Intel® FPGA Software Installation and Licensing

Updated for Intel® Quartus® Prime Design Suite: **19.1**

Contents

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1. Introduction to Intel® FPGA Software Installation and Licensing

This manual provides comprehensive information for installing and licensing Intel® FPGA software, including Intel Quartus® Prime software, ModelSim* - Intel FPGA Edition software, Nios® II Embedded Design Suite, and related software on Windows* and Linux operating systems.

Note: If you are a single user of Intel Quartus Prime software for Windows or Linux, use the *Intel FPGA Software Installation and Licensing Quick Start* to get your software up and running quickly. For more complex licensing scenarios, refer to the chapters on downloading, installing, and licensing software.

Related Information

Intel FPGA Software Installation and Licensing Quick Start

1.1. Intel FPGA Download Center

The Intel FPGA Download Center in the Intel webpage contains the resources to download Intel FPGA software and IP cores.

Related Information

- Downloading and Installing Intel FPGA Software on page 8
- Download Center

1.2. Intel FPGA Self-Service Licensing Center

The Intel FPGA Self-Service Licensing Center in the Intel webpage provides support for licensing Intel FPGA software.

Related Information

- Licensing Intel FPGA Software on page 20
- Self-Service Licensing Center

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9001:2015
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2. System Requirements and Prerequisites

To install and run Intel FPGA software, your system must meet minimum requirements.

2.1. Minimum Hardware Requirements

Installing Intel Quartus Prime software requires the following minimum hardware:

- Windows PC or Linux workstation.
  - For the most up-to-date FPGA software operating system requirements, refer to the Operating System Support page of www.intel.com.
- A monitor capable of at least 1024 x 768 display resolution
- At least 36 GB of free disk space to contain copies of uncompressed version installation files.
  - For disk space requirements for individual software components or Intel FPGA IP cores, refer to the Requirements page on the website, and click the Memory Requirements tab.

Related Information

- System and Software Requirements
- Operating System Support

2.2. Cable and Port Requirements

Using an Intel FPGA download cable or programming unit to program devices with the Intel Quartus Prime software requires the following minimum hardware:

- USB port for connecting an Intel FPGA Download Cable (Formerly USB Blaster) or Intel FPGA Download Cable II (Formerly USB Blaster II).

  For information about the Intel FPGA Download Cable II, refer to the *Intel FPGA Download Cable II (formerly USB Blaster II) User Guide*

- 10/100 Mb Ethernet connection for connecting an Intel FPGA Ethernet Cable download cable (formerly EthernetBlaster II Download Cable)

  For more information, refer to the *EthernetBlaster II Communications Cable User Guide*.

Related Information

2.3. Software Requirements

Installing Intel FPGA software requires the following minimum third-party software:

- Mozilla Firefox version 3.6 or later, Microsoft Internet Explorer version 8.0 or later, or Google Chrome with an internet connection for Intel Quartus Prime software internet resources.

Other requirements depend on your OS:

Table 1.   Prerequisites for all Intel FPGA Software

OS	Prerequisite
Any Linux OS distribution	**KDE** or **GNOME** window manager (version included with your Linux distribution)
	Native XServer software
Red Hat Enterprise Linux 5, 6 and 7	Install the following RPM packages: • X Windows libraries: `make`, `libX11.i686`, `libXau.i686`, `libXdmcp.i686`, `libXext.i686`, `libXft-devel.i686`, `libXft.i686`, `libXrender.i686`, `libXt.i686`, and `libXtst.i686` • GIMP toolkit: GTK+2
SUSE 12 Enterprise operating system	Install the 64-bit `libpng12.so.0` library. Obtain equivalent or substitute packages listed for Red Hat Enterprise Linux or above.
Ubuntu Enterprise Linux	Install `libc6:i386`, `libncurses5:i386`, `libxtst6:i386`, `libxft2:i386`, `libc6:i386`, `libncurses5:i386`, `libstdc++6:i386`, `libc6-dev-i386` `libxft2`, `lib32z1`, `lib32ncurses5`, `lib32bz2-1.0`, and `libpng12` libraries. *Note:* • For Ubuntu 18.04, additionally install `libqt5xml5` and `liblzma-dev` libraries. • For Ubuntu 18, `libpng12` library is no longer available via the `apt-get` method. Download and install the `libpng12` library from the following location: https://packages.ubuntu.com/xenial/amd64/libpng12-0/download

2.3.1. Intel High Level Synthesis Compiler Software Requirements

The Intel HLS Compiler is installed as part of the Intel Quartus Prime software installation, but it requires additional software to use.

C++ Compiler

For Linux, install one of the following versions of the GCC compiler and C++ libraries, depending on your edition of Intel Quartus Prime software:

- **PRO** GCC compiler and C++ Libraries version 5.4.0

  You must install these libraries manually.

- **STD** GCC compiler and C++ Libraries version 4.4.7

  These libraries are included in the version of Linux supported by the Intel HLS Compiler.

Important: The Intel HLS Compiler software does not support versions of the GCC compiler other than those specified for the edition of the software.

For Windows, install one of the following versions of the Microsoft Visual Studio Professional, depending on your edition of Intel Quartus Prime software:

- **PRO** Microsoft Visual Studio 2015 Professional

- **STD** Microsoft Visual Studio 2010 Professional

Important: The Intel HLS Compiler software does not support versions of Microsoft Visual Studio other than those specified for the edition of the software.

ModelSim Software and SoC EDS

The Intel HLS Compiler software also requires the ModelSim software. You can use your own licensed version of Mentor Graphics* ModelSim software, or you can install ModelSim - Intel FPGA Edition, ModelSim - Intel FPGA Starter Edition. Refer to the corresponding subsection for installation details.

Related Information

- ModelSim - Intel FPGA Edition Software Requirements on page 7
- Intel HLS Compiler Prerequisites
      In *Intel High Level Synthesis (HLS) Compiler Getting Started Guide*
- Operating System Support

2.3.2. ModelSim - Intel FPGA Edition Software Requirements

The prerequisites to install ModelSim - Intel FPGA Edition depend on your OS:

Table 2.   ModelSim - Intel FPGA Edition Software Requirements

OS	Requisite
Red Hat Linux Enterprise 5, 6 and 7	Install the following additional RPM packages: • 32-bit libraries: unixODBC-libs, unixODBC, ncurses, ncurses-libs, libzmq3, libXext, alsa-lib, libXtst, libXft, libxml2, libedit, libX11, libXi.
Windows	Install the Microsoft Visual C++ 2013 Redistributable Package (x86). *Note:* If you have administrator privileges, the installation of ModelSim - Intel FPGA Edition installs this package automatically.

2.4. Interaction with Third-Party Software

- If you are running the Bitdefender antivirus software, ensure to temporarily disable the software when downloading and installing the Intel Quartus Prime software.

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3. Downloading and Installing Intel FPGA Software

Note: Before you download and install the software, ensure that your system complies with all requirements described in *System Requirements & Prerequisites*.

You download software from the Download Center on www.intel.com. You have several options for downloading software. Choose depending on download speed, design requirements, and method of installation.

- To download select elements of the software, additional software, or additional device support, use individual files.
- To download the complete software package and device support for all supported families, use `.tar` files.

Related Information

- System Requirements and Prerequisites on page 5
- Download Center for FPGAs

3.1. Software Available in the Download Center

- Intel Quartus Prime Pro, Standard, and Lite Edition software[1] (includes the Nios II EDS and IP Library)
- Intel Quartus Prime Help
- ModelSim software
- DSP Builder for Intel FPGAs
- FLEXlm license server software
- Advanced Link Analyzer
- Stand-alone Intel Quartus Prime Programmer and Tools[1] (32 and 64 bit)
- Intel SoC FPGA Embedded Design Suite (EDS)
- Intel FPGA SDK for OpenCL™[2][3]

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[1] This product includes software derived from the RSA Data Security, Inc. MD5 Message-Digest Algorithm.

[2] The Intel FPGA SDK for OpenCL is based on a published Khronos Specification, and has passed the Khronos Conformance Testing Process. Current conformance status can be found at www.khronos.org/conformance.

[3] OpenCL and the OpenCL logo are trademarks of Apple Inc. used by permission of the Khronos Group™.

You must install device support for Stratix®, Arria®, Cyclone®, or MAX® device families as part of the Intel Quartus Prime installation.

Note: You can also obtain older versions of software and legacy software from the Download Center.

Related Information

Operating System Support

3.2. Installation Path

The installation path must satisfy the following requirements:

- Contain only alphanumeric characters
- No special characters or symbols, such as !$%@^&*<>,
- Only English characters
- No spaces

Default Installation Path

Linux	*<home directory>/<edition>/<version number>*	*<home directory>* is the default path of the Linux workstation, or as set by the system administrator
Windows	*<drive>:\<edition>\<version number>*	

where *<edition>*:

- `intelFPGA_lite`—for Lite Edition
- `intelFPGA`—for Standard Edition
- `intelFPGA_pro`—for Pro Edition

If you use a different path, substitute the appropriate name for *<installation-directory>* in the installation steps.

3.3. Downloading and Installing with Individual Executable Files

3.3.1. Downloading Individual Executable Files

To download Intel FPGA software with individual executable files:

1. Visit the Download Center page at:

   https://www.intel.com/content/www/us/en/programmable/downloads/download-center.html

2. Select the software edition (Pro, Standard or Lite).

3. Select the OS.

4. Click the **Individual Files** tab.

5. If you use Windows OS, select the files and then click **Download Selected Files**.

In Windows operating system, the Akamai DLM3 Download Manager automatically downloads and installs on your local machine. The download manager controls the download of the files you select, and allows you to pause and restart the download at any time. If you cannot use the download manager, follow the instructions for Linux.

6. If you use Linux OS, download by clicking the button next to each file name.

    The name of the executable file is:

    — `QuartusLiteSetup-<version>` (Lite Edition)

    — `QuartusSetup-<version>` (Standard Edition)

    — `QuartusProSetup-<version>` (Pro Edition)

You can double-click the file to start installation, or you can install through the command line. The latter option allows you to script the installation process.

Related Information

3.3.2. Installing Intel FPGA Software at the Command Prompt

You can install Intel FPGA software for Windows or Linux using command-line arguments. You can also group installation instructions into a custom installation script.

