SoC Designer Plus
Installation Guide

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Release Information

The following changes have been made to this document.

<table>
<thead>
<tr>
<th>Date</th>
<th>Issue</th>
<th>Confidentiality</th>
<th>Change</th>
</tr>
</thead>
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<tr>
<td>February 2016</td>
<td>A</td>
<td>Non-Confidential</td>
<td>Release with 8.3</td>
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Preface

This book describes the steps required to install ARM® SoC Designer Plus. It also introduces the FlexNet license management system, developed by Flexera® Software, that is used by ARM® to control the use of SoC Designer Plus.

Intended audience

This book is written for anyone who installs license managed SoC Designer Plus tools. It describes the types of licenses that are available and solutions to some of the problems you might encounter.

*Note:* Parts of this book apply to a specific operating system only, or to a specific type of license only, so ensure that what you read applies in your case.
Typographical conventions

The following typographical conventions are used in this book:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>courier</td>
<td>Commands, functions, variables, routines, and code examples that are set apart from ordinary text.</td>
<td><code>sparseMem_t SparseMemCreateNew();</code></td>
</tr>
<tr>
<td>italic</td>
<td>New or unusual words or phrases appearing for the first time.</td>
<td><code>Transactors</code> provide the entry and exit points for data ...</td>
</tr>
<tr>
<td>bold</td>
<td>Action that the user performs.</td>
<td>Click <strong>Close</strong> to close the dialog.</td>
</tr>
<tr>
<td>&lt;text&gt;</td>
<td>Values that you fill in, or that the system automatically supplies.</td>
<td><code>&lt;platform&gt;/</code> represents the name of various platforms.</td>
</tr>
<tr>
<td>[ text ]</td>
<td>Square brackets [ ] indicate optional text.</td>
<td><code>$CARBON_HOME/bin/modelstudio [ &lt;filename&gt; ]</code></td>
</tr>
<tr>
<td>[ text1</td>
<td>text2 ]</td>
<td>The vertical bar</td>
</tr>
</tbody>
</table>

Further reading

This section lists related publications. The following publications provide information relate directly to SoC Designer Plus:

- *SoC Designer Plus User Guide*
- *SoC Designer Plus Tools API Reference Manual*
- *SoC Designer Plus Installation Guide*
- *ESL API Developer's Guide*
- *SoC Designer Plus SystemC Linking Guide*
- *MxScript Reference Manual*
- *SoC Designer Plus CoDesign Package HDL Cosimulation Guide*
- *SoC Designer Plus Standard Model Library Reference Manual*

The following publications provide reference information about ARM® or AMBA®-related architecture. See [http://infocenter.arm.com/help/index.jsp](http://infocenter.arm.com/help/index.jsp) for access to all ARM documentation:

- *AMBA Specification*
- *AMBA AHB Transaction Level Modeling Specification*
- *AMBA AXI Transaction Level Modeling Specification*
- *Architecture Reference Manual*
The following publication provides reference information about ARM® debuggers:

- *ARM RealView® Model Debugger User Guide*
- *ARM DS-5™ user documentation*
- *SoC Designer™ Plus ARM® DS-5™ Application Note*

The following publications provide additional information on simulation:

Further reading
Chapter 1

Introduction

This chapter contains the following sections:

- Supported Client Platforms on page 114
- Identifying the Installation Process for your Software on page 116
- Licensing Overview on page 116

Note

If you are installing a demonstration version of SoC Designer Plus, the typical configuration of this is to run on a single workstation with the license located on the same workstation. This installation is described in Chapter 2 Installing SoC Designer Plus.
Supported Client Platforms

Operating Systems

SoC Designer Plus development tools are licensed to run on a client workstation in the following environments:

- Microsoft Windows 7 (64-bit). You must install Microsoft Visual Studio 2013 Update 4 for compiling and building custom components with Microsoft Windows.
- CentOS 6.6 (64-bit)
- Red Hat Enterprise Linux 6.6 (64-bit)

On CentOS and Red Hat machines, you must install certain additional packages and group packages:

- Additional Development
- Compatibility Libraries
- Development tools
- Perl Support
- libXext
- libXext-devel
- libXrender
- libXrender-devel
- glibc-devel

If cannot access these packages using the internet, refer to the section Installing OS Packages using DVDs or ISOs on page 115.

Compiler

For compiling and building custom components on Linux, you need Version 4.7.2 of the gcc compiler. This is included in your SoC Designer Plus installation.

Note that, if your system uses CASI models built outside of the SoC Designer Plus component wizard (for example, models built using SystemC), these models must also be built with Version 4.7.2 of the gcc compiler. You can find the required version at $CARBON_SDCXX_PATH/bin.

Licensing

For compiling and building custom components on Linux, you need Version 4.7.2 of the gcc compiler. This is included in your SoC Designer Plus installation.

License management utilities are supplied with the software package. For details on installing SoC Designer Plus licenses and setting up the license server, see Appendix A Installing FlexNet License Files.

The license server platform is not required to be the same as the tools platform. For example, you might have your development tools installed on Windows and use a Linux license server.
Installing OS Packages using DVDs or ISOs

If the system on which you are installing is not directly connected to the outside network, you can use installation DVDs or ISOs. The approach described in this section uses a loop back mount to mount DVDs or ISOs as a local disk.

