Quartus® II
Programmable Logic Design Software

Installation & Licensing for UNIX and Linux Workstations

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Quartus II Installation & Licensing for UNIX and Linux Workstations
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Documentation Conventions

The Quartus II Installation & Licensing for UNIX and Linux Workstations manual uses the following conventions to make it easy for you to find and interpret information.

Terminology

The following terminology is used throughout the Quartus II Installation & Licensing for UNIX and Linux Workstations manual:

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

Typographic Conventions

Quartus II documentation uses the following typographic conventions:

<table>
<thead>
<tr>
<th>Visual Cue:</th>
<th>Meaning:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bold Initial Capitals</strong></td>
<td>Command names, dialog box titles, and button names are shown in bold, with initial capital letters. For example: <strong>Find Text</strong> command, <strong>Save As</strong> dialog box, and <strong>Start</strong> button.</td>
</tr>
<tr>
<td><strong>Visual Cue:</strong></td>
<td><strong>Meaning:</strong></td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>bold</strong></td>
<td>Directory names, project names, disk drive names, file names, file name extensions, software utility names, tab names, and options in dialog boxes are shown in bold. Examples: quartus directory, d: drive, license.dat file.</td>
</tr>
<tr>
<td><strong>Initial Capitals</strong></td>
<td>Keyboard keys, user-editable application window fields, and menu names are shown with initial capital letters. For example: Delete key, the Options menu.</td>
</tr>
<tr>
<td><strong>“Subheading Title”</strong></td>
<td>Subheadings within a manual section are enclosed in quotation marks. In manuals, titles of Help topics are also shown in quotation marks.</td>
</tr>
<tr>
<td><strong>Italic Initial Capitals</strong></td>
<td>Help categories, manual titles, section titles in manuals, and application note and brief names are shown in italics with initial capital letters. For example: FLEXlm End Users Guide.</td>
</tr>
<tr>
<td><strong>italics</strong></td>
<td>Variables are enclosed in angle brackets (&lt;&gt;) and shown in italics. For example: &lt;file name&gt;, &lt;CD-ROM drive&gt;.</td>
</tr>
<tr>
<td><strong>Courier font</strong></td>
<td>Anything that must be typed exactly as it appears is shown in Courier. For example: /quartus/qdesigns/fir_filter.</td>
</tr>
<tr>
<td><strong>•</strong></td>
<td>Bullets are used in a list of items when the sequence of the items is not important.</td>
</tr>
<tr>
<td><strong>✓</strong></td>
<td>The checkmark indicates a procedure that consists of one step only.</td>
</tr>
<tr>
<td>** рук**</td>
<td>The hand points to information that requires special attention.</td>
</tr>
<tr>
<td><strong>→ 🦃</strong></td>
<td>The feet show you where to go for more information on a particular topic.</td>
</tr>
<tr>
<td><strong>↑</strong></td>
<td>Enter or return key.</td>
</tr>
</tbody>
</table>
Installing the Quartus II Software

This section describes the requirements and procedures for installing the Altera® Quartus® II software on Sun Ultra workstations running Solaris version 2.6, 7, or 8, Pentium II PCs running Red Hat Linux version 7.1, or on HP 9000 Series 700/800 workstations running HP-UX version 10.2 or 11.0.

System Requirements

Your system must meet the following minimum requirements:

- One of the following workstations:
  - Sun Ultra workstation running Solaris version 2.6, 7, or 8
  - Pentium II PC operating at 400 MHz or faster, running Red Hat Linux version 7.1
  - HP 9000 Series 700/800 workstation running HP-UX version 10.2 with Additional Core Enhancements (ACE) dated December, 1999 or later
  - HP 9000 Series 700/800 workstation running HP-UX version 11.0 with ACE dated November, 1999 or later
- ISO 9660-compatible CD-ROM drive
- Color monitor
- Serial port for use with the MasterBlaster™ communications cable
- A valid X-Windows display, which is required when running the Quartus II software
- One of the following Windows managers:
  - dtwm
  - vuewm
  - mwm
  - olwm
  - kde (Linux workstations only)
  - gnome (Linux workstations only)
A web browser with an Internet connection, which is required to enable the Quartus II software Internet connectivity features. If you are using the Netscape Navigator or Microsoft Internet Explorer browser, version 5.0 or later is required.

Refer to the readme.txt file, which is located in the top-level directory of the Quartus II software CD-ROM, for specific information about disk space and memory for the current version of the Quartus II software. After installation, the readme.txt file is available from the Quartus II Help menu and in the /usr/quartus directory.

In addition, the most current version of the Quartus II Installation & Licensing for UNIX and Linux Workstations manual is available in Adobe Portable Document Format (PDF) from the Literature section of the Altera web site at http://www.altera.com, and may contain updated information about system requirements.

### Uninstalling Previous Versions of the Quartus or Quartus II Software

If you have installed a previous version of the Quartus® or Quartus II software, Altera recommends that you uninstall that software before installing the new version of the software. However, it is not necessary to uninstall it.

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

- Delete the quartus directory.
The Quartus II Install Script

The Quartus II software Install script installs the Quartus II software.

These installation instructions assume the following conditions:

- Commands that do not fit on a single line in this manual are indicated by indentations of subsequent lines.
- The UNIX environment is case sensitive. You must enter directory names, file names, and file name extensions exactly as shown.
- The default CD-ROM directory is `/cdrom/cdrom0`. If you use a different CD-ROM directory, substitute the appropriate name in the installation steps.
- By default, the Quartus II software is installed in the `/usr/quartus` directory. The installation procedure creates this directory, if it does not already exist. If you use a different directory name, substitute the appropriate name in the installation steps.
- Your workstation must have drivers capable of supporting an ISO 9660 CD-ROM drive.
- If necessary, you can rerun the Install script to install additional components of the software.

Installing the Quartus II Software (Solaris Only)

To mount the CD-ROM drive and install the Quartus II software and device information on a Sun Solaris workstation, follow these steps:

1. You must have superuser or “root” privileges to mount and unmount the CD-ROM drive. If you are running Volume Manager, the CD-ROM drive is mounted and unmounted automatically as `/cdrom/cdrom0`, and you need to perform only steps 3 and 5, and can skip the other steps.

   cd /
2. To create the `/cdrom/cdrom0` directory, type the following command at the command prompt:

   `mkdir /cdrom/cdrom0`

3. Insert the Quartus II Programmable Logic Design Software for UNIX Workstations (Solaris 2.6, 7, and 8 only) CD-ROM into your CD-ROM drive.

