

# Quartus® II

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## Installation & Licensing for PCs

Version 5.0



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**QUARTUS® II**

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# Preface

The *Quartus® II Installation & Licensing for PCs* manual provides the information you need to install and start the Quartus II design software.

This manual is intended for all Quartus II software users, from beginning to advanced.

This manual provides comprehensive information for installing and licensing the Quartus II software, and includes information about the following topics:


- How to install the Quartus II software and related software.
- How to license the Quartus II software correctly.
- Other documentation and technical support information.



# Documentation Conventions

The *Quartus® II Installation & Licensing for PCs* manual uses the following conventions to make it easy for you to find and interpret information.

## Typographic Conventions

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

Visual Cue	Meaning
<b>Bold Initial Capitals</b>	Command names; dialog box, page, and tab titles; and button names are shown in bold, with initial capital letters. For example: <b>Find Text</b> command, <b>Save As</b> dialog box, and <b>Start</b> button.
<b>bold</b>	Directory names, project names, disk drive names, file names, file name extensions, software utility names, software executable names, and options in dialog boxes are shown in bold. Examples: <b>quartus</b> directory, <b>d:</b> drive, <b>license.dat</b> file.
Initial Capitals	Keyboard keys, user-editable application window fields, and menu names are shown with initial capital letters. For example: Delete key, the Options menu.
“Subheading Title”	Subheadings within a manual section are enclosed in quotation marks. In manuals, titles of Help topics are also shown 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. For example: <i>FLEXlm End Users Guide</i> .
<i>italics</i>	Variables are enclosed in angle brackets (< >) and shown in italics. For example: < <i>file name</i> >, < <i>CD-ROM drive</i> >.
Courier font	Anything that must be typed exactly as it appears is shown in Courier. For example: <code>\quartus\bin\lmulti lmhostid</code> .
↵	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 consists of one step only.
	The hand points to information that requires special attention.

Visual Cue	Meaning
	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 the *Quartus II Installation & Licensing for PCs* manual:

Term	Meaning
“click”	Indicates a quick press and release of the left mouse button.
“double-click”	Indicates two clicks in rapid succession.
“choose”	Indicates that you need to use a mouse or key combination to start an action.
“select”	Indicates that you need to 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. For example: <b>Select Chain Description File</b> , and click <b>OK</b> .
“turn on”/“turn off”	Indicates that you must click a check box to turn a function on or off.

# Chapter One

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## Installing the Quartus II Software



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# 1



# Introduction

This chapter describes the requirements and procedures for installing the following software CD-ROM versions (some listed CD-ROMs may not be included in your current Altera® Package):

- Quartus® II Design Software for PCs Version 5.0
- Altera VHDL & Verilog HDL Simulation Tool for Use with the Quartus II Software (ModelSim®) Version 6.0c
- MegaCore® IP Library Version 5.0
- Nios® II Embedded Processor, Evaluation Edition, Version 5.0 for Windows

## Quartus II System Requirements

Your system must meet the following minimum requirements:

- Intel Pentium II PC running at 400 MHz or faster with 256-MB system memory (faster systems give better software performance)
- 1.2 GB of available disk space on the drive or partition where you are installing the Quartus II software and an additional 5.2 MB on the drive containing your system directory
- Microsoft Windows NT version 4.0 (Service Pack 4 or later), Windows 2000, or Windows XP
- Microsoft Windows-compatible SVGA monitor
- CD-ROM drive
- One or more of the following ports:
  - Parallel port for use with the ByteBlaster™ II or ByteBlasterMV™ parallel port download cable or Parallel Port Software Guard
  - Serial port for use with the MasterBlaster™ communications cable
  - USB port for use with the USB-Blaster™ download cable, the MasterBlaster communications cable, the Altera Programming Unit (APU), or the USB Software Guard (Windows 2000 and Windows XP only)

- 10/100 Mb Ethernet connection for use with the EthernetBlaster download cable
- Microsoft Internet Explorer software version 5.0 or later



### Using Internet Explorer with Quartus II Help

You should have Microsoft Internet Explorer software version 5.0 or later installed, because portions of the Internet Explorer software are required to use the Quartus II online Help system. However, you do not need to make the Internet Explorer browser your default browser. You may need to configure the Internet Explorer software to work with your company network. For example, you may need to configure for a dial-up connection or for a proxy server. If necessary, you can download the Internet Explorer software from the Microsoft Internet Explorer web site at [www.microsoft.com/ie/](http://www.microsoft.com/ie/).



### For Information About

### Refer To

Specific disk space and memory requirements

Quartus II **readme.txt** file, which is located in the top-level directory of the Quartus II software CD-ROM. After installation, the **readme.txt** file is available from the Quartus II Help menu and in the Quartus II system directory.

Updated information about system requirements and the most current version of the *Quartus II Installation & Licensing for PCs* manual

*Quartus II Installation & Licensing for PCs* manual on the Altera web site

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

*Quartus II Software Release Notes* document on the Altera web site

Quartus II software features and how they work with your design flow

*Introduction to Quartus II* manual on the Altera web site

Altera programming hardware

*Altera Programming Unit User Guide*, *ByteBlaster II Download Cable User Guide*, *ByteBlasterMV Download Cable User Guide*, *EthernetBlaster Download Cable User Guide*, *MasterBlaster Serial/USB Communications Cable User Guide*, and *USB-Blaster Download Cable User Guide* on the Altera web site

# Uninstalling Previous Versions of the Quartus or Quartus II Software

If you have installed a previous version of the Quartus® or Quartus II software, you can uninstall that software, if you wish, before installing the current version of the Quartus II software.

To uninstall a previous version of the Quartus or Quartus II software:

- ✓ Choose **Programs > Altera > Quartus <version number> Uninstall, Repair or Modify** (Windows Start menu).

## Installing the Quartus II Software

The Quartus II software uses a Setup program for installation.

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

- You must have system administration (Administrator) privileges.
- By default, the Setup program installs the Quartus II software in the `<drive>\altera\quartus<version number>` system directory, where `<version number>` is the number of the Quartus II software version; for example, the default directory for the Quartus II software version 5.0 is `<drive>\altera\quartus50`.
- You can install multiple copies of the same version of the Quartus II software on the same PC. Subsequent installations of the Quartus II software can have a user-defined name. By default, the Setup program uses the format “**Quartus II <version number> (Copy <number>)**” for multiple copies, where **Copy <number>** is the number of Quartus II software installations that are installed on the PC. When installing a Quartus II service pack on a PC that has multiple copies of the same version of the Quartus II software installed, the installation program allows you to choose the copy of the Quartus II software that will receive 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 using the **Export Database** command (Project menu). After you have installed a newer version of the Quartus II software, you can import the database in the new version by using the **Import Database** command (Project menu). For more information about importing and exporting version-compatible databases, see “Overview: Using Version-Compatible Database Files” in Quartus II Help. Version-compatible database files are available in Quartus II software version 4.1 and later.

Follow these steps to run the Setup program on your PC:

1. Insert the Quartus II Design Software for PCs CD-ROM into your CD-ROM drive. The Quartus II Install CD window appears automatically, offering several options. If the CD-ROM is in the drive, and the Setup program is not already running, start the Setup program manually by performing the following steps:
  - a. Choose **Run** (Windows Start menu).
  - b. In the **Run** dialog box, type `<CD-ROM drive>:\install`.
  - c. Click **OK**.
2. Click the **Install Quartus II and Related Software** button to install the Quartus II software and related software. The Setup program starts automatically and guides you through the installation process.



