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### Type Conventions Used in This Document

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning or Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bold</strong></td>
<td>Items in the user interface that you select or click. Text that you type into the user interface.</td>
</tr>
<tr>
<td><code>&lt;Italic&gt;</code></td>
<td>Variables in commands, code syntax, and path names.</td>
</tr>
<tr>
<td>Ctrl+L</td>
<td>Press the two keys at the same time.</td>
</tr>
<tr>
<td>Courier</td>
<td>Code examples. Messages, reports, and prompts from the software.</td>
</tr>
<tr>
<td>.</td>
<td>Omitted material in a line of code.</td>
</tr>
<tr>
<td>.</td>
<td>Omitted lines in code and report examples.</td>
</tr>
<tr>
<td>[ ]</td>
<td>Optional items in syntax descriptions. In bus specifications, the brackets are required.</td>
</tr>
<tr>
<td>( )</td>
<td>Grouped items in syntax descriptions.</td>
</tr>
<tr>
<td>{ }</td>
<td>Repeatable items in syntax descriptions.</td>
</tr>
<tr>
<td></td>
<td>A choice between items in syntax descriptions.</td>
</tr>
</tbody>
</table>
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Lattice design tools are built to help you keep innovating. Whether you are designing high-volume mobile handsets or leading-edge telecom infrastructure, our easy-to-use tools will help you bring your ideas to market faster - ahead of your competition.

Lattice Radiant Software
Full-featured FPGA design suite offering best-in-class tools for small form factor FPGA applications. Powerful yet intuitive tools provide fast design starts and precise implementation with intelligent planning and accurate analysis.

Supported FPGA
- Avant-E
- Avant-G
- Avant-X
- MachXO5-NX
- CertusPro-NX
- Certus-NX
- CrossLink-NX
- CertusPro-NX-RT
- Certus-NX-RT
Lattice Diamond Software
Leading edge design software for Lattice FPGA families. Upgrade your design process with an easy-to-use interface, superior design exploration, optimized design flow, Tcl scripting, and more.

Supported FPGA
- ECP5UM
- ECP5UM5G
- LatticeECP3
- LatticeECP2M/S
- LatticeECP2/S
- LatticeSC
- LatticeSCM
- Crosslink
- CrosslinkPlus
- ECP5U
- MachXO3D
- LatticeECP2
- Mach-NX
- MachXO2
- LatticeXP2

ispLEVER Classic Software
ispLEVER Classic is the design environment for Lattice CPLDs and mature programmable products. It can be used to take a Lattice device design completely through the design process, from concept to device JEDEC or Bitstream programming file output.
LATTICE DEVELOPMENT TOOLS: Device Support and Licensing

**Supported FPGA**

- ispMACH 4000
- ispMACH 4A3
- ispMACH 4A5
- ispMach 5000VG
- ispGDX
- ispGDX2
- ispLSI 1K
- ispLSI 2K
- ispLSI 5000VG
- ispXPGA-E

**Lattice Propel Design Environment**

Lattice Propel is a complete set of graphical and command-line tools to create, analyze, compile, and debug both FPGA-based processor system hardware and software design.

**Supported FPGA**

- Avant-E
- Avant-G
- Avant-X
- MachXO5-NX
- CertusPro-NX
- Certus-NX
- CrossLink-NX
- CertusPro-NX-RT
- Certus-NX-RT
- ECP5U
- ECP5UM
- ECP5UM5G
- Mach-NX
- MachXO2
- LatticeXP2
iCEcube2 Design Software

Easy-to-use design tools to help you hit your cost, power, and time-to-market targets. iCEcube2 design software supports the iCE40 family of ultra-low-density FPGAs.

Supported FPGA

- iCE40 UltraPlus
- iCE40 LP/HX/LM
- iCE40 Ultra/UltraLite
Introduction to Lattice Design Tools Licensing

Lattice Design Tools require a license to utilize the software. This comes into two categories: Free and Subscription Licenses.

Free Tools licenses permit access to certain devices with the full bitstream. With Radiant, you can still generate bitstream with a free license using Evaluation Mode for certain devices.

