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<u>Index</u>

Licensing Overview

This chapter contains information about these topics:

- About This Reference on page 7
- Overview of Cadence Licensing on page 8

About This Reference

This reference is for Cadence system administrators—those providing the installation and licensing support for Cadence software on Solaris[™], IBM[®], and HP[®] platforms. Cadence system administrators must be familiar with UNIX[®] operating systems and a text editor.

This reference describes how to configure, monitor, and troubleshoot licensing. Here is a list of other documentation.

Information You Need	Where to Find It
Installation information	Cadence Installation Guide
Additional licensing or configuration requirements for Cadence products on UNIX	Your application's configuration guide, if one exists
Additional licensing or configuration requirements for Cadence products	postinstall README
Other product-specific information	Search your product's online documentation in the Cadence online documentation system (CDSdoc)
More licensing information from our license manager vendor, Macrovision	FLEXIm End User Manual and Frequently Asked Questions, http://www.macrovision.com/services/support/software_licensing.shtml
Specific commands and other information	Operating system's documentation

Licensing Overview

Information You Need	Where to Find It
Information specific to your hardware	Hardware documentation

After you install your Cadence products and configure licensing with Cadence installation software, you can read this reference if you need to

- Generate reports about license usage
- Troubleshoot licensing problems
- Add a new license file

If you have additional licensing needs, you can read about

- More complex installations
- Specific <u>licensing details and configurations</u>

Overview of Cadence Licensing

You must configure licensing before using Cadence products. When a user starts a product, the product checks out a license from a license server, similar to the way people check out books from a library. The license server determines which products are available and distributes licenses on a first-come, first-served basis until all licenses for a given product are in use. When the user exits the product, the product returns the license to the license server. Licensing is normally transparent to the person using the Cadence applications.

Cadence bases its licensing software on the FLEXIm[™] license manager from Macrovision Software, Inc. Cadence has added several features to FLEXIm licensing to better meet the needs of Cadence users:

- Alternative methods of locating the license file (<u>clients</u> file and <u>CDS_LIC_FILE</u>) so that Cadence licensing does not interfere with <u>LM_LICENSE_FILE</u> and other FLEXIm-based licensing
- A SKILL interface to licensing
- Improved error messages and solutions(<u>lic_error</u> on page 103)

Cadence does not support several FLEXIm features, such as INCREMENT, UPGRADE, FEATURESET, PACKAGE, LINGER. Not all Cadence products support queueing and time-outs equally. See your product's documentation for specific exceptions.

Cadence License Manager Licensing Overview

Cadence License Manager Licensing Overview

How to Configure Licensing

This chapter contains information about the following topics:

- Configuring Licensing on page 11
- After You Configure Licensing on page 39
- Managing Licenses on page 41
- <u>Setting Up Fault-Tolerant License Servers</u> on page 49
- Running Two Versions of Cadence Software on page 50
- Specifying Time-Outs on page 51

Configuring Licensing

You must configure licensing to use Cadence products. If you do not configure licensing, Cadence products will not run and you will see licensing errors.

Configuring licensing can include

- Editing the license file
- Creating a script to start the license daemons
- Editing the license server's boot script (optional)
- Creating a symbolic link
- Setting up application clients
- Setting up users' workstations

Cadence products do not interfere with other FLEXIm-based software if you configure the Cadence products by following the Cadence procedures.

This section describes

How to Configure Licensing

- What Do You Need to Know?
- Which Format Is Your License File?
- What Do You Do Now?

What Do You Need to Know?

Use these checklists as a guide for gathering the information you need to configure licensing.

What You Need to Know about the License File

Your Site

Where is the license file?

Which license configuration does it support (how many SERVER lines does it have)?

One SERVER line: single license server

Three SERVER lines: fault-tolerant license server

Neither one nor three SERVER lines: invalid license file

If you have a new license file, do you have an <u>encoded</u> or ASCII file?

Is the license-server host ID correct?

Where is the computer with that host ID?

Are the <u>products</u> you want this host ID to manage correct?

Is the default Cadence port, 5280, available and usable for Cadence licensing?

What You Need to Know about License Administration

Your Site

Who will be the license administrator?

Who should be able to start the license daemons?

Who should be able to kill the license daemons?

Do you need to control access to the Cadence software?

How to Configure Licensing

What You Need to Know about License Administration

Your Site

If you want to manage licenses with an <u>options</u> file, does the license file have both node-locked and floating licenses?

Do you want to start the license daemons with a script?

When the license server reboots, should the daemons start?

If the license daemons should start, what is the root password, so that you can modify the license-server boot script?

Where do you want the log file (default:

/usr/tmp/license.log)?

What type of license-usage reports do you want?

How will Cadence products locate the license files?

How to Configure Licensing

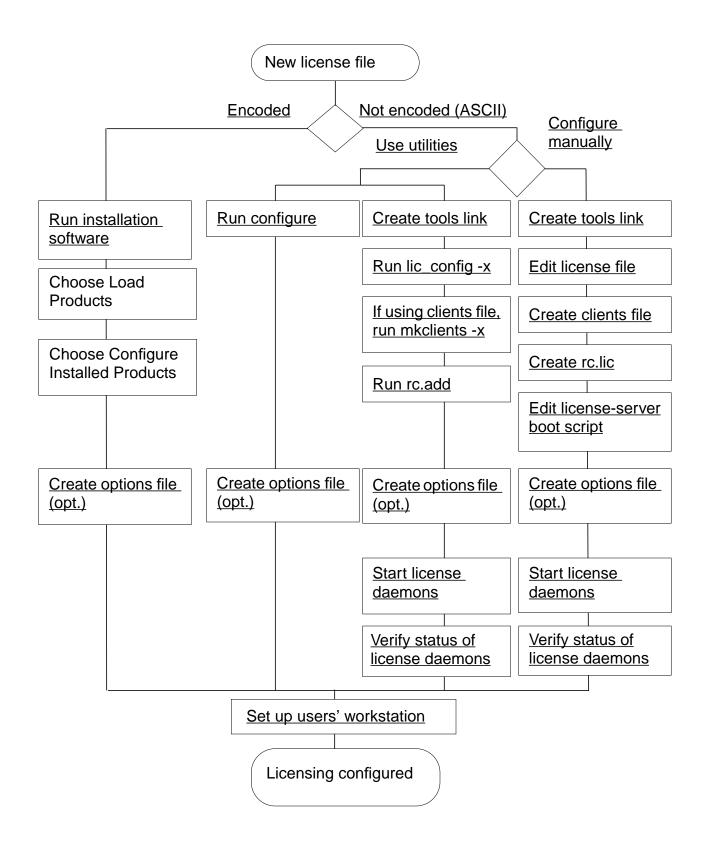
Which Format Is Your License File?

You can configure licensing several ways, depending on whether you have an encoded license or ASCII file. This table lists some of the differences between the formats.

Description	Encoded License File	ASCII License File
How you receive it	E-mail	E-mail or FAX
What e-mail Subject header says	Cadence(x of x) xxxxxxxxx. x 9504/sun4 Install Product Info	Header varies by source of the license file
E-mail corruption	Not likely to get corrupted	Easily corrupted if it contains long lines with node-locked licenses. See installation troubleshooting
What you see	After several lines of readable text, lines begin with "C_Begin"	Contains only readable text and includes SERVER, DAEMON, and FEATURE lines
How you install	Cadence installation software	Copy the license file to <pre>install_dir/share/license</pre> or elsewhere
How you configure the first time	Cadence installation software	Licensing utilities or an editor
How you configure after the first time	Cadence installation software, licensing utilities, or an editor	<u>Licensing utilities</u> or an <u>editor</u>

What Do You Do Now?

Now that you have completed the checklists and you know what type of license file you have, you can proceed to configuring your new license file.



How to Configure Licensing

Configuring Licensing with Cadence Utilities

This section describes how to configure licensing using Cadence utilities. Cadence products do not interfere with other FLEXIm-based software if you configure the Cadence products by following the Cadence procedures.

If you received <u>encoded</u> installation information via e-mail, the only way to configure default or customized licensing is by using <u>Cadence installation software</u>. If you have a license file previously configured with Cadence installation software, you can use Cadence installation software, the licensing utilities, or a text <u>editor</u>. If you use the utilities, you have a choice between using one utility or <u>several</u> utilities.

This section describes

- Summary of License Configuration Utilities
- Using Cadence Installation Software
- Configuring the License Server
- Configuring the Clients File
- Editing the License Server's Boot Script

Summary of License Configuration Utilities

Cadence installation software and the licensing utilities modify the files listed below.

Utility	Files Modified	Description
Cadence installation software	All files modified by the configure utility	Runs the configure utility. Choose Configure Installed Products from the Main Menu of the Cadence installation software utility, then choose System Configuration.

Cadence License Manager How to Configure Licensing

Utility	Files Modified	Description
<u>configure</u>	License file	Runs the lic_config -x, the
	<pre>install_dir/share/license/rc .lic</pre>	mkclients -x utility, the rc.add utility, creates the tools link, starts the licensing daemons if
	<pre>install_dir/share/license/cl ients</pre>	you request it, or forces the license daemons to read the
	/etc/rc.local, /etc/inittab	new license file.
	/sbin/rc2.d, /sbin/rc3.d,	
	or /etc/rc2.d directory	
	install_dir/tools link	
lic_config	License file	Modifies the license-server host name, daemon path, port number, and options file path.
	<pre>install_dir/share/license/rc .lic</pre>	Creates or modifies the script to start the correct daemon and create the log file.
mkclients	<pre>install_dir/share/license/cl ients</pre>	Adds the host names of workstations that can use the license file (if applications use the clients file to locate the correct license).
rc.add		Appends the script to start license daemons to the end of the license-server boot script. Depending on your operating system, you will need root permission to access or edit /etc files.
	inittab	Script that runs when an HP, IBM, or Solaris computer boots.
	/sbin/rc2.d or /sbin/rc3.d directory, or /etc/rc2.d directory	Script that runs when an HP, IBM, or Solaris computer boots
	(rc2.d/S??cds_lic)	

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How to Configure Licensing

Using Cadence Installation Software

To use Cadence installation software, complete the following steps:

- **1.** Gather the information you need by completing the <u>checklist</u>.
- **2.** Log in as cdsmgr or a non-root account on the license server.

Cadence recommends creating an account, such as cdsmgr, exclusively for managing Cadence software so that cdsmgr can manage the software without root permission.

3. Change to the Cadence installation directory.

```
cd install_dir
```

4. Verify the host ID of the license server.

```
tools/bin/lmhostid
```

The computer returns the host ID expected by Cadence licensing software.

```
lmhostid - Copyright (C) 1989-1999 Macrovision Software, Inc.
The FLEXlm Host ID of this machine is "abcd1234"
```

Note the host ID. Replace ${\tt HOSTID}$ in these procedures with the host ID of the license server as returned by ${\tt lmhostid}$. You can also use operating system commands to retrieve the specific host ID needed.

5. Start the Cadence installation utility.

```
./install/bin.xxx/softload
```

The xxx is the name of the platform (from the table) of the license server you are configuring.

Platform	Directory Name	Platform	Directory Name
HP Series 700	bin.hppa	Solaris	bin.sun4v
IBM RS/6000	bin.ibmrs	Linux	bin.lnx86

- **6.** From the Main Menu, choose *Configure Installed Products*.
- 7. Choose *** SoftShare Licensing Server HOSTID.

The *HOSTID* is the host ID of the license server in the license file. The ASCII configuration utility starts in the Cadence installation software console window. Respond to the prompts as described in the next section, "Configuring the License Server."

How to Configure Licensing

If you see a message that indicates your license file is corrupt, the license file is probably an ASCII license file that has not been previously configured with Cadence installation software. Use the <u>licensing utilities</u> or an <u>editor</u>.

Configuring the License Server

Cadence installation software runs configure, which runs lic_config -x, which edits the license file and the clients file, and creates the rc.lic script that starts the license daemons.