For example:
```
su -
mkdir /mnt/iso
mount -t iso9660 -o loop CentOS-6.6-x86_64-bin-DVD1.iso /mnt/iso
```

This allows all the packages to be found in `/mnt/iso/Packages`:
```
ls /mnt/iso/Packages/*
-r--r--r--. 2 root root  1735384 Oct 18 2014 glib2-2.28.8-4.el6.i686.rpm
-r--r--r--. 3 root root  1753004 Oct 18 2014 glib2-2.28.8-4.el6.x86_64.rpm
...
-r--r--r--. 2 root root  4552748 Oct 18 2014 glibc-2.12-1.149.el6.i686.rpm
-r--r--r--. 3 root root  3991412 Oct 18 2014 glibc-2.12-1.149.el6.x86_64.rpm
```

vi /etc/yum.report.d/local.repo

```
--
[local]
name=Fedora Local-repo
baseurl=file:///mnt/iso
gpgcheck=0
enabled=0
--
```

```
yum --disablerepo=* --enablerepo=local repolist
```

Group packages:
```
yum --disablerepo=* --enablerepo=local groupinstall "Development tools" ...
```

Individual rpm package:
```
yum --disablerepo=* --enablerepo=local install libXext ...
```

After installing the required packages, unmount the DVD or ISO. For example:
```
umount /mnt/iso
```
Identifying the Installation Process for your Software

To install SoC Designer Plus, you must perform the following:

1. Determine whether you have purchased a node-locked or floating-license version of SoC Designer Plus. See the purchase details to determine which license version you have.
2. Install SoC Designer Plus on the workstation from which you intend to run the software.
3. Obtain a license for your workstation or license server. This is covered in detail in Chapter 2 Installing SoC Designer Plus and Appendix A Installing FlexNet License Files.
4. Update your SoC Designer Plus installation to use the local license (for a node-locked license) or the remote license server (for a floating license).

To enhance your SoC Designer Plus installation with third-party models, perform the following:

• Install any third-party models you have and update the license, if necessary, to cover the models. See Chapter 3 Installing SoC Designer Plus Components.

Note that when adding ARM Fast Model Libraries they must be at a currently-supported version. Refer to the SoC Designer Plus Fast Model User Guide for version information.

If you encounter problems during installation, see Appendix B Frequently Asked Questions about Licensing, or contact ARM Technical Support.

Licensing Overview

You must obtain licenses to:

• run SoC Designer Canvas, SoC Designer Simulator, or the SoC Designer Run Time Only Environment
• use licensed ARM models in your system designs
• use licensed third-party models (third-party processor cores for example)

You can obtain a temporary license that enables you to evaluate SoC Designer Plus.

License management consists of the following components:

• a license file that lists the software you are entitled to run
• software that validates your installation of SoC Designer Plus against the license file

--- Note ---

For details on how to manage your licensing, see Appendix A Installing FlexNet License Files.

The location of the license and validation software depends on the type of installation:

Node-locked SoC Designer Plus contains validation software that reads the contents of a license file that is stored on the same workstation as the application. The license is locked to the workstation by a physical characteristic of the workstation (usually a network card id). Other workstations cannot run SoC Designer Plus unless they also have a node-locked license for that workstation.
Licensing a node-locked installation of SoC Designer Plus requires:

1. Identifying the hostid (based on the network card MAC address) or disk id (hard disk serial number) of your workstation and sending this to ARM to obtain a license file.
2. Copying the license file sent to you to a local directory.
3. Setting an environment variable to point to the directory containing the license file.

Floating

SoC Designer Plus communicates with license management software located on a license server. The server runs the validation software (lmgrd and carbond) and reads the contents of a license file that is stored on the server. The floating license is also locked to the server (usually by the host ID).

SoC Designer Plus can be installed on multiple workstations and each of them communicates with the license server to validate the shared license. (There might, however, be a limit on how many client workstations can simultaneously use the shared license that is set by the type of license obtained from ARM.)

Note

The vendor daemon provided is for use with FlexNet Version 11.13. If you do not have Version 11.13 or greater installed on your system, you must upgrade FlexNet or use the lmgrd that is provided in the installation package.

If there is a version compatibility problem, an error is generated when you issue lmstat on the host machine.

Licensing a floating application requires:

1. Identifying the network card id (MAC address) or disk id (serial number) of the server (or servers) that runs the validation software and sending this to ARM to obtain a license file.
2. After the license file is sent to you, you must copy it to a directory on the server.
3. Installing the FlexNet license management daemon and the license management daemon (lmgrd) on the server. This software is supplied with SoC Designer Plus.
4. Setting an environment variable on the client workstation (manually or with the License Wizard) to point to the server that validates the license file for the client application.
5. Starting the daemon software on the server when the server boots or when an application on a client workstations requires validation of the license file.
Chapter 2

Installing SoC Designer Plus

This chapter explains how to install a node-locked license for SoC Designer Plus. It contains the following sections:

- Installing SoC Designer Plus on Windows
- Installing SoC Designer Plus on Linux
- Verifying Installation by Launching SoC Designer Canvas
- Uninstalling SoC Designer Plus

**Note**

For more information on the different licensing options, see Chapter 1 *Introduction*.

### Installing SoC Designer Plus on Windows

This section describes how to install SoC Designer Plus on a workstation running the Windows operating system. If you are creating new components, refer to *Supported Client Platforms on page 114* for supported Visual Studio versions.

The SoC Designer Plus package consists of the following file:

SoCDesigner-<x.y.z><OS>-installer.exe

<x.y.z> is the version information and <OS> is the target installation operating system; for example, SoCDesigner-8.0.0-Win64_vc2013-installer.exe.

**Run setup** Run the installation executable.
**Provide Installation Privileges**

In the Installation Privileges dialog (Figure 1), specify whether you are installing as an administrator or individual user:

- **Yes** — Installs by default to `c:\Program files` and sets environment variables at the system level (all users). Note that, in the following dialog box, you have the option to change the installation directory.

- **No** — Installs by default to your home directory (for example, `c:\Users\MyHomeDirectory`). Environment variables are set for only this user. Note that, in the following dialog box, you have the option to change the installation directory.

Click **Next** when complete.

![Figure 1 Specification of installation privileges](image)
Provide Installation Location

In the Setup dialog (Figure 2) either accept the default location, or browse to specify the base directory for the installation. Click **Next** when complete.

![Figure 2 Specification of installation directory location](image)

Provide License Location

In the License information dialog (Figure 3), specify the license information.

![Figure 3 Specification of license information](image)

The environment variable CARBOND_LICENSE_FILE is updated based on the license file information you enter here.
Read to Install

The Ready to Install dialog displays (Figure 4). Click **Back** to make changes to previous information, or click **Next** to perform the installation.

![Ready to Install dialog](image)

**Figure 4 Ready to Install dialog**

Installation Complete

Installation may take several minutes. When the installation is complete, the dialog indicating successful installation displays.

Installing SoC Designer Plus on Linux

You can install SoC Designer Plus on the Linux operating systems listed in *Supported Client Platforms on page 114*.