Table 1: Device Support Per Design Flow

<table>
<thead>
<tr>
<th>Device Support</th>
<th>Radiant Free License</th>
<th>Diamond Free License</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Synthesize</td>
<td>Map</td>
</tr>
<tr>
<td>Avant-AT-E</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Avant-AT-G</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Avant-AT-X</td>
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</tr>
<tr>
<td>CrossLinkU-NX</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>MachXO5-NX</td>
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<td>✓</td>
</tr>
<tr>
<td>CertusPro-NX-RT</td>
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</tr>
<tr>
<td>Certus-NX-RT</td>
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<td>✓</td>
</tr>
<tr>
<td>iCE40 UltraPlus</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Licensing User Guide for Windows
Table 1: Device Support Per Design Flow (Continued)

<table>
<thead>
<tr>
<th>Device Support</th>
<th>Diamond Free License</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Synthesize</td>
</tr>
<tr>
<td>LatticeECP2M/S, LatticeECP2/S</td>
<td>✓</td>
</tr>
<tr>
<td>LatticeSC, LatticeSCM</td>
<td>✓</td>
</tr>
<tr>
<td>Crosslink, CrosslinkPlus</td>
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</tr>
<tr>
<td>ECP5U</td>
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</tr>
<tr>
<td>LatticeECP2, LatticeEC</td>
<td>✓</td>
</tr>
<tr>
<td>MachXO3D, MachXO3L/LF</td>
<td>✓</td>
</tr>
<tr>
<td>MachXO2, MachXO</td>
<td>✓</td>
</tr>
<tr>
<td>LatticeXP2, LatticeXP</td>
<td>✓</td>
</tr>
<tr>
<td>Platform Manager 2, Platform Manager</td>
<td>✓</td>
</tr>
<tr>
<td>Mach-NX</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Note:**

*You need a subscription license to enable full bitstream capability.

**Enables a 4-hour hardware timer. You need a subscription license to remove this and have full access to the bitstream.

Please visit the Lattice online store.

How to use this Guide

This installation guide is authored for Client Machines and License Administrators.

Floating License Installation

- For License Administrators who set up company servers and client licenses, please refer to the Server section.
- For Clients who access the server license, please refer to the Client section to set up the local client license.
License Types

There are two license categories for Lattice Tools: Node-locked and Floating.

Node-locked License

A node-locked license is confined to use on one specific machine only. The license is uncounted, which means that if software is operating on a particular machine, there is no limit on the number of instances permitted to run.

Node-locked License: 4 Machines = 4 Licenses

Software limited to single machine
LICENSING BASICS : License Types

Free Node-locked License

Subscription Node-locked License
Floating License

A floating license allows multiple clients to check out individual features concurrently from a shared license server. Floating licenses require the correct license server information and daemon location. Floating licenses are limited to the number of features seats specified in the license.

Floating License: No of seats — No of machines with access

Software available to entire network

Free Floating License
Subscription Floating License

FEATURE vs. INCREMENT in a Floating License

INCREMENT
Increment are additive lines in which a series of lines result in the sum of all the seats.

Increment lines: 1+4 = Total of 5 licenses

FEATURE
Feature lines are not additive in which only the first feature line will be taken into consideration in a license file.
LICENSING BASICS: License Types

Feature lines: Move the 4-seat license FEATURE line to the top of the license if 4 concurrent users are needed

```
FEATURE LSC_RADIAN'T lattice 2024.03 25-mar-2024 1 191937CDF4B1 \
  VENDOR_STRING=LSC_RADIAN'T
FEATURE LSC_RADIAN'T lattice 2024.03 25-mar-2024 4 191937CDF4B1 \
  VENDOR_STRING=LSC_RADIAN'T
```

VERSION vs. EXPIRATION DATE in a License

**VERSION**
The Maintenance Version covers the latest valid tool version. It needs to be greater than the software version to run the tools.

```
INCREMENT latticemsim mgcl 25-mar-2024 4 3F96F5C91783315ADF7B \
  VENDOR_STRING=7D06295E ISSUE='ModelSIM Lattice' SN=285454249 \
```

**EXPIRATION DATE**
The License Expiration Date specifies the last day that the license is valid.

*After March 25, 2024, this FEATURE line is no longer valid*

```
FEATURE LSC_RADIAN'T_SUBSCRIPTION lattice 2024.03 25-mar-2024 1 \
  B0F016E4F29A VENDOR_STRING=LSC_RADIAN'T_SUBSCRIPTION
```
How to Obtain a License

Free Licenses
Lattice offers free licenses which enable you to design and evaluate the performance of the supported devices per Software tool. To request free software licenses, see the links below. For other Software Tools, please go to the Software Licensing page.