Cadence licensing requires that both the lmgrd and cdslmd daemons be running. Using a script to start the license daemons is a convenient way to always

- Let users start the license daemons easily
- Start the license daemons with the same options
- Use the same log file (old log file renamed in the same location)
- Use the same license file

When you run the utilities, descriptive text precedes the prompts to help you determine the correct response. Respond to the prompts as described.

1. Continue from Cadence installation software or the configure utility, or start the lic_configure utility.

To use the defaults, type

```
lic_config
```

To customize licensing, type

```
lic_config -x
Enter the top installation directory <q to quit>
```

2. Type the path to the top directory which stores the installed Cadence products.

This is the installation directory referred to as $install_dir$. This path is the basis for all the information in the license file. Occasionally, you need to use a different path, such as one starting with /net, in the licensing files. The path must be to a <u>Cadence Hierarchy</u> that includes tools/bin, share/license, and other directories. The prompts continue with this prompt if the utility cannot find the tools link.

```
Can't find the /usr/cds/tools link.
Create it?
```

3. If the tools link does not exist, create it by typing y at the prompt

```
Edit the license file or the startup script now? \langle y/n/q \rangle [y] ->
```

How to Configure Licensing

4. Type y if you want to configure the license file or the rc.lic startup script (only in the configure utility).

If you type n, the software prompts you to configure the clients file (Configuring the Clients File).

```
Override the defaults? \langle y/n/q \rangle [y] ->
```

You can use the default licensing configuration when

- The computer you are configuring is the license server
- ☐ The licensing debug log file is /usr/tmp/license.log
- ☐ The license server uses the Imgrd license daemon in the default path
- ☐ The license server does not use an options file
- □ All workstations have permission to access the license file
- ☐ The lmgrd license daemon starts with the default options

You minimize the chance of users shutting the license daemons down inadvertently by starting the lmgrd daemon with one of these methods instead of using the default options:

Imgrd -2 -p

Only members of the lmadmin group can run lmdown, lmremove, and lmreread. If root should be able to use lmdown, root must be in the lmadmin group. If no lmadmin group exists, only root or a user belonging to group 0 can use these utilities.

lmgrd -x lmdown

No one, not even root, can run lmdown. The license daemons can only be stopped with kill. Do not use kill -9. Do not kill the license daemons while licenses are in use because the users risk losing their data.

Answer the prompt for paths to daemons by typing

```
install_dir/tools.xxx/bin
Configure license file license.abcd1234?
<y/n/q> [y] ->
```

1. Choose the license file to configure.

After you configure one license file, the software prompts you to configure the next license file in the directory. If you are editing an existing license file, the utility copies the existing file to

```
license file.month.day.hour:minute
```

How to Configure Licensing

reflecting the timestamp on the existing file.

- **2.** To use the default licensing configuration, answer the prompt to override the defaults by typing n. After you specify the license file, go to Configuring the Clients File .
- **3.** To customize licensing, answer the prompt to override the defaults by typing y.

Follow the prompts to customize licensing. Press Return to use the defaults.

Enter the hostname of the computer with hostid hostid <q to quit>

 \Box Type the host name of the license server with the specified *HOSTID*.

Enter the TCP port number <q to quit>

Type the port number that the license daemons will use.

The default is 5280, but you can specify any unused port.

Enter the path to the cdslmd daemon for hostname <q to quit>

Type the path to the daemon executable, usually

install_dir/tools.xxx/bin

If you do not know the path, press Return. You can continue (even if the path does not exist) and correct the path later.

Enter the path to cdslmd's OPTIONS file for hostname <q to quit>

☐ Type the path to the options file.

You can use an options file to manage licensing and restrict users beyond the limits provided by the license file. For example, you can restrict licenses to specific users, displays, workstations, or internet addresses with an options file.

Enter the installation directory the license daemons should use <q to quit>

Type the path to the installation directory to use in the rc.lic script that starts the license daemons.

This utility creates the rc.lic script to start the license daemons after you supply the requested information.

Enter the license file the license daemons should use <q to quit>

☐ Type the name of the license file that the license daemons started with rc.lic will use.

Enter the debug log file the license daemons should use

Type the location of the debug log file for this license server.

The default location is in /usr/tmp because the software will not delete a file in that location when the license server reboots.

Enter the new lmgrd daemon option

How to Configure Licensing

Type the Imgrd options to use when starting the license daemons on this license server.

You can minimize the chance of users shutting the license daemons down inadvertently by not using the default options. For example, for one method, type

```
-2 -p
```

For example, the default records the datestamp in the log file every 360 minutes (six hours). To increase the frequency of datestamps in the log file to every three hours, type

```
-s 180
```

To increase the time-out between fault-tolerant license servers to 30 minutes, type -t 1800

The lic_config utility stops here and prompts you to run the mkclients utility if workstations will locate the license file with the clients file. Cadence installation software and the configure utility continue in Configuring the Clients File.

Sample Dialog

For example, if you were modifying the licensing on a license server named sunny with a host ID of abcd1234, without the usual descriptive text, the prompts from the configure utility and lic_config -x utility would look like this. The defaults are in square brackets.

```
Enter the top installation directory <q to quit>
[/usr/cds] ->

Edit the license file or the startup script now?  # only in lic_config -x
<y/n/q> [y] -> y

Override the defaults? <y/n/q> [n] -> y  # only in configure

Configure license file license.abcd1234? <y/n/q> [y] -> y

Configuring license.abcd1234...

Enter the hostname of the computer system with hostid abcd1234
<q to quit> [sunny] ->

Enter the TCP port number <q to quit>
[5280] ->

Enter the path to the cdslmd daemon for sunny
<q to quit> [/usr/cds/tools/bin/cdslmd] ->
```

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Enter the path to cdslmd's OPTIONS file for sunny <CR for none, q to quit> -> These next prompts affect the information in the rc.lic script that starts the license daemons. The existing rc.lic uses the following installation directory '/usr/cds' Enter the installation directory the license daemons should use <q to quit> [/usr/cds] -> The existing rc.lic uses the following license file '/usr/cds/share/license/license.abcd1234' The following license files exist under the directory: license.abcd1234 license.abcd1234.Nov.20.11:03 license.klmn1234 Enter the license file the license daemons should use <q to quit> [/usr/cds/share/license/license.abcd1234] -> The existing rc.lic uses the following license debug log '/usr/tmp/license.log' Enter the debug log file the license daemons should use <q to quit> [/usr/tmp/license.log] -> ______ The existing rc.lic uses no lmgrd daemon options

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How to Configure Licensing

Enter the new lmgrd daemon option [no options] -> -s 180

Configuring the Clients File

The clients file is one of several methods by which your Cadence applications <u>locate licenses</u>. If you do not use a clients file, go on to <u>Editing the License Server's Boot Script</u>.

Cadence installation software and the configure utility continue by running mkclients -x. Respond to the continuing prompts.

1. Continue from Cadence installation software or the configure utility, or start the mkclients utility.

To allow all workstations to access this license server, type

mkclients

To identify specific workstations that can access this license server, type

mkclients -x

Cadence installation software and the configure utility continue.

Configure the clients file $\langle y/n/q \rangle$ [y] ->

All utilities continue.

Enter the top installation directory

2. Type the path to the top directory which stores the installed Cadence products (only in the mkclients -x utility).

This is the installation directory referred to as $install_dir$. This path is the basis for all the information in the clients file. Occasionally, you need to use a different path, such as one starting with /net, in the licensing files. The path must be to a <u>Cadence Hierarchy</u> that includes tools/bin, share/license, and other directories. The prompts continue with this prompt if the utility cannot find the tools link.

```
Can't find the /usr/cds/tools link. Create it?
```

- **3.** If the tools link does not exist, create it by typing y at the prompt.
- **4.** To configure the clients file, type y (only in the configure utility).

```
Create a new clients file [c] or append to the existing one [a]
```

5. If a clients file exists, specify whether you want to add to the existing file or create a new file.

How to Configure Licensing

If you create a new file, the utility copies the existing file to clients.month.day.hour:minute, reflecting the timestamp on the existing file. The configure utility continues.

Override the default?

6. To allow all workstations to access this license server, type n to use the defaults (only in the configure utility).

/Important

If you do not override the defaults and then press Return for the host name, all workstations can use the Cadence products.

7. To identify specific workstations that can access this license server, type y to override the defaults and follow these steps:

Enter the host name of the client

☐ Type the host name of the application client that will use the license file, or type an asterisk (*) to allow all workstations to use licenses from the license server.

Enter the path to the license file from hostname

Important

If you override the defaults and then press Return for the host name, only this workstation can use the Cadence products.

Specify the license file for the workstation you just listed.

The workstation must be able to access the path exactly as typed. For example, if the workstation uses an automount path of */net*, you would type something like this:

/net/sunny/usr/cds/share/license/license.abcd1234

8. Repeat these steps for each application client.

Sample Dialog

For example, if you were adding sunrise to a clients file on a license server named sunny, sunny is already in the license file. The prompts from the mkclients -x utility would look like what follows. Note that sunny and sunrise will be the only workstations that can access the license file.

How to Configure Licensing

```
# only in configure
Configure the clients file <y/n/q> [y] ->
*******************
Override the default? <y/n/q> [n] -> y
                                                # only in configure
Enter the installation directory <q to quit>
[/usr/cds] ->
The existing clients file lists the following clients:
sunny /usr/cds/share/license/license.abcd1234
______
Create a new clients file [c] or append to the existing one [a]
<q to quit> [c] -> a
When you finish adding host names, press <CR> at the prompt.
Enter the host name of the client
<* for all, <CR> to end input, q to quit> -> sunrise
Enter the path to the license file from sunrise
<q to quit> [/net/sunny/usr/cds/share/license/license.abcd1234] ->
Enter the host name of the client
<* for all, <CR> to end input, q to quit> ->
Clients file modified. Old copy moved to clients. Nov. 28.15:48
```

Editing the License Server's Boot Script

The rc.add utility adds the rc.lic script to the license server's boot script so that the license-server daemons start when the computer reboots. The utilities also let you start the

How to Configure Licensing

license daemons now or force running license daemons to read the new license file.

1. Continue from Cadence installation software or the configure utility, or start rc.lic.

To start rc.lic, as root type

rc.lic

Cadence installation software and the configure utility continue by running the rc.add utility. Respond to the continuing prompts.

Edit hostname's boot script?

2. Type y to add the rc.lic script to the license server's boot script (only in the configure utility).

As root you can add rc.lic to the license server's boot script. The rc.add utility is not interactive.

- ☐ Type the root password at the prompt (only in the configure utility).
- ☐ Type exit to exit root (only in the configure utility).
- ☐ Type exit to return to Cadence installation software (only if you're in Cadence installation software).

If you are not root, you cannot edit the boot script, but you are still able to start the license daemons (depending on permissions and the lmgrd options).

Start the license server daemons?

3. If you are <u>Setting Up Fault-Tolerant License Servers</u>, type n so that you do not start the license daemons (only in the configure utility).

You must <u>start</u> the license daemons on each license server within three minutes of starting the license daemons on the first license server.

4. If the Cadence license daemons are already running, the software prompts you to restart the license daemons or force the license daemons to read the license file.

Decide if you must shut the license daemons down.

What Changed	IIICANSA	Reread License File
Path to the license file	3	
Name of the license file	3	

How to Configure Licensing

SERVER host name	3	
TCP/IP port numbers	3	
Contents of options file	3	
Path to the options file	3	
Contents of license file (other than the above)		3

- **5.** If the Cadence license daemons are not running, type y at the prompt to start the license daemons.
- **6.** From the Cadence installation software Main Menu, choose *Test Installed Products*.

This runs Imstat; but for nonapparent errors, look at the debug log file.

To verify the license daemons manually, type

```
cd install_dir/tools/bin
./lmstat -c license_file
```

7. If you have multiple license servers, repeat this entire procedure (beginning with <u>Using</u> Cadence Installation Software) on each license server.