Run Installation Package

The SoC Designer Plus package for Linux consists of the following file:

```
SoCDesigner-<x.y.x>-linux-x64-installer.run
```

<x.y.z> is the version number; for example,

```
SoCDesigner-8.0.0-linux-x64-installer.run.
```

--- **Note** ---

You can simplify the installation by knowing the directory location of your license file before you run setup.

--- **Note** ---

For more information about specifying your license location by setting the CARBOND_LICENSE_FILE variable, see Appendix A.

---

To begin installing, enter:

```
./SoCDesigner-<x.y.x>-linux-x64-installer.run
```

The Welcome dialog displays. Click **Forward** to continue.
Provide Installation Location

Using the Choose Destination Location dialog displayed in Figure 5, either accept the default location and click **Forward**, or browse to specify a different base directory for the installation.

![Figure 5 Specification of installation directory](image)

Provide License Location

In the License Information dialog displayed in Figure 6, either browse to the location of the license file or enter the license information. For more information about specifying your license location by setting the CARBOND_LICENSE_FILE variable, see Appendix A *Installing FlexNet License Files*. 
Figure 6 Specification of license location

The environment variable CARBOND_LICENSE_FILE is updated based on the license file information you enter here.

Click **Forward** when the License file field is complete.

**Ready to Install**

The Ready to Install dialog displays (Figure 7). Click **Back** to make alterations, or click **Forward** to perform the installation.

Figure 7 Ready to Install dialog
Installation Complete

Installation may take several minutes. When the installation is complete, a message indicating successful installation displays. Click Finish to end the installation.

Note Setup Command

The installation wizard writes the command to set up the environment for running SoC Designer Plus. The command that is displayed depends on whether the platform operating system shell is Bourne or C-Shell.

The two computing environment preparation commands that are used in Linux to prepare for running the SoC Designer Plus tool are the following:

**Bourne**

source `<SoC Designer Plus install path>/etc/setup.sh`

**C-Shell**

source `<SoC Designer Plus install path>/etc/setup.csh`

SoC Designer Plus users often find it convenient to insert one of these command lines into their login files. As a root user Administrator, you can insert the appropriate command line into the global logins of all users who require access the SoC Designer Plus tools.

Verifying Installation by Launching SoC Designer Canvas

After installation is complete and you have configured your licenses, test the installation as follows:

**Windows**

From the Windows Start menu, navigate to Carbon > Carbon SoC Designer > SoC Designer Plus Canvas.

**Linux**

Use the console with the following command:

`> sdcanvas filename`

*filename* is an optional parameter. If no file is specified, SoC Designer Canvas opens with a blank Diagram window. Refer to the *SoC Designer Plus User Guide*, section 2.1, for a complete list of command line options.

Uninstalling SoC Designer Plus

**Windows**

To uninstall the Windows version of SoC Designer Plus:

- use the Add or Remove Programs dialog from the Control Panel.
- with a single command, as shown below:
  
  `<SoC Designer install path>/uninstall.exe`

**Linux**

To uninstall the Linux version of SoC Designer Plus, use the single command shown below:

`<SoC Designer install path>/uninstall`
Chapter 3

Installing SoC Designer Plus Components

This chapter describes how to install the components, in the following section:

• Installing SoC Designer Plus Models

Installing SoC Designer Plus Models

Installing SoC Designer Plus models requires adding the component configuration files for each model package to the SoC Designer Plus library search list.

To add the component configuration files to SoC Designer Plus:

1. Start SoC Designer Canvas or SoC Designer Simulator.

   Note
   You must have already installed a temporary or permanent license. The license requirements are summarized in Licensing Overview.

2. Select File > Preferences.

3. Select Component Library from the General category.

4. Use the Add button under the Additional component configuration files to Browse panel to display the file browser.

   Note that when adding ARM Model Libraries, they must be at a supported version. Refer to the SoC Designer Plus Fast Model System Creator User Guide for version information.
5. Navigate to the directory that holds the new models and add the component configuration file.

6. Repeat steps 4 and 5 for any other model libraries.

7. The license file for the new model must also be installed by adding the location of the license file (or the license server port) to the license path list.

   **Note**

   See *Licensing Overview* on page 116 for a general introduction to the various license options. Licenses are typically updated by adding the new feature string to an existing license or adding the new license file to the license search path.

An example of the Preferences dialog with additional library paths installed is shown in Figure 8:

![Figure 8 Preferences dialog with list of Component Library configuration files](image)

**Figure 8 Preferences dialog with list of Component Library configuration files**

**Note**

For details of the search order for component configuration files, see the section *Search Order for Component Library Files* in the *SoC Designer Plus User Guide*. 
Appendix A

Installing FlexNet License Files

ARM products are licensed via the FlexNet license manager. To obtain a license you must have a license server available on your network. This appendix documents installation procedures for FlexNet license files and license servers for the SoC Designer Plus installation.

Note

The vendor daemon provided is for use with FlexNet Version 11.13. If you do not have Version 11.13 or greater installed on your system, you must upgrade FlexNet or use the lmgrd that is provided in the installation package.

If there is a version compatibility problem, the following error is generated when you issue lmstat on the host machine. In the following example, the version of the license server is 8.2.

License server status: 7275@<host>

License file(s) on <host>: /flexlm/lics/carbon.lic: <host>: license server UP (MASTER) v8.2

Vendor daemon status (on <host>):

carbond: Cannot read data from license server (-16,287)

Feature usage info: Users of MaxSim_MxExplorer: Cannot get users of MaxSim_MxExplorer: No such feature exists (-5,222) Users of MaxSim_MxDesigner: Cannot get users of MaxSim_MxDesigner: No such feature exists (-5,222)e
For additional information on the FlexNet licensing, refer to the Flexera Software website www.flexerasoftware.com.

License Server Platform Requirements

The following table illustrates the support for license servers on different operating systems and architectures. Note that if your license server runs on RHEL4, RHEL6 (32-bit), Windows (32-bit), or SunOS, you will need to rehost the license server on a supported platform. Contact Technical Support for details.