• To run the installer executable, use:

    — Linux:

    ```
    <product>-<version>.run
    ```

    — Windows:

    ```
    <product>-<version>.exe
    ```

The installation wizard appears to guide you through the installation process.

Example 1. Command-Line Installer Examples

To see the installer's Help in Linux:

```
<product>-<version>.run --help
```

To run the installation with minimal or no interaction with the installer:

```
<product>-<version>.exe --mode unattended
                        --unattendedmodeui minimal
                        --installdir <installation directory>
                        --accept_eula 1
```

To install in console mode (no X display) for Linux:

```
<product>-<version>.run --mode text
                        --installdir <installation directory>
```

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3.3.2.1. Command-Line Options

The available command-line arguments for the installer are:

Option	Description
`--help`	Displays the installer help.
`--version`	Displays product information.
`--unattendedmodeui` *<unattendedmodeui>*	Specifies whether the installation requires user interaction. This argument is useful with unattended mode. Options are: • `none`— (Default) Installation does not require user interaction, and no output appears. • `minimal`—Installation does not require user interaction. A pop-up box shows the installation progress. • `minimalWithDialogs`— In addition to the installation progress bar, other pop-ups appear. This mode may require user interaction. *Note:* If you install in unattended mode, you must also include the `--accept_eula 1` option.
`--mode` *<mode>*	Specifies the installation mode. For Linux, the available modes are: • `qt` (Default) • `gtk` • `xwindow` • `text` • `unattended` For Windows, the available modes are: • `qt` (Default) • `win32` • `unattended`
`--accept_eula 1`	States that you accept the Intel FPGA End User License Agreement. This option is mandatory when you use unattended mode.
`--disable-components` *<disable-components>*	Specifies which components you want to disable, in a comma-separated list.
`--installdir` *<installdir>*	Specifies the target installation directory for Intel FPGA software. Refer to *Download and Installation Prerequisites* for the default installation directories.
`--product_copy_name` *<product_copy_name>*	If you install multiple copies of the same software with the same version, specifies the installation name. Default=none.
`--install-lic` *<install_lic>*	Specifies the target directory for the license agreement files.

Related Information

Installation Path on page 9

3.4. Downloading and Installing Using .tar Files

3.4.1. Downloading .tar Files

To download Intel FPGA software with `.tar` files:

1. Visit the Download Center page at:

https://www.intel.com/content/www/us/en/programmable/downloads/download-center.html

2. Select the software edition (Pro, Standard or Lite).

3. Select the OS.

4. Click the **Combined Files** tab.

5. Choose which files to download:

    — Single, complete `.tar` file.

    — Intel Quartus Prime Standard or Pro Edition `.tar` file, and one or more device-specific `.tar` files.

    — Intel Quartus Prime Lite Edition, which includes device files.

    To verify the software and device support included in each file, view the file contents by moving the pointer over the information icon.

6. Download using one of the following methods:

    — Windows: Select the files and click the **Download Selected Files** button.

    — Linux: Click the download button next to each file name.

Important: Wait for all the files to download completely before beginning installation.

Related Information

Installation Path on page 9

3.4.2. Installing from .tar Files

To install Intel FPGA software with `.tar` files:

1. Extract the installation files into the same directory.
    The **components** subdirectory stores software and device installation files.

2. If you use Windows OS, you extract the installation files by unzipping the `.tar` files.

    WinZip*, 7-Zip*, and WinRAR* are examples of unzipping tools. Do not use unzip program shortcuts, such as **1-Click Unzip**

3. Run one of the following scripts to begin installation:

Table 3.   Installation Scripts

Intel Quartus Prime Edition	OS	
	Linux	**Windows**
Lite and Standard Editions	`setup.sh`	`setup.bat`
Pro Edition	`setup_pro.sh`	`setup_pro.bat`

The wizard appears, and guides you through the installation process.

3.4.3. Using the Same Installation Files on Multiple Systems

You can install Intel FPGA software on multiple systems using the same installation files that you download once. This method reduces overall download and installation time.

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To use the same installation files for multiple systems:

- Download and save the installation files to a location that is accessible by each system on which you want to install Intel FPGA software.

- To perform the installation, you can:
  - — Launch the installation wizard from each system.
  - — Write and run a custom installation script using the available command-line arguments.

3.5. Intel Quartus Prime Environment Variables

The Intel Quartus Prime software installation process initializes environment variables. In specific cases, you can take advantage of modifying these variables.

QUARTUS_ROOTDIR_OVERRIDE

Use this optional environment variable when you have multiple copies of the Intel Quartus Prime software on the same computer and you want to determine which version to open by default.

Note: If you have multiple copies of the same version of the Intel Quartus Prime software, the system displays an error message indicating that Intel Quartus Prime software files cannot be found when you start the program. The solution is setting `QUARTUS_ROOTDIR_OVERRIDE` to one of the copies.

QUARTUS_LIBRARY_PATHS

The `QUARTUS_LIBRARY_PATHS` environment variable specifies user-defined library paths.

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

You must add `$QSYS_ROOTDIR` to the `PATH` variable (`$QSYS_ROOTDIR` locates the directory at `QUARTUS_ROOTDIR_OVERRIDE/sopc_builder/bin`).

LM_LICENSE_FILE and ALTERAD_LICENSE_FILE

These environment variables specify the location of the license file. However, the Intel Quartus Prime software overrides the value of these environment variables with the location that you specify in the **License Setup** dialog box.

Note: Separate multiple license servers and node locking license files with ":" (Linux) or ";" (Windows).

LC_ALL

You must ensure that your operating system locale is set up correctly. In particular, the locale you specify in `LC_ALL` environment variable must match the locale settings (such as `LANG`). If there is a mismatch, the following Perl warning might be generated during IP generation:

```
perl: warning: Setting locale failed.
```

This warning results in IP generation failure.

Note: You can also set the environment variable `PERL_BADLANG=0` to avoid the Perl warning.

Related Information

Installation Path on page 9

3.6. Starting the Intel Quartus Prime Software

You can run the Intel Quartus Prime software on Windows and Linux.

For versions that you purchase, the Intel Quartus Prime software prompts you for license information if it does not detect a license upon startup. You are prompted to evaluate, buy, or retrieve a license. The Intel Quartus Prime Pro Edition software provides the additional option of running the software in free mode for Intel Cyclone 10 GX devices only.

Note: You can evaluate the Intel Quartus Prime software at no cost for a period of time.

Related Information

Evaluating the Intel Quartus Prime Software on page 20

3.6.1. Starting the Intel Quartus Prime Software on Windows

To start the Intel Quartus Prime software on Windows systems:

- On the desktop, double-click the Intel Quartus Prime software icon
- On the Windows Start menu, point to:

    All Programs ➤ intelFPGA[_lite|_pro] ➤ <version> ➤ quartus.

- On the Search bar, type "quartus", and click the Intel Quartus Prime software icon.
- At a command prompt, type:

    `<installation-directory>\bin64\quartus`

3.6.2. Step 5: Start the Intel FPGA Software

Starting the Intel FPGA Software on Windows

Use any of the following methods to start Intel FPGA software on Windows:

- On the desktop, double-click the Intel FPGA software icon.
- On the Windows Start menu, click **All Programs ➤ intelFPGA[_lite|_pro] ➤ <version> ➤ quartus**.
- At a command prompt, type:

    `<installation-directory>\bin64\quartus`

Starting the Intel FPGA Software on Linux

Use the following method to start Intel FPGA software on Linux:

- Type the following at the command prompt:

  ```
  <installation-directory>/quartus/bin/quartus
  ```

Note: Starting the Intel Quartus Prime software in a platform-specific directory (for example, `<installation-directory>/linux64/quartus/`), can cause problems running the software.

3.7. Step 3: Install Programming Cable Drivers

After installing the Intel Quartus Prime software, you must also install the provided programming cable driver for any Intel FPGA download cable or programming unit that you plan to use.

Locate the appropriate drivers in the following location and install the driver according to your operating system:

- Windows:

  ```
  <installation-directory>\quartus\drivers
  ```

- Linux:

  ```
  <installation-directory>/quartus/drivers
  ```

For detailed information on installing drivers and setting up cables, refer to the corresponding cable user guide.

Related Information

- Installing the USB Download Cable
      In *Intel FPGA Download Cable (formerly USB Blaster) User Guide*
- Setting Up the Intel FPGA Download Cable II
      In *Intel FPGA Download Cable II (formerly USB Blaster II) User Guide*
- EthernetBlaster II Communications Cable User Guide (PDF)
- Cable and Adapter Drivers Information

3.7.1. Installing Drivers on Red Hat Enterprise Systems

To allow communication between the host computer and a development board, you must install the drivers for USB download cables, even for development kits with embedded Intel FPGA Download Cable II circuits. Configuring these options require administrator (root) privileges.

Note: The USB-Blaster is now the Intel FPGA Download Cable. The USB-Blaster II is now the Intel FPGA Download Cable II.

The Intel Quartus Prime software accesses the Intel FPGA Download Cable or Intel FPGA Download Cable II through the USB file system (`usbfs`). To program devices, change the permissions on the ports.

3.7.1.1. Installing on Red Hat Enterprise 4 or Earlier Versions

1. Add the following lines to the `/etc/hotplug/usb.usermap` file:

```
#
#Intel FPGA Download Cable
#
usbblaster 0x03 0x09fb 0x6001 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0x0
usbblaster 0x03 0x09fb 0x6002 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0x0
usbblaster 0x03 0x09fb 0x6003 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0x0
```

2. Create a file named `/etc/hotplug/usb/usbblaster` and write:

```
#!/bin/sh
#Intel FPGA Download Cable hotplug script
# Allow any user to access the cable
chmod 666 $DEVICE
```

3. Make the file executable.

Now you can set up the programming hardware in the Intel Quartus Prime software.

3.7.1.2. Installing on Red Hat Enterprise 5 and 6

1. Create a file named `/etc/udev/rules.d/51-usbblaster.rules`
2. In the file, add the following lines, depending on the type of download cable.

   Ensure that all the code is in one line.