Sample Dialog

For example, the output from the rc.add utility looks like this.

```
Edit sunny's boot script? <y/n/q> [y] -> # only in lic_config -x

Type the root password at the prompt and then type './rc.add'.

Once rc.add completes and the UNIX prompt returns, type 'exit' to continue configuration.

Password: # rc.add

Copying the startup script (rc.lic) to /etc directory . . .

Startup script (rc.lic) added to /etc/rc.local

For more information about licensing utilities, see the 'Software Installation and License Management Reference'.
```

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exit

If you were able to become root and run rc.add, you are done editing the boot script.

At this point, you should be able to start the license daemons. However, you can *only* start them successfully on the computer specified as the license server.

```
Type 'n' to the next prompt if
```

o The daemons are already running

Start the license server daemons? $\langle y/n/q \rangle$ [n] -> y

o You are configuring the license server files on another workstation

```
Starting Cadence license daemons

Old debug log files in /usr/tmp:
```

-rw-r--r- 1 cdsmgr 1127 Nov 28 14:38 /usr/tmp/license.log.Nov.28.14:38

Configuring Licensing without Utilities

This section describes how to configure licensing using an editor. Cadence products do not interfere with other FLEXIm-based software if you configure the Cadence products by following the Cadence procedures.

This section describes

- Creating the Tools Link
- Modifying the License File
- Creating the Clients File
- Creating the Daemon Startup Script
- Editing the License Server's Boot Script

How to Configure Licensing

Starting the License Daemons

When configuring licenses, you may also need to modify some of these files:

license file

```
install_dir/share/license/rc.lic
install_dir/share/license/clients
/etc/rc.local, /etc/inittab

/sbin/rc2.d or /etc/rc2.d directory
install dir/tools link
```

Creating the Tools Link

If you do not configure the software with <u>Cadence installation software</u> or the other licensing utilities, or if you do not have a tools link, you must create a tools link by following these steps:

1. Change to the installation directory.

```
cd install dir
```

2. Create the tools link.

```
ln -s tools.xxx tools
```

tools.xxx is the platform-specific directory listed below.

Platform	Directory Name	Platform	Directory Name
HP Series 700	tools.hppa	Solaris	tools.sun4v
IBM RS/6000	tools.ibmrs	Linux	tools.lnx86

The tools link lets the Cadence software find the appropriate executable files for your computer's architecture easily. The section on the <u>Cadence Hierarchy</u> illustrates this link.

Modifying the License File

Even though your license files are for specific host IDs, the host name does not identify the license server. You must add the host name and verify the daemon path in the license file.

To edit the license file, follow these steps:

- 1. Gather the information you need by completing the checklist.
- 2. On the license server, log in as cdsmgr or another non-root account.

How to Configure Licensing

Cadence recommends creating an account, such as cdsmgr, exclusively for managing Cadence software so that cdsmgr can manage the software without root permission.

3. Change to the Cadence installation directory.

```
cd install dir
```

4. Verify the host ID of the license server.

```
tools/bin/lmhostid
```

The computer returns the host ID expected by Cadence licensing.

```
lmhostid - Copyright (C) 1989-1999 Macrovision Software, Inc. The FLEXlm Host ID of this machine is "abcd1234"
```

Note the host ID. Replace *HOSTID* in these procedures with the host ID of the computer.

5. On the license server, change to the <code>install_dir/share/license</code> directory.

```
cd share/license
```

6. Edit the license file with an editor.

Note: Licensing files are case sensitive.

The license file lists the license servers:

```
SERVER Cadence SERVER HOSTID port number
```

□ Compare your license-server host ID to the host ID on the <u>SERVER</u> line in the file.

The HOSTID on the SERVER line of the license file must match the host ID of your license server.

Add the correct host name on the SERVER line.

Replace Cadence_SERVER with the host name for each corresponding host ID. A sample line for a license server with a host ID of abcd1234 is

```
SERVER sunny abcd1234 5280
```

□ Edit the port number (optional).

Replace port_number with the number of the port that Cadence licensing software should use. The Cadence default is 5280, but you can specify any unused port.

☐ On the cdslmd DAEMON line, type the absolute path to the cdslmd daemon.

The line is similar to:

```
DAEMON cdslmd /usr/cds/tools/bin
```

If your path includes spaces, enclose the path with quotation marks, as shown:

How to Configure Licensing

DAEMON cdslmd "c:\Program Files\Cadence Design Systems\Cadence License Manager\cdslmd.exe"

7. Save the license file and exit the editor.

Creating the Clients File

The clients file is one of several methods by which your Cadence applications <u>locate licenses</u>. If you do not use a clients file, go on to <u>Starting the License Daemons</u>.

Follow the steps below to create <code>install_dir/share/license/clients</code>.

- 1. On the license server, log in as cdsmgr or another non-root account.
- **2.** Change to the <code>install_dir/share/license</code> directory.

```
cd install dir/share/license
```

3. Copy the clients.sample template file to clients.

```
cp clients.sample clients
```

4. Change the permissions of the new file.

```
chmod 644 clients
```

5. Edit the new clients file with an editor.

The lines in the clients file use this syntax: port@host

Add the host name and the license-server name using the port@host syntax.

```
sunny 5280@breezy
```

The lines in the clients file also use this syntax:

```
hostname license file
```

Add the host name (hostname) and the correct path to the license file (license.HOSTID) for each workstation that can run Cadence software. This is the path that the workstation uses to find the license file, such as

```
sunny /usr/cds/share/license/license.abcd1234
```

For a local license file, use the absolute path to the license file. For a remote license file, use the network path, such as /net, to the license file. Use an asterisk (*) for hostname to let all application clients access the license file, such as

- * /usr/cds/share/license/license.abcd1234
- If you are configuring fault-tolerant license servers, specify the port@host syntax as follows:

```
sunny 5280@sunny;5280@breezy;5280@windy
```

How to Configure Licensing

If you are configuring fault-tolerant license servers and if <code>install_dir</code> is not identical on each license server (for example, the network sees some of the paths as /net), add lines to the clients file to identify the different <code>install_dir</code> paths, such as

```
sunny /usr/cds/share/license/license.abcd1234
sunny /net/sunrise/usr/cds/share/license/license.abcd1234
```

- Save the file and exit the editor.
- **6.** If you are setting up fault-tolerant licensing, copy the clients file to the second and third license servers.

For example, in the following line, replace *server2* with the name of the second license server.

rcp /usr/cds/share/license/clients server2:/usr/cds/share/license

Creating the Daemon Startup Script

Cadence licensing requires that both the lmgrd and cdslmd daemons be running. Using a script is a convenient way to always

- Let users start the license daemons easily
- Start the license daemons with the same options
- Use the same log file (old log file renamed in same location)
- Use the same license file

To create a script to start the license daemons, follow these steps:

- 1. On the license server, log in as root.
- **2.** Change to the *install_dir*/share/license directory. cd *install_dir*/share/license

3.	Copy	rclic.	sample	to /	etc/	rc.	lic
----	------	--------	--------	------	------	-----	-----

Platform	Copy to
HP Series 700 Solaris (optional)	/etc/rc.lic
IBM RS/6000	/etc/rc.lic

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Platform	Copy to
Solaris (optional) HP Series 700 (optional) IBM RS/6000 (optional)	/etc/rc2.d/S??cds_lic where the ?? is an S??-numbered file

4. Open the new /etc/rc.lic file with any text editor.

The sample file contains place-holding variables, which you need to replace with your own configuration information.

Replace	With
INSTALL_DIR	Absolute path to the installed Cadence software.
LICENSE_FILE	Absolute path to the license file.
LOG_DIR	Absolute path to the log-file directory
LOG_FILE	Optional. Absolute path to the debug log file. The default is $/usr/tmp/license.log$
LMGRD_OPTS	Optional. Any options to use when starting the license daemon, such as Imgrd $-t$ or $lmgrd -p$. Minimize the chance of users shutting the license daemons down inadvertently by starting the $lmgrd$ daemon with -2 $-p$ or $-x$ options:

If you want to run your own log-file filter, incorporate your filter into your rc.lic file.

- 5. Save the file and exit the editor.
- **6.** Change the ownership of /etc/rc.lic to cdsmgr.

chown cdsmgr /etc/rc.lic

7. Give the file the correct permissions.

Platform	Command	
HP Series 700 SunOS 4.1.3 Solaris (optional)	chmod 6744 /etc/rc.lic	
IBM RS/6000	chmod 744 /etc/rc.lic	

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Platform	Command
Solaris HP Series 700 (optional) IBM RS/6000 (optional)	chmod 6744 /etc/rc2.d/S??cds_lic

Editing the License Server's Boot Script

If you want the license daemons to start every time the license server reboots, add the startup script to the license server's boot script by following these steps:

- 1. On the license server, log in as root.
- 2. Change to the /etc directory.

cd /etc

3. To save the existing boot script listed below, copy it to a different name.

Platform	Name of Boot Script
HP and Solaris (optional)	/etc/inittab
IBM RS/6000	/etc/inittab
Solaris	Not applicable

For example, on a HP, type

cp ./etc/inittab /cic/inittab.old

4. Open the original file with an editor.

Add the following lines to the end of the file.

Platform	File Name	Lines to Add
HP Series 700 Solaris (optional)	/etc/inittab	# Starting the Cadence license server cds::once:sh /etc/rc.lic
IBM RS/6000	/etc/inittab	# Starting the Cadence license server cds:2:once:sh /etc/rc.lic

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Platform	File Name	Lines to Add
Solaris HP Series 700 (optional) IBM RS/6000 (optional)	/etc/rc2.d S??cds_lic	Copy rc.lic to /etc/rc2.d/S??cds_lic where the ?? is an S??-numbered file

5. Save the file and exit the editor.

Starting the License Daemons

After you configure the license server (or all license servers in fault-tolerant licensing), start the license daemons without rebooting the license servers.

Note: You can configure other licensing options either now or later. For example, you can use an options file to define work groups or reserve copies of a feature for specific users. If you decide to use options later, you will need to stop and restart the daemons at that time.

Important

If you are setting up fault-tolerant licensing, start the daemons on each license server within three minutes of starting the first daemon.

To start the license daemons, follow these steps:

- 1. On the license server, log in as cdsmgr or another non-root user.
- 2. If the Cadence license daemons are already running, the software prompts you to restart the daemons or force the license daemons to read the license file.

How to Configure Licensing

Decide if you must shut the license daemons down.

What Changed	Stop and Restart License Daemons	Reread License File using <i>Imreread</i>
Path to the license file	3	
Name of the license file	3	
SERVER host name	3	
TCP/IP port numbers	3	
Contents of options file	3	
Path to the options file	3	
Contents of license file (other than the above)		3

 If you are installing software for the first time or the license daemons are not running, type

```
/etc/rc.lic
```

If this is not the first time you are starting the daemons and you are directing the daemon output to the same log file, a message might indicate the location of earlier debug log files.

Starting Cadence license daemons

If you are adding software, use lmreread by typing

```
lmreread -c license_file
```

For fault-tolerant license servers, use 1mreread on one license server.

If you have combined your Cadence license file with non-Cadence FLEXIm-based licenses, specify the desired license daemon to reread the license file, such as.

```
lmreread -c license file cdslmd
```

☐ If the new license file contains changes to licenses currently in use, users must exit and restart the applications to use the new features.

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3. If you see a "Trying connection to host" message, stop and restart the daemons.

This message indicates that you are setting up <u>fault-tolerant</u> licensing. You must start the license daemons on all three license servers within three minutes. If you don't start the daemons on each server within three minutes, the first daemon shuts down. You cannot change this three-minute requirement.

- **4.** If you are setting up multiple independent license servers, repeat these steps on each license server.
- **5.** Make sure that the license daemons are up and running.

The FLEXIm daemon is lmgrd and the Cadence daemon is cdslmd. Type

```
cd install_dir/tools/bin
./lmstat -c license_file
```

You see messages similar to these.

```
lmstat - Copyright (C) 1989-1999 Macrovision Software, Inc.
Flexible License Manager status on Tue 10/24/95 9:25
License server status (/usr/cds/share/license/license.abcd1234):
    sunny: license server UP (MASTER)
Vendor daemon status (on sunny):
    cdslmd: UP
```

If the license server is UP, the lmgrd daemon is running. If the cdslmd status is UP, the cdslmd vendor daemon is running.