#### Installing Related Software

The Setup program also allows you to install ModelSim-Altera software, the MegaCore IP Library, and the Nios II Embedded Processor Evaluation Edition software. The CD-ROMs for this software are included in the Quartus II subscription packages, but may not be included in the Altera development and Altera partner kits. To install these programs, make sure the **ModelSim-Altera**, **MegaCore IP Library**, or **Nios II Embedded Processor, Evaluation Edition** options are turned on in the Setup program, and follow the installation process for those CDs. If you decide to install these software tools at another time, follow the installation instructions located in “Installing the ModelSim-Altera Software” on page 7, “Installing the MegaCore IP Library” on page 7, or “Installing the Nios II Embedded Processor Software” on page 8.

You can select a full installation or a custom installation. If you select a custom installation, you can select which device families you want to install, and you can also select whether you want to install EDA interfaces or tutorial files.



#### Installing Device Support Required for Using the Quartus II Tutorial

You must install support for Cyclone™ EP1C6 devices if you want to complete the Basic or LogicLock™ Quartus II tutorial. In addition, you must install support for MAX® II EPM570 and Stratix® EP1S25 devices if you want to complete the Optional MAX+PLUS® II conversion and Stratix tutorial modules.

3. If you want to install the Stand-Alone Programmer and the Stand-Alone SignalTap® II Logic Analyzer, click the **Install Stand-Alone Programmer** button. The Setup program starts automatically and guides you through the installation process.
4. If you will run the Quartus II software using a network (multiuser) license, and not a node-locked (single-user) license, click the **Install FLEXlm Server** button to install the FLEXlm License Manager software on the license server only. The Setup program installs the FLEXlm License Manager version 9.2 on the user workstation.

The Quartus II software supports network license servers on PCs running Windows NT 4.0, Windows 2000, and Windows XP; on UNIX workstations running Solaris 8 or 9, or HP-UX 11.0; and on PCs running Linux (Red Hat Linux 7.3 or 8.0 or Red Hat Enterprise Linux 3.0). You do not need to install the FLEXlm License Manager software on network client PCs or on PCs running the Quartus II software using a node-locked (single-user) license. Refer to [“Upgrading or Setting Up a License Manager Server” on page 18](#) for more information about setting up the license manager server.

# Installing the ModelSim-Altera Software

You can install the ModelSim-Altera software on PCs running Windows NT 4.0, Windows 2000, or Windows XP. The ModelSim-Altera **readme** file in the **modelsim** directory on the CD-ROM provides information on the ModelSim-Altera software operating requirements and licensing. You should read the **readme** file before installing the ModelSim-Altera software.

To install the ModelSim-Altera software on a PC, follow these steps:

1. Insert the Altera VHDL & Verilog HDL Simulation Tool for Use with the Quartus II Software (ModelSim) CD-ROM into your CD-ROM drive.
2. Choose **Run** (Windows Start menu).
3. In the **Run** dialog box, type `<CD-ROM drive>:\modelsim\pc\modelsim-altera.exe`.
4. Click **OK**. The Setup program starts automatically and guides you through the installation process.

# Installing the MegaCore IP Library

You can install the MegaCore IP Library on PCs running Windows NT 4.0, Windows 2000, or Windows XP. The MegaCore IP Library **readme.txt** file in the top-level directory on the CD-ROM provides information on the MegaCore IP Library. You should read the **readme.txt** file before installing the MegaCore IP Library.

To install the MegaCore IP Library on a PC, follow these steps:

1. Insert the MegaCore IP Library CD-ROM into your CD-ROM drive.
2. Choose **Run** (Windows Start menu).
3. In the **Run** dialog box, type `<CD-ROM drive>:\windows\setup.exe`.

4. Click **OK**. The Setup program starts automatically and guides you through the installation process.



#### For Information About

Using MegaCore functions with the Quartus II design software

#### Refer To

MegaCore user guides that are installed with the MegaCore IP Library and on the Altera web site.

## Installing the Nios II Embedded Processor Software

You can install the Nios II Embedded Processor Evaluation Edition software on PCs running Windows NT 4.0, Windows 2000, or Windows XP. The Nios II Embedded Processor **readme** file in the top-level directory on the CD-ROM provides information on the Nios II Embedded Processor software. You should read the **readme** file before installing the Nios II Embedded Processor software.

To install the Nios II Embedded Processor software on a PC, follow these steps:

1. Insert the Nios II Embedded Processor, Evaluation Edition for Windows CD-ROM into your CD-ROM drive.
2. Choose **Run** (Windows Start menu).
3. In the **Run** dialog box, type `<CD-ROM drive>:\launcher.exe`.
4. Click **OK**. The Setup program starts automatically and guides you through the installation process.

## Installing the TCP/IP Protocol

If you do not already have the TCP/IP protocol installed on the PCs in your network, you must add it to your networking configuration. These instructions apply only to PCs running Windows NT.

Follow these steps to install the TCP/IP protocol:

1. Close all other programs.
2. Insert your Windows operating system CD-ROM into your CD-ROM drive.
3. Choose **Settings > Control Panel** (Windows Start menu).
4. Double-click the **Network** icon in the Control Panel window.
5. In the **Network** dialog box, click the **Protocols** tab.
6. Click the **Add** button. The **Select Network Protocol** dialog box appears.
7. In the **Select Network Protocol** dialog box, select **TCP/IP Protocol** from the **Network Protocol** list.
8. Click **OK**.
9. In the **Windows NT Setup** dialog box, make sure the directory path is *<CD-ROM drive>:\i386*.
10. Click **Continue**.
11. In the **Network** dialog box, click **Close** after all files have been copied.
12. When you are asked if it is OK to restart your computer, click **Yes**.



For Information About	Refer To
Installing the TCP/IP protocol on PCs running Windows 2000 or Windows XP	Windows 2000 or Windows XP documentation or to the Microsoft web site at <a href="http://www.microsoft.com">www.microsoft.com</a> .



# Chapter Two

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## Licensing the Quartus II Software



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# 2

# Introduction

This chapter describes how to license the Quartus II software.



## Using Automatic Web License Retrieval

If you are using a node-locked (FIXEDPC) license and are a new user or are upgrading to a new version of the Quartus II software, you can perform an automatic web license retrieval at startup, which allows you to upgrade your license file automatically. For more information on this option, go to [“Starting the Quartus II Software” on page 25](#).

To set up your license for the Quartus II software, you must perform the following steps, each of which is described in more detail in this chapter:

1. If necessary, obtain a license file. The Quartus II software requires a valid, unexpired **license.dat** license file for each server that supports a network (multiuser) license or for each node-locked (single-user) license. This same license file can also enable the additional Altera simulation tools included with Altera software subscriptions, as well as the MAX+PLUS II software.
2. If you are using a network license (FLOATPC, FLOATNET, or FLOATLNX), modify the license file.
3. If you are using a network license, set up and configure the FLEXlm license manager server.

*or*

If you are using a node-locked (FIXEDPC) license, install a Sentinel Software Guard.