   — Intel FPGA Download Cable:

```
BUS=="usb", SYSFS{idVendor}=="09fb", SYSFS{idProduct}=="6001",
MODE="0666"
BUS=="usb", SYSFS{idVendor}=="09fb", SYSFS{idProduct}=="6002",
MODE="0666"
BUS=="usb", SYSFS{idVendor}=="09fb", SYSFS{idProduct}=="6003",
MODE="0666"
```

   — Intel FPGA Download Cable II:

```
BUS=="usb", SYSFS{idVendor}=="09fb", SYSFS{idProduct}=="6010",
MODE="0666"
BUS=="usb", SYSFS{idVendor}=="09fb", SYSFS{idProduct}=="6810",
MODE="0666"
```

Now you can set up the programming hardware in the Intel Quartus Prime software.

3.7.1.3. Installing on Red Hat Enterprise 7 or Above

Intel Quartus Prime 16.0 and earlier do not support Red Hat Enterprise (RHE) 7.

1. Create a file named `/etc/udev/rules.d/51-usbblaster.rules`
2. In the file, write the following lines, depending on the type of download cable:
   — Intel FPGA Download Cable

```
SUBSYSTEMS=="usb", ATTRS{idVendor}=="09fb", ATTRS{idProduct}=="6001",
MODE="0666"
SUBSYSTEMS=="usb", ATTRS{idVendor}=="09fb", ATTRS{idProduct}=="6002",
MODE="0666"
SUBSYSTEMS=="usb", ATTRS{idVendor}=="09fb", ATTRS{idProduct}=="6003",
MODE="0666"
```

— Intel FPGA Download Cable II:

```
SUBSYSTEMS=="usb", ATTRS{idVendor}=="09fb", ATTRS{idProduct}=="6010",
MODE="0666"
SUBSYSTEMS=="usb", ATTRS{idVendor}=="09fb", ATTRS{idProduct}=="6810",
MODE="0666"
```

Now you can set up the programming hardware in the Intel Quartus Prime software.

3.8. Configuring a JTAG Server

A JTAG Server communicates with the hardware and allows multiple programs to use JTAG resources at the same time. `jtagd` is the Linux version of `jtagserver`.

Related Information

JTAG Settings tab
  In *Intel Quartus Prime Help*

3.8.1. Configuring jtagserver on Windows

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

3.8.2. Configuring a Local JTAG Server (jtagd) on Linux

`jtagd` is the Linux version of `jtagserver`.

In typical operation, `jtagd` runs under the account of the user who is running Intel FPGA software. In this mode, `jtagd` exits after two minutes of idleness, and does not accept connections from remote machines.

Running `jtagd` as a daemon allows you to log off without terminating the service. This mode also enables remote access to JTAG resources:

1. Create the directory `/etc/jtagd`.

2. Set the permissions of the directory and the files within so the user running `jtagd` has read/write access.

3. Run the command `<path>/quartus/bin64/jtagd` with no arguments.

`jtagd` is now running as a service and does not terminate operation when you log off. You can also access JTAG services remotely.

3.9. Adding Device Support and Other Intel FPGA Software to Existing Installation

To download and install additional device support or software tools to an existing Intel FPGA software package:

1. Visit the Download Center page at:

https://www.intel.com/content/www/us/en/programmable/downloads/download-center.html

2. Select the same edition and OS of the current Intel FPGA software installation.

3. Click the **Individual Files** tab.

4. Select the device support that you want to add.

5. Download using one of the following methods:

   — Windows: Select the files and click the **Download Selected Files** button.

      Note: The download manager opens and begins the download process. If you cannot use the download manager, follow the instructions for Linux.

   — Linux: Click the download button next to each file name.

6. Wait for all the files to download completely before beginning the installation process.

7. Start the Intel Quartus Prime software.

8. Click **Tools ➤ Install Devices** to open the Installation Wizard.
   Windows: If you do not see the **Install Devices** command, go to the Windows Start menu and point to **All Programs ➤ Intel FPGA <version number>**.

9. Install in the same location as the Intel Quartus Prime software.

3.10. Managing Multiple Versions and Copies of Intel FPGA Software

You can install multiple copies of the same version of software on the same computer.

- To specify which version you want to open by default, setting the `QUARTUS_ROOTDIR_OVERRIDE` environment variable.

- To preserve project compilation databases from an earlier version of the software before installing a newer version, open the design in the earlier version of the software and export a version-compatible database for the design.

Related Information

3.11. Updating Intel FPGA Software

To download available Intel FPGA Software updates:

1. Verify that you are using the latest version of the Intel FPGA software.

2. Visit the Download Center page at:

   https://www.intel.com/content/www/us/en/programmable/downloads/download-center.html

3. Select the same edition and OS of the current Intel FPGA software installation.

4. On the version-specific download page, click **Updates**.

5. Download using one of the following methods:

   — Windows: Select the files and click the **Download Selected Files** button.

      Note: The download manager opens and begins the download process. If you cannot use the download manager, follow the instructions for Linux.

— Linux: Click the download button next to each file name.

6. Wait for all the files to download completely before beginning the installation process.

7. Run the executable files to launch the installation wizard, which guides you through the installation process.

   Note: For information about the latest updates, refer to the update release notes on www.intel.com.

3.12. Uninstalling Intel FPGA Software

3.12.1. Uninstalling on Windows

1. On the Windows Start menu, point to **All Programs ➤ Intel FPGA *<version number>***.

2. Point to ***<software name> <version number>* ➤ Uninstall *<software name> <version number>***.

   The installation wizard appears and guides you through the uninstallation process.

3.12.2. Uninstalling on Linux

1. Ensure that none of your project files are contained in the Intel FPGA software installation directory

2. Delete the software directory.

4. Licensing Intel FPGA Software

Most Intel FPGA software requires you to use a license to enable the software. Intel provides this license in a file named `license.dat`. The free Intel Quartus Prime Lite Edition and ModelSim - Intel FPGA Starter Edition software does not require a license. The Intel Quartus Prime Pro Edition software requires no license for Intel Cyclone 10 GX devices only.

When you purchase an Intel Quartus Prime software subscription, the license file supports:

- The version of the Intel Quartus Prime software you purchase
- All previous supported versions
- All versions released within a year of the purchase date

You can use the version of the Intel Quartus Prime software you purchase, and all related software, including the ModelSim - Intel FPGA Edition software and the IP Library, indefinitely.

Intel also uses licenses to enable additional software, such as purchased IP cores, the Intel FPGA SDK for OpenCL, and the Intel SoC FPGA Embedded Design Suite (EDS). For more information about licensing conditions of Intel FPGA software, refer to *Types of Intel FPGA Software Licenses.*

Related Information

- Types of Intel FPGA Software Licenses on page 26
- Intel FPGA Software Licensing Types

4.1. Evaluating the Intel Quartus Prime Software

You can evaluate the Intel Quartus Prime software at no cost for a period of time.

When you start the Intel Quartus Prime software, if the software cannot detect a valid license file, a dialog box with the following options appears:

- **Buy the Intel Quartus Prime Subscription Edition software**—launches your default internet browser and displays the Buy Design Software page of www.intel.com, where you can view and purchase software.

- **Enter free mode with limited device family support**—Only available for Intel Quartus Prime Pro Edition software, the free mode supports Intel Cyclone 10 GX devices only.

- **Start the 30-day evaluation period with no license file**—allows you to use the Intel Quartus Prime software for 30 days without programming file support.

- **If you have a valid license file, specify the location of your license file**—displays the **License Setup** page of the **Options** dialog box, where you can specify the location of your license file.

ISO 9001:2015 Registered

Select the 30-day evaluation option to evaluate the software before purchase.

4.2. Licensing Intel FPGA Software Walkthrough

To set up a license for Intel FPGA software, follow these steps:

1. Activate Products on page 21
2. Obtain Necessary Hardware Information on page 22
3. Request a License File from the Self-Service Licensing Center on page 22
4. Depending of the type of license that you use:
   — Setting Up a Fixed License on page 23.
   — Set Up a Floating Network License on a Local Computer.
   — Set Up a License in a Network License Server on page 24.

Related Information

Intel Quartus Prime Software License on page 27

4.2.1. Activate Products

After you purchase new software, you must activate the products before you can request a license. You activate new licenses with the Self-Service Licensing Center.

1. Log on to your My Intel account from www.intel.com.
2. Access the Self-Service Licensing Center.

Figure 1.   Self-Service Licensing Center Home
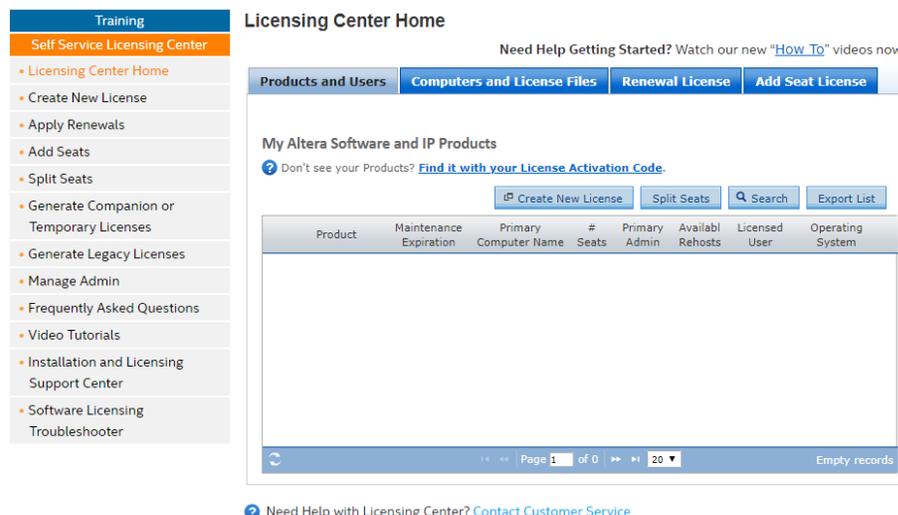
Under My Altera Software and IP products, a list of products associated to your account appears.

3. If the product you want to license does not appear in the list:
   a. Click **Find it with Your License Activation Code**.

b. Type the license activation code or Intel Quartus Prime software serial number in the Find/Activate Products page, and click **Search**.