- If the daemons are not running, start them.
- □ If you are using fault-tolerant licensing, complete this step on one license server.
- ☐ If you are using multiple independent license servers, complete this step on each license server.
- **6.** Test the changes to the boot script (optional).

Determine if the license daemons start when the license server reboots by rebooting the license server now. If the setup is correct, the license daemons start, and the file systems

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mount and link. A computer will not boot properly if one of the essential files, such as one of those listed below, is not correct.

Platform	File Name
HP Series 700	/etc/inittab, /etc/checklist, /etc/rc.lic
IBM RS/6000	<pre>/etc/inittab, /etc/filesystems, /etc/rc.lic</pre>
Solaris	<pre>/etc/rc2.d/S??cds_lic, /etc/vfstab</pre>

7. To set up multiple independent license servers, repeat these procedures (beginning with Creating the Tools Link on each license server).

After You Configure Licensing

After you configure licensing, you still have a few steps left before you can use the Cadence products.

Backing Up Your Licensing Files

Now that you have configured licensing, it is a good idea to back up the files you just configured, such as the install_dir/share/license/* file.

Letting Users Access Cadence Products

To run licensed Cadence products, users must be able to locate the Cadence products and the license files, either locally or remotely.

- **1.** For the C-shell, users need to edit their ~/.cshrc files.
 - Add the Cadence products to their search path.

```
set path = (install_dir/tools/bin $path)
```

Specify how to locate the license file.

To locate the license files with the clients file, you do not need to do anything.

Depending on the method of <u>locating</u> the license files, you need to set other variables.

Source the file.

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source ~/.cshrc

- 2. For the Bourne or Korn shell, users need to edit their ~/.profile files.
 - Set the search path.

```
PATH=install_dir/tools/bin:$PATH export PATH
```

- ☐ To locate the license files with the clients file, you do not need to do anything.
- □ To locate the license files with a variable, such as CDS_LIC_FILE or LM_LICENSE_FILE, set the variable.

```
CDS_LIC_FILE=pathA:pathB:pathC:port@host
export CDS_LIC_FILE
```

To source the file, type

```
. ./.profile
```

3. Specific Cadence applications require additional paths, such as

```
install_dir/tools/dfII/bin
```

See your application's configuration guide in cdsdoc for details.

4. If users will be running Cadence software in the background, they need to make sure their stty settings do not prevent it.

Cadence software usually writes information to the terminal. Occasionally, users have terminals set up to prevent software running in the background from writing to the terminal. If you plan to run the Cadence software in the background, follow these steps:

 Determine if the workstation configuration prevents background jobs from writing to the terminal by typing

```
stty
```

If you see tostop without a dash (as the following example shows), background programs cannot write to the terminal. The programs hang.

```
speed 9600 baud;
-inpck -istrip imaxbel
iexten crt tostop
```

Users on the above workstation cannot run Cadence products in the background. They must run them in the foreground without the ampersand (&), such as awb instead of awb &. Or, they can reset the terminal and then invoke the tool in the background.

☐ To run Cadence software in the background, reset your terminal by typing

```
stty -tostop
```

For more information, see your operating system documentation.

How to Configure Licensing

Managing Licenses

You can restrict user access and manage licensing beyond the limits provided by the license file. For example, use an options file or a clients file to restrict licenses to specific workstations even without node-locked licenses in the license file.

You can use an options file to

- Return idle licenses to the license pool
- <u>Define groups</u> so that you do not have to list individual users or hosts
- Reserve copies of a feature for specific workstations or specific users
- Allow or prevent specific users from using certain products
- Specify an enhanced log file

Not all Cadence products support all options equally. Search your product's documentation in cdsdoc to see which options your product recognizes.

Creating an Options File

To create an options file, complete the following steps:

1. Log in as cdsmgr or another user.

Note: Because a user can misuse the options file, restrict end-users' ability to start the daemons and modify the options file.

2. Change to the <code>install_dir/share/license</code> directory.

```
cd install_dir/share/license
```

3. If you want to restrict certain products, determine the licenses the products use.

A product can require more than one unique license feature (as listed in Product to Feature Map). A FEATURE line in the license file lists each license.

For example, to manage access to Verilog-XL, you must specify each feature used by Verilog-XL. The license file lists all licensed features, so it includes these entries as well as many others.

```
FEATURE VERILOG-XL cdslmd 2.300 6-dec-1996 2 1BF890030EABFBBEB324 "J" 51200322
FEATURE VXL-VLS cdslmd 2.300 6-dec-1996 2 1BF890030EABFBBEB324 "J" 51200322
FEATURE 100 cdslmd 4.400 6-dec-1996 2 1BF890030EABFBBEB324 "UHD" 51200322
FEATURE 21900 cdslmd 5.000 6-dec-1996 2 1BF890030EABFBBEB324 "UHD" 51200322
```

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The <u>License Map.HOSTID</u> file corresponding to this license file includes these lines.

```
26000 2 9504 Verilog-XL
VERILOG-XL 2.3 J
VXL-VLS 2.3 J
100 4.4 UHD
21900 5.0 UHD
```

To manage access to Verilog-XL, you must list VERILOG-XL, VXL-VLS, 100, 21900, and all the other features under 26000.

4. Use a text editor to create and edit an options file.

```
Use install_dir/share/license/options.sample as a guide.
```

A few points to remember:

- Comment lines can begin with a pound (#) sign or with any word other than a keyword.
- □ Lines have a limit of 2000 characters.
- □ A backslash (\) continues a line onto the next line.

/Important

If you restrict licenses, the restriction applies to the first FEATURE lines encountered in the <u>license file</u>. For example, if you reserve five licenses, you reserve the first five licenses in the license file, even if they are node locked. As an example, your license file has these 3 FEATURE lines for the same license,

```
FEATURE VXL-VLS cdslmd 2.300 6-dec-1996 1 1BF890030EABFBBEB324 "J" 51200322 FEATURE VXL-VLS cdslmd 2.300 6-dec-1996 4 1BF890030EABFBBEB424 "J" FEATURE VXL-VLS cdslmd 2.300 6-dec-1996 2 1BF890030EABFBBEB524 "J"
```

You have reserved both the node-locked and the first line of floating licenses. Restricting licenses is a complex procedure. For more information, see the *FLEXIm User Guide* at

```
http://www.macrovision.com
```

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The options file uses this format.

```
#Sample Options
GROUP name list_of_users
USER_GROUP name list_of_users
HOST_GROUP groupname list_of_hosts
TIMEOUT feature seconds
NOLOG { IN | OUT | DENIED | QUEUED }
REPORTLOG file
RESERVE number feature { USER | HOST | DISPLAY | GROUP | HOST_GROUP | INTERNET }
INCLUDE feature { USER | HOST | DISPLAY | GROUP | HOST_GROUP | INTERNET } name
INCLUDEALL { USER | HOST | DISPLAY | GROUP | HOST_GROUP | INTERNET } name
EXCLUDE feature { USER | HOST | DISPLAY | GROUP | HOST_GROUP | INTERNET } name
EXCLUDEALL { USER | HOST | DISPLAY | GROUP | HOST_GROUP | INTERNET } name
EXCLUDEALL { USER | HOST | DISPLAY | GROUP | HOST_GROUP | INTERNET } name
```

5. To use groups instead of listing individual users or hosts, add GROUP, USER_GROUP, or HOST_GROUP lines to the options file.

Creating groups usually makes the options file easier to maintain because you do not need to list individual users or hosts. The FLEXIm license manager cannot use UNIX groups.

```
GROUP groupname name1 name2 name3 name4 name5 ...
```

USER_GROUP is an alias for GROUP and does the same thing.

USER_GROUP groupname name1 name2 name3 name4 name5 ...

You concatenate multiple GROUP and USER_GROUP lines on one list.

GROUP or USER_GROUP		
Default:	No groups	
Minimum:	Not applicable	
Maximum:	None	

For example, to create a cadgroup with users gary, julie, and jan, the entry is GROUP cadgroup gary julie jan

After you create the group, you can reserve, include, or prevent cadgroup from using certain products. To define a group of workstations for which you can include, exclude, or reserve licenses, use HOST GROUP lines.

HOST_GROUP groupname host1 host2 host3 host4 host5

For example, to create an icwks group for the sunrise, sunset, and orange workstations, the entry is

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HOST_GROUP icwks sunrise sunset orange

HOST_GROUP	
Default:	No groups defined
Minimum:	Not applicable
Maximum:	Unlimited number of groups

Reserving Licenses

➤ To reserve licenses, add a RESERVE line to the options file.

For example, you might want to reserve some Cadence products for specific engineers or hosts.

```
RESERVE # feature type name
```

where

#Number of licenses reserved.

featureName of the feature reserved.

type GROUP, USER, HOST, DISPLAY, or INTERNET address. The FLEXIm license manager cannot use UNIX groups.

name Name of the user group, host, display, or Internet address for the restricted feature. The Internet address uses the n.n[[.n].n] format and can include asterisks as wildcards.

RESERVE	
Default:	No licenses reserved
Minimum:	Not applicable
Maximum:	Determined by the number of licenses in the file

For example, to reserve one copy of Verilog-XL for a user named jan, the options file entry is

```
RESERVE 1 VERILOG-XL USER jan
RESERVE 1 VXL-VLS USER jan
RESERVE 1 100 USER jan
RESERVE 1 21900 USER jan
```

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You can reserve licenses for a specific display. In an X Window System[™] environment, a user can run applications from several workstations while always using one particular display. You can include a DISPLAY entry in the options file.

To reserve a specified number of licenses for cadgroup, the entry might be

```
RESERVE 3 VERILOG-XL GROUP cadgroup
RESERVE 3 VXL-VLS GROUP cadgroup
RESERVE 3 100 GROUP cadgroup
RESERVE 3 21900 GROUP cadgroup
```

Timing Out Idle Licenses

To have products return their licenses to the license pool when they are idle, add a TIMEOUT line to the options file.

As long as users have the license checked out, the license is unavailable to anyone else. If no more licenses are available for that product, no one else can use the product. However, the product, not the user, determines when the product is idle (search your product's documentation in cdsdoc to determine if your product supports TIMEOUT).

Depending on your product, you can specify how long a license can be inactive before being available for someone else. If you set a time-out for a feature and another user requests the feature when no more licenses are available, a license that has been inactive for the specified time returns to the license pool for the user requesting it.

If your product supports TIMEOUT, you can set a maximum amount of time (in seconds) that a license can remain inactive.

TIMEOUT feature seconds

TIME-OUT	
Default:	Licenses do not time out
Minimum:	Fifteen minutes (900 seconds)
Maximum:	None

For example, if you want Concept™ to time out in 30 minutes of inactivity, the entry is TIMEOUT concept 1800

Restricting Access

➤ To allow or prevent access to Cadence products, add INCLUDE, EXCLUDE, INCLUDEALL, and EXCLUDEALL lines to the options file.

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INCLUDE feature type name EXCLUDE feature type name INCLUDEALL feature type name EXCLUDEALL feature type name

where

feature Name of feature restricted.

type USER, GROUP, HOST, DISPLAY, or INTERNET.

name Name of user, group, host, display, or the Internet address for the restricted feature. The Internet address uses the n.n[[.n].n] format and can include asterisks as wildcards.

INCLUDE, INCLUDEALL, EXCLUDEALL, EXCLUDE		
Defaults: Every user can use the licenses		
	Determined by the number of licenses in the file	

/Important

If you use an INCLUDE line, you automatically exclude everyone else in that category (USER, GROUP, HOST, DISPLAY, or INTERNET). For example, if you include one user, you must specify all users to include those who can use the license. The number of USER, GROUP, HOST, DISPLAY, or INTERNET addresses that you want to restrict determines whether it is easier to use an INCLUDE or an EXCLUDE line.