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Architecture</th>
<th>SoC Designer v5.0.1 Daemon</th>
<th>Plus</th>
<th>SoC Designer v8.0.x Daemon</th>
<th>Plus</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHEL4</td>
<td>64-bit</td>
<td>Supported</td>
<td>Not supported</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32-bit</td>
<td>Supported</td>
<td>Not supported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHEL5a</td>
<td>64-bit</td>
<td>Supported</td>
<td>Supported</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32-bit</td>
<td>Supported</td>
<td>Supported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHEL6</td>
<td>64-bit</td>
<td>Supported</td>
<td>Supported</td>
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<tr>
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<td>32-bit</td>
<td>Supported</td>
<td>Not supported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Windows</td>
<td>64-bit</td>
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<td>Not supported</td>
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<tr>
<td>SunOS</td>
<td>64-bit</td>
<td>Supported</td>
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<td>32-bit</td>
<td>Supported</td>
<td>Not supported</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Refer to the section Setting Up Licensing on EL-5 License Servers for further instructions.

FlexNet Software Location

The license server can be accessed from the Downloads page on the Support section of the Carbon website (www.carbondesignsystems.com). The license server is also included as part of the complete Carbon SoC Designer Plus installation package.

License server packages are available for Linux and Windows. Download the version applicable to your installation.

After installing the Carbon software, the FlexNet programs and the Carbon FlexNet daemon are found in the following directories:

- Linux: ${MAXSIM_HOME}/bin/Linux64
- Windows: %MAXSIM_HOME%\Tools
FlexNet Software Programs

The following FlexNet license programs are included once you complete the installation:

- lmgrd
- lmutil

**lmgrd**

The lmgrd program starts the FlexNet license daemon.

Linux: `lmgrd -c licenseFile [-l logFile]`

Windows: `lmgrd.exe -c licenseFile [-l logFile]`

**lmutil**

The lmutil program performs many functions depending on the option used.

The lmhostid option returns the FlexNet hostid.

`lmutil lmhostid`

Note: `lmhostid` returns a different ID than the Linux hostid command.

The lmdown option gracefully shuts down the FlexNet license daemon.

`lmutil lmdown -c licenseFile`

The lmstat option provides status information on the license server.

`lmutil lmstat -c licenseFile [-a]`

The lmreread option causes the license daemon to reread the license file and start any new vendor daemons.

`lmutil lmreread -c licenseFile`

In the above example, `licenseFile` is either a license file, or the location of the license server in the format:

`<socket>@<hostname>` (for example, `7275@licserver`)

**Setting Up the License File**

The following modifications should be made to the provided FlexNet license file:

- Change `<this_host>` on the SERVER line to the actual hostname, for example, for hostname `licserver`:
  
  — change from: `SERVER this_host 7274e893 7275`
  
  — to: `SERVER licserver 7274e893 7275`

- **Linux**: Add the path to the Carbon daemon object, carbond (see *FlexNet Software Location* on page A30) for the location of the Carbon daemon, *carbond*. For example:
  
  — change from: `VENDOR carbond`
  
  — to: `VENDOR carbond <path_to_MAXSIM_HOME>/bin/Linux/carbond`
Starting and Managing the License Server on Linux

See FlexNet Software Location on page A30 to find the appropriate FlexNet programs.

To start the license server: `lmgrd -c licenseFile [-l logFile]`, for example:

```
$ lmgrd -c carbon.lic -l carbonlic.log
```

To verify that the license started up correctly: `lmutil lmstat -c licenseFile`, for example:

```
$ lmutil lmstat -c 7275@licserver -a
$ lmutil lmstat -c carbon.lic -a
```

To gracefully stop the license server: `lmutil lmdown -c licenseFile`, for example:

```
$ lmutil lmdown -c 7275@licserver -a
$ lmutil lmdown -c carbon.lic -a
```

To update license information while the license server is running: `lmutil lmreread -c licenseFile`, for example:

```
$ lmutil lmreread -c carbon.lic
```

Setting Up the License Environment Variables

Prior to running SoC Designer Plus, utilities, or simulations using ARM Models, you need to set either the ARM-specific license environment variable, CARBOND_LICENSE_FILE, or the standard FlexNet license environment variable, LM_LICENSE_FILE.

FlexNet checks for the CARBOND_LICENSE_FILE license variable first, and then checks for the LM_LICENSE_FILE variable.

After you specify a valid license file during the installation process, the SoC Designer Plus Wizard automatically sets up these environment variables.

Linux csh shell

For the Linux csh shell, set one of the following:

- `setenv CARBOND_LICENSE_FILE licenseFile`
- `setenv LM_LICENSE_FILE licenseFile`

where `licenseFile` is either a license file or `<socket>@<hostname>` (i.e. `7275@licserver`). For example:

```
setenv CARBOND_LICENSE_FILE 7275@licserver
```

Linux Bourne shell

For the Linux Bourne shell, set:

```
CARBOND_LICENSE_FILE=licenseFile
export CARBOND_LICENSE_FILE
```

or

```
LM_LICENSE_FILE=licenseFile
export LM_LICENSE_FILE
```

Windows: You cannot specify the path to the daemon; it must be in same directory as lmgrd.

Change the socket number from 7275 on the SERVER line if a different socket must be used.
Starting and Managing the License Server on Linux

LM_LICENSE_FILE=licenseFile
export LM_LICENSE_FILE

wherelicenseFileis either a license file or<socket>@<hostname>
(i.e. 7275@licserver). For example:

CARBOND_LICENSE_FILE=7275@licserver
export CARBOND_LICENSE_FILE

Windows

For Windows, use the License Wizard to install the license. Follow the steps below:

1. ClickStart > Programs > Carbon > Carbon SoC Designer <version> > License Wizard to launch the Carbon License Wizard.
2. ClickNextand the Server or File dialog box appears.
3. This dialog box allows you to specify the licensing you will use to run SoC Designer Plus. If a license file already exists as an environment variable on this computer, that value will appear in this dialog. Check the appropriate button as described below:

   • If you are using a floating license, selectEnter a license serverand enter the license in the formatport@host, for example, 7275@FlexServer. A floating license requires that your system administrator install the license on a license server and provide you with the server name and port number. To list multiple floating licenses, separate each license with a semi-colon, for example, 7275@FlexServer;7276@FlexServer.