4. Select the products that you want to activate in the **Activate Products** table.

5. Click **Activate Selected Products**.

4.2.2. Obtain Necessary Hardware Information

To generate a `license.dat` file, Intel requires information about the computer on which you want to install the license.

The following table indicates what information you need, depending on the type of license and the license host's operating system.

Table 4.   Hardware Information Necessary for Intel FPGA software licenses

License Type	OS	Hardware Information	Notes
Fixed license	Windows or Linux	NIC ID or software guard ID	Legacy Quartus II software version 7.2 and earlier support software guards.
Floating license	Windows or Linux license servers	NIC ID	Use the ID from a physical NIC card, not a virtual ID.
	UNIX license servers	Host ID	Equivalent to the NIC ID.

- The Appendix contains instructions on obtaining the hardware information.

With the hardware information, you are ready to go to the Self-Service Licensing Center.

Related Information

4.2.3. Request a License File from the Self-Service Licensing Center

Note: For software or IP with an expiration date prior to January 1, 2009, obtain a license file by visiting the Legacy License Generator page on www.intel.com.

From the **Self-Service Licensing Center Home** page:

1. Click **Create New License**.
The **Create New License** dialog box appears, displaying the **Unlicensed Products** table.

2. Select one or more products from the **Unlicensed Products** table, and then click **Next**.

3. Click **Confirm Selection** to generate the license file.
You receive an email with the license file text included in the body of the email and an attached file.

Intel sends the license file to the email address specified for the licensed user. If the license does not have an email address, Intel sends the license file to the email address in your My Intel account profile.

Note: If you do not receive your license email within 12 hours of requesting a license, or if you do not know all the required information to complete the process, file a service request on the My Support section of www.intel.com.

If you have a floating, multi-user license, the FLEXlm licensing scheme allows you to set up three redundant license servers to serve licenses. You must request a license file for redundant servers from the Self-Service Licensing Center.

Related Information

- Legacy License Generator
- Self-Service Licensing Center

4.2.4. Setting Up a Fixed License

To set up a fixed license file (single user, single computer):

1. Create a security copy of any existing `license.dat` file.

2. Save the `license.dat` file on your local hard drive. The preferred location is:
   — Linux:

     `/usr/local/flexlm/licenses`

   — Windows:

     `C:\licenses\flexlm`

   Note: If you save the file in other location, make sure that the path contains only alphanumeric characters, and do not type any special characters or symbols, such as !$%^&*<>, empty spaces, or non-English characters.

3. Start the Intel Quartus Prime software.
   If the Intel Quartus Prime software cannot detect a valid license file, the **License Setup Required** dialog box prompts you to license, evaluate, or buy the software.

Figure 2.   License Setup Required Dialog Box

4. Select **If you have a valid license file, specify the location of your license file**, and click **OK**.

The **License Setup** page on the **Options** dialog box appears.

5. In the **License file** box, specify the full path name of the `license.dat` file, and click **OK**.

Alternatively, you can specify the license file location by using the `LM_LICENSE_FILE` or `ALTERAD_LICENSE_FILE` environment variables. However, the location that you specify in the **License Setup** dialog box supersedes `LM_LICENSE_FILE` or `ALTERAD_LICENSE_FILE`.

Related Information

Intel Quartus Prime Environment Variables on page 13

4.2.5. Set Up a License in a Network License Server

4.2.5.1. Set Up a License File in the License Server

Perform the following steps in the license server:

1. Save the `license.dat` file. The preferred location is:
   — Windows:

      <drive>`:\flexlm`

   — Linux:

      `/usr/local/flexlm/licenses`

2. Identify the hostname of the license server.

3. If the license server uses Windows, specify the port number for the licensing manager.
   — Choose a number outside of the `27000-28000` range, and unique on the machine.

   In Linux systems, the FLEXlm license manager automatically chooses a free port between 27000 and 27009.

4. Modify the SERVER line in the `license.dat` file to include the hostname and port number of the license server.

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

5. Identify the path to the `alterad` vendor daemon executable.[2]
   — Windows:

      <installation_directory>`\bin64\alterad.exe`

   — Linux:

      <installation-directory>`/linux64/alterad`

6. Optionally, identify the user-defined port numbers for the `alterad` daemons.

---

[2] If the license server does not provide the necessary vendor daemon, copy the required daemon from another machine, save the file in a location on the license server, and specify the daemon location on the license server in the license file.

Send Feedback

The FLEXlm software works with Internet firewalls that require you to specify port numbers in the license file on the SERVER line and each VENDOR or DAEMON line. The syntax to specify a port is `PORT=<number>`. Finally, you must allow firewall access to those port numbers.

7. Modify the VENDOR line in the `license.dat` file to include the path to the `alterad` daemon.[3] and the daemon's port number.

```
VENDOR alterad <path/to/alterad> [port=<user-defined port number>]
```

8. If you are using a license file for the ModelSim - Intel FPGA Edition software, identify the path to the Mentor Graphics vendor daemon executable `mgcld`. [2]

9. (Optional) Identify the user-defined port numbers for the `mgcld` daemon.

    Allow firewall access to those port numbers.

10. Modify the VENDOR line in the `license.dat` file to include the path to the `mgcld` daemon.[3] and the daemon's port number.

```
VENDOR mgcld <path/to/mgcld> [port=<user-defined port number>]
```

When you complete all modifications, ensure the license file conditions are met.

Example 2. Setting Up Floating Network Licenses on the License Server

The following example shows how to specify port numbers in a floating license file, where ports `1800`, `1801`, and `1802` provide access through a firewall.

```
SERVER myServer 0123456789ab 1800
VENDOR alterad ./alterad port=1801
VENDOR mgcld ./mgcld port=1802
```

With the modified `license.dat` file, you can set up the FLEXlm license manager on the license server, and finally start the license server.

4.2.5.2. Launch the Licensing Server

The Intel Quartus Prime software administers licensing for single or multiple users in a network installation with the FLEXlm license manager software.

The requisites to configure a new license server are:

- System administration (Administrator) privileges.
- A valid `license.dat` license file.
- (Linux only) To run the FLEXlm `lmgrd` license server manager, make sure that the `/usr/tmp` directory exists.

To launch a new license server:

1. At a command prompt, type:
   — Windows

   ```
   <installation-directory>\bin64\lmgrd -c \path\to\license.dat
   ```

---

[3] If the server path has spaces in it, enclose the full path in quotation marks.

— Linux:

```
<installation-directory>/linux/lmgrd -c /path/to/license.dat
```

For more information about using the license manager server, refer to *Configuring the License Manager Server*.

Related Information

- Installation Path on page 9
- Configuring the License Manager Server on page 29
- Other Licensing Actions on page 32

4.2.5.3. Specify a Network License Server in the Intel Quartus Prime Software

1. Start the Intel Quartus Prime software.
   If the **License Setup Required** dialog box opens, select **If you have a valid license file, specify the location of your license file**, and click **OK**.
2. Click **Tools ➤ License Setup**.
3. In the **License file** box, specify the port and location of the licensing server, and then click **OK**.

   Use the `<port>@<hostname>` notation, where `<port>` is the license port number and `<hostname>` is the server's host name.

   Note: Separate multiple license servers and node locking license files with ":" (Linux) or ";" (Windows).

Alternatively, you can specify the license file location by using the `LM_LICENSE_FILE` or `ALTERAD_LICENSE_FILE` environment variables. However, the location that you specify in the **License Setup** dialog box supersedes `LM_LICENSE_FILE` or `ALTERAD_LICENSE_FILE`.

Note: If you are using the legacy Quartus II software version 7.2 or earlier, you must also use a software guard. Attach the software guard to a parallel or USB port on your computer.

4.3. Types of Intel FPGA Software Licenses

Intel provides licenses for purchased versions of the Intel Quartus Prime software, purchased IP cores, development kits, and the ModelSim - Intel FPGA Edition software.

Intel Quartus Prime Software License on page 27

ModelSim - Intel FPGA Edition Software License on page 27

Intel Quartus Prime Lite Edition and ModelSim - Intel FPGA Starter Edition Software License on page 27

Intellectual Property (IP) Cores Licenses on page 28

Development Kits Containing the Intel Quartus Prime Software on page 28

Nios II Embedded Design Suite License on page 28

Mentor Graphics AXI Verification IP Suite License (Intel FPGA Edition) on page 29

Send Feedback

University Program Software Licenses on page 29

4.3.1. Intel Quartus Prime Software License

Most Intel Quartus Prime software products require license. The Intel Quartus Prime Pro Edition software provides a free mode which supports Intel Cyclone 10 GX devices only.

When you purchase an Intel Quartus Prime subscription, you choose between a single-user license that is fixed to a specific computer, or a multi-user floating license.

- *Fixed license*—A stand-alone (node-locked, single-user) license is tied to the network interface card (NIC) ID of the computer on which you installed the software.

- *Floating license*—A floating network (multi-user) license is for users running the Intel Quartus Prime software on multiple computers connected on a network. A license server issues licenses to computers on demand. Floating licenses are not specific to an operating system. If you want to run the FPGA software on additional computers, you can purchase additional seats to add to your floating license after its original purchase.

Note: Intel continues to support operating system-specific floating licenses for the legacy Quartus II software version 6.1 and earlier.

Related Information
License.dat Example Files on page 41

4.3.2. ModelSim - Intel FPGA Edition Software License

The ModelSim - Intel FPGA Edition software requires a valid license. This license expires 12 months after the date of purchase. To obtain a new or renew an expired license file for the ModelSim - Intel FPGA Edition software, go to the Self-Service Licensing Center. You can only renew license for the version that you purchased.

The ModelSim - Intel FPGA Edition license appears as a `FEATURE` line inside the Intel Quartus Prime `license.dat` file.

Note: Before using ModelSim - Intel FPGA Edition software, you must set an environment variable the location of license.

Related Information
Specifying the License for the ModelSim - Intel FPGA Edition Software on page 35

4.3.3. Intel Quartus Prime Lite Edition and ModelSim - Intel FPGA Starter Edition Software License

Intel offers the entry-level Intel Quartus Prime Lite Edition and ModelSim - Intel FPGA Starter Edition software. This software supports selected devices, provides limited feature support, and does **not** require license files.