The INCLUDE and EXCLUDE lines follow these rules of precedence:

- EXCLUDE those listed
- □ INCLUDE those listed, but exclude everyone else
- ☐ If there is no EXCLUDE or INCLUDE list, everyone can use the FEATURE
- ☐ If there is an EXCLUDE or INCLUDE list for a FEATURE, no one else can use the FEATURE
- ☐ The software excludes someone on both the INCLUDE and EXCLUDE lists
- □ For more information, refer to the Macrovision web site:

http://www.macrovision.com

In the example that follows, including a user named jan to use Verilog-XL forces you to specify everyone else who should be able to access the feature, such as the cadgroup.

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How to Configure Licensing

```
INCLUDE VERILOG-XL USER jan
INCLUDE VXL-VLS USER jan
INCLUDE 100 USER jan
INCLUDE 21900 USER jan
INCLUDE VERILOG-XL GROUP cadgroup
INCLUDE VXL-VLS GROUP cadgroup
INCLUDE 100 GROUP cadgroup
INCLUDE 21900 GROUP cadgroup
```

In the example that follows, including a host workstation named sunny forces you to specify the name of every host that should be able to access the feature.

```
INCLUDE VERILOG-XL HOST sunny INCLUDE VXL-VLS HOST sunny INCLUDE 100 HOST sunny INCLUDE 21900 HOST sunny
```

In the example that follows, including a display named sundown: 0 forces you to specify every display that should be able to access the feature.

```
INCLUDE VERILOG-XL DISPLAY sundown:0
INCLUDE VXL-VLS DISPLAY sundown:0
INCLUDE 100 DISPLAY sundown:0
INCLUDE 21900 DISPLAY sundown:0
```

In the example that follows, including an Internet address of 192.12.13.* forces you to specify every internet address that should be able to access the feature.

```
INCLUDE VERILOG-XL INTERNET 192.12.13.*
INCLUDE VXL-VLS INTERNET 192.12.13.*
INCLUDE 100 INTERNET 192.12.13.*
INCLUDE 21900 INTERNET 192.12.13.*
```

To exclude a user, group, host workstation, display, or Internet address from the list of authorized feature users, use the following:

```
EXCLUDE VERILOG-XL USER jan
EXCLUDE VERILOG-XL GROUP cadgroup
EXCLUDE VERILOG-XL HOST sunny
EXCLUDE VERILOG-XL DISPLAY sundown:0
EXCLUDE VERILOG-XL INTERNET 192.12.13.115
```

You can even manage all features served by the Cadence daemon, cdslmd. EXCLUDEALL prevents a user, host, group, or display from using all features served by cdslmd (or all daemons in the license file). INCLUDEALL lets a user, host, group, or display use all features served by cdslmd.

```
INCLUDEALL type name EXCLUDEALL type name
```

How to Configure Licensing

Limiting Log-File Messages

➤ To limit the messages recorded in the debug log file, add a NOLOG line to the options file.

Because the license daemons write many status messages to the debug log file, the file can grow quickly. To slow the growth of the file, you can limit the logging of several licensing messages. However, if you turn off the messages, gen_report cannot include the information in reports, which can cause the statistics to be inaccurate.

```
NOLOG IN | OUT | DENIED | QUEUED
```

where

IN Does not record licenses checked in.

OUT Does not record licenses checked out.

DENIED Does not record licenses denied, licenses not available, or when an excluded user tries to check out a license.

QUEUED Does not record when a user chooses to queue for an available feature.

Search your product's documentation in cdsdoc to see if your product supports queueing.

NOLOG	
	All licensing messages recorded in the debug log file

For example, to avoid logging messages about queueing (if it is available), use NOLOG QUEUED

If you want to run your own log-file filter, you can incorporate your filter into your rc.lic file.

Note: Cadence no longer provides the gen_report utility. For an enhanced report generator that reads the new FLEXIm report log files, contact a third-party vendor.

Creating Enhanced Log Files

➤ If you want to use a third-party report generator to create detailed reports, specify a report log file in the options file.

You can generate additional usage information from the REPORTLOG log file, a non-ASCII log file, by using third-party report generators.

How to Configure Licensing

REPORTLOG +file_name

If you begin file_name with a plus (+) sign, you append the file instead of overwriting it each time the license daemons start.

REPORTLOG	
Default:	No report log file

After Modifying the Options File

- 1. Save and exit the options file.
- 2. If your license file contains both node-locked and floating licenses, follow the steps in When Your License File Contains Both Node-Locked and Floating Licenses.
- 3. Edit the license file.

Enter the full path to the options file on the DAEMON line after the cdslmd path. For example, enter a line similar to

DAEMON cdslmd cdslmd_path install_dir/share/license/options

- **4.** For fault-tolerant licensing, follow these steps:
 - Copy the options file to the second and third servers.
 - Add the absolute path to the options file to the DAEMON line of the license file on the second and third servers, as in the last step.

Note: If you use automount to reference licensing files in fault-tolerant licensing, the license server cannot serve licenses if the remote computer goes down.

5. If the license daemons are already running, stop and restart them.

Setting Up Fault-Tolerant License Servers

In <u>fault-tolerant licensing</u>, each license server needs the Cadence licensing software and a copy of the same or equivalent license file and the optional clients and options files.

To set up fault-tolerant license servers, follow these steps:

- After installing and configuring the first license server, install the Cadence licensing software tools using Cadence installation software on the second and third license servers.
- **2.** Copy the licensing files to the second and third license servers.

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Copy the license file to the second and third license servers.

You must list the license servers in the same sequence in each license file. You need to edit the $install_dir$ paths if $install_dir$ is not the same path on each license server.

Copy the clients file (if used) to the second and third license servers.

```
rcp install_dir/share/license/clients \
server2:install_dir/share/license/clients
```

- Edit the clients file on each license server if install_dir is not the same path on each license server
- Copy the options file (if used) to the second and third license servers.
- 3. <u>Start</u> the license daemons on each license server within three minutes of starting the first daemon.

```
/etc/rc.lic
```

/Important

Users starting the license server daemons must have write permission to the debug log file.

In fault-tolerant licensing, the master server maintains the license debug log file. The other servers do not output licensing transactions to their debug log files. You can use $lmstat -a \ or -c \ to \ identify \ the \ master \ server.$

You see messages similar to these.

```
lmstat - Copyright (C) 1989-1999 Macrovision Software, Inc.
Flexible License Manager status on Tue 11/28/95 9:25
License server status (/usr/cds/share/license/license.abcd1234):
         sunny: license server UP (MASTER)
         orange: license server UP
         sunlight: license server UP
```

Running Two Versions of Cadence Software

If you want to continue running your older Cadence software while also letting some users run the newer software, follow these steps:

- 1. Use Cadence installation software to install the new software in a different hierarchy.
- 2. Stop the licensing daemons.

How to Configure Licensing

- **3.** Configure licensing (license file, clients file, rc.lic) for the new software with Cadence installation software, the licensing utilities, or with an editor.
- 4. From the old hierarchy, create symbolic links to the new licensing files.

The new license file lets the older software run, but you must use the newer license files and license daemons. To use both versions, link the old license files to the newer files.

- Occasionally, the name of a feature that a product uses changes, in which case you
 must copy the older feature to the new license file if it is not already there.
- □ Link your old license file to your new license file.

```
ln -s new_license_file old_license_file
```

Link your old clients file to your new clients file.

```
ln -s new_clients_file old_clients_file
```

- **5.** Make sure workstations can access the new license file.
- **6.** If the license daemons are already running, <u>stop</u> them.
- 7. Start the license daemons.
- **8.** Users specify the hierarchy to use by setting their search <u>paths</u> to point to the correct <u>install_dir/tools/bin</u>.

Users should only have one Cadence hierarchy in their path at any given time.

C-shell users can set a shell variable to point to the desired installation

```
setenv CDS old_install_dir
```

and add the following line to their .cshrc files:

```
set path = ($CDS/tools/bin $path)
```

Source the file:

source ~/.cshrc

Specifying Time-Outs

You can specify several different types of time-outs that affect licensing.

Server-Server Time-Out

In a fault-tolerant configuration, you can specify the number of seconds in which the license daemons must connect to each other if you start the license daemons with the lmggrd -t option. The default time-out is 10 seconds. There is no maximum.

How to Configure Licensing

Client-Server

On a busy network or if the license server is busy with other tasks or with a large number of application clients, products are not able to check licenses out when the connection to the license server times out before the server can return a result to the client.

You can increase this time limit by specifying the number of seconds in which to time out between client workstation and license server. Use the environment variable CDS_LIC_TIMEOUT. The default is 10 seconds. There is no minimum or maximum.

For example, to have a connection between the application client and the license-server time-out if you have not received a response within three minutes, add this line to the user's ~/.cshrc.

setenv CDS_LIC_TIMEOUT 180

Idle Client

You can specify the maximum amount of time that an application can run without some activity before returning licenses to the license pool. All applications do not support this time-out.

License Maintenance

This chapter contains information about the following topics:

- <u>Tracking Licence Expiration</u> on page 53
- Monitoring Licensing on page 55
- Stopping and Starting the License Daemons on page 60
- Changing the License File on page 63

Tracking Licence Expiration

If you do not have permanent licenses for your Cadence software, and if you are not using the automatic update service, then you need to track your license expiration dates. The worst way to find out about expired licenses is when the software returns a fatal error. There are several methods for checking your licenses ahead of time.

- <u>Server Model License Expiration Notification</u> on page 53
 Use the lmCheckExpiration.cds script to periodically check all your licenses.
- Client Model License Expiration Notification on page 55

Use the CDS_LIC_EXPIRE environment variable to tell so-equipped Cadence software to report license expiration warnings upon startup.

Note: Contact your Cadence Sales representative to order new licenses at least 10 days in advance of the expiration date.

Server Model License Expiration Notification

The lmCheckExpiration.cds script checks all licenses in the specified license file. You can schedule the script to run periodically on your system (using cron on UNIX, or the job scheduler on Windows) to notify you when licenses are close to expiring.

License Maintenance

The script has the following format:

```
lmCheckExpiration.cds
  [-c license_file] [-d days_to_expire] [-m email_address] [features]
```

Where:

parameter	description
-c license_file	Use the specified license file. You can specify a path to the license file, or port@host, or both as a concatenated, colon-separated list.
	The default is to look for and check the CDS_LIC_FILE, the clients file, or the LM_LICENSE_FILE, in that order.
-d days_to_expire	Include only those licenses expiring within the specified number of days.
	The default is to return only those licenses expiring today.
-m email_address	Send the expiration report to the specified address. The report is also written to the standard output (stdout.)
features	Specify a list of features (products) to check.
	If you do not specify any features, the default is to return information for all licenses served by the license server(s).

The script returns 0 for success, 1 if it cannot connect to any of the license servers, and 2 for an invalid argument.

If a license is going to expire within the specified number of days, the script writes a warning message to the stdout of the terminal from which it was started, and optionally sends mail to a specified user. The message includes the license name, version, expiration date, and the number of days before expiration.

For example, to check the status of licenses for cpe and feature 34500:

Show a message only if the licenses are expiring today:

```
\label{lmcheck} \mbox{lmCheckExpiration.cds -c } 5280@cds11574:/cds/share/license/license.dat -cpe 34500
```

■ Show and send a message if the licenses are expiring within 30 days:

```
lmCheckExpiration.cds -c 5280@cds11574:/cds/share/license/license.dat -
-d 30 -m user@company.com cpe 34500
```

This may generate the following message:

```
Warning: The following feature(s) are expiring soon:
```

License Maintenance

```
cpe 4.4 24-apr-2002 14 days 34500 4.4 09-may-2002 25 days
```

Client Model License Expiration Notification

Beginning in the summer of 2002, some new Cadence applications can notify you when their licenses are nearing their expiration dates. If a tool has this capability, it will be mentioned in the product's *Product Notes* or *What's New* documentation.

To use this new feature, set the CDS_LIC_EXPIRE environment variable and specify a number of days. Each time you start your Cadence tool, it will notify you if any of the licenses it checks out are expiring within that specified number of days.