Radiant Free License
The free license enables full design and implementation functionality for Radiant-supported devices.
- Request Node-locked License
- Request Floating License

Diamond Free License
The free license enables you to design and evaluate the performance of non-SERDES-based Diamond-supported devices.
- Request Node-locked License
- Request Floating License

Subscription Licenses
Subscription licenses enable you to design and optimize solutions for supported devices in each Software tool. To purchase or renew a Software license, please go to the Online Store or contact a local sales representative or distributor.

If you have purchased a Software license and received a Software Serial Number, please go to our Subscription licensing form to generate the required license.

Subscription License 30-Day Extension
If you need a temporary license extension while license renewal is being processed, we have a solution for this scenario.

This license is only for a temporary extension to a subscription license that will expire.
To request an extension, you will need the following:

- Your subscription license serial number
- Click **Request an extension** and go to **My Licenses** to edit the record and click **Extend 30 days**.
- If you have not previously connected to our support portal, you will need to verify your contact information.

### How to determine the MAC address/NIC ID

The Network Interface Card ID uniquely identifies your workstation on the network. At the command prompt, you may find the NIC ID for your network card by running `ipconfig /all`. The number on the physical address line, without the dashes, is your NIC ID.

**Note:**

Use an adapter that does not change when machine is docked vs. un-docked.

**Physical Address Example**

![Physical Address Example](image-url)
How to Fill in the Licensing Forms

**Free Web Licenses**
You may generate free web licenses for certain devices that are supported by Lattice Software Tools.

**To fill in the Software Licensing Request Form**
1. Ensure that you enter your NIC ID without any separator or spaces.
2. Proceed to check the tick box verifying that you are not an employee of Cadence Design Systems, Mentor Graphics Corporation, or Synopsys, Inc.
3. You may choose to include some Free IPs listed and click generate.

**Free License Software Licensing Form**

![Software License Request Form](image)

**Subscription Licenses**
If you have purchased a Software license and received a Software Serial Number, you will be directed to our Subscription licensing form where you will need:

- A latticesemi.com account.
  
  It is recommended to create an account if you do not already have one.

- The given serial number.
Note:

Click **Check SN** to check if the serial number is available to license.

- The NIC/Physical address of the computer you wish to license.
- Company Name

**Subscription Licensing Page**

![Subscription Licensing Page](image)

- **Request a New License** - Click to request a new license.
- **My Licenses** - Click to extend existing licenses to 30 days or renew license using new Serial Number.

**Subscription Licensing Form**

![Subscription Licensing Form](image)

**Evaluation Licenses**

Lattice offers evaluation license to enable free subscription license for end-users up to 60 days. You may raise a ticket to the [Submit Support Ticket](https://www.lattice.com/support) page.
**Academic License Program**

We offer a 1-year Lattice Design tools license free for colleges and universities who meet our academic license program requirements. If you are a professor, and you are interested in applying, please login to your Lattice account and fill out the application form here. If you are a student, please coordinate with your professor to join this program.
License Installation

To fully utilize the Lattice Software Design Tools, Software Licenses must be installed properly. The process depends on the type of license you are to use.

Node-locked License Installation

1. You will receive a license email once the license has been generated. Save the attached file (license_.dat) to the installation folder of your software package (e.g. <sw_install>\license\license.dat).

2. Change the value of your Environment Variable to point to the correct file.
   For example: LM_LICENSE_FILE = <sw_install>\license\license.dat;
To edit the LM_LICENSE_FILE via “env” shortcut:
1. Click the Search bar next to the Windows symbol in the taskbar’s upper left corner.
2. Enter env and click the Open button.

To edit the LM_LICENSE_FILE via Control Panel:
1. Click the Search bar next to the Windows symbol in the taskbar’s upper left corner.
2. Navigate to Control Panel and select System.
3. On the right side of the screen, click on Advanced System Settings and enter the computer admin username and password.
4. Click on the Environment Variables and under System variables, you will find the LM_LICENSE_FILE.