   • If you are using a node-locked license, selectEnter a license fileand browse to the location on the local computer where the license file (*.lic) is located. A node-locked license only works on this one computer.

   • ClickNextand the License Complete screen appears. As described on this screen, the user environment variable CARBOND_LICENSE_FILE is set with the value entered in the previous dialog.

   • ClickOKand the license installation completes and the window closes.

Starting and Managing the License Server on Windows

The FlexNet Windows programs include LMTOOLS (lmtools.exe). LMTOOLS is a graphical user interface used to start and stop the license server, configure the license server, check the license server status, etc. LMTOOLS can be used to configure the license server to startup automatically when booting Windows.

To configure the license server using LMTOOLS:

1. Start LMTOOLS by launching the lmtools.exe program.
2. Select the Services/License File tab and then select Configuration using Services (“FlexNetService1” should be highlighted).
3. Select the Config Service tab.

   • If not already specified, specify the Service Name (this normally should be “FlexNetService1”).

   • Enter the full paths to the following items: 1) path to the lmgrd.exe file, 2) path to the license file, and 3) path to the debug log file (license server log file). You can use the Browse feature to identify the full path.

   • Check “Start Server at Power Up”.
• Check “Use Services”.
• Click “Save Services”.

4. Select the Start/Stop/Reread tab.
   • Verify that the correct service is highlighted (for example, FlexNetService1).
   • Start the license server by clicking Start Server.

5. Select the Server Status tab. To verify that the license server is running, click on Perform Status Enquiry and then examine the log window under this button.

Setting Up Licensing on EL-5 License Servers

Flexera Software specifies that the license client (SoC Designer Plus) version must not be higher than the license server version. SoC Designer Plus is built using Flexera version 11.13, so the 11.13 versions of lmgrd, lmutil, and carbond are provided. Replace these existing three utilities with the new ones as described below. Note that the replacement takes only a few minutes and should not affect performance.

If your license server runs on an Enterprise Linux 5 machine, you need to run the license daemon for Enterprise Linux 5. This is located in your SoC Designer Plus installation directory under /bin/ES5/x86/.

The procedure described in this section has been qualified on Red Hat Enterprise Linux Version 5.

Before you begin, you may want to copy your old license server daemon to a different location.

1. Determine the name of the existing license file by looking at running processes on the license server. In the example below, the license file is named licenseA.lic:

   ps aux | grep lmgrd
   user 15562  0.0  0.0  16536  1532 pts/23   S    11:24   0:00 lmgrd -c /home/user/licenseA.lic

2. Stop the license daemon using lmutil; for example:
   lmutil lmdown -c /home/user/licenseA.lic

3. Replace your existing lmutil, lmgrd, and carbond with the new ones, which are located in /bin/ES5/x86/.

4. Restart the license daemon using lmgrd; for example:
   lmgrd -c /home/user/licenseA.lic
Appendix B

Frequently Asked Questions about Licensing

This chapter includes details on common license client or server problems and gives possible solutions. It contains the following sections:

• General Licensing Questions
• Problems with Client Configuration
• Problems with Server Configuration
• Setting Linux environment variables
• Setting Windows environment variables

General Licensing Questions

This section includes information on licensing issues that are not specific to a particular licensing configuration.

How do the Carbon development tools implement FlexNet?

If you are an experienced user of FlexNet then you might find the following information about the Carbon implementation of this software useful:

• You can run the license management software under Windows or Red Hat Linux.
• The Carbon vendor daemon program is called:

  Windows  carbond.exe
  Linux    carbond
• The default license file for workstations running the Carbon development tools is specified by the `CARBOND_LICENSE_FILE` environment variable.

• If you are configuring FlexNet license management servers, you are recommended to place a copy of the license file in the same directory as the FlexNet server software on each server.

**How does FlexNet find a license file?**

The locations to be searched by Carbon license-managed software are stored in the `CARBOND_LICENSE_FILE` environment variable. You can set `CARBOND_LICENSE_FILE` so that it contains one or more file names, directory names, or `port@server` information. If you specify a directory name, you must not include the final slash character. The locations are searched in order until a valid license is found. If a directory name is found then each file within the directory that has a `.lic` extension is searched. For Carbon Design Systems licensed tools, the contents of `CARBOND_LICENSE_FILE` are searched before the contents of the generic FlexNet environment variable, `LM_LICENSE_FILE`.

**Carbon license search algorithm**

A summary of the algorithm used in Carbon licensed products when searching for a license file is:

```plaintext
if (CARBOND_LICENSE_FILE env-var set) {
    Search CARBOND_LICENSE_FILE for feature.
    if (feature found)
    {
        Stop searching
    }
}
if (LM_LICENSE_FILE env-var set)
{
    Search LM_LICENSE_FILE for feature.
    if (feature found)
    {
        Stop searching
    }
}
else
{
    Search c:\FlexNet\license.dat (Windows)
    Search /usr/local/FlexNet/licenses/license.dat (Linux)
    if (feature found)
    {
        Stop searching
    }
}
Print error saying that license was not found.
```
Can I use FlexNet with more than one product?

FlexNet is a widely used product for license management, so it is possible that you have more than one product using FlexNet. The latest version of the FlexNet software always works with vendor daemons built using previous versions.

Note
If your products are supplied with different versions of FlexNet, you must use the latest version of FlexNet for all your products.

You might be able to combine multiple license files together. See How do I combine licenses?

How do I combine licenses?

You may wish to combine license files together if you are using more than one licensed application, or are adding a new feature to an existing license.

Node locked licenses can be combined if they have been generated for the same host ID.

Floating licenses can be combined if:

1. The number of SERVER lines in each file is the same
2. The host ID field of each SERVER line in one file exactly matches the host ID field of each SERVER line in the other file.

If you are using a node-locked license, and want to combine multiple licenses into a single file, then copy and paste all of the INCREMENT lines from your separate license files into a new license file.

To combine floating license files, use a text editor and open one license file, copy the other license file into the text editor and then remove any duplicate SERVER and VENDOR lines. Be sure to always use the newest version of lmgrd used by product and the newest version of each vendor daemon (for example, carbond).