Use the following formats to set the variable:

■ C-shell:

```
setenv CDS_LIC_EXPIRE <days>
```

Bourne and Korn shells:

```
CDS_LIC_EXPIRE=<days>; export CDS_LIC_EXPIRE
```

MS-DOS Window:

```
set CDS_LIC_EXPIRE=<days>
```

If a license is going to expire within the specified number of days, the tool writes a warning message to the stdout of the terminal from which it was started. The message includes the license name, version, expiration date, and the number of days before expiration.

For example:

Show a message only if the license is expiring today:

```
setenv CDS_LIC_EXPIRE 0
```

■ Show a message if the license is expiring within 30 days:

```
setenv CDS_LIC_EXPIRE 30
```

This may generate the following message:

```
Warning: The following feature(s) are expiring soon:

cpe 4.4 24-apr-2002 14 days

34500 4.4 09-may-2002 25 days
```

Monitoring Licensing

Licensing requires little or no maintenance or monitoring, but you may need to

License Maintenance

- Know the <u>status</u> of your licenses or license daemons
- Look at the log files
- Determine the <u>license usage</u>
- Control or restrict the access to licenses in some way
- Change the license file
- Start the license daemons
- Stop the license daemons

This reference assumes that the cdsmgr account you created during installation is the account you use to monitor and maintain Cadence licensing.

Because Macrovision provides the LM_LICENSE_FILE variable to specify the path to the license file, set LM_LICENSE_FILE before you run the licensing utilities so that you do not have to type the path to the license file for each utility.

For example, to determine the status of the license daemons, you usually specify the license file name and type

```
lmstat -a -c /usr/cds/share/license/license.abcd1234
```

If you will be using many licensing utilities during a session, set this variable in the shell where you will run the utilities.

```
setenv LM_LICENSE_FILE /usr/cds/share/license/license.abcd1234
```

then to retrieve the status, you only need to type

lmstat -a

License and Daemon Status

Use Imstat to display the status of the license servers, Cadence daemons, features, and users of each feature.

For example, if a license server named sunny uses the /usr/cds/share/license/license.abcd1234 license file, type

lmstat -a -c /usr/cds/share/license/license.abcd1234

License Maintenance

lmstat responds with something similar to this

```
lmstat - Copyright (C) 1989-1999 Macrovision Software, Inc.
Flexible License Manager status on Tue 11/21/99 11:40

License server status
(License file: /usr/cds/share/license.abcd1234):
sunny: license server UP (MASTER)

Vendor daemon status (on sunny):
cdslmd (v3.x): UP

Feature usage info:
    Users of VERILOG-XL: (Total of 100 licenses available)
    Users of 111: (Total of 100 licenses available)
    Users of VXL-VLS: (Total of 100 licenses available)
...
```

You can also use the port@host format to display the status of the license servers, Cadence daemons, features, and users of each feature. If 5280 is the port number you are using and the license server is running on sunny, type

lmstat -c 5280@sunny

License Maintenance

License Usage

The debug log file and the report log file collect different usage information.

Debug Log File

The license daemons record all license activity (licenses checked in and out, licenses denied, queues, and network problems) in a /usr/tmp/license.log debug log file (default).

Preferences

You can specify several debug log file preferences:

 Create a log file you can rename while the daemons are running (the default method of starting the daemons)

```
When you configure licensing, the utility creates an \underline{rc.lic} file (from the rclic.sample file) that starts the licensing daemons with this line:
```

```
lmgrd | sh -c 'while read line; do echo "$line" >> log_file; done'
```

When the daemons start with this method, you can rename the output log file without stopping the daemons. A new debug log file replaces it.

Create a log file that the computer does not delete as it reboots

The default method of starting the daemons creates the log file in /usr/tmp (/usr/tmp/license.log) instead of /tmp because the computer deletes the files in /tmp when the it reboots. You can modify the /etc/rc.lic file to place the debug log file in another location.

If the license-server boot script starts the license daemons the default way, /etc/rc.lic renames the license.log file with a .month.day.time extension, such as license.log.Nov.24.09:20:23, and creates a new license.log file.

■ <u>Limit the messages</u> recorded in the log file by editing the options file.

Because the licensing daemons and other processes share the same log file, the log file can grow very large, especially when stable licensing daemons serve many licenses. You can periodically remove old license.log files to save disk space. Do not remove an old log file until you have generated any desired licensing reports from it. Portions of a debug log file follow:

License Maintenance

```
15:33:50 (lmgrd)
                  This log is intended for debug purposes only.
15:33:50 (lmgrd)
                  There are many details in licensing policies
15:33:50 (lmgrd)
                  that are not reported in the information logged
15:33:50 (lmgrd)
                  here, so if you use this log file for any kind
15:33:50 (lmgrd)
                  of usage reporting you will generally produce
15:33:50 (lmgrd)
                  incorrect results.
15:33:50 (lmgrd)
15:33:50 (lmgrd) ------
15:33:50 (lmgrd)
15:33:50 (lmgrd)
15:33:50 (lmgrd) FLEXlm (v6.1f) started on cds10065 (Sun) (8/26/1999)
15:33:50 (lmgrd) FLEXlm Copyright 1988-1999, Macrovision Software, Inc.
15:33:50 (lmgrd) US Patents 5,390,297 and 5,671,412.
15:33:50 (lmgrd) World Wide Web: http://www.macrovision.com
15:33:50 (lmgrd) License file(s): license.dat
15:33:50 (lmgrd) lmgrd tcp-port 5280
15:33:50 (lmgrd) Starting vendor daemons ...
15:33:50 (lmgrd) Started cdslmd (internet tcp port 39412 pid 1520)
15:33:50 (cdslmd) FLEXlm version 6.1f
CADENCE ERROR MSG:
                        FEATURE "F6" with code "FC62A8E17705E28A6C3A" is
unsupported. Ignored.
15:33:50 (cdslmd) Using options file: "options"
15:33:50 (cdslmd) Feature F5 is not enabled yet
15:33:50 (cdslmd) Feature F5 is not enabled yet
15:33:50 (cdslmd) Feature F5 is not enabled yet
15:33:50 (cdslmd) EXPIRED: F7
15:33:50 (cdslmd) EXPIRED: F8
15:33:50 (cdslmd) Warning: F1 expires 1-sep-1999
15:33:50 (cdslmd) Server started on cds10065 for:
                                                       F1
15:33:50 (cdslmd) F1
                               F1
15:33:50 (cdslmd) F2
                                               F3
                               F2
15:33:50 (cdslmd) F4
                               F5
                                               FΆ
15:33:50 (cdslmd) FEATURE
                           F1 INACTIVITY TIMEOUT set to 900 seconds
15:33:50 (cdslmd) FEATURE
                           F1 INACTIVITY TIMEOUT set to 900 seconds
15:33:50 (cdslmd) FEATURE
                           F1 INACTIVITY TIMEOUT set to 900 seconds
15:33:50 (cdslmd) FEATURE
                           F2 INACTIVITY TIMEOUT set to 900 seconds
15:33:50 (cdslmd) FEATURE
                           F2 INACTIVITY TIMEOUT set to 900 seconds
                           F2 INACTIVITY TIMEOUT set to 900 seconds
15:33:50 (cdslmd) FEATURE
18:18:26 (cdslmd) OUT: "F1" jdoe@sunny
18:19:57 (cdslmd) OUT: "F2" joan@windy
18:21:42 (cdslmd) IN: "F1" jdoe@sunny
```

License Maintenance

```
18:22:28 (cdslmd) IN: "F2" joan@windy
18:41:48 (lmgrd) SHUTDOWN request from cdsmgr at node cloudy
18:41:48 (lmgrd) lmgrd will now shut down all the vendor daemons
18:41:48 (lmgrd) Shutting down cdslmd
18:41:48 (cdslmd) daemon shutdown requested - shutting down
```

The debug log file does not always give you the type of report you want for several reasons:

Because the debug log file does not record information about uncounted licenses, you cannot generate reports about site license usage.

The license file lists the quantity of site or uncounted licenses as zero.

- If you prevent certain messages from being recorded with the NOLOG option, you cannot include that information in reports.
- The information you really want goes to the report log file.

For an enhanced report generator, contact a third-party vendor or Macrovision.

Report Log File

You can generate additional usage information from the non-ASCII report log file by using third-party report generators.

Stopping and Starting the License Daemons

You need to stop and restart the license daemons

- After you modify
 - The path to the license file
 - ☐ The host name or port number in the license file
 - ☐ The options file
- To start a <u>new debug log file</u>

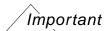
You must stop the license daemons carefully to prevent loss of users' data.

- Stopping the License Daemons
- Starting the License Daemons

License Maintenance

Stopping the License Daemons

If you are not the owner of the daemon, you will need to be root or be listed in lmadmin group or group 0 in /etc/group or NIS or its equivalent to stop the daemons.



Do **not** kill the license manager daemon while licenses are in use because the users could lose their data. Do **not** use the -9 option of the kill command.

Follow these steps to stop the daemons.

1. Notify users that you are terminating the license daemons so that they can exit the products properly.

If users do not exit before you shut the license daemons down, they will get the following message until the license server comes back up.

WARNING (LM 100) waiting <num_sec> seconds to regain <feature> license

2. Verify that no users are accessing FLEXIm licenses.

```
cd install_dir/tools/bin
./lmstat -a -c license_file
```

3. Terminate the licensing daemons.

```
./lmdown -c license_file
```

Note: You only need to execute lmdown on one node of a license fault tolerant system.

The lmdown utility shuts down ALL license daemons in the specified license file. If you do not specify a license file and you have multiple license files in your path, lmdown shuts down ALL license daemons in all license files. The license daemons write their last messages to the debug log file, close the file, and exit. All licenses granted by those daemons return to the license pool. If an application is still running when you terminate the license daemons, the next time the client program tries to verify its license, the license will not be valid.

Only use your operating system's kill command if lmdown does not work. If you started lmgrd with lmgrd -2 -p -x lmdown, you cannot use lmdown to shut the daemons down.

4. Verify that the license daemons are no longer running.

```
./lmstat -a -c license_file
```

Go to Starting the License Daemons

License Maintenance

Starting the License Daemons

If you have multiple license servers, restart the license daemons on each license server that you have shut down.

To restart the license daemons, follow these steps.

1. Verify that the daemons are not running.

```
cd install_dir/tools/bin
./lmstat -c license_file -a
```

If the license daemons are running, stop the daemons.

/Important

Do **not** kill the license manager daemon while licenses are in use because the users could lose their data. Do **not** use the -9 option of the kill command.

2. Start the license daemons.

You must have write permission to the log file to start the license daemons.

/Important

For fault-tolerant license servers, start the license daemons on each license server within three minutes of starting the first daemon.

- If the /etc/rc.lic script starts the license daemons, type /etc/rc.lic
- $\ \square$ If you did not create the script to start the license daemons, type

```
nohup lmgrd -c license_file > /usr/tmp/license.log &
```

This command starts the license daemons using $license_file$, records the licensing activity in /usr/tmp/license.log, and runs in the background.

Check the log file for error messages.

If you see the following message in the license log file, /usr/tmp/license.log, another license daemon is probably running.

ERROR: date time (cdslmd) Retrying socket bind (address in use)

Solaris computers sometimes take as long as five minutes to close a port after you have shut down the daemons. Wait and try again.

3. Verify that the license daemons are up and running.

```
./lmstat -a -c license file
```

License Maintenance

Changing the License File

If you modify a license file while the license daemons are running, such as when you receive a new license file, you can use lmreread to force the daemons to read the new license files. The license daemons do not see the changes until they restart or reread the license file.

Follow these steps to force the daemons to see the new license file.

- 1. On the license server, log in as cdsmgr.
- 2. Configure the new license file with SoftLoad or an editor.
- **3.** Decide if you must shut down the license daemons.