4. To mount the CD-ROM drive, type the following command at the command prompt:

   `/sbin/mount -F hsfs -o ro /dev/dsk/<device name of CD-ROM> /cdrom/cdrom0`

5. To install the Quartus II software, type the following command at the command prompt:

   `/cdrom/cdrom0/install`

   You are guided through the installation procedure. If necessary, you can rerun the Install script to install additional components of the software.

6. To unmount the CD-ROM drive, type the following command at the command prompt:

   `/sbin/umount /cdrom/cdrom0`

   To successfully unmount the CD-ROM drive, you must make sure no one is accessing the directory structure at or below the `cdrom` directory. If another user is using the CD-ROM drive, you may receive the following message:

   `umount: cannot unmount /cdrom/cdrom0: Device busy`

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

   `pwd`

   You should see the `/` prompt on your screen. If you do not, you should type `cd /` again.
You must install support for the APEX™ 20K EP20K100 device if you want to complete the Basic Quartus II tutorial. In addition, you must install support for the ARM®-based Excalibur™ EPXA10 and Stratix™ EP1S25 devices if you want to complete the Excalibur and Stratix Advanced tutorial modules.

Installing the Quartus II Software (Linux Only)

To mount the CD-ROM drive and install the Quartus II software and device information on a Linux workstation, follow these steps:

You must have superuser or “root” privileges to mount and unmount the CD-ROM drive.

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

   ```bash
   mkdir /mnt/cdrom
   ```

2. Insert the Quartus II Programmable Logic Design Software for Linux Workstations (Red Hat Linux 7.1 Only) CD-ROM into your CD-ROM drive.

3. To mount the CD-ROM drive, type the following command at the command prompt:

   ```bash
   /bin/mount /mnt/cdrom
   ```

4. To install the Quartus II software, type the following command at the command prompt:

   ```bash
   /mnt/cdrom/install
   ```

   You are guided through the installation procedure. If necessary, you can rerun the Install script to install additional components of the software.

5. To unmount the CD-ROM drive, type the following command at the command prompt:

   ```bash
   /bin/umount /mnt/cdrom
   ```
To successfully unmount the CD-ROM drive, you must make sure that no one is accessing the directory structure at or below the `cdrom` directory. If another user is using the CD-ROM drive, you may receive the following message:

```
unmount:/mnt/cdrom : Device busy
```

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

```
pwd
```

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

You must have installed support for the APEX 20K EP20K100 device if you want to complete the Basic Quartus II tutorial. In addition, you must install support for the ARM-based Excalibur EPXA10 and Stratix EP1S25 devices if you want to complete the Excalibur and Stratix Advanced tutorial modules.

### Installing the Quartus II Software (HP-UX Only)

To mount the CD-ROM drive and install the Quartus II software and device information on an HP-UX workstation, follow these steps:

1. **You must have superuser or “root” privileges to mount and unmount the CD-ROM drive.**

2. Specify a directory on which to mount the CD-ROM drive. The CD-ROM drive is usually placed in the top-level directory. To access this directory, type the following command at the command prompt:

   ```
cd /
```

2. Find the device ID for the CD-ROM drive so you can mount the correct device. To view a list of the possible device IDs, type the following command at the command prompt:

   ```
/usr/sbin/ioscan -fn -C disk
```
Quartus II Installation & Licensing for UNIX and Linux Workstations

Figure 1 shows sample output from this command, including sample device IDs.

Figure 1. Sample Device ID Output from ioscan Command

<table>
<thead>
<tr>
<th>CD-ROM ID code</th>
</tr>
</thead>
<tbody>
<tr>
<td>disk 0 10/0/14/0.0.0 sdisk CLAIMED</td>
</tr>
<tr>
<td>DEVICE TEAC CD-532E-B CDROM /dev/dsk/c0t0d0 /dev/rdsk/c0t0d0</td>
</tr>
<tr>
<td>disk 1 10/0/15/1.5.0 sdisk CLAIMED</td>
</tr>
<tr>
<td>DEVICE QUANTUM ATLAS10K-18LVD /dev/dsk/c3t5d0 /dev/rdsk/c3t5d0</td>
</tr>
<tr>
<td>disk 2 10/0/15/1.6.0 sdisk CLAIMED</td>
</tr>
<tr>
<td>DEVICE QUANTUM ATLAS10K-18LVD /dev/dsk/c3t6d0 /dev/rdsk/c3t6d0</td>
</tr>
</tbody>
</table>

The \(-fn\) option allows the \(\text{ioscan}\) command to show an extended information set, and the \(-C\) option filters the output to show only I/Os of disk type.

3. To create the \texttt{cdrom} directory, type the following command at the command prompt:

\[
\text{mkdir /cdrom}
\]

4. Insert the appropriate Quartus II Programmable Logic Design Software for UNIX Workstations CD-ROM (either HP-UX 10.2 or HP-UX 11.0) into your CD-ROM drive.

5. To mount the CD-ROM drive, type the following command at the command prompt:

\[
\text{/sbin/mount -o cdcase /dev/dsk/}<\text{device name of CD-ROM}> /cdrom}
\]

The \(-o \text{cdcase}\) option creates lowercase file names in the CD file system. This command is followed by the device ID, and the directory on which you are mounting the CD-ROM drive.

6. To install the Quartus II software, type the following command at the command prompt:

\[
\text{/cdrom/install}
\]
You are guided through the installation procedure. If necessary, you can rerun the Install script to install additional components of the software.

7. To unmount the CD-ROM drive, type the following command at the command prompt:

```
/sbin/umount /cdrom
```

To successfully unmount the CD-ROM drive, you must make sure that no one is accessing the directory structure at or below the `cdrom` directory. If another user is using the CD-ROM drive, you may receive the following message:

```
unmount: cannot unmount /cdrom : Device busy
```

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

```
pwd
```

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

You must have installed support for the APEX 20K EP20K100 device if you want to complete the Basic Quartus II tutorial. In addition, you must install support for the ARM-based Excalibur EPXA10 and Stratix EP1S25 devices if you want to complete the Excalibur and Stratix Advanced tutorial modules.
Licensing the Quartus II Software

This section describes how to license the Quartus II software. To set up your license for the Quartus II software, you must perform the following steps, each of which are described in more detail in this section:

1. If necessary, obtain a license file. The Quartus II software requires a license.dat license file for each server that supports a valid, unexpired network (multiuser) license or for each node-locked (single-user) license. This same license file can also enable the additional Altera synthesis and simulation tools included with Altera software subscriptions, as well as the MAX+PLUS® II software.

