



# Intel FPGA Software Installation and Licensing Quick Start

Updated for Intel® Quartus® Prime Design Suite: **18.1**



**MNL-1087 | 2018.11.26**

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# 1. Intel® FPGA Software Installation and Licensing Quick Start

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This quick start provides streamlined instructions for downloading, installing, and licensing Intel® FPGA software using typical single-user license configuration.

This quick start covers the following installation and licensing steps:

- [Step 1: Download Intel FPGA Software](#) on page 3
- [Step 2: Install Intel FPGA Software](#) on page 4
- [Step 3: Install Programming Cable Drivers](#) on page 4
- [Step 4: Configure the Linux User Environment \(Linux Only\)](#) on page 4
- [Step 5: Start the Intel FPGA Software](#) on page 5
- [Step 6: Specify the Intel FPGA Software License](#) on page 5

For multi-user, Linux, or other alternative installation configurations, refer to *Intel FPGA Software Installation and Licensing*.

## 1.1. Step 1: Download Intel FPGA Software

Follow these steps to download Intel FPGA software:

1. Navigate to the Intel FPGA development tools web page at:  
<https://www.intel.com/content/www/us/en/software/programmable/quartus-prime/download.html>
2. Click the **Download** button for the tool you want to install. Additional Intel FPGA software tools are listed at the bottom of the page.
3. On the Download Center for FPGA's web page, specify options for the tool version, edition, and operating system.
4. For Download Method, select the **Akamai DLM3 Download Manager**. The download manager controls the download of the files you select, and allows you to pause and restart the download at any time. Linux does not support this option.
5. Click the **Combined Files** tab.
6. Select the files to download. You can download the complete set of software and device files in a single `.tar` file, or download individual `.tar` files for specific software and device support. Consider download speed, design requirements, and method of installation when determining download method.
7. Complete download of all files before starting installation.

### Related Information

- [Intel FPGA Software Installation and Licensing Manual](#)
- [System Requirements and Prerequisites](#)



## 1.2. Step 2: Install Intel FPGA Software

Follow these steps to install Intel software:

1. Complete download of all installation files, as [Step 1: Download Intel FPGA Software](#) on page 3 describes.
2. Extract the installation files into the same directory. If using Windows OS, extract the installation files by unzipping the .tar files. The **components** subdirectory stores software and device installation files.
3. To begin the installation, run one of the following:

**Table 1. Installation Scripts**

Intel Quartus Prime Edition	Operating System	
	Linux	Windows
Intel Quartus Prime Lite and Intel Quartus Prime Standard Editions	setup.sh	setup.bat
Intel Quartus Prime Pro Edition	setup_pro.sh	setup_pro.bat

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

## 1.3. 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 you 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.

## 1.4. Step 4: Configure the Linux User Environment (Linux Only)

Before starting the Intel Quartus Prime software for Linux for the first time, you must set up the user environment. These steps do not apply to Windows.

1. Update each user's PATH environment variable to include the Intel Quartus Prime bin directory.



The bin directory is usually located at \$QUARTUS\_ROOTDIR/quartus/bin.

2. Review (and update as appropriate), each user's Intel Quartus Prime general environment variables.
3. If you use a version of Intel FPGA software that requires a license, set the LM\_LICENSE\_FILE or ALTERAD\_LICENSE\_FILE environment variable to point to the license.dat file or license server address.
4. Save the changes to the .cshrc file or .bashrc file
5. At the command prompt, type:
  - C shell:

```
cd
source .cshrc
```

- Bash shell:

```
cd
~/ .bashrc
```

After setting the environment variables, you are ready to start the software.

## 1.5. 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.

## 1.6. Step 6: Specify the Intel FPGA Software License

The Intel FPGA software that you purchase requires a license file to enable full use of the software. The license enables the software version that you purchase, as well as all previous versions, and all versions that are within one year of the purchase date. A license for the Intel Quartus Prime software also enables the IP library. This step summarizes the licensing process only for a *single user on one computer*. For other licensing options, refer to *Intel FPGA Software Installation and Licensing*



The ModelSim\* - Intel FPGA Edition software also requires a valid license. This license expires 12 months after the date of purchase. Every 12 months you must regenerate your license file from the Intel FPGA Licensing Center to renew your license for the specific ModelSim - Intel FPGA Edition software version that you purchase.

*Note:* The Intel Quartus Prime Lite Edition and ModelSim - Intel FPGA Starter Edition do **NOT** require a license. If you are using this software, you can skip the licensing step and begin using the software.