Note:
If you install the software tool for the first time, the LM_LICENSE_FILE will automatically be created with the default value <sw_install>\license\license.dat, if you want a different license path make sure to update the environment variable.
Note:

If you have multiple licenses, you may add multiple license paths in the LM_LICENSE_FILE.
5. You should be able to open the Lattice Design Tool without error if your license is properly installed.

Floating License Installation

Server

You must have a license server set up on a Windows server to monitor your Radiant software license to allow floating licensing. Each client PC must have the LM_LICENSE_FILE variable set to point to the license file on the server.

To edit the License File:

You must change the license file after getting a floating license from Lattice Semiconductor to indicate the server’s name and routes to the Lattice daemon. Please see the floating license example.

1. Edit the SERVER line by replacing nodename with the host name of the server for which you requested your license.dat file. You may also need to change the PORT NUMBER (7788). The port number should not be an issue.

2. Edit the DAEMON lattice line by replacing daemon_path with the path to the lattice daemon, for example:
   C:\lsc\radiant\<version>\ispfpga\bin\nt64\lattice.exe

3. Edit the ModelSim DAEMON line, replacing daemon_path with the path to ModelSim Lattice Edition.
For ModelSim, the path is: `<install_path>/radiant/<version>/modeltech/win32loem/mgcd`.

**Floating license before editing**

```
SERVER hostname 3CS18036B46F 7788
DAEMON latche daemon_path
DAEMON mgcd path to mgcd
INCREMENT latticessim mgcd 2023.09 25-mar-2024 1 3F96FSC91783315ADF7B \ 
 VENDOR_STRING=7D61790E ISSUER="ModelSim Lattice" SN=2B85454249 \ 
 SIGN=1F64 52F2 73EB 90E4 206E D1F3 2206 0FE1 225D 9506 DA33 000A \ 
 709C 0B53 9330 0F6E 405E BD52 E89F 49FE CF30 3F08 4046 AC81 FE1F \ 
 D8C9 107A E56C D6D9
```

**Floating license after editing**

```
SERVER hostname 3CS18036B46F 7788
DAEMON latche daemon_path
DAEMON mgcd c:\lscc\radiant\<version number>\license\license.dat
INCREMENT latticessim mgcd 2023.09 25-mar-2024 1 3F96FSC91783315ADF7B \ 
 VENDOR_STRING=7D61790E ISSUER="ModelSim Lattice" SN=2B85454249 \ 
 SIGN=1F64 52F2 73EB 90E4 206E D1F3 2206 0FE1 225D 9506 DA33 000A \ 
 709C 0B53 9330 0F6E 405E BD52 E89F 49FE CF30 3F08 4046 AC81 FE1F \ 
 D8C9 107A E56C D6D9
```

To set up your license manager as a system service:

1. Copy the license file (license.dat) to C:\lscc\radiant\<version number>\license\license.dat.

**Note:**

You can save the license to any folder if it will be correctly grabbed by LMTOOLS.

2. Open the **LMTOOLS** dialog box in this path C:\lscc\radiant\<version number>\ispfga\bin\nt64\lmtools.exe
3. In the **LMTOOLS** dialog box, select the **Config Services** tab.

4. Change the name of the service to **Lattice FLEXlm Service 1**.

5. Browse and set `lmgrd.exe` to `\ispfpga\bin\nt64\lmgrd.exe`.

6. Navigate and save the license file as `licenseslicense.dat`. You can also save your license in a shared folder.

7. Navigate and choose `licenselattice.log` as the debug log file.

8. Click and save the service.

9. Choose the **Start/Stop/Reread** tab.

10. Click the **Start Server** button.

---

**Note:**

If the LMTOOLS tickbox is checked on the **Service/License File** tab, it results to the tool ignoring the license path in the environment variable. When unchecked, please configure your `LM_LICENSE_FILE` environment variable. See section on how to configure.
11. Navigate to the **Config Services** tab.

12. To view the lattice.log file, click **View Log**. Check to see if the license server is having any issues starting up. Close the log file if there are no issues.

13. To validate license checkout, select **Start > Open Lattice Radiant Tool** (this will be noted in the lattice.log file).