4. Start the Quartus II software.
5. Specify the location of the license file.
6. (Optional) Register for an Altera.com account.

# Obtaining a License File

When you start the Quartus II software, if the software cannot detect a valid license file, you are asked whether you want to run in evaluation mode for 30 days, perform an automatic license retrieval from the Altera web site, or specify the correct location of a valid license file.

You can also obtain an ASCII license file, **license.dat**, from the Licensing section of the Altera web site at [www.altera.com/licensing](http://www.altera.com/licensing) if you have the following information:

- Your Altera ID, which is a six-digit number that is provided when you purchase the Quartus II development system. This number is listed on the packing list that is shipped with the Quartus II software.
- Your serial number, which can be one of the following numbers:
  - If you have a network (multiuser) license version of the Quartus II software, the serial number is printed on the side of the Quartus II shipping box, and on the *Registration & License File Request Form*, which is also included with the Quartus II software package. This number begins with the letter G, and is followed by five digits (Gxxxxx).
  - If you have a node-locked (single-user) version of the Quartus II software, the serial number is the number on your Software Guard. This number begins with the letter T.
- Your Network Interface Card (NIC) number. To find your Windows NT, Windows 2000, or Windows XP server NIC number by using FLEXlm utilities, type the following command at a command prompt:

```
<drive>:\altera\quartus<version number>\bin\lmutil  
lmhostid ↵
```



## Saving Previous license.dat Files

Altera recommends that you save any previous **license.dat** file in a temporary directory, in case you need to refer to it later.

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 25.
2. Select **Perform automatic web license retrieval** to request a valid license file automatically from the Altera web site. If you are using a node-locked (FIXEDPC) license and the Quartus II software is able to retrieve a license file successfully from the web site, you can skip the remaining steps of this procedure. If you are using a network (multiuser) license, or if the Quartus II software is not able to retrieve a license file, you are guided through the licensing procedure.

*or*

To request a license file at a later time, go to the Licensing section of the Altera web site at [www.altera.com/licensing](http://www.altera.com/licensing). The Altera Software Licensing page is displayed.

3. If you are using a node-locked (single-user) license, select the FIXEDPC license option.

*or*

If you are using a network (multiuser) license, select the FLOATPC, FLOATNET, or FLOATLNX license option.

4. Specify the requested information.
5. You will receive an e-mail from Altera with a **license.dat** file attached, as well as the license file text. Altera recommends using the attached license file if you are using a node-locked (single-user) license. If you are using a network (multiuser) license, you may either use the attached license file, or copy 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`.

For Information About	Refer To
Additional methods of finding your NIC number	Altera Find Answers page, which is available from the Support Center section of the Altera web site at <b>www.altera.com/answers</b> .
Using the FLEXIm utilities	<i>FLEXIm End Users Guide</i> , which is available from the Support Services section of the Macrovision web site at <b>www.macrovision.com</b>

Figure 1 shows the Quartus II FEATURE line of a sample license file for a node-locked (single-user) license that uses a Software Guard.

**Figure 1. Sample Node-Locked (Single-User) License File**

<i>Feature name</i>	<i>Daemon name</i>	<i>Release date</i>	<i>Expiration date</i>	<i>Number of licenses requested</i>	<i>Authorization code</i>
<pre>FEATURE quartus alterad 2006.12 permanent uncounted 2BC9FE52E0F3 \ HOSTID=GUARD_ID=T000002287 SIGN="1C66 DAC6 1DAB C886 727B 65DF FAC2 B479 3E3C \ 656D 3561 E5D0 BBA3 C45C 4DDC 0F2F 68F5 4DF1 6F63 7785 2F5D 1480 1B0A 70DE \ 2220 1952 DDCD 9F4D 6D61 A177 "</pre>					

Figure 2 on page 15 shows a sample single-server network license file for a PC.

**Figure 2. Sample Single-Server Network License File**

```

Server name      Server host ID  Optional port  Number of  Authorization
name            name            number         licenses  code
                |                |              requested
SERVER alice    00c04f6bead6  1800
VENDOR alterad "<drive>:\altera\quartus42\bin\alterad.exe"
USE_SERVER
FEATURE quartus alterad 2006.12 permanent 5 7A496D25A602 SIGN="1C66 DAC6 1DAB C886 \
727B 65DF FAC2 B479 3E3C 656D 3561 E5D0 BBA3 C45C 4DDC 0F2F 68F5 4DF1 6F63 \
7785 2F5D 1480 1B0A 70DE 2220 1952 DDCD 9F4D 6D61 A177"
Feature name    Daemon name     Release date    Expiration date

```

If you are using the Quartus II software with a node-locked (single-user) license, skip to [“Installing a Sentinel Software Guard” on page 22](#).

The FLEXlm licensing scheme allows you to set up three redundant license servers to serve a network (multiuser) license. You can obtain a license file for redundant servers by performing the steps described earlier in this section for obtaining a license file. [Figure 3](#) shows a sample redundant server license file.

**Figure 3. Sample Redundant Server License File**

```

Server name      Server ID      Optional port  Number of  Authorization
name            number        number         licenses  code
                |                |              requested
SERVER alice    00c04f6bead6  1800
SERVER king    00c4fbbd170  1800
SERVER queen   00c4fbbd320  1800
VENDOR alterad "<drive>:\altera\quartus42\bin\alterad.exe"
USE_SERVER
FEATURE quartus alterad 2006.12 permanent 5 7A496D25A602 SIGN="1C66 DAC6 1DAB C886 \
727B 65DF FAC2 B479 3E3C 656D 3561 E5D0 BBA3 C45C 4DDC 0F2F 68F5 4DF1 6F63 \
7785 2F5D 1480 1B0A 70DE 2220 1952 DDCD 9F4D 6D61 A177"
Feature name    Daemon name     Release date    Expiration date

```



**For Information About**

**Refer To**

Setting up and administering license servers, including setting up three redundant license servers

*FLEXlm End Users Guide*, which is available from the Support Services section of the Macrovision web site at **www.macrovision.com**.

## Modifying the License File

If you have a network (multiuser) license, the **license.dat** file must be modified before it can be used by the license server. See *Application Note 340 (Altera Software Licensing)*, which is available from the Literature section of the Altera web site at **www.altera.com/literature**, for a detailed description of the license file.



**If You Have a Node-Locked (Single-User) License**

If you have a node-locked (single-user) license, you can skip this section and go to “Installing a Sentinel Software Guard” on page 22.

The first few lines of the license file are shown in the following example (your license file may not contain all the **VENDOR** entries, depending on which software you have enabled):

```
SERVER <host name> <8- or 12-character host or NIC ID> <port number>
VENDOR alterad "<path to daemon executable>"
VENDOR mgcld "<path to daemon executable>"
```

To modify the license file, follow these steps:

1. In the **license.dat** file, type the variables that are described in **Table 1**. The host or NIC ID will already be entered in the license file.