How do I move my license to another workstation?

If you want to move your development tools license from the original workstation for which it was generated to another workstation within the same company, then you must obtain a new license file from Carbon Design Systems with a new host ID. A host ID is usually generated from an ethernet card MAC address. For node locked licenses, the hard disk volume number can be used instead. For more details about host IDs see Chapter 2 Installing SoC Designer Plus.
Feature not supported error

When you try to run a Carbon Design Systems licensed product that has the **Counterfeit Resistance Option** (CRO) enabled, and you do not have a CRO-enabled license, an error message is displayed:

- If you attempt to use your CRO-enabled product with a non-CRO node-locked license, the following error message is displayed:

  Serious error: C3397E: Cannot obtain license for compiler with license version >=
  version: SIGN= attribute required, but missing from license
  This is probably because the license is older than the application
  You must obtain a SIGN= version of this license from your vendor.
  Feature: product_A
  Missing: SIGN2=
  License path: C:\mypathname\mylicense.dat:
  FlexNet error: -114,582

  This example shows the error produced if you attempt to use Product_A, which supports CRO, with a license that does not contain any CRO information.

- If you attempt to use your CRO-enabled product with a non-CRO floating license, the following error message is displayed on the client:

  Error: A1439E: Cannot obtain license for "product" with license version >=n.n: License
  server does not support this feature

  This error message is displayed if you attempt to use, for example, SoC Designer Plus with a Carbon Design Systems license.

--- Note

If you have products that use old-style licenses, you can still use those products alongside CRO-enabled products.

---

Do the Carbon Design Systems development tools support BORROW?

Carbon development tools do not support the use of the FlexNet **BORROW** attribute in its development tool license files.

If you want to use your development tools on a separate network to your license server (including standalone), you require a node locked license.

If you have a number of different machines that must have access to the development tools whilst away from your license server network, then you must obtain one or more node locked licenses that are locked to network cards that can easily be transferred between machines as required, such as a USB or PCMCIA network cards.

Why can I not find the LMHOSTID utility?

If you are using Linux, you have probably not run the `makelinks.sh` script. The script creates a series of links to the `lmutil` program, one of which is for `lmhostid`. This script is in the appropriate directory for your platform:

Utilities/FlexNet/version/release/Linux-Pentium

You can now type `lmutil lmhostid` at the command prompt to run the utility.

If you are using Windows, this script is not available. Instead, open a command prompt, change to the directory where your license utilities are installed, normally `C:\FlexNet`, then type `lmutil lmhostid`. 
Problems with Client Configuration

This section deals with issues relating to the configuration of clients in node locked or floating license systems.

License apparently missing

When you try to run any Carbon licensed product, you might see the message:

A license for the feature 'product' could not be checked out.
Reason: No such feature exists.

If so, one possible reason is that a valid license file cannot be found:

- If your workstation is running Windows, use the Carbon License Wizard to specify the location of the license file (see Installing SoC Designer Plus on Windows on page 219).
  If you are using a node-locked license on Linux, see Installing SoC Designer Plus on Linux on page 222.

Another cause of this error message is that you have a license for an evaluation version of the Carbon development tools but have since installed the full version. You must use a license compatible with the type of tools you have installed on your workstation.

How do I manually install a node-locked license on Windows?

Instead of using the Carbon License Wizard as described in Installing SoC Designer Plus on Windows on page 219, you can set up your node-locked license yourself.

To manually install a node-locked license:

1. Obtain your license as described in Chapter 2 Installing SoC Designer Plus.

2. Save the license file as license.dat and place it in C:\Program Files\Carbon\licenses, or another location where you have installed your Carbon development tools. You must save your license file in a licenses directory to make it easy to find later.

3. Create or modify a Windows environment variable called CARBOND_LICENSE_FILE to point to C:\Program Files\Carbon\licenses\license.dat, or the equivalent location if you have installed your Carbon Design Systems development tools in a different place. See also Chapter 2 Installing SoC Designer Plus and Setting Windows environment variables on page B45.

Problems communicating with the server

If you are using Carbon development tools with a floating license, your workstation must be able to communicate with a server running FlexNet server software. If such communication cannot be established, a commonly reported FlexNet error code is -15. Possible reasons for this are:

- the wrong license file is being referenced by the application program
- the server machine or machines specified in the license file are not running
- you are using the wrong port@host information
- the vendor daemon specified in the license file is not running
- the hostname in the license file is not recognized by the system
- the network between the client machine and the server machine is down
Problems with Client Configuration

You can try running tests on your server or client workstations to identify possible causes of the failure:

1. Try running the `lmutil lmdiag` utility, which is designed primarily for this purpose.
2. Verify that the application is referencing the correct license file.
3. Verify that the vendor daemon, `carbond`, is running (you can use `ps` on the server to look for it on Linux, or the Windows Task Manager).
4. Examine the server log file to see if any problems are reported, particularly messages indicating that the vendor daemon has quit.
5. Run `lmutil lmstat -a` on the server machine to verify that the vendor daemon is alive.
6. Run `lmutil lmstat -a` on the client machine to verify the connection from client to vendor daemon across the network.
7. If none of the above tests identifies the cause of the licensing failure, check whether your client machine can communicate to the server through TCP/IP using a utility such as `ping`. If this fails then it is possible that communication is being blocked between the server and client.

Firewalls

Your license server and client may be on opposite sides of a firewall. If so, you must configure the firewall to enable access to fixed ports for the lmgrd and carbond license daemons. Define these ports in the server license file by modifying the top of the license file as shown, substituting your own values:

```
SERVER myserver server_hostid 8224
VENDOR carbond port=portnumber
```

Subnets

If your license server and client are on different subnets, then using the server’s fully qualified domain name or IP address may solve the problem. Using the IP address must circumvent issues surrounding domain name resolution.

Server hostname length

There is a character length limit for server hostnames used in the license files. The limit is 64 characters. If your license server name is too long, you must use the server’s IP address in the license file and client license environment variable instead of the hostname.

How can I change the order in which my license sources are accessed?