4.3.4. Intellectual Property (IP) Cores Licenses

You only need to purchase a full production license for licensed Intel FPGA IP cores after completing hardware testing and you are ready to use the IP in production. The rest of the time, you can use the Intel FPGA IP Evaluation Mode feature to evaluate IP cores.

You must purchase the license and generate a full production license key before you can generate an unrestricted device programming file. During Intel FPGA IP Evaluation Mode, the Intel Quartus Prime Compiler only generates a time-limited device programming file (`<project name>_time_limited.sof`) that expires at the time limit.

Intel licenses IP cores on a per-seat, perpetual basis. The license fee includes first-year maintenance and support. You must renew the maintenance contract to receive updates, bug fixes, and technical support beyond the first year.

Purchase a license through your local sales office or distributor. Intel FPGA partners can deliver third-party IP cores for evaluation with the appropriate license.

Related Information

- AN 320: Using Intel FPGA IP Cores Evaluation Mode
- AN 343: OpenCore Evaluation of AMPP Megafunctions
- Intellectual Property and Reference Designs
- Self-Service Licensing Center

4.3.5. Development Kits Containing the Intel Quartus Prime Software

Development kits that include the Intel Quartus Prime software include instructions for obtaining a license for that software.

You can purchase development kits from the Development Kits, Daughter Cards & Programming Hardware page on www.intel.com or through a local sales office or distributor.

Related Information

Development Kits, Daughter Cards and Programming Hardware

4.3.6. Nios II Embedded Design Suite License

You can evaluate the Nios II processor without a license by using the Intel FPGA IP Evaluation Mode, and then purchase a license for the Nios II processor only after you complete hardware testing and are ready to go to production.

With the Intel FPGA IP Evaluation Mode feature, you can:

- Simulate the behavior of a Nios II processor within your system.
- Verify the functionality of your design, as well as evaluate its size and speed quickly and easily.
- Generate time-limited device programming files for designs that include Nios II processors.
- Program a device and verify your design in hardware.

Send Feedback

A license for the Nios II processor core or the Nios II development kit allows you to create, compile, and generate non-time-limited FPGA programming files and flash programming files. If you do not have a license, the programming files that you can create are time-limited.

You do not need a license to develop software using only the Nios II Software Build Tools for Eclipse.

Related Information

Intel FPGA IP Evaluation Mode
　　In *Nios II Processor Reference Guide*

4.3.7. Mentor Graphics AXI Verification IP Suite License (Intel FPGA Edition)

The Mentor Graphics Verification IP Suite (Intel FPGA Edition) provides bus functional models for simulation and verification. This software requires a license file.

If you are using a legacy version of Quartus II software (prior to version 12.1) and want to upgrade your software, you must regenerate your license file before continuing to use the Mentor Graphics AXI Verification IP Suite (Intel FPGA Edition) Bus Functional Models and Inline Monitor (Mentor Graphics Verification IP Suite (Intel FPGA Edition)) for AXI3 or AXI4.

To access Mentor Graphics Verification IP Suite (Intel FPGA Edition) with the Intel Quartus Prime Lite Edition software, you must upgrade to version 12.1 or higher and purchase seat licenses by contacting your Intel sales representative.

4.3.8. University Program Software Licenses

The University Program offers licensed and unlicensed FPGA software to participating universities.

For use in teaching, the University Program recommends the Intel Quartus Prime Lite Edition software, which does not require a license. The licensed commercial versions of the Intel Quartus Prime Standard and Pro Edition software are available for installation in university laboratory facilities. Refer to the University Program pages on www.intel.com for more information.

Related Information

University Program

4.4. Configuring the License Manager Server

4.4.1. Installing the FLEXlm License Manager Server Software on Another License Server

To install the FLEXlm license manager server software on an additional license server:

1. On the additional license server, create a directory that mimics the location of the Intel FPGA software:

　　— Windows

```
<installation-directory>\bin64
```

— Linux

```
<installation-directory>/linux64
```

2. From your local computer, copy the following files from the location of the Intel FPGA software to the new directory on the licensing server:

— `lmgrd`

— `lmutil`

— `alterad`

— `lmtools` (Windows only)

4.4.2. Upgrading the FLEXlm License Manager Server Software

To support network licensing, the Intel FPGA software requires the FLEXlm license manager server software version 11.11.1 or later. The installation process for Windows installs the FLEXlm software version 11.11.1 for all Windows and Linux platforms). However, you should also verify that the FLEXlm software version of the license server is 11.11.1.

On the computer running the FLEXlm software, type at a command prompt:

Windows	`<FLEXlm system directory>\lmgrd -v`
	`<FLEXlm system directory>\alterad -v`
Linux	`/<FLEXlm system directory>/lmgrd -v`
	`/<FLEXlm system directory>/alterad -v`

If the `lmgrd` or `alterad` daemons are not from the FLEXlm software version 10.8, you must upgrade both daemons with the versions that the Intel Quartus Prime software provides.

To upgrade an older version of the FLEXlm software:

1. Make a backup copy your current `lmgrd` and `alterad` daemons.

2. Shut down the license server software

3. Copy the new versions of the files to the computer running the license server over your current daemons.

   If you installed the FLEXlm software using the Intel Quartus Prime installer, the current versions of the `lmgrd` and `alterad` daemons are in:

Windows	`<installation-directory>\bin64\alterad`
	`<installation-directory>\bin64\lmgrd`
Linux	`/<installation-directory>/linux64/alterad`
	`<installation-directory>/linux64/lmgrd`

4. Copy the FLEXlm software utility `lmutil` from the Intel Quartus Prime system directory to the license server computer.

5. Restart the FLEXlm license server by typing at a command prompt:

Send Feedback

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

Related Information

4.4.3. (Windows Only) Starting and Stopping the License Server

After changing the license configuration, you must restart the license server.

Note: Before you start or stop the license server, you must configure a new license server as a Windows service.

To start or stop the license server in the **LMTOOLS** dialog box:

1. Type the following command at a command prompt:

   `<installation-directory>\bin64\lmtools`

2. In the **LMTOOLS** dialog box, click **Configuration using Services**.
3. Select the name of the license server, usually **Flexlm License Server**.
4. Click the **Start/Stop/Reread** tab.
5. Click **Start Server** or **Stop Server**.

4.4.4. (Windows Only) Starting the License Server Automatically

Before you set up the license server to start automatically at startup, you must configure the license server as a Windows service.

To start the license server automatically at startup:

1. At a command prompt, type:

   `<installation-directory>\bin64\lmtools`

2. In the **LMTOOLS** dialog box, click **Configuration using Services**.
3. Select the name of the license server.

   Usually **Flexlm License Server**.
4. Click the **Config Services** tab.
5. Turn on **Use Services**.
6. Turn on **Start Server at Power Up**.

4.4.5. Rereading an Existing License File on a License Server

If you change the license file, you must reread the license file or restart the license server before you can run the Intel Quartus Prime software again. If you have an existing FLEXlm license server with an existing license file for the MAX+PLUS® II software, or software from another vendor, and the FLEXlm license manager server

software is version 11.11.1, you can copy and paste the `FEATURE` lines from your Intel Quartus Prime `license.dat` file into your existing license file. Make sure you modify the FEATURE lines for your server.

- At a command prompt, type:

Windows	`<Intel Quartus Prime system directory>/linux64/lmutil lmreread`
Linux	`<Intel Quartus Prime system directory>\bin64\lmutil lmreread`

Note: You can see a list and description of the available FLEXlm options by typing `lmgrd –help` at a command prompt.

Related Information
- Set Up a Floating Network License on a Local Computer
- Set Up a License File in the License Server

4.5. Other Licensing Actions

The Self-Service Licensing Center in the Intel webpage allows you to view, request, activate, and manage your software licenses. You must have a My Intel account to access the Self-Service Licensing Center.

Besides requesting licensing files and activating software, you can perform the following tasks with the Self-Service Licensing Center:

- View existing licenses—you can view all your existing licenses, including their expiration dates, available rehosts, and licensed users.
- Renew licenses—you can renew your existing licenses.
- Rehost licenses—you can transfer your existing licenses from one computer to another. You have a total of three rehosts for each license.
- Add seats to a floating license—you can add seats to your existing floating licenses.
- Manage license users—you can specify the licensed user for each of your existing licenses.
- View license history—you can view the license file history for each computer that you add to your My Intel account.

Additionally, you can also split a floating license, obtain a checkout license, or obtain a companion license with the Self-Service Licensing Center.

Related Information
Self-Service Licensing Center

4.5.1. Managing Licensed Users

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

1. Log on to your My Intel account from www.intel.com.

2. Access the Self-Service Licensing Center.

3. In the **Products and Users** tab, click the **License User** icon for the license you want to update in the **Licensed User** column of the **My Altera Software and IP Products** table.

4. In the **User Information** box, type the name and email address of the licensed user, and then click **Save**.

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

4.5.2. Renewing a License

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

1. Log on to your My Intel account from www.intel.com.

2. Access the Self-Service Licensing Center.

3. In the **Renewal License** tab, click **Apply Renewals** to access the Apply Renewals page.

4. Select the product you want to renew, and click **Next**.

5. Select the renewal product you want to apply, and click **Next**.

4.5.3. Creating a Computer Profile

Create a computer profile for your My Intel account to allow the assignment of licenses.

1. Log on to your My Intel account from www.intel.com.

2. Access the Self-Service Licensing Center.

3. In the **Computer and License Files** tab, click **Add Computer**.

4. In the **Add Computer** dialog box, select the **License Type** for your computer.

   Your software license type must match the license type of any license you want to assign your computer.

5. Select the **Primary Computer Type** for your computer.

   The primary computer type is the NIC ID, Host ID, or software guard ID.

6. Type your computer name in the **Primary Computer Name** box. You can specify any name meaningful to you in this box.

7. Type your NIC ID, Host ID, or software guard ID number in the **Primary Computer ID** box.

8. If you have a fixed license and want to use your license for multiple computers, you can specify up to two companion IDs in the **Companion ID** and **Companion ID 2** boxes.

Your companion ID is your NIC ID, Host ID, or software guard ID. You can use your license or associated companion license only on one computer at a time.

9. If you have a floating license, you can set up your license on up to three redundant license servers. Type the NIC ID or Host ID for redundant servers in the **Redundant Server ID 2** and **Redundant Server ID 3** boxes.