14. In the **LMTOOLS** dialog box, select the **Start/Stop/Reread** tab.

15. Choose the **Stop Server**.

16. Navigate to the **Config Services** tab. Use Services and Start Server on Power-Up are also options.
17. Select **File > Exit** after clicking Save Service.
18. Restart the Windows PC to check the server system.
19. Restart the Radiant software to ensure that the license server is still operating as a service.

**To configure your LM_LICENSE_FILE environment variable in the Control Panel:**

1. Modify or create your **LM_LICENSE_FILE** in Control Panel.
2. Go to **Advanced System Settings** then **Environment Variables** to include the port@servername. The LM_LICENSE_FILE value in this case is: 1717@L-PF1KDFY9.

**Client**

The software is installed on your license server (for license manager utilities and daemons) as well as on each client that uses a specific software.

This setting provides the best run-time performance. Install the software locally on each client that will utilize the floating license after receiving your floating license and ensuring that the license management is operating.

**To set your LM_LICENSE_FILE environment variable:**

1. Modify or create your **LM_LICENSE_FILE** in Control Panel.
2. Go to Advanced system settings then Environment Variables to include the port@servername. The LM_LICENSE_FILE value in this case is: 1717@L-PF1KDFY9.

License Debugger
The license debugger is a software feature that helps you to know the included license features in the software license. The License File lists the LM_LICENSE_FILE path. The Feature list lists all the features and location found with Lattice Daemon. On the Local System Information, the machine host name and NIC IDs are shown.

To open the License Debugger in Radiant:
1. Launch the Radiant tool. Click on the Help tab.
2. Under the Help tab, click on **License Debug**.

3. Click the ‘…’ button next to the Start to search for your license file. You can also enter your entire license path.

4. Click Start to see the included features in your license.
5. If you need to check a specific license feature, click on the License Debug button and fill in the search license feature box.
IP (Intellectual Property) Licensing

Introduction to IP Cores

Lattice IP Cores are pre-tested, reusable functions that allow designers to focus on their unique system architectures. These IP cores provide industry-standard functions such as PCI Express, DDR, Ethernet, CPRI, and embedded microprocessors. In addition, several independent IP providers have teamed with Lattice to offer additional high quality, reusable IP cores. For a complete listing of IP cores from Lattice and its 3rd party partners, please go to the Lattice IP page.

Table 1: Radiant Devices

<table>
<thead>
<tr>
<th>Function</th>
<th>IP Core</th>
<th>Avant</th>
<th>CertusPro-NX</th>
<th>Certus-NX</th>
<th>CrossLink-NX</th>
<th>Mach-NX</th>
<th>MachXO5</th>
<th>Cross Link</th>
<th>CrossLink Plus</th>
<th>ICE40</th>
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<tbody>
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<td>Communications</td>
<td>10 Gb Ethernet Mac</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>SGMII and Gb Ethernet PCS</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td></td>
<td></td>
<td></td>
<td>✓</td>
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<td>✓</td>
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<td>✓</td>
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<td></td>
<td>✓</td>
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</tr>
<tr>
<td>Connectivity</td>
<td>10 Gb Ethernet PCS</td>
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<td></td>
<td>GPIO</td>
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<td>PCI Express x1 Endpoint</td>
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</tr>
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<td>PCI Express x4 Endpoint</td>
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Licensing User Guide for Windows
Table 2: Diamond Devices

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<tr>
<th>Function</th>
<th>IP Core</th>
<th>ECP5/ECP5-5G</th>
<th>ECP3</th>
<th>ECP2M</th>
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### Introduction to IP Licensing

Each Lattice IP core is a set of compiled code that implements a basic function, like a DDR2 memory controller, or a Tri-speed MAC, and is targeted/optimized for a specific Lattice FPGA family. You can first use the IP tools in Diamond or Radiant to configure some parameters in the IP core (for example, with DDR2, you might configure the data word width to a particular length).

The IP tool generates a compiled netlist, which is sometimes called a black box, because while you can connect the inputs and outputs, you cannot see inside this compiled design. Finally, using Diamond or Radiant, you can integrate the IP with your custom RTL to create your final design, which can then be programmed into a Lattice FPGA. This custom code is sometimes called a wrapper as it wraps around the IP core to create the final design.

<table>
<thead>
<tr>
<th>Function</th>
<th>IP Core</th>
<th>ECP5/ECP5-5G</th>
<th>ECP3</th>
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<th>MachXO2</th>
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</table>

Table 2: Diamond Devices
After you have completed your design, you can generate a bitstream file and program a Lattice FPGA.