2. Set up and configure the FLEXlm license manager server for a UNIX or Linux workstation.

3. Configure each workstation (UNIX only).

4. Configure each Quartus II user’s environment.

5. Start the Quartus II software.

6. Specify the location of the license file.

7. Specify a web browser.

8. Register as an Altera Fast Access user.

Obtaining a License File

You can obtain an ASCII license file, license.dat, from the Licensing section of the Altera web site at http://www.altera.com 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 can be found on the packing list that is shipped with the Quartus II software.
Your serial number, which is printed on the side of the Quartus II software 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).

The host ID number, for UNIX or Linux network license servers. To find your UNIX or Linux network license server host ID by using FLEXlm utilities, type the following command at a command prompt (where <operating system> represents hp, linux, or solaris):

```
/usr/quartus/<operating system>/lmutil lmhostid
```

For information about additional methods of finding your host ID number, refer to the Solutions Database, which is available from the Support section of the Altera web site at http://www.altera.com. For complete information about using the FLEXlm utilities, you should refer to the FLEXlm End Users Guide, which is available at http://www.globetrotter.com/manual.htm.

To obtain a license file, follow these steps:


2. Click the Licensing icon. The Altera Licensing Center page is displayed.

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

4. Specify the requested information.

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

5. You will receive an e-mail from Altera with a license.dat file attached, as well as the license file text. You may either use the attached license file, or copy the lines from the attached license file to an existing license file. When you receive the license file text, save it in the /usr/local/flexlm/licenses directory. If you are using your license.dat file with both the Quartus II software and the MAX+PLUS II software, Altera recommends that you save it in a top-level directory named flexlm.
Figure 2 shows a sample network license file for a UNIX workstation that functions as a single license server.

**Figure 2. Sample Network License File for a Single UNIX Workstation Server**

```
 SERVER alice 807f1034 1800
 VENDOR alterad "/usr/quartus/solaris/alterad"
 USE_SERVER
 FEATURE altera_mainwin alterad 2002.01 permanent 5 4432968595AB
 FEATURE quartus alterad 2002.01 permanent 5 7A496D25A602
```

If you are using the Quartus II software with a node-locked (single-user) license, skip to “Configuring Each Workstation (UNIX only)” on page 19.

**Obtaining a Redundant Server License File**

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 to support three redundant license servers by performing the steps described in “Obtaining a License File” on page 11. Figure 3 on page 14 shows a sample redundant server license file.
For additional information about setting up and administering license servers, including setting up three redundant license servers, refer to the FLEXlm End Users Guide, which is available at http://www.globetrotter.com/manual.htm.

**Specifying an Optional Port Number**

System administrators can specify a port number in the license.dat file to be used by the license server and client workstations. If a port number is not specified in the license.dat file, the FLEXlm utility automatically uses the next available port number in the range 27000 to 27009. However, to prevent port number conflicts, you can specify a port number. If three redundant license servers are being used, you must specify a port number. For more information about redundant license servers, see “Obtaining a Redundant Server License File” on page 13.

Choose a port number greater than 1024, because port numbers less than 1024 are privileged port numbers on UNIX servers. See “Setting Up a License Server” on page 15 for more information about setting up a UNIX or Linux license server.
Setting Up a License Server

This section provides instructions for configuring network licensing for the Quartus II software on Sun Ultra workstations running Solaris 2.6, 7, or 8, Pentium II PCs running Red Hat Linux version 7.1, HP 9000 Series 700/800 workstations running HP-UX version 10.2 with ACE dated December, 1999 or later, or HP 9000 Series 700/800 workstations running HP-UX version 11.0 with ACE dated November, 1999 or later.

Configuring an Existing UNIX or Linux Workstation 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 have an existing FLEXlm license server with an existing license file for the MAX+PLUS II software or software from another vendor, 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 2 on page 13.

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 the readme.txt file, which is located in the top-level directory of the Quartus II software CD-ROM, to verify that you are using the latest supported version of the FLEXlm license software.

If you do not have an existing FLEXlm license server, and you need to configure a new license server, skip to “Configuring a New UNIX or Linux Workstation License Server” on page 17.
Rereading Your License File on a Solaris License Server

To reread your license file on a Solaris license server:

✔ Type the following command at a command prompt:

   /usr/quartus/solaris/lmutil lmreread

or

✔ Restart the license server.

Rereading Your License File on a Linux License Server

To reread your license file on a Linux license server:

✔ Type the following command at a command prompt:

   /usr/quartus/linux/lmutil lmreread

or

✔ Restart the license server.

Rereading Your License File on an HP-UX License Server

To reread your license file on an HP-UX license server:

✔ Type the following command at a command prompt:

   /usr/quartus/hp/lmutil lmreread

or

✔ Restart the license server.

For complete information about using the FLEXlm utilities to administer and troubleshoot the FLEXlm License Manager software, refer to the FLEXlm End Users Guide, which is available at http://www.globetrotter.com/manual.htm.
Configuring a New UNIX or Linux Workstation 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 new Solaris, Linux, or HP-UX license server before starting the Quartus II software for the first time.

1. If you have an existing FLEXlm license server, refer to “Configuring an Existing UNIX or Linux Workstation License Server” on page 15.

2. These instructions assume that you have installed the license.dat file in the /usr/local/flexlm/licenses directory. If you have installed the license file in a different directory, substitute the appropriate path name for that directory.

Configuring a New Solaris License Server

To configure a new Solaris license server:

✓ Type the following command at a command prompt:

```
/usr/quartus/solaris/lmgrd -c /usr/local/flexlm/licenses/license.dat
```

Configuring a New Linux License Server

To configure a new Linux license server:

✓ Type the following command at a command prompt:

```
/usr/quartus/linux/lmgrd -c /usr/local/flexlm/licenses/license.dat
```
**Configuring a New HP-UX License Server**

To configure a new HP-UX license server:

✔️ Type the following command at a command prompt:

```
/usr/quartus/hp/lmgrd -c /usr/local/flexlm/licenses/license.dat
```

For more specific information about configuring a new UNIX workstation license server, refer to the `readme.txt` file, which is located in the top-level directory of the Quartus II software CD-ROM. For additional information about setting up and administering license servers, including setting up three redundant license servers, refer to the FLEXlm End Users Guide, which is available at [http://www.globetrotter.com/manual.htm](http://www.globetrotter.com/manual.htm).

**Installing the FLEXlm Software on Another License Server**

You can install the FLEXlm software on an additional Solaris, Linux, or HP-UX license server.