If you have more than one license source, you might want to change the order in which they are used. For example, you might have two separate license servers, each with its own license file, and one of these servers is significantly slower to issue licenses than the other. In this case you would want to point to the faster server first.

If you are using Windows, you have the option of using the License Wizard. Start the License Wizard as described in Chapter 2 Installing SoC Designer Plus. Select one of the existing entries in the list, and click on the Up or Down buttons as required to reorder the list. When you have finished, click Next, then click Finish to change your Carbon Design Systems licensing environment.

If you are unable to use the License Wizard on Windows, or are using Linux, you must manually edit the value of the `CARBOND_LICENSE_FILE` environment variable yourself to change the order in which license sources are searched.
If you are using Linux, see Chapter 2 *Installing SoC Designer Plus* for information on how to set the `CARBOND_LICENSE_FILE` environment variable.

### What does “Diagnose license management problems” do in the License Wizard?

This option in the License Wizard runs a script that analyzes the licensing configurations on your workstation. You must only use this option when directed to by Carbon Design Systems Support.

### How can I optimize floating license checkout times?

When using a license server (or servers), each time a client workstation starts one of the Carbon Design Systems development tool installation packages, a license checkout request is sent across the network to the license server to obtain a license. There are a number of ways of configuring a client machine to check out a floating license from a license server and it is worth ensuring that your system is configured in such a way that the time taken for these checkout requests is minimized. These are:

- **Use** the `CARBOND_LICENSE_FILE` environment variable to point to your license server(s). This environment variable is examined first by the tools, so it is preferable to use this rather than `LM_LICENSE_FILE` (the generic FlexNet environment variable).

- **Set** `CARBOND_LICENSE_FILE` to `port@server` rather than pointing it to a local copy of the license file. This removes the delay incurred by the tools having to process the local copy of the license file to find out the name of the license server. Note that this variable can also be used to specify multiple locations (using a list separated by semi-colons on Windows, or colons on Linux) and each location is checked in turn until a valid license is found.

- **Check** for network problems. If everything is working as it must be, then a license must be granted in about the same time it takes to 'ping' the server on which the license resides. If the checkout takes longer, domain name resolution issues can be a cause of such problems. If this is the case you can sometimes overcome the problem by substituting the server's IP address for the server name where it appears in the license search paths.

- **Check** for server problems, particularly if you have set up the `CARBOND_LICENSE_FILE` environment variable to point to multiple servers. If any of the license search paths point to a server which is no longer running the license management software, there is a delay while FlexNet waits for the license request to time out before moving to the next location in the search path. You must ensure that there are no spurious entries here which may cause such a delay and that all referenced servers are running. To temporarily work around this problem you can modify the order in which the servers appear in the `CARBOND_LICENSE_FILE` environment variable. This is described in *Setting Windows environment variables* on page B45 and *Setting Linux environment variables* on page B44.
Problems with Server Configuration

This section deals with issues relating to the configuration of floating license systems.

Server log reports "Invalid license key (inconsistent authentication code)"

A common cause for this error message is that you have changed non-user editable parts of your license file. For example, you may have a three-server license and have commented out two of the three server lines. The only parts of the license you are allowed to change are the host name (not the host ID) and the license server daemon port numbers.

This message can also indicate that you are running an older version of the FlexNet license server software that is not compatible with the format of the license file that you have installed. This can happen if you upgrade your development tools.

How do I update the license file my server uses?

If you want to change the license file used by a license server that is already running, you must use one of the following options:

• shutdown and restart your license server, referencing the new license file

   Note
   Users cannot check out licenses while the server is down.

• use the lmreread command to read the new license file

Further information on these procedures can be found in the FlexNet End Users Guide, which is supplied as a PDF with your Carbon Design Systems development tools.

How can I tell how many floating licenses are in use?

To find out how many floating license seats are in use at a given point in time, you must run the lmutil lmstat command, with appropriate arguments, on the server. The license server log is not suitable for the purpose of usage analysis, as at high server loading or with certain types of license file configuration, you may get incomplete or misleading results.

The lmutil lmstat command can generate text output which indicates which user is using what version of a license component, and when the license was granted. By selecting the appropriate arguments, such as -i for information from the FEATURE/INCREMENT line for the specified feature, or -a for all information, you can collect snapshot information of your license usage. You can then run the output through a text parser if you wish to analyze the data in more detail. Further information on the lmutil lmstat command can be found in the FlexNet End Users Guide.

You must be aware that there is a trade-off between increased temporal resolution of your usage data and server loading, especially if you have a high turnover licensing environment. The lmutil lmstat command can consume a significant fraction of your server’s CPU resource, especially if the -a switch is used. At very high loadings (>1000 checkouts/minute) the resulting data are known to be inaccurate simply because not all transactions can be recorded during the data collection period.
Server log reports “(carbond) cannot open lock file”

This error most commonly occurs on a Linux system if a previous instance of the lmgrd license daemon was not shut down properly. Only one copy each of lmgrd and carbond can run on your license server at any given time. Attempting to start another copy of these daemons causes an error.

When the Carbon license daemon (carbond) is started, it creates a file called /var/tmp/lockcarbond. If lmgrd terminates abnormally, carbond does not release the lock file because it is actively running.

To solve this problem, locate any license daemon processes. You can do this using the following command:

```bash
ps -a | grep daemon_name
```

where `daemon_name` is lmgrd or carbond.

Next terminate these processes with:

```bash
kill PID
```

where `PID` is the process ID for the license daemon.

Delete the /var/tmp/lockcarbond if it still exists. You must now be able to restart the license server.

What version of the license server daemons must I use?

License server software consists of two parts: the Carbon license server vendor daemon carbond and the Flexera Software FlexNet license server daemon lmgrd. You can upgrade to later versions of lmgrd, but must use the version of carbond provided with the latest Carbon tools you have installed. The latest Flexera Software utilities, including lmgrd, can be downloaded from their website at http://www.flexera.com. Newer versions of carbond can only be obtained through Carbon.

Older releases of the Carbon license daemon are forwards compatible with later releases of lmgrd.

Server log reports “Invalid license key (inconsistent authentication code)”

A common cause for this error message is that you have changed non-user editable parts of your license file. For example, you may have a three-server license and have commented out two of the three server lines. The only parts of the license you are allowed to change are the host name (not the host ID) and the license server daemon port numbers.