If you have a copy of Diamond or Radiant, you already have access to all the IP core code via the IPexpress or IP Catalog tool. When you purchase an IP core, you now have a license to fully utilize this code - i.e. you have purchased a key, which comes in the form of a file called license.dat.

To get this file, you need to complete a request using the IP Subscription License Form. After completing the required fields in the form, we will email you a new license.dat file, which works with Diamond or Radiant, and unlocks the IP core.

Types of IP Licenses

There are 2 ways you can purchase a license to use Lattice IP cores. The type of IP license you purchase is reflected by the part number you order; so, there is only one way to license any specific IP core part number. These license types include:

- **Single Machine Annual License**: Individual IP core that is limited to a single machine installation only. The use period is up to 1 year, so the license will expire at the end of the 12-month term. Upon expiration, you will still be able to use programming bitstream files generated over the previous year but will not be able to generate new bitstream files without the hardware timer. Part numbers for annual licenses will end in a suffix like -US. Extensions to this 1-year period are available.

- **Site Perpetual License**: This IP license is a floating license installed on a server. There is no expiration date to this license type, but a one-seat license is given for each item you purchase. Part numbers for site licenses will end in a suffix like -UT. These products are specific to a single type of IP and a single target FPGA technology.

For more information and support in IP licensing, please visit the Lattice IP Support page.

Free IP Licenses

Lattice offers free IP that requires licenses which can be generated through the Licensing page.
Evaluation Mode in IP

What are the limitations of using IP in Evaluation Mode?

You can do nearly all your design and prototyping work without an IP license. If you do not have a license to use the IP core, the software will insert a hardware timer into the programming bitstream. This will cause the bitstream to time-out after a set period - usually from 30 minutes to about 4 hours. After the period expires, you can re-program the FPGA to reset the period. Also, without an IP license, full timing simulation is not available.

To turn on Evaluation Mode:

1. In the Project Tab, click Active Strategy > Bitstream Settings.

2. Check the IP Evaluation tick box.

3. Click Apply and OK to exit.
Frequently Asked Questions

1. How do I manage my subscription licenses?

- Log in to our website, https://www.latticesemi.com/ and go to Support -> Licensing.
- Under Purchase/Renew Radiant License, click Subscription licensing.
- Select My Licenses to view all licenses generated for your email address.

2. Why do I get the following warning: "WARNING - Device1 iM4A3-64/32 is a mature device, please contact Lattice for the license to enable this device" when loading a program for my CPLD?

Please keep in mind that when programming mature devices, you must use the Diamond Programmer stand-alone version. The Diamond Integrated Programmer (a programmer integrated into the Lattice Diamond software) lists the mature devices in the Device Selection and scans them, but it cannot program mature devices, even with the Mature Device license. Bypass is the only available operation.

- To program the mature device, visit our licensing page and request a Diamond-free license.

3. Why is my license invalid when I use a remote desktop?

When a Node-locked licensed is used in remote connections, the error described below occurs. For more information on the difference between a Node-locked and a Floating License, you may check on License Types.
4. How to improve Diamond/Radiant/Propel software startup speed caused by invalid license paths?

- In most cases, license paths can be edited using the LM_LICENSE_FILE in Windows Environment Variables (Windows Search Box >Edit Environment Variables).
- However, there are instances during software startup wherein the tool may search for previously used paths that no longer exist (for example, Network License Path). To verify this, go to Help > License Debug and press start. There should be no licensing errors as shown below.
If issues occur because of invalid paths not found in the LM_LICENSE_FILE environment variable, you can manually modify the registry item. You can exit Diamond or Radiant and type REGEDIT in the Windows Search Box.
FREQUENTLY ASKED QUESTIONS:

- Open the Registry Editor and go to Edit > Find and search for LATTICE_LICENSE_FILE. This may take a few minutes.

Find

Find what: LATTICE_LICENSE_FILE

Look at:
- Keys
- Values
- Data

Match whole string only

Find Next

- When the search results show the LATTICE_LICENSE_FILE registry entry, double-click it and delete any licensing locations that are no longer needed.