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

Refer to the following information to complete the licensing process:

- [Specifying a Single User License](#) on page 6
- [Setting Up a Fixed License](#) on page 9

### 1.6.1. Specifying a Single User License

To license the Intel FPGA software, you can direct the software to retrieve a license file automatically, or you can manually request a license file from the Intel FPGA Licensing Center

To obtain and specify a license file, follow these steps:

1. Start the Intel Quartus Prime software. If the software does not detect a license, you are prompted to evaluate, license, or buy the software.
2. Request a license file using one of the following methods:
  - Select **Perform automatic web license retrieval**. The software attempts to retrieve the license automatically from [www.altera.com](http://www.altera.com).
  - Request a license file from the Intel FPGA Licensing Center located at: <https://www.intel.com/content/www/us/en/programmable/support/support-resources/support-centers/licensing.html>

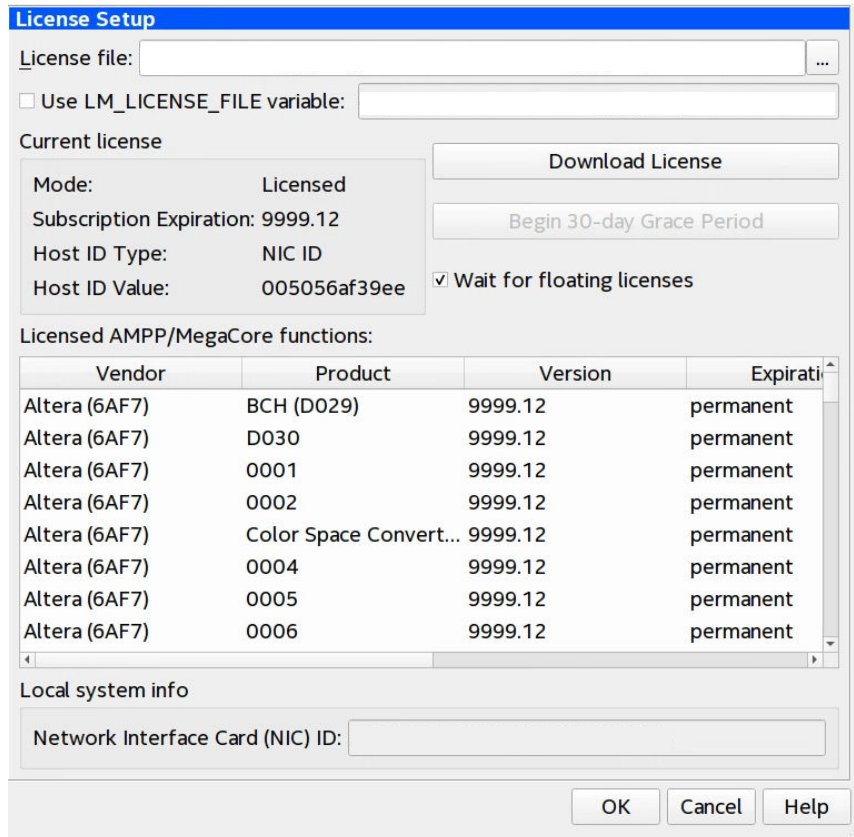
*Note:* The license request requires your computer network interface card (NIC) ID number.

If the Intel Quartus Prime software retrieves a fixed license file successfully, skip the remaining licensing steps and begin using the software.

3. If you request a license file from the Intel FPGA Licensing Center, Intel emails you the license file text and an attached file. After obtaining the license email, use the attached license file to specify licensing settings in the Intel Quartus Prime License Setup (**Tools > License Setup**).
4. In the **License file** box, specify the full path name of the **license.dat** file.
5. Specify the host NIC ID, as [Identifying Host's NIC ID](#) on page 7 describes.
6. Click **OK**. You can begin using the software.



Figure 1. License Setup Tab



*Note:* If you do not receive a license email within 12 hours of the request, or if you require additional information to complete the process, login or register for a My-Intel account, and then submit a Support case requesting license support.

#### 1.6.1.1. 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.

#### 1.6.1.2. 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 2. NIC ID in Output of ipconfig Command**

```
Ethernet adapter Ethernet 2:

Connection-specific DNS Suffix . : 
Description . . . . . : 
Physical Address. . . . . : 
DHCP Enabled. . . . . : 
Autoconfiguration Enabled . . . . : 
IPv4 Address. . . . . : 
Subnet Mask . . . . . : 
Default Gateway . . . . . : 
DNS Servers . . . . . : 

Primary WINS Server . . . . . : 
Secondary WINS Server . . . . . : 
NetBIOS over Tcpip. . . . . :
```

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

### 1.6.1.3. 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 3. NIC ID in the Output of ifconfig Command**

```
[root@localhost ~]# /sbin/ifconfig eth0
eth0      Link encap:Ethernet  HWaddr 08:00:27:00:00:00
          inet addr:192.168.1.100  Bcast:192.168.1.255  Mask:255.255.254.0
          inet6 addr: fe80::208:0000:0000:0000 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:0
          RX packets:100000000  errors:0  dropped:0  overruns:0  frame:0
          TX packets:100000000  errors:0  dropped:0  overruns:0  carrier:0
          collisions:0  txqueuelen:1000
          RX bytes:1000000000 (1.0 GiB)  TX bytes:1000000000 (1.0 GiB)
          Interrupt:0  Memory:00000000-00000000
```