10. Click **Submit**.

To edit an existing computer profile:

1. Click the **Update Computer** icon next to the computer that you want to edit in the **My Computers** table.

2. Make changes in the **Update Computers** dialog box.

3. Click **Submit** when you are finished making changes.

Related Information

4.5.4. Transferring a License File to Another Computer

You can rehost or transfer a license from one computer to another. You can rehost each license up to three times within your maintenance period.

1. Log on to your My Intel account from www.intel.com.

2. Access the Self-Service Licensing Center.

3. To rehost a license, follow these steps:

   a. In the **Computers and License Files** tab, locate the product you want to rehost.

   b. In the **Update Computer** column, click the **pencil** icon.

   c. In the **Update Computer** dialog box, change the host ID in the **Primary Computer ID** box, and click the **Submit** button.

4. Click **Get License**.

Your license file is sent to the email address specified for your My Intel account profile. Your software license type must match the license type of any license you want to assign your computer.

Related Information

4.5.5. Adding Floating Seats

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

1. Log on to your My Intel account from www.intel.com.

2. Access the Self-Service Licensing Center.

3. In the **Add Seat License** tab, click **Add Seats** to access the My Add Seat License page.

4. On the Add Seats page, select a product to which you want to add additional seats, and click **Next**.

5. Select the product with the seats you want to apply and click **Next**.

6. Type the number of additional seats you want to add to your floating license in the **Number of Seats to Add** box.

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

Example 3.   Floating License Example

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

4.5.6. Specifying the License for the ModelSim - Intel FPGA Edition Software

Note: The ModelSim - Intel FPGA Starter Edition software versions 6.4g and later do not require a license.

The ModelSim - Intel FPGA Edition software supports licenses using the Mentor Graphics license daemon `mgcld`.[4]

1. You can find the `mgcld` daemon in the following directories:

   - Windows:

     ```
     <ModelSim - Intel FPGA Edition system directory>\win32aloem
     ```

   - Linux:

     ```
     <ModelSim - Intel FPGA Edition installation directory>/linuxaloem
     ```

2. Before starting the ModelSim - Intel FPGA Edition software, set the `MGLS_LICENSE_FILE` environment variable to the location and file name of the ModelSim - Intel FPGA Edition license file.

   For example,

   ```
   MGLS_LICENSE_FILE (<ModelSim installation directory>/licenses/eda/
   license.dat)
   ```

   or with the *<port>*@*<hostname>* notation `1900@set`, where *<port>* is the license port number and *<hostname>* is the server's host name.

The ModelSim - Intel FPGA Edition software license expires 12 months after the date of purchase, at which point you can no longer use the software. You must obtain an updated Intel Quartus Prime software subscription license file from the Self-Service Licensing Center every 12 months to renew your license for the specific ModelSim - Intel FPGA Edition software version that you purchase. You can use only the version of ModelSim - Intel FPGA Edition software that you purchase with the updated license.

---

[4] The ModelSim - Intel FPGA Edition software license does not support Remote Desktop access with node-locked, uncounted licenses.

Related Information

- [Set Up a License File in the License Server](#) on page 24
- [Self-Service Licensing Center](#)

4.6. Syntax of license.dat License File

The `license.dat` file must meet these conditions to ensure license integrity:

- The text editor does not append `.txt` or any other file extension to the file name, for example, `license.dat.txt`, otherwise the software cannot find the license.

- The last `FEATURE` line ends with a carriage return (new line).

- Any `FEATURE` line that wraps to a second or third line must have a backslash (\) at the end of each line to indicate that the statement continues. However; `VENDOR_STRING` statements that wrap to multiple lines do not need a backslash (\). The backslash should only be added outside the line with double quotation marks (").

- The license file does not have hidden control characters:

  — Opening the license file with any software other than a plain text editor may add hidden characters.

    For example, WYSIWYG editors such as Microsoft Excel, Word, or WordPad, may insert special control characters such as a tab or carriage return. Pasting special control characters into another plain text document can corrupt the license, even if those characters are invisible in a plain text editor.

  — If you edit the license file in one operating system, then copy the license file in another operating system, and then copy the license file to the Windows operating system, the second operating system may insert unwanted control characters into the license file. Make sure that you correctly convert the file.

For information about the contents of a license file and example licenses, refer to *About Intel FPGA License Files*

Related Information

[About Intel FPGA Software License Files](#) on page 37

5. About Intel FPGA Software License Files

This section contains details about the syntax of Intel FPGA Software License Files.

Related Information

- Configuring the License Manager Server on page 29
- Set Up a License File in the License Server on page 24

5.1. License File Troubleshooting

Use this information to troubleshoot and modify and edit Intel FPGA software license files.

Related Information

- Software Licensing Troubleshooter
- Intel FPGA Licensing

5.2. License File Components

This topic describes the different parts of the Intel FPGA license file (`license.dat`).

5.2.1. License File Header

Intel FPGA license files have headers that contain identifying information specific to the license, such as the type of license, the primary computer and companion IDs, issue and expiration dates, and a product license summary.

The following example shows the header of a floating server license file that contains a license for the Intel Quartus Prime software and the ModelSim - Intel FPGA Edition software. The license was issued on May 08, 2019, is a perpetual license with no defined companion IDs, and has a maintenance expiration date of April 2019.

```
# Intel Corporation Software and/or Intellectual Property License File
# Issued 08 May 2019
# Upgrade to these products will no longer be available after the Maintenance
Expiration
# date unless licenses are renewed.
# Floating Server License
# Primary Machine Name-xxxxxxxx
# Primary Machine ID-Host ID XXXXXXXXXXXX
# Redundant Server 2-N/A
# Redundant Server 3-N/A
# Product License Summary:
# Quartus PRO Edition Float for Partners, 1 Seat(s)
# - Maintenance Expiration of 2019.04
# ModelSim Intel FPGA Edition Software, 1 Seat(s)
```

```
# - Maintenance Expiration of 2019.04
# - License Expires 08-May-2020
...
```

5.2.2. SERVER, VENDOR, and USE_SERVER Lines

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

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

VENDOR *<daemon> <path>*

USE_SERVER

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

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

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

Table 5.   Elements of the SERVER and VENDOR Lines for Floating Licenses

Element Name	Editable	Description
hostname	yes	The host name of the server in the license.dat file.
8- or 12-character host or NIC ID	no	The PC NIC or UNIX Host ID of the server. You must supply this ID to www.intel.com when purchasing the license.
port	n/a	The port number.
daemon	no	The vendor daemon name: • alterad daemon: Intel Quartus Prime software • mgcld daemon: ModelSim - Intel FPGA Edition software • armlmd daemon: ARM features of the ARM Development Suite (ADS)
path	yes	The path to the vendor daemon on the server. You must edit this entry.

5.2.3. FEATURE and INCREMENT Lines

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

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

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

```
FEATURE START
# The following is a feature line for Intel Quartus Prime Standard Edition Fixed
# Number of seat licenses is 1
# No license expiration date
FEATURE maxplus2 alterad 2015.04 permanent uncounted 6D103456930D \
HOSTID=GUARD_ID=T000012345 SIGN="0116 7EF5 F487 4771 3456 9278 \
4DA6 80CF 4131 95C6 1F1E D54F 8429 C807 6A8B 0A13 BC80 A11D 0F6E \
AC08 4FA8 0B6E C267 9BBB 5791 C037 0FAD FB9E FFD8 5CF4"
FEATURE quartus alterad 2015.04 permanent uncounted 08E2123438D3 \
HOSTID=GUARD_ID=T000012345 TS_OK SIGN="0403 403E CF63 6460 \
3C3D 2AA7 60B3 A074 77A7 670A 3C5D BF03 9391 3476 D1DA 14E7 56FA \
0F63 1EE2 77C8 41C9 3495 A238 FF7C F507 6573 54FA F46C D42B C0B3"
# FEATURE END
################################################################
INCREMENT alteramtivsim mgcld 2015.04 13-aug-2015 uncounted \
6D7CE8FDD113FDB05C51 \
VENDOR_STRING=2A865E73 HOSTID=GUARD_ID=T000012345 ISSUER="Altera" \
SN=23912821 SIGN2="03BB 4774 F8FA 6E7A 4B71 5E3B FB9C 92B5 7B2F \
3581 49EF 4558 0945 260B 23C6 1DE0 2BD4 3709 6945 5A70 CAD6 C22B \
7A4E 67B7 C8FF 90BB B360 022C E3DC 32F8"
# FEATURE END
```

Table 6.   Elements of the FEATURE and INCREMENT Code Lines

Element Name	Description
name	The feature name.
daemon	The name of the vendor daemon that manages the feature. This name corresponds to a VENDOR line in network/server licenses.
version	Any version of software released up to and including this date is licensed. Software with a later version date does not function using this license file.
expiration	The date after which the software or service pack cannot be used. The expiration date applies to trial licenses. For Intel FPGA license subscriptions, the expiration is permanent.
# of licenses	The number of concurrent users that can run each feature. For some license types, the entry is uncounted.
authcode	An authorization code generated by Intel.
vendor_strings	Specified for certain third-party license features.
hostid_lock	Specified if a feature is node-locked to a software guard, NIC ID, or hard-disk serial number. Intellectual property (IP) Intel FPGA IP functions often contain node-locked feature lines in floating licenses. • Software guard: HOSTID=GUARD_ID=*<Software guard number>* • Network interface card (NIC): HOSTID=*<NIC ID>* • Hard-disk serial number: HOSTID=DISK_SERIAL_NUM=*<Hard-disk ID>*
issuer	The name of the ModelSim license issuer.
sign	An authorization code generated by Intel.
TS_OK	Enables remote log on for fixed license Intel Quartus Prime software (includes Intel FPGA IP, Nios II Software Build Tools for Eclipse, and DSP Builder).

The following table describes the available Intel FPGA license features. This table does not include license features for any intellectual property (IP), development kits, or special license codes used for the Intel Quartus Prime Lite Edition software.