**Table 1. Variables to Modify in the License File (license.dat)**

Variable Name	Description	Directory
<host name>	The host name of the server; for example, my_server.	
<port number> (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.	
alterad "<path to daemon executable>" (2)	Path to the Altera vendor daemon executable alterad.	\<Quartus II system directory>\bin\alterad.exe
mgcld "<path to daemon executable>" (2)(3)(4)	Path to the Mentor Graphics vendor daemon executable mgcld.	\<ModelSim-Altera system directory>\win32aolem\mgcld.exe
<p>Notes:</p> <p>(1) If you do not specify a port number in the license file, the FLEXlm License Manager will automatically choose a free port between 27000 and 27009. However, to prevent port number conflicts, you can specify a port number. If three redundant servers are being used, you must specify a port number. For PC-based license servers, Altera recommends that you specify a port number of 1800. However, you can use any unused port number between 0 and 64000.</p> <p>(2) In some network environments, the license server does not have an installation of the software tool(s) that provides the necessary vendor daemon (<b>alterad</b> or <b>mgcld</b>). In this case, copy the required daemon from another machine that does have an installation of the software. Find the file in the directory location specified. Save the file in a similarly named directory or any other location on the license server. Specify the daemon location on the license server in the license file.</p> <p>(3) If the path to the server has spaces in it, enclose the full path in quotation marks.</p> <p>(4) If you are not using a license file for the ModelSim-Altera software, you may delete this line.</p>		

**2.** Make sure the license file meets these guidelines:

- The license file name must have a **.dat** extension. If your text editor adds **.txt** or another extension to the file name, such as **license.dat.txt**, you must rename the file to have only a **.dat** extension.
- The license file must have a carriage return at the end of the last **FEATURE** line.
- Any **FEATURE** line that wraps to a second or third line must contain a backslash (\) at the end of each line to indicate that it continues.





**For Information About**

**Refer To**

Modifying the license file for the Quartus II and MAX+PLUS II software and for other EDA tools

*Application Note 340 (Altera Software Licensing)* on the Altera web site

# Upgrading or Setting Up a License Manager Server

This section provides instructions for upgrading or setting up the FLEXlm License Manager server software on a PC running Windows NT 4.0, Windows 2000, or Windows XP. A system administrator should perform these steps to configure license servers after the Quartus II software is installed.



**If You Have a Node-Locked (Single-User) License**

If you have a node-locked (single-user) license, you can skip this section and go to [“Installing a Sentinel Software Guard”](#) on page 22.

## Upgrading the FLEXlm License Server Software

To support network licensing, the Quartus II software requires the FLEXlm License Manager software version 8.0 or later. The Quartus II Setup program installs version 9.2 of the FLEXlm License Manager server software on your user workstation, but you should also verify that the version of the FLEXlm License Manager software or the license server is 8.0 or later. Go to [“Installing the Quartus II Software”](#) on page 4 for more information on installing the FLEXlm License Manager server software. If the FLEXlm License Manager software is version 8.0 or later, skip to [“Rereading an Existing License File”](#) on page 19.

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

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

```
<drive>:\<FLEXlm system directory path>\lmgrd -v ↵
<drive>:\<FLEXlm system directory path>\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 in the installation of the Quartus II software.

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

1. Make a backup copy of the **lmgrd** and **alterad** daemons you are currently using.
2. To overwrite or replace the daemons you are currently using, copy the new versions of the files to the computer running the license server. You may have to shut down the license server software to complete this step.

If you used the Quartus II Setup program to install the FLEXlm License Manager server software, the current version of the **lmgrd** and **alterad** daemons are located in the following directories:

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

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

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

## Rereading an Existing License File

The Quartus II software uses the FLEXlm software to administer licensing for single users or for multiple users in a network installation. 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 server is version 8.0 or later, you can add, by copying and pasting,

the Altera FEATURE lines from your Quartus II **license.dat** file into your existing license file. Paste the Quartus II FEATURE line as shown in the sample license file in [Figure on page 15](#). Make sure you have also modified the license file according to the guidelines in [“Modifying the License File” on page 16](#).

If you make these changes to your 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.

Refer to [“Upgrading or Setting Up a License Manager Server” on page 18](#) to verify that you are using the latest supported version of the FLEXlm License Server software, or if you need to upgrade an older version of the FLEXlm License Server software.



### Configuring a New License Server

If you do not have an existing FLEXlm license server, and you need to configure a new license server, skip to [“Configuring a New License Server” on page 21](#).

To reread your license file on a license server:

- ✓ Type the following command at a command prompt:

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

or

- ✓ Restart the license server.



### For Information About

Using the FLEXlm utilities to administer and troubleshoot the FLEXlm License Manager software

### Refer To

*FLEXlm End Users Guide*, which is available from the Support Services section of the Macrovision web site at [www.macrovision.com](http://www.macrovision.com)

## Configuring a New License Server

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

- If you have an existing FLEXlm license server, refer to “Rereading an Existing License File” on page 19.
- Make sure you have obtained a valid license file according to the guidelines in “Obtaining a License File” on page 12, and that you have modified the license file according to the guidelines in “Modifying the License File” on page 16.
- These instructions assume that you have installed the **license.dat** file in the **<drive>:\flexlm** directory. If you have installed the license file in a different directory, substitute the appropriate path name for that directory.

To configure a new license server:

- ✓ Type the following command at a command prompt:

```
<drive>:\<Quartus II system directory>\bin\lmgrd -c  
<license file path>\license.dat ←
```



### For Information About

### Refer To

Configuring a new UNIX workstation license server

Quartus II **readme.txt** file

Setting up and administering license servers, including setting up three redundant license servers

*FLEXlm End Users Guide*, which is available from the Support Services section of the Macrovision web site at **www.macrovision.com**

## Installing the FLEXlm Software on Another License Server

You can install the FLEXlm software on an additional license server.

To install the FLEXlm software on another license server, perform the following steps:

1. Create a directory named `<drive>:\<Quartus II system directory>\bin` on the additional license server.
2. Copy the following files from the `<drive>:\<Quartus II system directory>\bin` directory of your original Quartus II software into the new directory:
  - `lmgrd`
  - `lmutil`
  - `alterad`

You can also install the FLEXlm software on another license server with the **Install FLEXlm Server** button in the Setup program. Refer to [“Installing the Quartus II Software” on page 4](#) for more information.

## Installing a Sentinel Software Guard

If your Quartus II development system uses a node-locked license and includes a Sentinel Software Guard, you must make sure the Sentinel driver is installed and then install the Software Guard before you can specify a license file.



### Before You Install the Sentinel Software Guard

You should be aware of the following information before you install a Sentinel Software Guard:

- If you have a network (multiuser) license, you can skip this section and go to [“Starting the Quartus II Software” on page 25](#).
- Current Quartus II single-user license packages provide USB Software Guards only. Parallel Port Software Guards are no longer provided in Quartus II software packages; however, they are still supported for backward compatibility.

## Installing the Sentinel Driver

The Sentinel driver is required for all Quartus II software systems running on Windows NT, Windows 2000, and Windows XP that use a USB or Parallel Port Software Guard. The Sentinel driver is installed automatically with the Quartus II software.



### Sentinel Driver Installation Requirement

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

If the Sentinel driver is not installed, you can install it by following these steps:

1. Choose **Run** (Windows Start menu).
2. If you are installing the USB Software Guard, type the following command in the **Run** dialog box:

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

*or*

If you are installing the Parallel Port Software Guard, type the following command in the **Run** dialog box:

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

3. In the **Sentinel Driver Setup Program** window, choose **Install Sentinel Driver** (Functions menu).
4. In the **Sentinel Install** dialog box, click **OK**.
5. Restart your computer at the prompt.

## Installing the USB Software Guard

To install the USB Software Guard on a PC running Windows 2000 or Windows XP, follow these steps:



### Software Guard Operating System Compatibility

The USB Software Guard is supported only on PCs running Windows 2000 or Windows XP. If you are using a node-locked (single-user) license on PC with Windows NT, you must use a Parallel Port Software Guard. Refer to [“Installing the Parallel Port Software Guard”](#) on page 24 for more information.

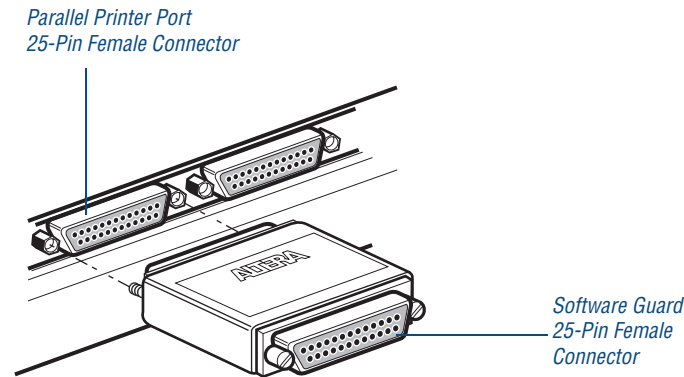
1. Locate an unused USB port on the computer.
2. Insert the USB Software Guard into the USB port.

## Installing the Parallel Port Software Guard

To install the Parallel Port Software Guard on a PC running Windows NT, Windows 2000, and Windows XP, follow these steps:

1. Locate a parallel printer port (that is, an LPT port) on the computer. If you have a printer connected to this port, you must disconnect it temporarily.
2. Insert the 25-pin male connector end of the Software Guard into the 25-pin female connector of the parallel printer port, as shown in [Figure 4](#) on page 25.

**Figure 4. Attaching the Parallel Port Software Guard to a PC**



3. If necessary, reinsert the printer cable connector into the female connector of the Parallel Port Software Guard.



#### Parallel Port Software Guard Warnings

You should be aware of the following information after you insert a Parallel Port Software Guard:

- Do not connect disk drives that use the parallel port or any device, other than a printer or the ByteBlaster II or ByteBlasterMV download cable, to either end of the Parallel Port Software Guard. Disk drives can destroy a Parallel Port Software Guard by drawing more power than the guard is capable of handling.
- Disconnect the Parallel Port 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 Parallel Port Software Guard.

## Starting the Quartus II Software

You can start the Quartus II software after installation is complete. In order to enable Quartus II features, however, you must specify the license file, either within or outside the Quartus II software. For information about how to specify your license file, refer to the next section, “Specifying the License File.”



To start the Quartus II software:

- ✓ Choose **Programs > Altera > Quartus II <version number>** (Windows Start menu).

or

- ✓ Open a new command prompt window and type the following command:

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



### Running the Quartus II Software Without Administrator Privileges

If you do not have Administrator privileges and you use the Quartus II software, some components of the Quartus II software may not work correctly.

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

- **Enable 30-day evaluation period with no license file (no programming file support)**—This option allows you to continue to use the Quartus II software for 30 days without programming file support. After 30 days, you must have a valid license file in order to use the software.
- **Perform automatic web license retrieval**—This option displays the Licensing section of the Altera web site, which allows you to request a license file automatically. If you are using a node-locked (FIXEDPC) license, the Quartus II software retrieves the license file automatically from the web site. If you are using a network (multiuser) 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 12](#) for more information.
- **Specify valid license file**—This option displays the **License Setup** page of the **Options** dialog box, which allows you to specify the location of your license file. See the next section, [“Specifying the License File,”](#) for more information.

# Specifying the License File

Once you have obtained a license file and set up a network license server (for multiuser licenses) or installed a USB or Parallel Port Software Guard (for single-user licenses), you must specify the location of the license file for each user (or “client”). You can specify the license file with one of the following methods, which are described in more detail in this section:

- Specify the license file using the Quartus II software
- Specify the license file using the Windows NT, Windows 2000, or Windows XP **System** control panel



## Specifying the License File for the ModelSim-Altera Software

If you are using the ModelSim-Altera simulation software, which is included with Altera software subscriptions, and/or you are using the MAX+PLUS II software, you must specify the license file with the **System** control panel.

## Specifying the License File Using the Quartus II Software

You can specify the location of your license file from within the Quartus II software.



## Specifying the License File from within the Quartus II Software

Specifying the license file from within the Quartus II software does not require system administration (Administrator) privileges.