**Installing the FLEXlm Software on Another Solaris License Server**

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

1. Create a directory named `/usr/quartus/solaris` on the additional license server.

2. Copy the following files from the `/usr/quartus/solaris` directory of your original Quartus II software into the new `/usr/quartus/solaris` directory:

   `lmgrd`
   `lmutil`
   `alterad`
Installing the FLEXlm Software on Another Linux License Server

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

1. Create a directory named `/usr/quartus/linux` on the additional license server.

2. Copy the following files from the `/usr/quartus/linux` directory of your original Quartus II software into the new `/usr/quartus/linux` directory:
   - `lmgrd`
   - `lmutil`
   - `alterad`

Installing the FLEXlm Software on Another HP-UX License Server

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

1. Create a directory named `/usr/quartus/hp` on the additional license server.

2. Copy the following files from the `/usr/quartus/hp` directory of your original Quartus II software into the new `/usr/quartus/hp` directory:
   - `lmgrd`
   - `lmutil`
   - `alterad`

Configuring Each Workstation (UNIX only)

If you are using a Solaris or HP-UX workstation, you must configure each UNIX workstation that will run the Quartus II software.

Linux workstations do not require any configuration steps or runtime patches. If you are a Linux workstation user, skip to “Configuring Each Quartus II User’s Environment” on page 26.
Configuring Each UNIX Workstation (Solaris Only)

To configure each Sun Solaris UNIX workstation that will run the Quartus II software before starting the Quartus II software for the first time:

⚠️ You must have superuser or "root" privileges to perform this step.

✅ Make sure that each workstation has the runtime patches that are required to run the Quartus II software on a Solaris 2.6 or 7 UNIX workstation. (Solaris 8 UNIX workstations do not require any runtime patches to run the Quartus II software.) The last two numbers of the patches represent the version number and can be substituted with a more recent version number. Refer to Table 1 or Table 2 on page 21 for a list of patches and descriptions. To determine which patch is installed on your system, type the following command at a command prompt:

```
showrev -a | grep <patch number>
```

If the patches are not installed on your system, you should download the appropriate replacement patch from the Sun Microsystems support web site at [http://sunsolve.sun.com](http://sunsolve.sun.com). Altera recommends checking the Altera Solutions Database, which is available from the Support Center section of the Altera web site at [http://www.altera.com](http://www.altera.com) for late-breaking information on required and optional operating system patches. In addition, the latest version of the Quartus II Installation & Licensing for UNIX and Linux Workstations manual, which is available in PDF format from the Altera web site, may contain updated information on patches.

Table 1 and Table 2 list the runtime patches for Solaris 2.6 and 7.
In addition to the runtime patches, you should install the appropriate graphics card patch for your system, as shown in Table 3 and Table 4.

### Table 1. Solaris 2.6 Runtime Patches

<table>
<thead>
<tr>
<th>Runtime Patches</th>
<th>Description</th>
<th>Reason for Patch</th>
</tr>
</thead>
<tbody>
<tr>
<td>105181-16</td>
<td>SunOS 5.6: kernel update patch</td>
<td>Fixes kernel thread problems</td>
</tr>
<tr>
<td>105633-32</td>
<td>Xsun patch</td>
<td>Xserver not thread safe</td>
</tr>
</tbody>
</table>

Note: If you are unable to install these runtime patches, the Quartus II software still functions, but online Help is not available and the graphical user interface performance and general stability may be affected.

### Table 2. Solaris 7 Runtime Patches

<table>
<thead>
<tr>
<th>Runtime Patches</th>
<th>Description</th>
<th>Reason for Patch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Either 108376-01 or 107078-18</td>
<td>OpenWindows 3.6.1: Xsun patch</td>
<td>Xserver not thread safe</td>
</tr>
</tbody>
</table>

Note: If you are unable to install this runtime patch, the Quartus II software still functions, but online Help is not available and the graphical user interface performance and general stability may be affected.

### Table 3. Solaris 2.6 Graphics Card Patches

<table>
<thead>
<tr>
<th>Graphics Card</th>
<th>Patches</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M64 graphics card</td>
<td>105362-24</td>
<td>PGX 2.6: M64 graphics patch</td>
</tr>
<tr>
<td>Elite3D graphics card</td>
<td>105363-24 and 105361-10</td>
<td>Elite3D 2.6: AFB graphics patch</td>
</tr>
<tr>
<td>Cgsix graphics card</td>
<td>105492-02</td>
<td>SunOS 5.7: Cgsix graphics patch</td>
</tr>
<tr>
<td>Creator graphics card</td>
<td>105360-28 and 105361-10</td>
<td>Creator 2.6: FFB graphics patch</td>
</tr>
<tr>
<td>TCX graphics card</td>
<td>106391-01</td>
<td>TCX 2.6: graphics patch</td>
</tr>
</tbody>
</table>

Note: If you do not install the appropriate graphics card patch, the Quartus II software still functions, but may have user interface problems; for example, fonts may not display correctly.
Configuring Each UNIX Workstation (HP-UX Only)

For each HP-UX UNIX workstation that will run the Quartus II software, you must verify the required runtime patches and kernel configuration before starting the Quartus II software for the first time:

You must have superuser or “root” privileges to install runtime patches or modify kernel configuration.

Verifying Required Runtime Patches

If you are using the Quartus II software on a workstation running HP-UX 10.20, make sure the workstation has the required runtime patches listed in Table 5. Each patch may be listed under one of several possible names (for example, PHCO_19434 or PHCO_17187). If you are using the Quartus II software on a workstation running HP-UX 11.0, you must install a runtime patch if one of the following patches is installed on your system:

- PHSS_20142
- PHSS_22946
Refer to Table 5 and to Table 6 on page 24 for a list of required patches and descriptions. To determine which patch is installed on your system, type the following command at the command prompt:

```
/usr/sbin/swlist -v | grep <patch name and number>
```

If one of the patches in each set of required patches is not installed on your system, you must download the appropriate replacement patch:

1. Back up your UNIX workstation before installing a patch.
2. Download the patch from the Hewlett-Packard support web site at [http://us-support.external.hp.com](http://us-support.external.hp.com).
3. Copy the patch to the `tmp` directory.
4. Type the following commands from the `tmp` directory:
   ```
   sh <patch name and number>
   ```
5. To start the SD Install program, type the following command:
   ```
   swinstall
   ```
6. Select the path to the patch.
7. To install the patch, choose **Install** (Actions menu).