Table 7. **Available Intel FPGA License Features**

Feature Name	Description
`quartus`	Intel Quartus Prime Standard Edition software
`quartus_pro`	Intel Quartus Prime Pro Edition software
`alteramtivsim`	ModelSim - Intel FPGA Edition VHDL and Verilog HDL Simulator *(1)*
`alteramtivlog`	ModelSim - Intel FPGA Edition Verilog HDL Simulator *(2)*

Notes:
1. The `alteramtivsim` license subscription supports both VHDL and Verilog HDL, but the software does not support mixed language simulation for ModelSim - Intel FPGA Edition version 6.4a and later. For ModelSim - Intel FPGA Edition version 6.3g_p1and earlier, the `alteramtivsim` license subscription supports VHDL only.
2. The ModelSim - Intel FPGA Edition `alteramtivlog` license subscription supports Verilog HDL only and is available for ModelSim - Intel FPGA Edition version 6.3g_p1 and earlier.

5.3. Using a FLEXlm Options File

If the license file contains `FEATURE` and `INCREMENT` lines for the same software but different maintenance dates, the license server may grant newer licenses from the `FEATURE` line to users running older versions of software, which leaves fewer licenses for users running newer versions of software.

By default, the license server grabs licenses from the first matching `FEATURE` or `INCREMENT` line in the license file. If all the licenses in the first `FEATURE` or `INCREMENT` line are in use, the license server attempts to grab licenses from the next `FEATURE` or `INCREMENT` lines, until the end of the license file. A FLEXlm options file allows you to control which users can grab which licenses by creating pools of licenses for each `FEATURE` and `INCREMENT` line.

To create a FLEXlm options file that controls a floating license server:

1. In a new text file, add a `GROUP` line for each user group you want to create, with a list of user names, separated by spaces for each group, as follows:

   ```
   GROUP <group name> <username 1> <username 2>
   ```

   Users can be members of more than one group as shown in the following example:

   ```
   GROUP quartus2010 kjones bknight root administrator
   ```

   ```
   GROUP quartus2009 bknight cface root administrator
   ```

2. Add an `INCLUDE` line for each `INCREMENT` and `FEATURE` line in the license file for the product you want to control.

   Set the `VERSION` keyword to the maintenance date or version date on the `INCREMENT` or `FEATURE` line from the license file. The `GROUP` field controls which group or groups can use the license line as follows:

   ```
   INCLUDE <product name>:VERSION=<maintenance date> GROUP <group name>
   ```

Send Feedback

For example:

```
INCLUDE quartus:VERSION=2010.12 GROUP quartus2010
INCLUDE quartus:VERSION=2009.06 GROUP quartus2009
INCLUDE ip_base:VERSION=2010.12 GROUP quartus2010
INCLUDE ip_base:VERSION=2009.06 GROUP quartus2009
```

3. Save the options file `<filename>.dat`.

4. Add the options file as the last option on the `VENDOR` line in the license file, as shown in the following example:

```
VENDOR alterad "C:\lic\alterad.exe" "C:\lic\alteraOptions.dat"
```

5. Restart the FLEXlm license server, or reread the license file.

Related Information

5.4. License.dat Example Files

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

5.4.1. Fixed PC Software Guard License Example

The example below shows a `license.dat` file that contains a license for the Intel Quartus Prime Standard Edition software and the ModelSim - Intel FPGA Edition software. This license file works on a PC that has software guard number `T000012345` attached to its parallel port.

```
######################################################################
FEATURE START
# The following is a feature line for ModelSim - Intel FPGA Edition
# Number of seat licenses is 1
# No license expiration date
INCREMENT alteramtivsim mgcld 2015.04 13-aug-2015 uncounted \
    6D7CE8FDD113FDB05C51 \
    VENDOR_STRING=2A865E73 HOSTID=GUARD_ID=T000012345 \
    ISSUER="Altera" \
    SN=23912821 SIGN2="03BB 4774 F8FA 6E7A 4B71 5E3B FB9C 92B5 \
    7B2F 3581 49EF 4558 0945 260B 23C6 1DE0 2BD4 3709 6945 5A70 \
    CAD6 C22B 7A4E 67B7 C8FF 90BB B360 022C
# FEATURE END
######################################################################
FEATURE START
# The following is a feature line for Intel Quartus Prime Standard Edition Fixed
# Number of seat licenses is 1
# No license expiration date
FEATURE maxplus2 alterad 2015.04 permanent uncounted 6D103456930D \
    HOSTID=GUARD_ID=T000012345 SIGN="0116 7EF5 F487 4771 3456 9278 \
    4DA6 80CF 4131 95C6 1F1E D54F 8429 C807 6A8B 0A13 BC80 A11D \
    0F6E AC08 4FA8 0B6E c267 9BBB C037 0FAD FB9E FFD8 5CF4"
FEATURE quartus alterad 2015.04 permanent uncounted 08E2123438D3 \
    HOSTID=GUARD_ID=T000012345 TS_OK SIGN="0403 403E CF63 6460 \
    3C3D 2AA7 60B3 A074 77A7 670A 3C5D BF03 9391 3476 D1DA 14E7 \
    56FA 0F63 1EE2 77C8 41C9 3495 A238 F507 6573 54FA F46C FF7C \
    D42B C0B3"
######################################################################
```

```
End of Altera Corporation Software and/or Intellectual Property
License File.
Issued 5/13/2015
```

5.4.2. Floating Network License Example

The example below shows a `license.dat` file that contains a license for the Intel Quartus Prime Pro Edition software, the ModelSim - Intel FPGA Edition software, and the IP Base Suite. This license specifies that two users can run the software simultaneously and works when the PC with NIC ID `00B0D0ABCCBA` is set up as a license server and the users point to the license location.

```
######################################################################
SERVER <hostname> 00B0D0ABCCBA <port number>
VENDOR alterad <path to daemon executable>
USE_SERVER
######################################################################
FEATURE START
# IP Base Suite (FIR Compiler II, FFT, NCO, DDR2 (UniPHY), DDR2 (ALTMEMPHY),
DDR3,
# LPDDR2, QDR II, RLDRAM II)
# Number of seat licenses is 2
# No license expiration date
PACKAGE ip_base alterad COMPONENTS="6AF7_0034 6AF7_0012 6AF7_0055 \
      6AF7_00A8 6AF7 00A7 6AF7_00A8 6AF7_00C2 6AF7_00BE 6AF7_00BF \
      6AF7_00A4 6AF7_00AC 6AF7 00AD 6AF7_0014" OPTIONS=SUITE \
      IGN="1A76 FAF3 0CFA 9A0B D5A9 C867 4923 F223 AA3B C17B 6F11 \
      98E6 8056 178E A795 1F63 7695 1260 3D0C F662 2657 4AFF 25BD \
      3029 0C7C 1B3A 542A 3948 9F90 03CE" \
FEATURE ip_base alterad 2015.05 permanent 2 D7564046983D \
VENDOR_STRING="iiiiiiiihdLkhIIIIIIIIUPDuiaaaaaaaa11X38DDDDDDDDpjz5
cdddddddddJJJJJbqIhouuuuuuuuYYWiVVVVVVVVVbp0FVHHHHHHHHBUEakfffffffD
2FFRkkkkkkkkWL$84" \
      DUP_GROUP=UHD SIGN="0A9A EB33 1A75 A16D 5949 B37B 015F 1A69 \
      9FD4 CED3 ABCE A628 9FDE 4846 455C 01E1 064B D881 C079 215C \
      FBAE 86B2 AC3F 4210 F471 6298 A340 CFC8 BCDA C218"
# FEATURE END
######################################################################
FEATURE START
# The following is a feature line for Intel Quartus Prime Pro Edition Floating
# Number of seat licenses is 2
# No license expiration date
FEATURE maxplus2 alterad 2015.05 permanent 2 71781799E9FF \
      SIGN="0D15 DBE8 1893 DA63 0658 4F28 D47C 64D8 A9AB 4E84 A3EE \
      4257 F592 753F E261 0FD9 C334 F2E9 C9A2 5316 CB42 EF0F 188D \
      7933 5134 6FDC 0BA8 6CCD FF8A 403D"
FEATURE quartus_pro alterad 2015.05 permanent 2 8D7C83160D8A SIGN="15F3 \
      2C48 65E9 1EAC 5E5F 19A0 1C53 7DF1 4BEA D4EA 422A 92C7 9CC0 \
      8B45 4A3D 0674 667C 1FB9 504E D960 8FC2 1B46 94C3 035B 3711 \
      651F D889 0B03 99F7 48EC"
# FEATURE END
######################################################################
# End of Altera Corporation Software and/or Intellectual Property
License File.
Issued 05/13/2015
```

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A. Appendix: Getting Hardware Information for License

This appendix shows how to obtain information about the computer on which you want to install the Intel FPGA software license. Most licenses require a network interface card (NIC) ID, which is the physical address of your Ethernet card.

Table 8. **Hardware Information Necessary for Intel FPGA software licenses**

License Type	OS	Hardware Information	Notes
Fixed license	Windows or Linux	NIC ID or software guard ID	Legacy Quartus II software version 7.2 and earlier support software guards.
Floating license	Windows or Linux license servers	NIC ID	Use the ID from a physical NIC card, not a virtual ID.
	UNIX license servers	Host ID	Equivalent to the NIC ID.

A.1. Identifying Host's NIC ID

A network interface card (NIC) ID is a 12-digit hexadecimal string embedded in the network card that uniquely identifies a computer. You must identify the NIC ID of the computer that hosts the software installation or the license server.

Note: If you have a triple redundant license server for floating licenses, the first server that you specify is the master. Use the master server's NIC ID or host ID.

A.1.1. Finding the NIC ID for Windows

Use the `ipconfig` utility to find the NIC ID on Windows.

- At a command prompt, type:

```
ipconfig /all
```

The command prints network information. The NIC Address appears as **Physical Address**.

Figure 3.   **NIC ID in Output of ipconfig Command**

If the system has more than one network card, you can use the NIC ID of any network card connected to the computer.

A.1.2. Finding the NIC ID on Linux

Use the `ifconfig` utility to find the NIC ID on Linux.

- At a command prompt, type:

```
/sbin/ifconfig eth0
```

The command prints network information. The NIC Address appears as **HWaddr**.

Figure 4.   **NIC ID in the Output of ifconfig Command**

A.1.3. Finding the NIC ID in the Intel Quartus Prime Software

Use the following method to find the NIC ID in the Intel Quartus Prime software:

- Display the **License Setup** settings by clicking **Tools ➤ License Setup**.