### 1.6.1.4. Finding the NIC ID in the Intel Quartus Prime Software

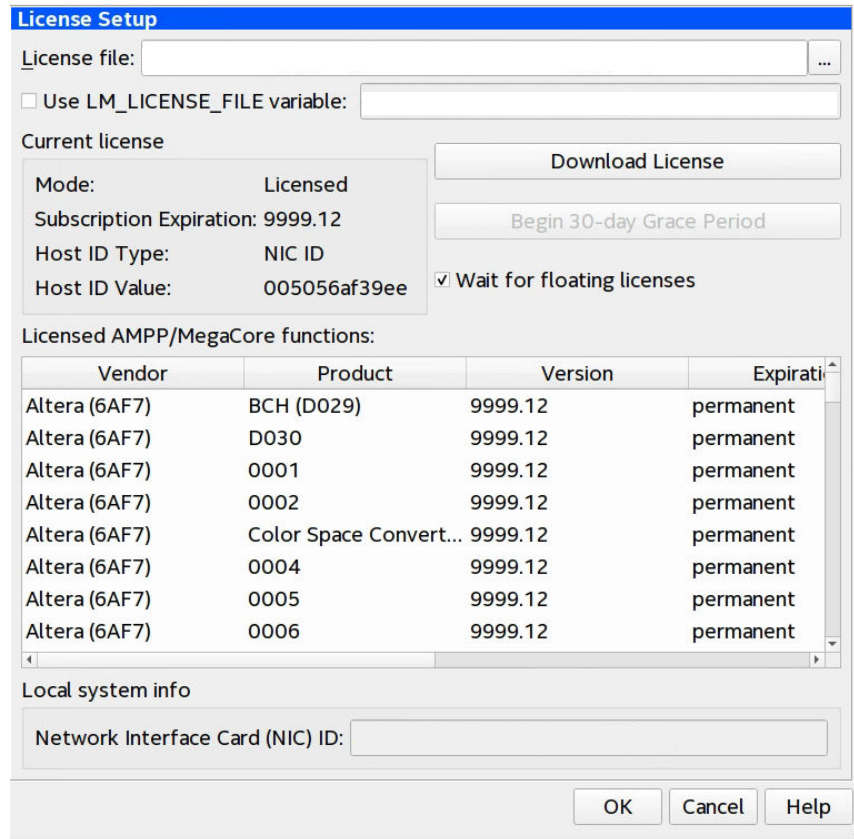
Use the following method to find the NIC ID in the Intel Quartus Prime software:

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





Figure 4. NIC ID in License Setup Settings



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

### 1.6.2. 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 5. 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`.

### 1.6.2.1. Specifying the License File with the `LM_LICENSE_FILE` or `ALTERAD_LICENSE_FILE` Environment Variable

You can specify the Intel Quartus Prime software license location with the `LM_LICENSE_FILE` or `ALTERAD_LICENSE_FILE` environment variable.

To specify the license file:

1. Close the software if it is open.
2. Set the `LM_LICENSE_FILE` or `ALTERAD_LICENSE_FILE` environment variable using the Control Panel (Windows) or by editing your `.cshrc` or `.bashrc` file (Linux).

*Note:* Linux: You must source your `.cshrc` or `.bashrc` file before restarting the Intel Quartus Prime software. See the topic on setting up the Linux environment for more details.

3. Start the Intel Quartus Prime software.

*Note:* The license file setting in the **License Setup** dialog box supersedes the `LM_LICENSE_FILE` or `ALTERAD_LICENSE_FILE` environment variable setting.

### 1.6.2.2. Setting Environment Variables for Windows Systems

To set environment variables in Windows systems:



1. Click **Windows Start menu** ► **Control Panel** or open the Control Panel application.
2. Click **System and Security** ► **System** ► **Advanced system settings** to open the **System Properties** dialog box.
3. In the **System Properties** dialog box, select the **Advanced** tab, and click **Environment Variables**.  
The **Environment Variables** dialog box opens.
4. Select a variable in the **Environment Variables** dialog box, and click **Edit**.
5. Type a value in the **Variable value** box in the **Edit Variable** dialog box, and click **OK**.

The updated value appears in the **Environment Variables** dialog box.

## 1.7. Document Revision History for Intel FPGA Software Installation and Licensing Quick Start

Document Version	Intel Quartus Prime Version	Changes
2018.11.26	18.1.0	<ul style="list-style-type: none"><li>• Reorganized, consolidated, and simplified information into procedural steps.</li><li>• Updated links for Intel FPGA Licensing Support Center, Download Center for FPGAs, and My-Intel.</li><li>• Added information about starting Intel FPGA software on Windows.</li><li>• Added linking between topics in flow.</li><li>• Added License Setup tab screenshot.</li></ul>
2018.04.16	17.1.0	Updated licensing information for ModelSim - Intel FPGA Edition software
2017.03.03	17.1.0	Initial release.