To specify your license file within the Quartus II software, follow these steps:

1. Start the Quartus II software as described in the “Starting the Quartus II Software” on page 25.

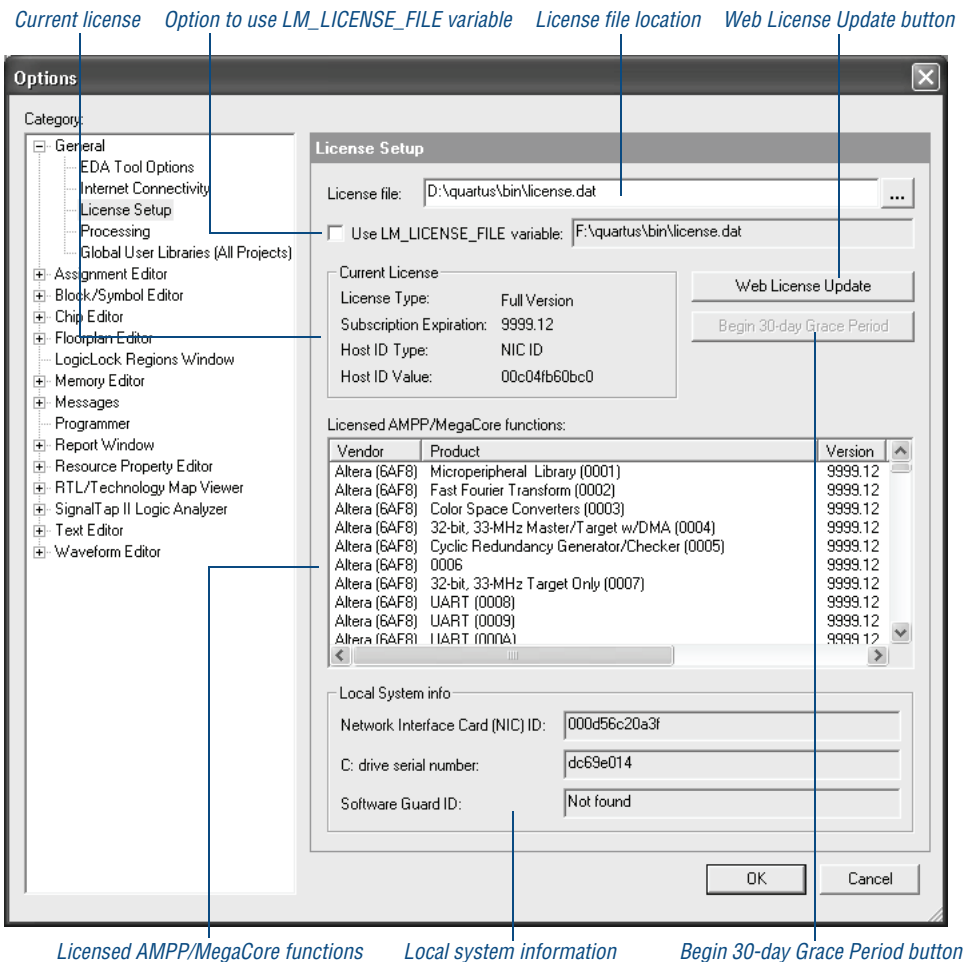


### When Starting the Quartus II Software for the First Time

When you start the Quartus II software, if the software cannot detect a valid license file, you are asked whether you want to run in evaluation mode for 30 days, request a valid license file automatically from the Altera web site, or specify the correct location of a valid license file.

2. Select **Specify valid license file** to specify the name of the license file. The **License Setup** page of the **Options** dialog box (Tools menu) is displayed. **Figure 5** shows the **License Setup** page.

**Figure 5. License Setup Page of the Options Dialog Box**



3. In the **License file** box, specify the full path name of your **license.dat** file. You can click **Browse (...)** to locate your **license.dat** file. Altera recommends that you store the **license.dat** file in a directory named **<drive>:\flexlm**.

You can also specify the location of the license file by typing a name of the format **<port>@<host>** instead of a license file path name, where **<host>** is the name of the server on which the license file is stored and **<port>** is the port listed in the **license.dat** file. Refer to [Figure 2 on page 15](#) for a sample network license file to determine your port and server name, and see [Table 1 on page 17](#) for more information about port numbers. If there is no port listed in the **license.dat** file, you can simply specify **@<host>**.



#### Specifying Multiple License Files

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

or

If you want to use the current **LM\_LICENSE\_FILE** value specified in the **System Control Panel**, turn on **Use LM\_LICENSE\_FILE variable**.

4. If you want the Quartus II software to check the Altera web site automatically for license file updates, click **Web License Update**.
5. If you want to use the Quartus II software in the “Subscription Expiration” grace period and did not already specify that option at startup, click **Begin 30-day Grace Period**. The “Subscription Expiration” grace period allows you to use the Quartus II software with programming file support for 30 days. When the grace period expires, you must obtain an updated license file at the Altera web site to continue using the Quartus II software with programming file support.
6. Click **OK**.

The **Licensed AMPP/MegaCore functions** list of the **License Setup** page lists all of the AMPP and MegaCore functions that are available for the license.

## Specifying the License File Using the Windows NT, Windows 2000, or Windows XP System Control Panel

You can specify the location of your license file from outside the Quartus II software by setting system variables in the Windows NT, Windows 2000, or Windows XP **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 specify the license file in the Windows NT **System** Control Panel, follow these steps:

1. Choose **Settings > Control Panel** (Windows Start menu).
2. Double-click the **System** icon in the Control Panel window.
3. In the **System Properties** dialog box, click the **Environment** tab.
4. Click the **System Variable** list to highlight it, and then in the **Variable** box, type `LM_LICENSE_FILE`.
5. In the **Value** box, type either `<drive>:\flexlm\license.dat` or a name of the format `<port>@<host>`, where `<host>` is the name of the server and `<port>` is the port listed in the `license.dat` file. Refer to [Figure 2 on page 15](#) for a sample network license file to help you determine your port and server name. Refer also to [Table 1 on page 17](#) for more information about port numbers. If there is no port listed in the `license.dat` file, you can simply 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 semicolons (;), with no spaces between the names and numbers.

6. Click **OK**.

To specify the license file in the Windows 2000 or Windows XP **System Control Panel**, follow these steps:

1. Choose **Settings > Control Panel** (Windows Start menu).
2. Double-click the **System** icon in the Control Panel window.
3. In the **System Properties** dialog box, click the **Advanced** tab.
4. In the **Advanced** tab, click **Environment Variables**.
5. Under **System Variables**, click **New**. The **New System Variable** dialog box is displayed.
6. In the **Variable Name** box, type `LM_LICENSE_FILE`.
7. In the **Variable Value** box, type either `<drive>:\flexlm\license.dat` or a name of the format `<port>@<host>`, where `<host>` is the name of the server and `<port>` is the port listed in the **license.dat** file. Refer to Figure 2 on page 13 for a sample network license file to help you determine your port and server name. Refer also to Table 1 on page 15 for more information about port numbers. If there is no port listed in the **license.dat** file, you can simply 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 semicolons (;), with no spaces between the names and numbers.

8. Click **OK**.

If you want the Quartus II software to use the `LM_LICENSE_FILE` setting from your **System Control Panel** rather than from another license file setting, make sure **Use LM\_LICENSE\_FILE variable** is turned on in the **License Setup** page of the **Options** dialog box (Tools menu).

# Registering for an Altera.com Account

Your copy of the Quartus II software is registered at the time of purchase; however, in order to use the mySupport web site to view and submit service requests, you must also register for an Altera.com account. Although an Altera.com account is required only for using the mySupport web site, having an Altera.com account will also make it easier for you to use many other Altera web site features, such as the Download Center, Licensing Center, Altera Technical Training online class registration, or Buy On-Line-Altera eStore features.

To register for an Altera.com account, follow these steps:

1. Go to the mySupport web site:
  - ✓ To start your web browser and connect to the mySupport web site while running the Quartus II software, choose **Altera on the Web > Quartus II Service Request** (Help menu).

*or*

  - ✓ Point your web browser to the mySupport web site at **[www.altera.com/mysupport](http://www.altera.com/mysupport)**.
2. Follow the instructions on the mySupport web site to register for an Altera.com account.

If you are not a current Altera subscription user, you can still register for an Altera.com account.

# Chapter Three

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## Documentation & Technical Support



### What's in Chapter 3:

Starting the Quartus II Tutorial	34
Using Quartus II Help	35
Contacting Altera	40

# 3



# Starting the Quartus II Tutorial

The online tutorial introduces you to the features of the Quartus II design software. It shows you how to create and process your own logic designs quickly and easily. The modular design of the Basic and Optional tutorials allows you to choose the areas of the Quartus II software that you want to learn about:

- The Basic tutorial guides you through the steps required to create, compile, perform timing analysis on, simulate, and program a sample finite impulse response (FIR) filter design, called **fir\_filter**.
- The Optional tutorial modules focus on topics such as making the transition from the MAX+PLUS II software, using the LogicLock™ feature, and using Stratix device features. You do not need to complete the Basic tutorial to begin any of the Optional tutorial modules.

To start the Quartus II tutorial after you have successfully installed the Quartus II software:

- ✓ Choose **Tutorial** (Help menu).

After you start the tutorial, the Quartus II window resizes to allow you to view the Tutorial window and the Quartus II software simultaneously.