Figure 5. **NIC ID in License Setup Settings**
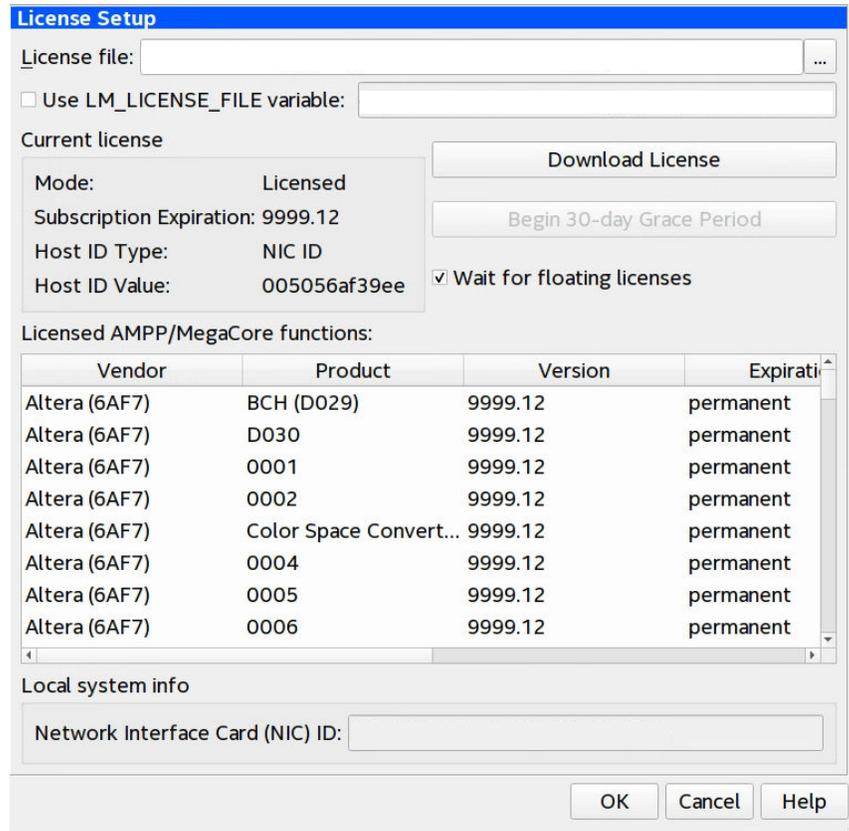
The computer's NIC ID appears under **Local System info** in the **Network Interface Card (NIC) ID** field.

A.1.4. Find NIC ID on Windows Using FLEXlm Utilities

- At a command prompt, type:

```
<installation-directory>\bin64\lmutil lmhostid
```

Related Information

Installation Path on page 9

A.2. UNIX Host ID

The license server host ID for UNIX is equivalent to the NIC ID.

A.3. Locating Your Hard-Disk Serial Number

Some versions of software use the hard disk serial number for licensing. A hard-disk serial number is an eight-character hexadecimal ID that identifies the PC with the Intel FPGA license. If the ID is not eight characters, include a leading zero.

A.3.1. To find the hard-disk serial number on a Windows PC

- Type the following command at a command prompt:

  ```
  vol c:
  ```

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

A.3.2. To find the hard-disk serial number if the Intel Quartus Prime software is installed on your computer

- Click **Tools ➤ License Setup**. The hard-disk serial number appears under **Local Systems info** in the **C: drive serial number** field. Verifying the hard-disk serial number with the Intel Quartus Prime software ensures that you use the correct hard-disk serial number if your PC has multiple hard drives.

A.4. Identifying the USB Software Guard ID

Legacy Quartus II software version 7.2 and earlier support software guards. A USB software guard ID is a ten-character alphanumeric number beginning with the letter T.

- If the Intel Quartus Prime software is installed and the guard is attached, clicking the **Tools ➤ License Setup**. Your software guard ID appears under **Local System info** in the **Software Guard ID** field.

- Otherwise, find the software guard ID on the printed label on the guard.

7. Intel FPGA Software Installation and Licensing Archives

If the table does not list a software version, the user guide for the previous software version applies.

Intel Quartus Prime Version	User Guide
18.1	Intel FPGA Software Installation and Licensing
18.0	Intel FPGA Software Installation and Licensing
17.1	Intel FPGA Software Installation and Licensing
17.0	Intel FPGA Software Installation and Licensing
16.1	Altera Software Installation and Licensing
16.0	Altera Software Installation and Licensing
15.1	Altera Software Installation and Licensing
15.0	Altera Software Installation and Licensing
14.1	Altera Software Installation and Licensing

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8. Document Revision History for Intel FPGA Software Installation and Licensing

The following table shows the revision history for this document.

Document Version	Intel Quartus Prime Version	Changes
2019.06.27	19.1	• Removed the topic *Set Up a Floating Network License on a Local Computer* since it was outdated. • Renamed "Mentor Graphics* Verification IP (VIP) Altera Edition" to "Mentor Graphics AXI Verification IP Suite (Intel FPGA Edition)". • In *License File Header* topic, updated the license header sample to remove references to Altera. • In *Obtain Necessary Hardware Information*, added Linux OS support for fixed licenses. • Added footnote about Remote Desktop limits to "Specifying the License for the ModelSim - Intel FPGA Edition Software."
2019.04.01	19.1	• In *Intel Quartus Prime Environment Variables*, added `LC_ALL` variable to the list to explain the Perl warning observed if there is a mismatch in the locale setting. • In *Software Available in the Download Center*, added footnote about RSA Data Security, Inc. MD5 Message-Digest Algorithm. • In Software Requirements on page 5, updated RHEL, Ubuntu, and SUSE package details. • Global changes: — Rebranded Altera URLs to Intel URLs. — Rebranded myAltera to My Intel along with related screenshots.
2018.09.24	18.1.0	• Added statement that the Intel Quartus Prime software installer does not support spaces in the installation path. • Renamed *Installation Directory* topic to *Installation Path*.
2018.05.07	18.0.0	• Reorganized content. • Moved content about getting hardware information to Appendix. • Added how to install USB drivers for Red Hat Enterprise systems. • Added software requirements for Intel High Level Synthesis (HLS) Compiler. • Added information about specifying more than one licensing server. • Removed references to automatic web license retrieval. • Removed instructions to set environment variables on Linux and Windows. • Created a Licensing Intel FPGA Software Walkthrough topic. • Updated the supported Red Hat Linux version number (5, 6 and 7 instead of 5 and 6).
2018.04.16	17.1.0	Updated licensing information for ModelSim - Intel FPGA Edition software

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ISO 9001:2015 Registered

Document Version	Intel Quartus Prime Version	Changes
2017.11.06	17.1.0	• Fixed outdated links from topic: "Using the Self-Service Licensing Center" • Added topics: "Installing Intel FPGA Software at the Command Prompt" and "Downloading and Installing Intel FPGA Software on Multiple Systems" • Removed command-line information from "Additional Installation Procedures"
2017.07.19	17.0.0	• Removed "How to Contact Us" topic
2017.05.08	17.0.0	• Included new free licensing mode for Intel Quartus Prime Pro Edition software, which supports Intel Cyclone 10 GX devices only. • Removed all references to Solaris, which is no longer supported. • Added make as a required Linux library.
2016.10.31	16.1.0	• Removed all references to Talkback feature. • Changed instances of Altera to Intel FPGA.
2016.05.02	16.0.0	Removed instructions on downloading .iso files, which are no longer supported.
2015.11.02	15.1.0	Updated to reflect the new Quartus Prime Lite, Standard, and Pro Edition software.
2015.05.04	15.0.0	• Reorganized the document. • Added a quick start for fixed, single user licenses.
2015.03.09	14.1.1	• Updated the supported Red Hat Linux version number (5 and 6 instead of 6 and 7) • Changed recommended screen resolution from 768 x 1024 to 1024 x 768
2014.12.15	14.1.0	• Updated RPM package prerequisite information for Red Hat Linux Enterprise 7 and ModelSim-Altera Edition software and SoC EDS on systems running Red Hat Linux Enterprise 7 • Added Microsoft redistributable package requirements for ModelSim-Altera Edition • Updated FLEXlm license server version to 11.11.1 • Updated available software in the "Altera Software" topic • Removed references to Windows XP and Windows Server 2003 • Updated terminology in the "Adding Floating Seats" topic • Updated instructions for the "Setting Windows Environment Variables" topic • Added a firewall example to the "Modifying the Network License File" topic
2014.18.08	14.0a10.0	• Updated RPM package prerequisite information for Red Hat Linux Enterprise 6 and ModelSim-Altera Edition software and SoC EDS on systems running Red Hat Linux Enterprise 6
June, 2014	14.0.0	• Updated "Cables and Ports" topic. • Updated "Upgrading or Setting Up a License Manager Server" topic. • Updated "Quartus II General Environment Variables" topic. • Updated "Download and Installation Prerequisites" topic. • Removed references to 32-bit Quartus II software. • Added "Downloading and Installing Altera Software Updates" topic.

continued...

Document Version	Intel Quartus Prime Version	Changes
		• Updated "Rehosting a License" topic. • Updated 32-bit libraries in "Download and Installation Prerequisites" topic. • Updated "Modifying the Network License File" topic.
Nov, 2013	13.1.0	• Added references to Altera SDK for OpenCL in "Altera Software" topic. • Updated information about downloading .tar files in "Installation Options" topic. • Removed note about installing software separately from "Installing Device Family Support" topic.
May, 2013	13.0.0	• Removed references to the TCP/IP protocol in "More Download, Installation, and Setup Procedures" topic. • Removed references to SOPC Builder in "Supported Software Subscriptions" topic. • Removed the "Individual Software Files" topic, and "Using the 64-Bit Version of the Quartus II Software for Linux" topic. • Updated Altera Complete Design Suite DVD information in "Altera Software" topic. • Removed reference to Windows Vista in "Cables and Ports" topic. • Updated downloading, installing, and uninstalling Altera software information in "Altera Download Center" topic. • Updated information about installing the FLEXlm software in "Upgrading the FLEXlm License Manager Server Software" topic.