Alterna recommends visiting the Solutions Database, which is available from the Support Center of the Altera web site at [http://www.altera.com](http://www.altera.com) for late-breaking information on required operating system patches. In addition, the latest version of the Quartus II Installation & Licensing for UNIX and Linux Workstations manual, which is available in PDF format from the Altera web site, may contain updated information on patches.

Table 5 and Table 6 list the runtime patches for HP-UX 10.2 and 11.0.
Table 5. HP-UX 10.2 Runtime Patches

<table>
<thead>
<tr>
<th>Runtime Patches</th>
<th>Description</th>
<th>Reason for Patch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Either PHCO_19434 or PHCO_17187</td>
<td>s700_800 10.2 csh(1) cumulative patch</td>
<td>Fixes crash in csh when exiting a Mainwin application</td>
</tr>
<tr>
<td>PHSS_23555 or PHSS_17159</td>
<td>s700_800 10.2 Xserver cumulative patch</td>
<td>Fixes X server crash with multiple-rectangle</td>
</tr>
<tr>
<td>PHSS_22354 or PHSS_17872 (1)</td>
<td>s700_800 10. X HP aC++ runtime libraries (aCC A.01.21)</td>
<td>Runtime for compiler A.01.21</td>
</tr>
<tr>
<td>PHSS_19739</td>
<td>s700_800 10.2 HP DCE/9000 1.5 cumulative patch</td>
<td>Problems with threads</td>
</tr>
<tr>
<td>PHCO_23684</td>
<td>s700_800 10.20 libc cumulative patch</td>
<td>Problems with Tcl exec command</td>
</tr>
</tbody>
</table>

Note (1): This patch is automatically included when you are using HP-UX 10.2 with Additional Core Enhancements (ACE) dated December, 1999 or later.

Table 6. HP-UX 11.0 Runtime Patch

<table>
<thead>
<tr>
<th>Runtime Patches</th>
<th>Description</th>
<th>Reason for Patch</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHSS_25447</td>
<td>s700_800 11.00 X/Motif 32bit Runtime OCT2001 Periodic Patch</td>
<td>Problems with running the Quartus II software</td>
</tr>
</tbody>
</table>

Note (1): You must install this patch only if one of the following patches is installed on your system: PHSS_20142 or PHSS_22946.

Verifying Kernel Configuration

You should perform the following steps to verify whether the system's kernel configuration meets the minimum system requirements to run the Quartus II software:

1. Back up your UNIX workstation before modifying your kernel configuration.
2. Type the following command at the command prompt:
   
   `sam`
3. In the **SAM Areas** folder, double-click the **Kernel Configuration** icon.

4. In the **Kernel Configuration** folder, double-click the **Configurable Parameters** icon.

5. Choose **Apply Tuned Parameter Set** (Actions menu). The **Tuned Kernel Parameter Sets** dialog box appears.

6. In the **Select a Tuned Parameter Set** list, select the appropriate default parameter for your operating system:

   ✓ If you are using HP-UX 10.2, select **Enhanced Technical Workstation Parameters**.

   or

   ✓ If you are using HP-UX 11.0, select **CAE/ME/General Eng. Workstation 64-Bit Kernel**.

7. Click **OK**.

8. In the **Configurable Parameters** list in the **Kernel Configuration** dialog box, scroll to view the configuration parameters and change them to the recommended settings, if necessary:

   ✓ If you are using HP-UX 10.2, check the configuration parameters listed below to make sure that the values shown in the **Current Values** column in the **Kernel Configuration** dialog box are greater than or equal to the recommended values listed below. If they are not, change the values to the recommended values.

   **HP-UX 10.2 Parameter:**  
   **Recommended Value:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>eqmemsize</td>
<td>4500</td>
</tr>
<tr>
<td>maxswapchunks</td>
<td>2048</td>
</tr>
<tr>
<td>ninode</td>
<td>1500</td>
</tr>
<tr>
<td>maxfiles</td>
<td>1000</td>
</tr>
<tr>
<td>maxssiz</td>
<td>0X05FB3000</td>
</tr>
</tbody>
</table>

   or
If you are using HP-UX 11.0, check the configuration parameters listed below to make sure that the values shown in the **Current Values** column in the **Kernel Configuration** dialog box are greater than or equal to the recommended values listed below. If they are not, change the values to the recommended values.

<table>
<thead>
<tr>
<th>HP-UX 11.0 Parameter</th>
<th>Recommended Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>semmnu</td>
<td>1000</td>
</tr>
<tr>
<td>semume</td>
<td>100</td>
</tr>
</tbody>
</table>

9. To close the **Configurable Parameters** list, choose **Exit** (File menu). The **Create a New Kernel** dialog box appears.

10. Click **Create New Kernel Now**.

11. Click **OK**. The system creates a new kernel, and then restarts.

If you receive an error message pertaining to `sem_lock` or `sem_unlock`, you must increase the `semmnu` parameter to a value larger than 1000 and the `semume` parameter to a value larger than 100.

---

**Configuring Each Quartus II User’s Environment**

Make sure that the following steps have been performed for each Quartus II software user before starting the Quartus II software for the first time:

1. Update each user’s `PATH` environment variable in the `.cshrc` file, which is located in the home directory, to include the `bin` directory in the Quartus II system directory, which is usually the `/usr/quartus/`
Quartus II Installation & Licensing for UNIX and Linux Workstations

bin directory. To update the PATH environment variable, type the following command at a command prompt:

```bash
setenv PATH $PATH:/usr/quartus/bin
```

2. Save the changes to the .cshrc file, and then type the following commands at a command prompt:

```bash
cd
source .cshrc
```

Starting the Quartus II Software

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

```bash
quartus
```

In order to use the Quartus II software, you must follow the guidelines in “Specifying the License File,” next. If you want to enable the Internet connectivity features of the Quartus II software, you should also follow the guidelines in “Specifying a Web Browser” on page 31.

Specifying the License File

Once you have obtained a license file and set up a license server, you must specify the location of the license file for each user (or “client”). You can specify the license file with either 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 .cshrc file on client workstations
If you are using any of the Altera-provided synthesis and simulation software tools included with Altera software subscriptions, such as the Exemplar Logic™ LeonardoSpectrum™-Altera synthesis software, or the Model Technology™ ModelSim®-Altera simulation software, and/or you are using the MAX+PLUS II software, you should specify the license file with the .cshrc file.