## Before You Start the Quartus II Tutorial

You should be aware of the following information before you start the Quartus II tutorial:

- You must have installed support for Cyclone EP1C6 devices if you want to complete the Basic or LogicLock tutorial. In addition, you must have installed support for MAX II EPM570 and Stratix EP1S25 devices if you want to complete the Optional MAX+PLUS II Conversion and Stratix tutorial modules. If you did not install support for these devices, refer to [“Installing the Quartus II Software” on page 4 in Chapter 1, “Installing the Quartus II Software.”](#)
- The tutorial is designed for display online. However, if you want to print one or more of the tutorial modules, click the **Printing Options** button located at the beginning of each module and then click the link to open the appropriate printable version.

# 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 Quartus II software. You can view Help in one of the following ways:

- Press F1 from a highlighted menu command or active dialog box for context-sensitive help.
- Choose **Index** (Help menu) to view the **Index** tab. The Index lets you search for and display all Help topics related to a keyword or phrase.
- Choose **Contents** (Help menu) to view the **Contents** tab. The Contents outlines the design flow and groups related topics into folders, but does not list all the topics in Quartus II Help.
- Choose **Search** (Help menu) to perform a search with the **Search** tab. The Search finds a maximum of 500 topics containing the search keyword.
- Choose **Messages** (Help menu) to view the **Messages** list. The Messages list provides an alphabetical list of all messages and offers detailed Help on each message.
- Choose **Glossary** (Help menu) to view the Glossary list. The Glossary list provides definitions to key terminology in the Quartus II software.



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

## Getting Help on a Message

To view Help on an individual message, follow these steps:

1. In the Messages window, select the message on which you want to receive Help.
2. Choose **Help** (right button pop-up menu).

To view the entire alphabetical list of messages:

- ✓ Choose **Messages** (Help menu).

*or*


- ✓ Choose **Contents** (Help menu), and select **Messages List** from the end of the Contents.

## Using Context-Sensitive Help

To view context-sensitive help for a specific item:

- ✓ Press F1 from a highlighted menu command or active dialog box for context-sensitive help.

*or*

- ✓ Press Shift+F1 or choose the **Context-Sensitive Help** button  on the toolbar. The pointer turns into a Help pointer. You can then point to a menu command or active window and click for context-sensitive help.

## Navigating Help

The Help window includes a **Contents** tab, **Index** tab, **Search** tab, and **Favorites** tab that can help you navigate through thousands of Help topics.

### Using the Index Tab

To find and display a Help topic using the Index, follow these steps:

1. Choose **Index** (Help menu) or, if the Help window is already open, click the **Index** tab.
2. Type the entry you want to find in the **Type in the keyword to find** box.
3. In the list of keywords, select the entry or subentry.



### Finding Cross-Reference Entries in Quartus II Help

If the entry you are looking for refers to a cross-reference entry in parentheses that is preceded with **See** or **See also**, you can type that entry in the **Type in the keyword to find** box to locate additional topics.

4. To open the topic, click **Display** or double-click the entry.

## Using the Search Tab

To search all topics in Quartus II Help for specific keywords, follow these steps:

1. Choose **Search** (Help menu) or, if the Help window is already open, click the **Search** tab.
2. Type the word or words that you want to find:
  - To find topics with adjacent words, type the words in double quotation marks. For example, "this and that" finds topics that contain the exact phrase "this and that."
  - To find topics that contain the words, type the words without double quotation marks. For example, this and that finds topics that contain any combination of the words "this," "and," and "that."
3. If necessary to narrow your search, select **AND**, **OR**, **NEAR**, or **NOT** from the list.
4. If necessary, turn on **Search previous results**, **Match similar words**, or **Search titles only**.
5. Click **List Topics**.
6. Select the topic you want to display.
7. Click **Display**.

## Using the Contents Tab

To view groups of related topics, follow these steps:

1. Choose **Contents** (Help menu) or, if the Help window is already open, click the **Contents** tab.
2. Select the Help folder topic you want to view.
3. Click the + icon to expand the folder and view the names of individual Help topics.
4. Select the topic you want to display.

## Using the Favorites Tab

To add Help topics to your Favorites list:

1. Open the Help window.
2. Open the topic that you want to add to your Favorites list.
3. Click the **Favorites** tab to open it.
4. Click **Add** to add the topic to your list of favorite Help topics.

## Printing Help Topics

To print Quartus II Help topics from the **Contents** tab, follow these steps:

1. In the **Contents** tab, select the Help folder or Help topic that you want to print.
2. Choose **Print** (right button pop-up menu).

*or*

Click the **Print** button  on the toolbar.

3. Select the appropriate print option:
  - To print the selected topic, select **Print the selected topic**.

- To print the selected folder and all the topics in the folder, select **Print the selected heading and all subtopics**.

4. Click **OK**.



#### Printing Individual Help Topics

You can also use the **Print** command or **Print** button to print any individual Help topic you are viewing.

## Finding a Keyword in a Help Topic

To search for a keyword in an open Quartus II Help topic, follow these steps:

1. To open the **Find** dialog box, press **Ctrl + F**.
2. In the **Find what** box, type the search text.
3. If necessary, turn on one or both of the following options:
  - **Match whole word only**
  - **Match case**
4. In the **Direction** list, select a search direction.
5. Click **Find Next**.
6. If necessary, click **Find Next** again to find the next instance of the search text.
7. To end the search, click **Cancel**.

## Viewing a Glossary Definition

To view the alphabetical glossary list:

- ✓ Choose **Glossary** (Help menu).

*or*

- ✓ Choose **Contents** (Help menu), and select **Glossary List** from the end of the Contents.

# Contacting Altera

You can contact Altera for technical support and product information.

## Technical Support

If you need technical support, you can visit the Altera web site or the mySupport web site, or you can call the Altera Applications Department.

**Table 1. Quartus II Technical Support Resources**

Resource	Description
<b>Altera web site:</b>	<b>www.altera.com</b>  Includes the Altera Find Answers page, which is available from the Support Center section of the Altera web site at <b>www.altera.com/answers</b> .
<b>mySupport web site:</b>	<b>www.altera.com/mysupport</b>  or choose <b>Altera on the Web &gt; Quartus II Service Request</b> (Help menu) in the Quartus II software. This web site allows you to submit, view, and update technical support service requests.
<b>Telephone:</b>	(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

In order to use the mySupport web site to view and submit service requests, you must also register for an Altera.com account. An Altera.com account is required only for using the mySupport web site; however, having an Altera.com account will also make it easier for you to use many other Altera web site features, such as the Download Center, Licensing Center, Altera Technical Training online class registration, or Buy On-Line-Altera eStore features. For more information, refer to “Registering for an Altera.com Account” on page 32 in Chapter 2, “Licensing the Quartus II Software.”.