Edit String

Value name: LATTICE_LICENSE_FILE

Value data: C:\ broccoli\diamond\3.12\frontend\license.dat

OK Cancel

- To see if the program startup has improved, press OK and open Lattice Diamond or Lattice Radiant.
5. How to determine the MAC Address for Debian OS?

- You need to upgrade first to Debian testing for dependency on a newer library because Debian does not name the ethernet adaptor eth0.

To fix this using systemd:

```bash
apt install net-tools (for ifconfig -a)
create /etc/systemd/network/80-eth0.link
[Match]
MACAddress=08:62:66:4a:22:e5 (your ethernet adaptor MAC address)
[Link]
Name=eth0
then run update-initramfs -u
then reboot.
```

Note:

This workaround appears to have additional issues with script errors that may have dependencies on RHEL, as well as various requirements on 32-bit libraries before installing iCECube2.

6. How do I use the Serial Number I received from Lattice License Administrator to obtain my Software license?

- Log in to https://www.latticesemi.com/ and navigate to http://www.latticesemi.com/en/Support/Licensing or Support > Licensing. Click Diamond Subscription License. When you are in the License Generation page, here are the options you can do.

- Requesting a new license
  - Select New License or Request a New License.
  - Enter your Company Name and NIC (open an MS-DOS window and type "ipconfig /all" and press Enter. The MAC Address is a 12-digit hexadecimal value split into pairs with dashes, like this: 00-01-02-66-1D-E0. For Linux, type ifconfig -a).
  - Enter the Serial Number and click check SN. Save the file assuming no errors appear.
  - Your license should be delivered to your mailbox within a few minutes.
FREQUENTLY ASKED QUESTIONS:

- **Renewal of expired license**
  - Go to My Licenses.
  - Choose the expired license record you want to renew with your new Serial Number and press E (for edit).
  - Select Request Renewal, then enter the Company Name, First Name, Last Name, Email, Serial Number and proceed click.
  - Select SN and save assuming no errors appear.
  - Your license should be delivered to your mailbox within a few minutes.

- **License Extension**
  - Go to My Licenses.
  - Choose the expired license record you want to renew with your new Serial Number and press E (for edit).
  - Scroll down to find the Extend 30 Days button and click Extend.
  - Your license should be delivered to your mailbox within a few minutes.

7. **How can I switch or transfer my license to a different computer or PC?**

To change or transfer a license to new computer or PC, submit a technical support case with the new computer’s MAC address at [https://www.latticesemi.com/Support/SubmitSupportTicket](https://www.latticesemi.com/Support/SubmitSupportTicket).

The license will be generated shortly after License Admin acknowledges the request.

8. **How can I configure a floating license in RHEL7 using only license management files?**

1. Edit the server, daemon, and ModelSim daemon lines to license.dat file in /nas/storage/lattice. You can change the PORT numbers used that suit your needs, as shown below:
   ```
   SERVER lattice-lic-server 0052376A34FC 17700
   DAEMON lattice /nas/storage/lattice/bin/lin64/ PORT=50500
   ```
   Replace the daemon_path with the ModelSim Lattice Edition path. For ModelSim, the path is: % <install_path>/diamond/3.12/modeltech/ win32loem/mgcld
   Please visit the [link](https://www.latticesemi.com/Products/DesignSoftwareAndIP/FPGAandLDS/LatticeDiamond) for the license daemons.

2. Download the Lattice RPM: diamond_3_12-base-240-2-x86_64-linux.rpm from: [https://www.latticesemi.com/Products/DesignSoftwareAndIP/FPGAandLDS/LatticeDiamond](https://www.latticesemi.com/Products/DesignSoftwareAndIP/FPGAandLDS/LatticeDiamond)
   to: /tmp/lattice/ on the Linux server
3. List the contents of the rpm and look for the license binaries lmgrd|lattice

   cd /tmp/lattice/
   rpm -qlpv diamond_3_12-base-240-2-x86_64-linux.rpm | less
   rpm -qlpv diamond_3_12-base-240-2-x86_64-linux.rpm | egrep -i lattice
   rpm -qlpv diamond_3_12-base-240-2-x86_64-linux.rpm | egrep -i license
   rpm -qlpv diamond_3_12-base-240-2-x86_64-linux.rpm | egrep -i lmgrd
   rpm -qlpv diamond_3_12-base-240-2-x86_64-linux.rpm | egrep -i 'ispfpga'