This message can also indicate that you are running an older version of the FlexNet license server software that is not compatible with the format of the license file that you have installed. This can happen if you upgrade your development tools.
Setting Linux environment variables

On Linux clients, you must set the environment variable `CARBOND_LICENSE_FILE` to include `port@server` information. If a default port in the range between 27000 and 27009 is used on the server, then the port number is omitted.

The ways in which you can configure your Linux client to obtain its license from a server are:

- **Shell commands**
- **Using the `.FlexNetrc` file**

### Shell commands

If you are using csh or tcsh, you can set the environment variable for a single server as follows:

```bash
setenv CARBOND_LICENSE_FILE 8224@my_server
```

If you are using bash or sh, an example would be:

```bash
CARBOND_LICENSE_FILE=8224@my_server
export CARBOND_LICENSE_FILE
```

If you are using a three-server license, or wish to refer to more than one license server, you can add these values to your environment variables. For example, in csh or tcsh:

```bash
setenv CARBOND_LICENSE_FILE 8224@my_server1:8224@my_server2:@my_server3
```

In this example, the port number is omitted for `my_server3` because a default port is being used. If you are using a three-server license, the master server would be `my_server1`. In all cases you may wish to add the above environment variable settings to your startup scripts so that your licensing is set up automatically when you log in.

### Using the `.FlexNetrc` file

You can edit a file in your home directory called `.FlexNetrc` to set up client licensing. To do this, add the following line to `.FlexNetrc`:

```bash
CARBOND_LICENSE_FILE=value
```

where `value` is the value to which you want to set the environment variable, such as `8224@my_server`. 
Setting Windows environment variables

This section describes how to set environment variables related to Carbon SoC Designer Plus. These variables are typically set at installation and do not require changing. It might be necessary to modify the environment variables if you change the location of the license files after installation.

On Windows clients, you can set the environment variable `CARBOND_LICENSE_FILE` using one of the methods described in the following sections:

- Using the Control Panel
- Using the Command Line

See also Installing SoC Designer Plus on Windows on page 219.

Using the Control Panel

You can use the Control Panel to set environment variables in Windows.

--- Note ---
You must have administrator privileges to set system environment variables.

---

If you are using the Control Panel, then you can set the environment variable as follows:

1. Open the Control Panel.
2. Locate the environment variables setting tab. This is on the Advanced tab of the System Properties dialog.
3. Click on Environment Variables to display the Environment Variables dialog.
4. Edit the environment variable `CARBOND_LICENSE_FILE` to point to the license file.

--- Note ---
If the environment variable does not exist, create a new system environment variable `CARBOND_LICENSE_FILE` and set its value:

- For node-locked licenses, set the path to point to the license file on the workstation.
- For a floating license, the variable must include valid `port@server` information. If a default port in the range between 27000 and 27009 is used on the server, then the port number is omitted in the environment variable.

If you are using a single server floating license, you would set the environment variable value to something similar to:

`8224@my_server`

If you are using a three-server license, or wish to refer to more than one license server, you would set the environment variable value to something similar to:

`8224@my_serverA;8224@my_serverB;@my_serverC`

If this is used in a three-server environment, the master server is `my_serverA`. The entry for `my_serverC` is not preceded by a port number because in this example a default port number is being used.
Using the Command Line

You can use the command line on Windows to set system environment variables for that instance of the command line. If a default port in the range between 27000 and 27009 is used on the server, then the port number is omitted. If you are using the command line, you can set the environment variable for a single server as follows:

```
set CARBOND_LICENSE_FILE=8224@my_server
```

If you are using a three-server license, or wish to refer to more than one license server, you can add these values as shown here:

```
set CARBOND_LICENSE_FILE=8224@my_serverA;8224@my_serverB;8224@my_serverC
```

If this example is used in a three-server environment, the master server is `my_serverA`. The entry for `my_serverC` is not preceded by a port number because in this example a default port number is being used.

--- Note ---

Using the command line on Windows to set an environment variable only sets the variable for that instance of the command line, not for the entire system.
The items in this glossary are listed in alphabetical order, with any symbols and numerics appearing at the end.

**Client**
The workstation on which you are running the Carbon Design Systems development tools. Also known as **Host**.

**Counterfeit Resistance Option (CRO)**
Counterfeit Resistance Option enables the encryption of license keys using Public Key Encryption.

**CRO**
See Counterfeit Resistance Option.

**FlexNet**
The license management software (see License management software) used to control the use of a Carbon Design Systems application.

**Host**
In this manual, host means the workstation on which you are running Carbon Design Systems applications or FlexNet. In other contexts the term can mean a workstation that provides data and other services to another workstation. Also referred to as **Client**.

**Host ID**
The Host ID enables the license management software to validate that the software is running on a licensed workstation. The Host ID is based on a unique feature of the workstation such as the network card MAC address hard disk serial number. If a node-locked license is used, the Host ID refers to the workstation running the software. If a floating license is used, the Host ID refers to the workstation that is contacted by the client to validate the license.

**License management software**
Software that controls the usage of software applications programs. For example, a program might be licensed for use on one specific workstation only, or for simultaneous use by a limited number of users on a network. See also FlexNet.

**Master server**
The server, in a three-server redundant arrangement, that issues licenses. The master server must be started before the two secondary servers, and must be listed first in the license file and client license environment variables. If the master server fails, one of the two secondary servers becomes the master.
**Permanent license**
A license that enables you to use a Carbon Design Systems application. See also *License management software*.

**Platform**
A combination of a particular type of workstation hardware meeting a minimum specification with a particular operating system of a specific release or later.

**RTOE**
Refers to the *SoC Designer Plus Run Time Only Environment* or to a package distributed to run in this environment.

**Server**
A computer that issues floating licenses to a *client* workstation. Carbon Design Systems licenses can be used with a single server, or triple (redundant) server arrangement.

**SoC**
*System on Chip*. A complete system that is present in a single integrated circuit chip. Carbon SoC Designer Plus enables design and test of SoC systems without the requirement of producing an actual silicon chip.