Specifying the License File Using the Quartus II Software

To specify the license file within the Quartus II software, follow these steps on each workstation that will be running the Quartus II software:

1. If you have not already done so, start the Quartus II software, as described in “Starting the Quartus II Software” on page 27.
2. Choose License Setup (Tools menu). Figure 4 on page 29 shows the License Setup tab of the Options dialog box.
3. In the License file box, specify the full path name of the license.dat file. You can click Browse (...) to locate the license.dat file. Altera recommends that you store the license.dat file in a directory named /usr/local/flexlm/licenses.

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. See Figure 2 on page 13 for a sample network license file to determine your port and server name, and refer to “Specifying an Optional Port Number” on page 14 for more information about port numbers. If there is no port listed in the license.dat file, you can simply specify @<host>.

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

4. Click OK.
The Licensed AMPP/MegaCore functions list of the License Setup tab lists all of the features and products that are available for the license.

Figure 4. License Setup Tab of the Options Dialog Box
Specifying the License File in the .cshrc File on Client UNIX and Linux Workstations

To specify the license file in the .cshrc file on each client (user) workstation, make sure that you update the LM_LICENSE_FILE variable that is specified in the .cshrc file located in each user’s home directory. You must edit this file for each user, or provide clear instructions that describe which lines the user needs to enter or edit:

📍 Make sure that each user has an LM_LICENSE_FILE variable that is set to the full directory path name of the license file. To update this variable, add the following line to the .cshrc file for each user:

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

 فإذا كان أكثر من تطبيق يستخدم هذا المتغير، فاكتب الأبواب المختلفة بينها بـ (: ) بدون فاصلات بين الاسماء. على سبيل المثال:

```
setenv LM_LICENSE_FILE /usr/local/flexlm/licenses/license.dat:/tmp/license.xyz
```

📍 If you want to specify the name of the server on which the license file is stored, add the following line to the .cshrc file for each user:

```
setenv LM_LICENSE_FILE=<port>@<host>
```

where <host> is the name of the server and <port> is the port listed in the license.dat file. See Figure 2 on page 13 for a sample network license file to determine your port and server name, and refer to “Specifying an Optional Port Number” on page 14 for more information about port numbers. If there is no port listed in the license.dat file, you can simply specify @<host>.

📍 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
```
Specifying a Web Browser

You must specify your web browser location in the Options dialog box to enable the Internet connectivity features of the Quartus II software. To specify your web browser location, follow these steps:

1. Start the Quartus II software.
2. Choose Options (Tools menu). The General Options tab of the Options dialog box appears automatically. Figure 5 on page 32 shows the General Options tab of the Options dialog box.
3. In the Web browser box, specify the full path name of your web browser. You can click Browse to locate your web browser.
4. If you are using a proxy server, specify the proxy address and port:
   a. Turn on Access the web using a proxy server (UNIX platforms only).
   b. In the Address box, type the proxy address.
   c. In the Port box, type the port number.
5. Click OK.
Figure 5. General Options Tab of the Options Dialog Box

- Web browser location
- Proxy address
- Port number
Registering as an Altera Fast Access User

Your copy of the Quartus II software is registered at the time of purchase; however, in order to use the mySupport web site or the Download Center, Licensing Center, or Buy On-Line–Altera eStore sections of the Altera web site, you must register as an Altera Fast Access user.

To register as an Altera Fast Access user, follow these steps:

1. 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 Home Page (Help menu).

   or

   Point your web browser to the mySupport web site at http://www.altera.com/mysupport.

2. Follow the instructions on the mySupport web site to register as a new Altera Fast Access user and create your Altera logon ID and password. If you are a current Altera subscription user, you will need the following information:

   - Your Altera ID, which is a six-digit number that is provided when you purchase the Quartus II design system. This number is listed on the packing list that is shipped with the Quartus II software.
   - Your License Type, which appears in the License type field in the License Setup dialog box (Tools menu) in the Quartus II software.
   - Your License ID, which appears in the Host ID field in the License Setup dialog box (Tools menu) in the Quartus II software.

   If you are not a current Altera subscription user, you can still register as an Altera Fast Access user and create an Altera logon ID and password.
Installing Programming Hardware

This section describes how to install the MasterBlaster communications cable. This section also describes alternate methods for programming Altera devices. Refer to “Using Alternate Programming Methods” on page 36 for more information.

Installing the MasterBlaster Serial/USB Communications Cable

The UNIX and Linux version of the Quartus II software currently supports the MasterBlaster communications cable only for the serial port.

You can use the MasterBlaster Serial/USB communications cable to download configuration data to SRAM-based devices, such as APEX 20K and Mercury™ devices, and EEPROM-based devices, such as the MAX® 3000 and MAX 7000 devices; to perform in-system programming of EPC2, EPC4, EPC8, or EPC16 configuration devices; or to perform SignalTap® logic analysis.

You can connect the MasterBlaster cable to an RS-232 serial port. The MasterBlaster cable can receive power from either of the following sources:

- 5.0-V or 3.3-V circuit boards
- A DC power supply, which is supplied with the MasterBlaster cable

To install and set up the MasterBlaster cable for device configuration or programming, follow these steps:

1. With a standard RS-232 cable, connect one end of the cable to the MasterBlaster cable, and connect the other end of the cable to the appropriate port on the computer.

2. Connect the 16-pin female header end of the cable to the 16-pin male MasterBlaster port, and the 10-pin female end of the cable to the 10-pin male header on the target printed circuit board. Figure 6 on page 35 shows the MasterBlaster communications cable.
3. Open the Quartus II Programmer:

   ✓ Choose **Open Programmer** (Processing menu).

   or

   ✓ Choose **New** (File menu). Click the **Other Files** tab, select **Chain Description File**, and click **OK**.

4. In the Programmer window, under **Programming Hardware**, click **Setup**. The **Programming Hardware Setup** dialog box is displayed.

5. Click **Add**. The **Add Hardware** dialog box is displayed.

6. In the **Hardware Type** list, select **MasterBlaster**.

7. In the **Port** box, type the path and name of the appropriate serial port.

8. In the **Baud rate** list, select a baud rate that is appropriate for your computer.

9. Click **OK**.
10. In the **Programming Hardware Setup** dialog box, click **Close**.

For more information about the MasterBlaster cable, refer to the MasterBlaster Serial/USB Communications Cable Data Sheet, which is available from the Literature section of the Altera web site at [http://www.altera.com](http://www.altera.com). For more information about SignalTap logic analysis with the MasterBlaster cable, refer to “Selecting the Communications Cable for the SignalTap Logic Analyzer” in Quartus II Help.

**Using Alternate Programming Methods**

You can also use one of the following software/hardware combinations to download configuration data to SRAM-based devices, such as APEX 20K and Mercury devices, and EEPROM-based devices, such as the MAX 3000 and MAX 7000 devices; or to perform in-system programming of EPC2, EPC4, EPC8, or EPC16 configuration devices using programming files that are generated with the current UNIX and Linux version of the Quartus II software:

- The PC version of the Quartus II software, with either the MasterBlaster or ByteBlasterMV™ programming hardware.
- The MAX+PLUS II version 10.1 software for PCs, with the MasterBlaster, ByteBlasterMV, Master Programming Unit (MPU), or Altera Programming Unit (APU) programming hardware.
- The Altera Stand-Alone Programmer (ASAP2) software for PCs, which is available from the Download Center section of the Altera web site at [http://www.altera.com](http://www.altera.com), with the MasterBlaster, ByteBlasterMV, MPU, or APU programming hardware.

Refer to the Quartus II Installation & Licensing for PCs manual or the MAX+PLUS II Getting Started manual for information about installing programming hardware on a PC. Both manuals are available from the Literature section of the Altera web site at [http://www.altera.com](http://www.altera.com). Refer to the Quartus II and MAX+PLUS II online Help for more information about programming Altera devices.
Additional Workstation Configuration Information

This section describes how to change additional workstation configuration items including Quartus II general environment variables, Quartus II NativeLink® environment variables, user names, language settings, and fonts.

Setting Environment Variables

This section describes the environment variables that the Quartus II software uses to configure various options and locate files.

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

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

Quartus II General Environment Variables

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

The QUARTUS_ROOTDIR variable specifies the name of the Quartus II home directory. The default directory is `/usr/quartus`. You should change this variable only if the system displays an error message indicating that Quartus II files cannot be found when you start the program.

**MWFONT_CACHE_DIR**

The MWFONT_CACHE_DIR variable specifies the name of the Quartus II font cache directory. The default directory is `/<user's home directory>/windows`.

### 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 path(s) of the EDA tool(s) to be 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 specifies the LD_LIBRARY_PATH variable needed by some EDA tools. You should set this variable to the EDA tool’s LD_LIBRARY_PATH if the EDA tool requires an LD_LIBRARY_PATH variable.
Other Workstation Configuration Information

This section describes other workstation configuration information, including user names, language settings, and fonts.

- If you receive the error message `Can't start quartus_cmp server, starting attempt 1 of 3` when starting a compilation, simulation, or software build, increase the value of the environment variable `QUARTUS_PROCESS_TIMEOUT` from its default value of 100. If the environment variable does not exist, set it to an initial value of 100. You may have to increase the value until you no longer receive the error message.

- If you want to change user names at a workstation using the `su` command, you must type the following command at the command prompt before starting the Quartus II software:

  ```bash
  su - <username>
  ```

  Changing user names using the `su <username>` command (without the dash) causes the new user to use the environment settings from the previous user, which may cause the Quartus II software to stop responding.

- This version of the Quartus II software does not support UNIX language settings other than English. The `LANG` variable must be set to `C` for the Quartus II software to function correctly.

- By default, generated fonts are saved to the `windows` subdirectory within your home directory; however, having the font cache saved to this directory for each user may cause unnecessary duplication of fonts. You can avoid this problem by specifying a directory to contain all the generated fonts for the display. To specify this directory, type the following command at the command prompt:

  ```bash
  setenv MWFONT_CACHE <new directory name>
  ```
If the Quartus II software stops responding due to an internal error, determine whether the `rpcss`, `quartus_dbc`, `quartus_cmp`, or `quartus_cmd` processes are running. 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>
```
Starting the Quartus II Tutorial

The online tutorial introduces you to the basic features of the Quartus II programmable logic development system. It shows you how to create and process your own logic designs quickly and easily. The modular design of the Basic and Advanced 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, timing analyze, simulate, and program a sample finite impulse response (FIR) filter design, called `fir_filter`.

- The Advanced tutorial builds on the training in the Basic tutorial, focusing on the LogicLock feature and ARM-based Excalibur and Stratix device features.

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.

You must have installed support for the APEX 20K EP20K100 device if you want to complete the Basic Quartus II tutorial. In addition, you must install support for the ARM-based Excalibur EPXA10 and Stratix EP1S25 devices if you want to complete the Excalibur and Stratix Advanced tutorial modules. If you did not install support for these devices, refer to one of the following sections:

- “Installing the Quartus II Software (Solaris Only)” on page 5
- “Installing the Quartus II Software (Linux Only)” on page 7
- “Installing the Quartus II Software (HP-UX Only)” on page 8
Quartus II File Organization

During the Quartus II software installation, the following directories are created on your workstation:

- The `/usr/quartus` directory (the main directory where the Quartus II software files are installed) contains system software and data files and includes the subdirectories described in Tables 7 through 10.
- The `/usr/quartus/qdesigns` directory contains tutorial and sample files and includes the subdirectories described in Table 10 on page 44.

The `/usr/quartus` directory includes the subdirectories listed in Table 7.

**Table 7. Quartus II System Directory (`quartus`) Structure (Part 1 of 2)**

<table>
<thead>
<tr>
<th>Directory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>./adm</td>
<td>Contains system administration scripts.</td>
</tr>
<tr>
<td>./bin</td>
<td>Contains the executable software program files and device files.</td>
</tr>
<tr>
<td>./eda</td>
<td>Contains libraries for use with other EDA tools. Refer to Table 8 on page 43 for information on the subdirectories of this directory.</td>
</tr>
<tr>
<td>./hp</td>
<td>Contains platform-specific files for HP-UX 10.20 UNIX workstation installations.</td>
</tr>
<tr>
<td>./hp11</td>
<td>Contains platform-specific files for HP-UX 11.0 UNIX workstation installations.</td>
</tr>
<tr>
<td>./libraries</td>
<td>Contains the Quartus II software directory for &quot;self-contained&quot; libraries. Refer to Table 9 on page 44 for information on the subdirectories of this directory.</td>
</tr>
<tr>
<td>./linux</td>
<td>Contains platform-specific files for Linux workstation installations.</td>
</tr>
<tr>
<td>./lmf</td>
<td>Contains Library Mapping Files (.lmf).</td>
</tr>
<tr>
<td>./mw</td>
<td>Contains files needed for the MainWin software.</td>
</tr>
<tr>
<td>./objective_studio</td>
<td>Contains files needed for Objective Studio software.</td>
</tr>
<tr>
<td>./qdesigns</td>
<td>Contains tutorial and sample files. Refer to Table 10 on page 44 for information on the subdirectories of this directory.</td>
</tr>
</tbody>
</table>
The /usr/quartus/eda directory includes the subdirectories described in Table 8.