What Changed	Stop and Restart License Daemons	Reread License File
Path to the license file	3	
Name of the license file	3	
SERVER host name	3	
TCP/IP port numbers	3	
Contents of options file	3	
Path to the options file	3	
Contents of license file (other than the above)		3

- **4.** Stop and restart the daemons if you need to.
- **5.** If the license daemons need to reread the license file and the license daemons are still running, force the license daemons to read the new license file.

```
install_dir/tools/bin/<u>Imreread</u> -c license_file
```

For fault-tolerant license servers, use 1mreread on one license server.

To specify which daemon should read the new license file, type

```
install_dir/tools/bin/lmreread -c license_file cdslmd
```

The -c option specifies the license file. If you do not specify a license file, lmreread looks for the license file sequentially in

☐ The setting of the LM_LICENSE_FILE environment variable

License Maintenance

☐ The /usr/local/flexlm/licenses/license.dat file

Imreread uses the license file only to find the correct license daemon to notify to read the new license file. The license daemon always rereads the original (same path) license file.

- **6.** If the new license file contains changes to licenses currently in use, users must exit and restart the applications to use the new features.
- 7. If the users located the old license file with the CDS_LIC_FILE or LM_LICENSE_FILE environment variable and the location of the license file has changed, they must change the path specified by the variable.

Setting Up Licensing on Windows

Overview

The setting up of licensing server on Windows platform is done primarily by invoking the lmtools gui and then doing the requried configuration within the lmtools gui. Running and configuring lmtools includes the following tasks:

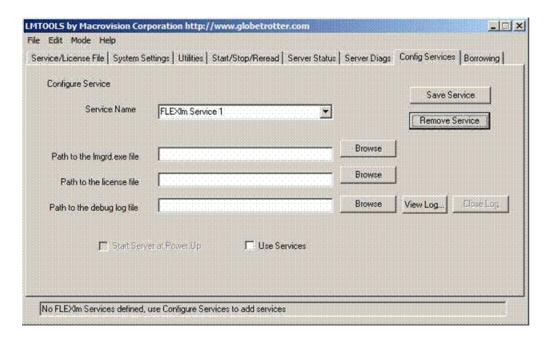
- 1. Running Imtools
- 2. Configuring the Service
- 3. Specifying the System Details
- 4. Verifying Networking
- 5. Editing the License File
- 6. Configuring the Service
- 7. Starting the Service
- 8. Verifying the Server
- 9. Setting up Service to Run at Startup

Running Imtools

1. Select Start > FLEXIm ToolKit.

Setting Up Licensing on Windows

The Imtools gui for managing license server on Windows appears.



Next, you need to configure the service.

Configuring the Service

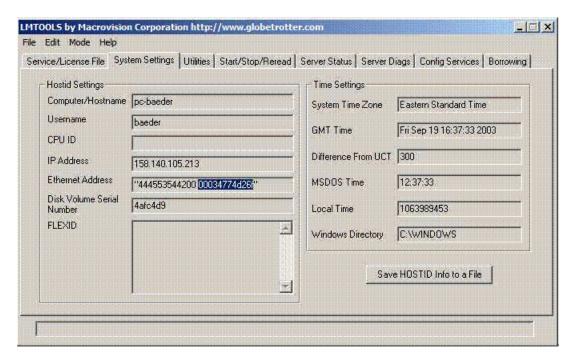
- 1. Select the Config Service tab.
- 2. Click Remove Service to remove any service other than FLEXIm Service.

After the superfluous services are removed, the system details have to be specified.

Specifying the System Details

1. Click the System Settings tab.

Setting Up Licensing on Windows



Next, you need to verify the hostname and the real ethernet address.

2. Open a command shell and give the following command to get the ethernet address <code>ipconfig</code>

The *Physical Address* is the real hardware address.

3. To get the hostname, enter the following on the command prompt.

hostname

```
Connection-specific DNS Suffix : Cadence.COM
Description : Intel(R) PRO/100 SP Mobile Combo Ada

Physical Address : 80-03-47-74-D2-6F
Dhcp Enabled : Yes
Autoconfiguration Enabled : Yes
IP Address : 158.140.105.213
Subnet Mask : 255.255.255.0
Default Gateway : 158.140.105.254
DHCP Server : 158.140.105.254
DNS Servers : 158.140.105.250
158.140.128.40
158.140.128.40
158.140.32.75
Primary WINS Server : 158.140.39.80
Lease Obtained : Thursday, September 18, 2003 9:49:43

M

C:\Documents and Settings\baeder\hostname
pc-baeder

C:\Documents and Settings\baeder\
```

Next, you need to verify that networking is enabled.

Verifying Networking

1. On the command prompt, enter the following:

ping localhost

```
Microsoft Windows XP [Uersion 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\baeder\ping localhost

Pinging pc-baeder [127.0.0.1] with 32 bytes of data:

Reply from 127.0.0.1: bytes=32 time</ims TTL=128

Ping statistics for 127.0.0.1:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\baeder\
```

/ Important

You should be able to successfully ping yourself. If the ping fails, then you need to correct it. Without networking, FLEXIm cannot run. For troubleshooting, see Q. What do I do to make a standalone machine work as a license server? (Applicable for Linux and Windows) on page 107.

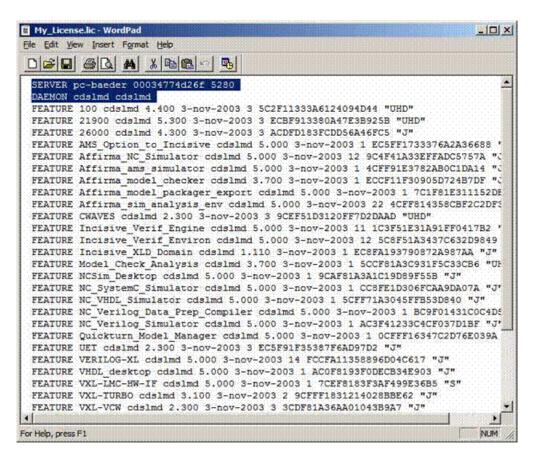
After verifying the networking, the next step is to edit the license file to specify the hostname of the license server and the path to the cdslmd daemon.

Editing the License File

- 1. Open the license file in any texteditor such as Notepad.
- 2. Enter the hostname next to the SERVER entry. This is the first line in the license file.
- 3. Specify the daemon name and location next to the DAEMON entry. This is the second entry in the license file. Normally, lmgrd and cdslmd should be in the same directory.

Setting Up Licensing on Windows

Therefore, you should just remove the path information, and just have DAEMON cdslmd cdslmd



4. Save the license file and exit out of the texteditor.

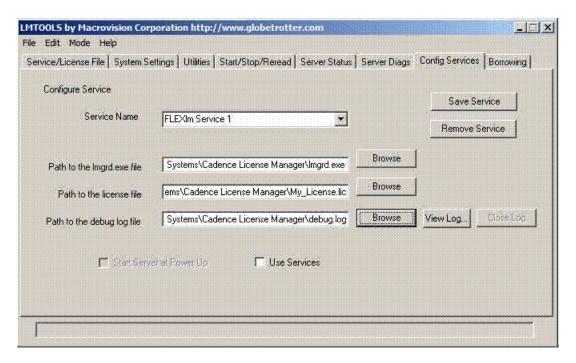
After editing the license file, you need to configure the service.

Configuring the Service

1. Click the Config Services tab.

Setting Up Licensing on Windows

2. Specify the path to the Imgrd.exe, license, and the debug log file.

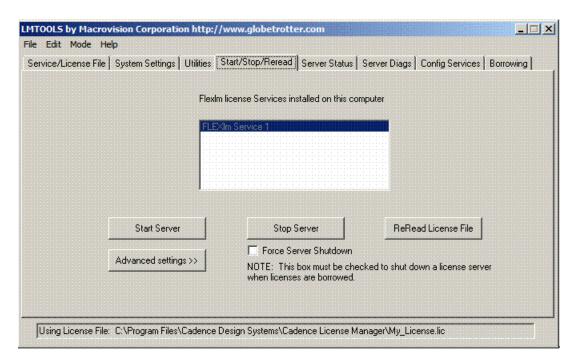


3. Click Save Service to save the service.

Next, you need to start and verify the service.

Starting the Service

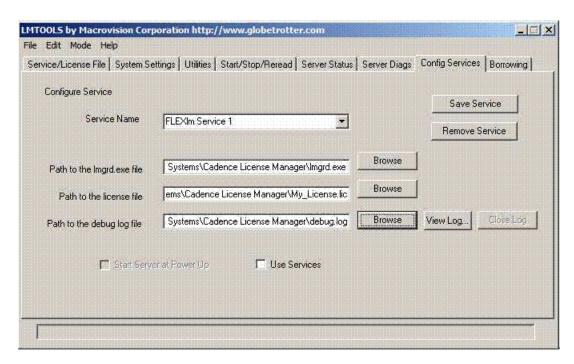
1. Click Start/Stop/Reread tab.



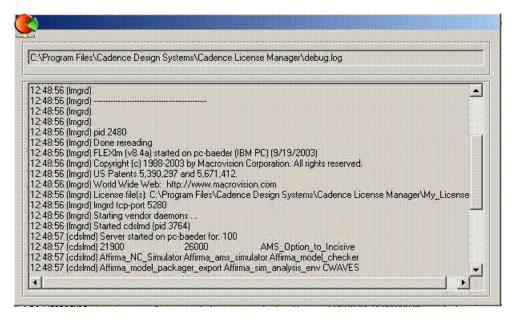
2. Click Start Server to start the server.

Verifying the Server

1. Click the Config Services tab.



2. Click *View Log* to view the log file.



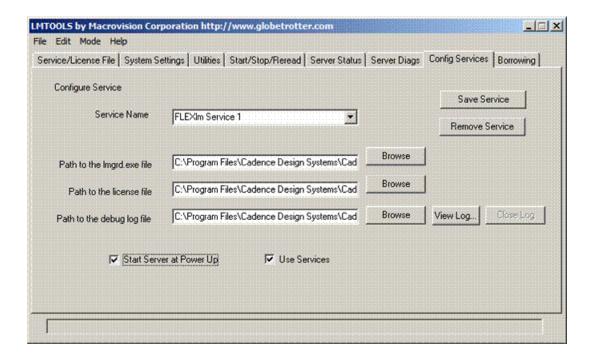
3. Verify that the server started successfully.

4. Click *Close Log* to close the log file.

Optionally, you can configure the service to start at machine startup.

Setting up Service to Run at Startup

1. Select the *Use Services* and *Start Server at Power Up* option to ensure that the FLEXIm server is available at all times.



Cadence License Manager Setting Up Licensing on Windows

A

Distributed and Heterogeneous Installations

This appendix contains information about these topics.

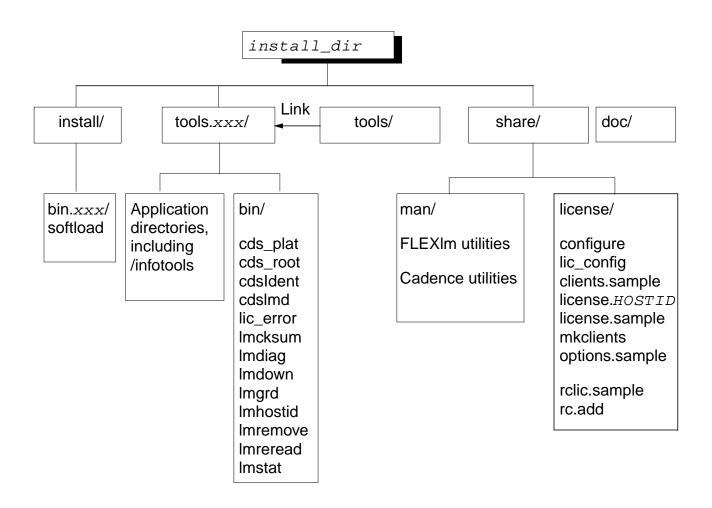
- Cadence Hierarchy on page 75
- <u>Distributed Software Installations</u> on page 77
- Heterogeneous Networks on page 78

Cadence Hierarchy

You need to know about the Cadence installation hierarchy if you want to save disk space, maximize performance, or have a heterogeneous network. There is no standard hierarchy for Cadence products on Windows NT, however many of the directories are the same.