## Product Information

If you need the latest Altera product information or literature, go to the Literature section of the Altera web site at [www.altera.com/literature](http://www.altera.com/literature). You can also purchase printed sets of documentation from the Shop Altera web site at [www.shopaltera.com](http://www.shopaltera.com).



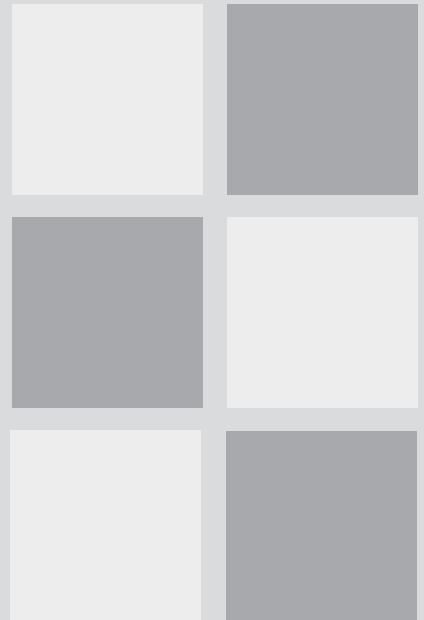
For Information About	Refer To
Altera technical support services and product information	The Contact Altera section of the Altera web site



# Appendix A

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## Quartus II File Organization



# A

### What's in Appendix A:

Quartus II File Organization

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# Quartus II File Organization

During the Quartus II software installation, two top-level directories are created:

- The `\altera\quartus<version number>` directory contains system software and data files and includes the subdirectories described in Tables 2 through 5.
- The `\altera\qdesigns<version number>` directory contains tutorial and sample files and includes the subdirectories described in Table 5.

The main `\altera\quartus<version number>` directory includes the subdirectories described in Table 1.

**Table 1. Quartus II System Directory (`quartus<version number>`) Structure (Part 1 of 2)**

Directory	Description
<code>.\bin</code>	Contains the executable software program files. Also contains Tcl scripts to perform tasks in the Quartus II software and other EDA software.
<code>.\drivers</code>	Contains drivers, including the following drivers: <ul style="list-style-type: none"><li>■ EthernetBlaster driver, which is required to use the EthernetBlaster download cable with an Ethernet port for Windows 2000 and Windows XP</li><li>■ ByteBlaster driver, which is required to use the ByteBlaster II or ByteBlasterMV download cable with Windows NT, Windows 2000, and Windows XP</li><li>■ USB-Blaster driver, which is required to use the USB-Blaster download cable with USB for Windows 2000 and Windows XP</li><li>■ MasterBlaster USB driver, which is required to use the MasterBlaster communications cable with USB for Windows 2000 and Windows XP</li><li>■ APU USB driver, which is required to use the APU with Windows 2000 and Windows XP</li><li>■ Sentinel driver, which is required to use the Sentinel Software Guard with node-locked (single-user) licenses for Windows NT</li></ul>
<code>.\drivers\i386</code>	Contains the <b>BBLPT</b> utility, which can be used to install or remove the ByteBlaster driver.

**Table 1. Quartus II System Directory (*quartus<version number>*) Structure (Part 2 of 2)**

Directory	Description
<b>.\eda</b>	Contains libraries for use with other EDA tools. Refer to <a href="#">Table 2</a> for information on the subdirectories of this directory.
<b>.\libraries</b>	Contains the Quartus II software directory for “self-contained” libraries. Refer to <a href="#">Table 3</a> for information on the subdirectories of this directory.
<b>.\lmf</b>	Contains Library Mapping Files ( <b>.lmf</b> ).
<b>.\sopc_builder</b>	Contains files needed for the SOPC builder software.

The `\altera\quartus<version number>\eda` directory includes the subdirectories described in [Table 2](#).

**Table 2. Quartus II EDA Directory (*eda*) Structure**

Directory	Description
<b>.\cadence</b>	Contains technology libraries for Cadence EDA tools.
<b>.\ibis</b>	Contains input files that allow the Quartus II software to generate design-specific IBIS Output Files for EDA tools.
<b>.\mentor</b>	Contains technology libraries for Mentor Graphics EDA tools.
<b>.\sim_lib</b>	Contains VHDL and Verilog HDL simulation libraries that are compatible with EDA tools from other vendors.
<b>.\synopsys</b>	Contains technology libraries for Synopsys EDA tools.
<b>.\innoveda</b>	Contains technology libraries for Mentor Graphics Innoveda EDA tools.
<b>.\fv_lib</b>	Contains formal verification model libraries.

The `\altera\quartus<version number>\libraries` directory includes the subdirectories described in [Table 3](#).

**Table 3. Quartus II Library Directory (libraries) Structure**

Directory	Description
<b>.\megafunctions</b>	Contains megafunctions, including Library of Parameterized Modules (LPM) functions, corresponding Include Files ( <b>.inc</b> ) that contain their AHDL Function Prototypes, and corresponding Block Symbol Files ( <b>.bsf</b> ).
<b>.\others</b>	Contains libraries of logic functions that provide compatibility between the Quartus II software and the MAX+PLUS II software.
<b>.\primitives</b>	Contains Block Symbol Files ( <b>.bsf</b> ) for Quartus II primitives.
<b>.\software</b>	Contains the bootloader library file that generates flash programming files with the Quartus II software and the ADS Toolset.
<b>.\vhdl87</b>	Contains the library of IEEE std. 1076–1987 VHDL packages.
<b>.\vhdl93</b>	Contains the library of IEEE std. 1076–1993 VHDL packages.

The `\altera\quartus<version number>\sopc_builder` directory includes the subdirectories described in [Table 4](#).

**Table 4. Quartus II SOPC Builder Directory (sopc\_builder) Structure**

Directory	Description
<b>.\bin</b>	Contains the executable software program files for the SOPC Builder software.
<b>.\bin\europa</b>	Contains the HDL library generator.
<b>.\components</b>	Contains the SOPC Builder software components.
<b>.\placeholders</b>	Contains the SOPC Builder placeholders for the available components.
<b>.\examples</b>	Contains the SOPC Builder example files.
<b>.\documents</b>	Contains the SOPC Builder documentation.
<b>.\tutorials</b>	Contains the SOPC Builder tutorial files.

The `\altera\qdesigns<version number>` directory includes the subdirectories described in [Table 5](#).

**Table 5. Quartus II Work Directory (*qdesigns*<version number>) Structure**

Directory	Description
<b>.\tutorial</b>	Contains the completed project and design files for the Basic tutorial. This directory includes a <b>readme.txt</b> file that contains important information about the tutorial.
<b>.\chiptrip</b>	Contains the <b>chiptrip</b> project for use when completing the MAX+PLUS II Conversion tutorial module.
<b>.\fir_filter</b>	Directory in which you should create the <b>fir_filter</b> project if you are completing the Design Entry tutorial module. Use this directory to prevent accidental changes to the original design files in the <b>\altera\qdesigns&lt;version number&gt;\tutorial</b> directory.
<b>.\fir_filter\compile</b>	Contains the <b>compile_fir_filter</b> project for use when completing the Compilation tutorial module independently or nonsequentially.
<b>.\fir_filter\timing</b>	Contains the <b>timing_fir_filter</b> project for use when completing the Timing Analysis tutorial module independently or nonsequentially.
<b>.\fir_filter\simulate</b>	Contains the <b>simulate_fir_filter</b> project for use when completing the Simulation tutorial module independently or nonsequentially.
<b>.\fir_filter\program</b>	Contains the <b>program_fir_filter</b> project for use when completing the Programming tutorial module independently or nonsequentially.
<b>.\logiclock\topmult</b>	Contains the <b>topmult</b> project for use when completing the LogicLock tutorial module.
<b>.\logiclock\lockmult</b>	Contains the <b>lockmult</b> project for use when completing the LogicLock tutorial module.
<b>.\stratix</b>	Contains the <b>stratix_tutorial</b> project for use when completing the Stratix tutorial module.

## **Revision History**

The information contained in the *Installation & Licensing for PCs* manual version 5.0 revision 1 supersedes information published in previous versions.

Minor typographical changes were made to the previous version.

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