Table 8. Quartus II EDA Directory (eda) Structure

<table>
<thead>
<tr>
<th>Directory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>./cadence</td>
<td>Contains technology libraries for Cadence EDA tools.</td>
</tr>
<tr>
<td>./h</td>
<td>Contains header files for software interfaces to other EDA tools.</td>
</tr>
<tr>
<td>./ibis</td>
<td>Contains input files that allow Quartus II to generate design-specific IBIS Output Files for EDA tools.</td>
</tr>
<tr>
<td>./lib</td>
<td>Contains library files for software interfaces to other EDA tools.</td>
</tr>
<tr>
<td>./mentor</td>
<td>Contains technology libraries for Mentor Graphics EDA tools.</td>
</tr>
<tr>
<td>./sim_lib</td>
<td>Contains VHDL and Verilog HDL simulation libraries that are compatible with EDA tools from other vendors.</td>
</tr>
<tr>
<td>./synopsys</td>
<td>Contains technology libraries for Synopsys EDA tools.</td>
</tr>
<tr>
<td>./innoveda</td>
<td>Contains technology libraries for Innoveda EDA tools.</td>
</tr>
</tbody>
</table>
Quartus II Installation & Licensing for UNIX and Linux Workstations

Table 9. Quartus II Library Directory (libraries) Structure

<table>
<thead>
<tr>
<th>Directory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>./megafunctions</td>
<td>Contains megafunctions, including Library of Parameterized Modules (LPM) functions, corresponding Include Files (.inc) that contain their AHDL Function Prototypes, and corresponding Block Symbol Files (.bsf).</td>
</tr>
<tr>
<td>./others</td>
<td>Contains libraries of logic functions that provide compatibility between the Quartus II software and the MAX+PLUS II software.</td>
</tr>
<tr>
<td>./primitives</td>
<td>Contains Block Symbol Files (.bsf) for Quartus II primitives.</td>
</tr>
<tr>
<td>./software</td>
<td>Contains the boot loader library file that generates flash programming files with the Quartus II software and the ADS Toolset.</td>
</tr>
<tr>
<td>./vhdl87</td>
<td>Contains the library of IEEE Std. 1076–1987 VHDL packages.</td>
</tr>
<tr>
<td>./vhdl93</td>
<td>Contains the library of IEEE Std. 1076–1993 VHDL packages.</td>
</tr>
<tr>
<td>./verific_vhdl87</td>
<td>Contains files to support VHDL design processing.</td>
</tr>
<tr>
<td>./verific_vhdl93</td>
<td>Contains files to support VHDL design processing.</td>
</tr>
</tbody>
</table>

The /usr/quartus/qdesigns work directory includes the subdirectories described in Table 10.

Table 10. Quartus II Work Directory (qdesigns) Structure (Part 1 of 2)

<table>
<thead>
<tr>
<th>Directory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>./tutorial</td>
<td>Contains the completed project and design files for the Basic tutorial. This directory includes a readme.txt file that contains important information about the tutorial.</td>
</tr>
<tr>
<td>./fir_filter</td>
<td>Directory in which you should create the fir_filter project if you are completing the Design Entry tutorial module. Use this directory to prevent accidental changes to the original design files in the /qdesigns/tutorial directory.</td>
</tr>
<tr>
<td>./fir_filter/compile</td>
<td>Contains the compile_fir_filter project for use when completing the Compilation tutorial module independently or nonsequentially.</td>
</tr>
<tr>
<td>./fir_filter/timing</td>
<td>Contains the timing_fir_filter project for use when completing the Timing Analysis tutorial module independently or nonsequentially.</td>
</tr>
<tr>
<td>./fir_filter/simulate</td>
<td>Contains the simulate_fir_filter project for use when completing the Simulation tutorial module independently or nonsequentially.</td>
</tr>
</tbody>
</table>
Table 10. Quartus II Work Directory (qdesigns) Structure (Part 2 of 2)

<table>
<thead>
<tr>
<th>Directory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>./fir_filter/program</td>
<td>Contains the <code>program_fir_filter</code> project for use when completing the</td>
</tr>
<tr>
<td></td>
<td>Programming tutorial module independently or nonsequentially.</td>
</tr>
<tr>
<td>./excalibur</td>
<td>Contains the <code>arm_tutorial</code> project for use when completing the</td>
</tr>
<tr>
<td></td>
<td>Excalibur tutorial module.</td>
</tr>
<tr>
<td>./excalibur/arm_c</td>
<td>Contains the <code>arm_tutorial.c</code> and associated Assembly Files (.s) used</td>
</tr>
<tr>
<td></td>
<td>in Software mode when completing the Excalibur tutorial module.</td>
</tr>
<tr>
<td>./logiclock</td>
<td>Contains the <code>lock_fir_filter</code> project for use when completing the</td>
</tr>
<tr>
<td></td>
<td>LogicLock™ tutorial module.</td>
</tr>
<tr>
<td>./stratix</td>
<td>Contains the <code>stratix_tutorial</code> project for use when completing the</td>
</tr>
<tr>
<td></td>
<td>Stratix tutorial module.</td>
</tr>
</tbody>
</table>
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 or fax the Altera Applications Department.

You must register as an Altera Fast Access user to use the mySupport web site, or the Download Center, Licensing Center, or Buy On-Line-Altera eStore sections of the Altera web site. For more information, refer to “Registering as an Altera Fast Access User” on page 33.

Altera web site:  http://www.altera.com
Includes the Solutions Database, which is available from the Support Center section of the Altera web site.

mySupport web site:  http://www.altera.com/mysupport
or choose Altera on the Web > Quartus II Home Page (Help menu) in the Quartus II software. This web site 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)
(408) 544-7000
(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.

Fax:  (408) 544-6401
Product Information

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

Go to “Contacting Altera” in Quartus II Help for complete information on Altera technical support services.
Revision History

Revision 2

The information contained in Quartus II Installation & Licensing for UNIX and Linux Workstations manual 2.0 Revision 2 supercedes information contained in previous versions.

Updated the version number of the Red Hat Linux software, and made minor typographical changes to the previous version.

Revision 1

The information contained in Quartus II Installation & Licensing for UNIX and Linux Workstations manual 2.0 Revision 1 supercedes information contained in previous versions.

Minor typographical changes were made to the original version.
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