4. Extract the linux license binaries from the rpm file: ispfpga.tar.gz using the rpm2cpio and cpio and tar commands

   cd /tmp/lattice
   rpm -qlpv diamond_3_12-base-240-2-x86_64-linux.rpm | egrep -i 'ispfpga'
   drwxr-xr-x 2 root root 0 Dec 2 22:21 /usr/local/diamond/3.12/ispfpga
   -rwxr-xr-x 1 root root 778858185 Dec 2 22:01 /usr/local/diamond/3.12/ispfpga/ispfpga.tar.gz
   rpm2cpio diamond_3_12-base-240-2-x86_64-linux.rpm | cpio -idmv ...
   ./usr/local/diamond/3.12/examples/examples.tar.gz
   ./usr/local/diamond/3.12/ispfpga
   --->./usr/local/diamond/3.12/ispfpga/ispfpga.tar.gz <<-------THIS IS THE TAR FILE YOU WILL NEED
   ./usr/local/diamond/3.12/license
   ./usr/local/diamond/3.12/license/license.txt
   ...

5. List the contents of the tarfile ispfpga.tar.gz looking for the lmgrd lmutil and lattice daemons

   tar -tvf ./usr/local/diamond/3.12/ispfpga/ispfpga.tar.gz | egrep -i '/lmutil/lmgrd/lattice'
   -rwxr-xr-x relman/neosoft 1351888 2019-10-30 02:05 bin/lin64/lattice
   -rwxr-xr-x relman/neosoft 1170840 2019-07-08 23:06 bin/lin64/lmutil
   -rwxr-xr-x relman/neosoft 1138392 2019-07-08 23:06 bin/lin64/lmutil
6. Extract the lmgrd lmutil and lattice daemons from the tarfile
   
   tar -xvf ./usr/local/diamond/3.12/ispfpga/ispfpga.tar.gz bin/lin64/lattice
   tar -xvf ./usr/local/diamond/3.12/ispfpga/ispfpga.tar.gz bin/lin64/lmgrd
   tar -xvf ./usr/local/diamond/3.12/ispfpga/ispfpga.tar.gz bin/lin64/lmutil
   
   copy the files to nas storage dir for the license server to use
   
   cp -R /tmp/lattice/bin /nas/storage/lattice/
   cd /nas/storage/lattice/bin/lin64/
   
   Verify the files are correct for the Linux OS you are using
   
   file lattice
   lattice: ELF 64-bit LSB executable, x86-64, version 1 (SYSV),
   dynamically linked (uses shared libs), for GNU/Linux 2.6.18, stripped
   ./lattice -v
   11:15:47 (lattice) FlexNet Licensing version v11.16.4.0 build 252457
   x64_lsb
   ./lmgrd -v
   lmgrd v11.16.4.0 build 252457 x64_lsb - Copyright (c) 1988-2019
   Flexera. All Rights Reserved.
   ./lmutil -v
   
   Copyright (c) 1989-2019 Flexera. All Rights Reserved.
   lmutil v11.16.4.0 build 252457 x64_lsb
   
7. On the Linux server, start the license service
   
   start server: /nas/storage/lattice/bin/lin64/lmgrd -c /nas/storage/lattice/
   license.dat -l /nas/storage/lattice/licence.log
   stop server: /nas/storage/lattice/bin/lin64/lmutil lmdown -c /nas/
   storage/lattice/license.dat
   query server: /nas/storage/lattice/bin/lin64/lmutil lmstat -c /nas/
   storage/lattice/license.dat
   
   check service: ps fuxwa | egrep -i 'lmgrd|lattice' | egrep -v grep
   
8. Query the lattice server showing ALL the licenses available and usage:
   
   /nas/storage/lattice/bin/lin64/lmutil lmstat -a -c /nas/storage/lattice/
   license.dat
Revision History

The following table gives the revision history for this document.

<table>
<thead>
<tr>
<th>Date</th>
<th>Version</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/28/2024</td>
<td>1.1</td>
<td>▶ Added Avant-G and Avant-X devices.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ Removed ispLEVER Classic Free License table.</td>
</tr>
<tr>
<td>11/22/2023</td>
<td>1.0</td>
<td>Initial release.</td>
</tr>
</tbody>
</table>