE START
# The following is a feature line for Quartus II Subscription Edition Fixed
# Number of seat licenses is 1
# No license expiration date
FEATURE maxplus2 alterad 2011.04 permanent uncounted 6D103456930D \
    HOSTID=GUARD_ID=T000012345 SIGN="0116 7EF5 F487 4771 3456 9278 \
    4DA6 80CF 4131 95C6 1F1E D54F 8429 C807 6A8B 0A13 BC80 A11D \
    0F6E AC08 4FA8 0B6E C267 9BBB 5791 C037 0FAD FB9E FFD8 5CF4"
FEATURE quartus alterad 2011.04 permanent uncounted 08E2123438D3 \
    HOSTID=GUARD_ID=T000012345 TS_OK SIGN="0403 403E CF63 6460 \
    3C3D 2AA7 60B3 A074 77A7 670A 3C5D BF03 9391 3476 D1DA 14E7 \
    56FA 0F63 1EE2 77C8 41C9 3495 A238 FF7C F507 6573 54FA F46C \
    D42B C0B3"
# FEATURE END
#####
End of Altera Corporation Software and/or Intellectual Property License File.
Issued 05/13/2010
```

Example of Floating Network License

Figure 6 shows a `license.dat` file that contains a license for the Quartus II and MAX+PLUS II software, as well as the ModelSim-Altera Edition software and the IP Base Suite. This license specifies that two users can run the software simultaneously, and works when the PC with NIC ID 00B0D0ABCCBA is set up as a license server and the users point to the license location.

Figure 6. Floating Node Network License for a PC Server Example

```
#####  
SERVER <hostname> 00B0D0ABCCBA <port number>  
VENDOR alterad <path to daemon executable>  
USE_SERVER  
#####  
FEATURE START  
# IP Base Suite (FIR, FFT, NCO, DDR, DDR2, DDR3, QDRII, DDR/DDR2 Library,  
# RLD RAM II, SerialLite II, S2GXGEMAC)  
# Number of seat licenses is 2  
# No license expiration date  
PACKAGE ip_base alterad COMPONENTS="6AF7_0034 6AF7_0012 6AF7_0055 \  
6AF7_00A8 6AF7_00A7 6AF7_00A8 6AF7_00C2 6AF7_00BE 6AF7_00BF \  
6AF7_00A4 6AF7_00AC 6AF7_00AD 6AF7_0014" OPTIONS=SUITE \  
SIGN="1A76 FAF3 0CFA 9A0B D5A9 C867 4923 F223 AA3B C17B 6F11 \  
98E6 8056 178E A795 1F63 7695 1260 3D0C F662 2657 4AFF 25BD \  
3029 0C7C 1B3A 542A 3948 9F90 03CE"  
FEATURE ip_base alterad 2012.05 permanent 2 D7564046983D \  
VENDOR_STRING="iiiiiiihdLkhIIIIIIIIUPDuiaaaaaaaaa11X38DDDDDDdpjz5cdddddddJJJJJbq  
Ih0uuuuuuuuuugYYWiVVVVVVVVb0FVHHHHHHHHBUEakffffffffffD2FFRkkkkkkkkkWL$84" \  
DUP_GROUP=UHD SIGN="0A9A EB33 1A75 A16D 5949 B37B 015F 1A69 \  
9FD4 CED3 ABCE A628 9FDE 4846 455C 01E1 064B D881 C079 215C \  
FBAE 86B2 AC3F 4210 F471 6298 A340 CFC8 BCDA C218"  
# FEATURE END  
#####  
FEATURE START  
# The following is a feature line for Quartus II Subscription Edition Floating  
# Number of seat licenses is 2  
# No license expiration date  
FEATURE maxplus2 alterad 2012.05 permanent 2 71781799E9FF SIGN="0D15 \  
DBE8 1893 DA63 0658 4F28 D47C 64D8 A9AB 4E84 A3EE 4257 F592 \  
753F E261 0FD9 C334 F2E9 C9A2 5316 CB42 EF0F 188D 7933 5134 \  
6FDC 0BA8 6CCD FF8A 403D"  
FEATURE quartus alterad 2012.05 permanent 2 8D7C83160D8A SIGN="15F3 \  
2C48 65E9 1EAC 5E5F 19A0 1C53 7DF1 4BEA D4EA 422A 92C7 9CC0 \  
8B45 4A3D 0674 667C 1FB9 504E D960 8FC2 1B46 94C3 035B 3711 \  
651F D889 0B03 99F7 48EC"  
# FEATURE END  
#####  
# End of Altera Corporation Software and/or Intellectual Property License File.  
Issued 05/13/2010
```

Example of Hard-Disk-Based MAX+PLUS II BASELINE License

Figure 7 shows a `license.dat` file that contains a license for the MAX+PLUS II BASELINE software. This license works on the PC with hard-disk serial number 07d00123. The leading zero does not appear in the license file but is required when requesting a license.

Figure 7. Hard-Disk-Based MAX+PLUS II BASELINE License Example

```
FEATURE maxplus2web alterad 2002.11 17-nov-2002 uncounted \
    368EC33D9680 HOSTID=DISK_SERIAL_NUM=7d00123 SIGN="01A0 \
    D1B3 F570 2FA5 2EF1 7EA1 B4B1 3738 5BDF 8106 2933 5021 \
    8CA3 4B07 02E1 0E24 85A8 97E7 538B EC86 660B 3813 A0CF \
    8335 69F4 0657 529B 4CAE 48E7 7D53"
```



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