The SoftLoad installation utility placed the Cadence software in a directory that this reference refers to as <code>install_dir</code>. Most Cadence applications are in their own directories under <code>install_dir/tools</code>.

Distributed and Heterogeneous Installations



Licensing Files

Cadence licensing uses these <code>install_dir/share/license</code> files.

install_dir/share/license	Purpose
clients	Identifies the workstations that can access the license files and the path to those license files
clients.sample	Sample clients file
license.HOSTID	License file identified with the host ID of the license server
license.sample	Sample license file
options.sample	Sample options file

Distributed and Heterogeneous Installations

install_dir/share/license	Purpose	
rclic.sample	Sample script to start license daemons	
Cadence licensing uses these <code>install_dir/tools/bin</code> files.		
install_dir/tools/bin.xxx	Purpose	
cds_plat	Identifies the platform of the workstation on which you logged in	
cds_root	Locates the directory which contains the Cadence software	
cdslmd	Cadence licensing daemon	

Distributed Software Installations

Most customers use Cadence products on networked computers, adding a few steps to the installation and configuration process. The exact procedures depend on your hardware and your operating system, so you may also need to refer to their documentation for specific details.

The FLEXIm utilities, such as 1mstat

Sharing Files among Platforms

lm*

If you are installing Cadence products for more than one platform, you can save disk space by having the different platforms share as many files as possible. Most Cadence directories are platform specific, but you can share several $install_dir$ directories among platforms:

adm doc lib local veriloglib framework share

Distributing Cadence Products across File Systems

The ideal situation is to have one disk large enough for all of your Cadence products. However, if that is not possible, you can distribute the software in several file systems. Possible relocation alternatives are

- By product: the largest products are Design Framework II and Allegro.
- By platform, such as tools.sun4v or tools.hppa

Distributed and Heterogeneous Installations

Sample Automounting

To run Cadence software, you can mount directories using either a hard mount or an automount. If you install the Cadence software on multiple file servers, you can configure the automounter on the client to transparently select an accessible file server from which to mount the software.

This section assumes that the automounter is up and running throughout the network, and that the "hosts" option is part of the automounter's configuration.

To configure the automounter (instead of using hard mounts), create an /etc/auto.cds file that lists the mount points on each redundant server. A sample /etc/auto.cds file follows:

This sample file for a fault-tolerant configuration configures the automounter to mount the Cadence software from one of three redundant file servers. A single server configuration does not contain the server2 and server3 lines.

After you create this file, reference it in the appropriate place. For example, if you are using an /etc/auto_master file, add the following line to the file:

```
/cds /etc/auto.cds
```

Important

If the file server goes down while the mount is in effect, the file system becomes unavailable. When this happens, users should exit all Cadence applications, wait five minutes, and start the applications again. The automounter will select a file server from which to mount the software.

For more information about automounting, see the documentation for your operating system.

Heterogeneous Networks

Heterogeneous networks (more than one platform, such as a network with Sun, HP, and Windows NT workstations) do not really affect licensing. Because the license file is platform independent, you can use your licenses on any supported platform.

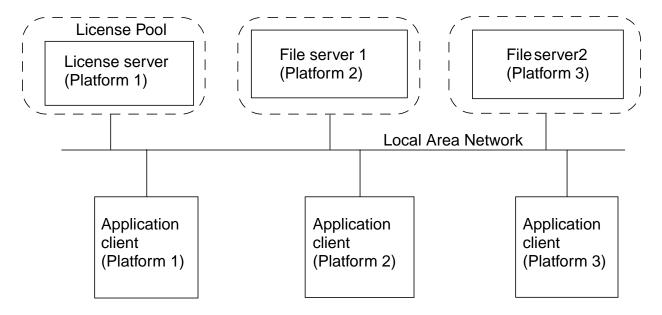
However, Cadence products are not platform independent and run on the platform specified by their CD-ROMs. You can put the platform-independent directories and files in a shared

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Distributed and Heterogeneous Installations

location. The Cadence Installation Guide describes one method of installing multiple platforms on a file server.

This figure illustrates only one of many possible configurations.



Cadence License Manager
Distributed and Heterogeneous Installations

В

How Licensing Works

This appendix contains information about the following topics:

- Components of Licensing Configurations on page 81
- How Licensing Components Interact on page 91
- <u>Types of Licensing Configurations</u> on page 98

Components of Licensing Configurations

The <u>overview of Cadence licensing</u> gives a high-level view of licensing. This chapter describes the lower-level activities. Regardless of which licensing <u>configuration</u> you use, all configurations need the same components and perform the same type of activities.

Component	Description
License server	Runs TCP/IP and the license daemons.
<u>Cadence licensing tools</u> , including	Licensing binaries.
lmgrd	The FLEXIm license daemon forwards requests to the Cadence daemon, cdslmd.
cdslmd	The Cadence daemon serves the licenses, tracks the type and quantity of licenses, and who is using them.
Licensing utilities	Helps manage and maintain licenses at your site.
<u>License file</u>	Contains licenses for the Cadence products ordered for your site.
A method to specify the license file	Specifies where products can find the licenses they need.
Licensed products (applications), such as Verilog-XL™	Requests and releases the appropriate licenses.

How Licensing Works

The FLEXIm license daemon, lmgrd, and the Cadence daemon, cdslmd, run on the license server and work together to distribute licenses upon request. Products needing licenses locate the license file to determine which license-server lmgrd to contact. The lmgrd contacts the cdslmd daemon, which serves the licenses if the licenses are available.

License-Server Requirements

A computer system that is a license server or standalone workstation must have

A local disk that contains the UNIX operating system and UNIX file systems, such as /usr/tmp.

A license server cannot be diskless.

By default, Cadence licensing software uses the /usr/tmp files listed below.

File	Purpose
license.log	Default licensing log file. You can specify a different name for this log file.
lockcdslmd	Lock file required when license server is running. It is always a zero-length file. Do not delete it. See <u>Cannot open daemon lock file MULTIPLE "cdslmd" servers running</u> .

TCP/IP daemons running

Depending on your operating system, you can check for TCP/IP by typing one of these:

- ☐ netstat -a | grep tcp
- ☐ netstat -a | grep TCP
- □ netstat -l
- ☐ ifconfig ln0 (use netstat -rn to get interface# name, such as ln0)

For example, the netstat -a | grep tcp command returns information indicating tcp is running, similar to

tcp	0	0	sunny.6000	sunny.1071	ESTABLISHED
tcp	0	0	sunny.1071	sunny.6000	ESTABLISHED
tcp	0	0	*.6000	* . *	LISTEN
tcp	0	0	*.5280	* . *	LISTEN

See your operating system documentation for more information about TCP/IP.

How Licensing Works

License daemons running

The lmgrd and cdslmd daemons (and any other license daemons in the license file) are in charge of serving all licenses in the license file. These daemons run only on the designated license server. They will not run on any other workstation on the network.

When you start the lmgrd licensing daemon, you can specify the path to the license file.

In most cases, you won't need to deal with the license daemons. However, you can verify that the daemons are running correctly with the Imstat utility (normally found in <code>install dir/tools/bin</code>):

lmstat -c license_file

License-Server Recommendations

Licensing is most reliable when the license server

- Is a reliable computer system
- Is a dedicated license server or, at least, has little traffic, so that the server can serve the licenses quickly. File servers do not make good license servers.
- Has its own license file on a local disk
- Has Cadence licensing tools on a local disk

Note: The license server must have a local disk. Diskless nodes cannot be license servers.

The Host ID

Depending on the hardware platform, the host ID is the system's PROM ID, Ethernet address, or another unique identifier.

Each license server has its own license file, based on its host ID, unless the license file is for fault-tolerant licensing. The host ID in the license file must match the host ID of the license server. (Host IDs are not case sensitive.) You can compare the host ID number on the *Software Manufacturing Completion Report*, which came with your software shipment, to the license server's host ID and to the host ID in the license file.

- If you have a single license server, the host ID must match the license server's host ID.
- If you have multiple, independent license servers, **each** host ID in each file must match its license server's host ID.

How Licensing Works

If you have fault-tolerant licensing, the three host IDs in the file must match the host IDs of the three license servers.

If you have installed and configured the Cadence software, type the following command to display the host ID of your UNIX node.

lmhostid.

If you have installed and configured the Cadence software, determine the host ID used for licensing with your operating system's commands, as listed below.

Call your Cadence representative if these numbers do not match.

If lmhostid is not available, use one of the methods below.

Architecture	Host ID	Alternate Method
HP Series 700	Ethernet address	lanscan command. Use the 12 rightmost digits of the number in the Station Address field.
	32-bit host ID	uname -i command.
	"ID module"	Read the ID typed on the ID module, remove "A", and convert the remainder to hexadecimal with the UNIX dc command. To convert an ID (n) to hexadecimal, type
		<pre>dc ; Starts dc 16 o ; Specifies output format n p ; Returns n in hexadecimal format q ; Exits dc</pre>
		The module ID method returns a host ID of five to eight characters.
IBM RS/6000	32-bit host ID	uname -m command. Use the middle eight characters.
Solaris	32-bit host ID	/usr/sbin/sysdef -h command.

Cadence Licensing Tools

Cadence licensing tools include the license daemons and licensing utilities. Cadence licensing software requires two daemons, the FLEXIm license daemon (lmgrd) and the Cadence vendor daemon, cdslmd.

When you install the software by following the directions in the *Cadence Installation Guide* or in this reference, Cadence software does not interfere with other FLEXIm-based software.

How Licensing Works

License File

The license file contains licenses for the Cadence <u>products ordered</u> for your site. The license file lists the license server, the license-vendor daemons, and the Cadence licenses. The license file contains only SERVER, DAEMON, and FEATURE lines, but the file can contain any amount of white space. The file ignores lines beginning with #. All data in the license file is case sensitive, unless otherwise indicated.

The beginning of a license file looks similar to this:

```
SERVER sunny 17007ea8 5280
DAEMON cdslmd /usr/cds/tools/bin/cdslmd
FEATURE Pearl cdslmd 4.000 20-aug-2002 1 4C023FE4994312CA195D "J"
```

Note: You cannot use variables or shell metacharacters in the license file. Use comment lines beginning with hash (#) and wrap long lines by using a backslash (\).

For easier troubleshooting, do not combine license files for multiple FLEXIm-based products. However, if you want to combine license files, see the *FLEXIm End User Manual*,

http://www.macrovision.com/services/support/TOC.htm

You can edit only

- Host names (up to a maximum of 32 characters) on SERVER lines
- Port numbers on SERVER lines
- Paths to the daemon on DAEMON lines
- Paths to an options file on DAEMON lines



You corrupt the license file by

- Editing a FEATURE line
- Using a host name longer than 32 characters

SERVER Line

The SERVER line identifies the license server, the host ID, and an optional port number with the following syntax:

```
SERVER hostname HOSTID [port_number]
```

A license file for a single license server or standalone configuration has one SERVER line. A license file for fault-tolerant licensing has three SERVER lines.

How Licensing Works

You can only edit the hostname and the port_number.

hostname String returned by the UNIX hostname command.

HOSTID Case-insensitive string returned by the Imhostid utility.

For example, on SunOS 5.5.1 workstations, the ID returned by the UNIX hostid command is the same as that returned by lmhostid. On IBM workstations, the ID returned by the UNIX hostid command is not the same as that returned by lmhostid.

port_number TCP/IP port number to use if /etc/services or the equivalent

NIS database does not assign a port to FLEXLM.

For example, this /etc/services line defines the same FLEXLM port that Cadence puts in the license file.

FLEXLM 5280 # Cadence FLEX1m daemons

The TCP/IP port number in the license file overrides the FLEXLM service port listed in /etc/services or the equivalent NIS database.

DAEMON Line

DAEMON lines specify the vendor-specific daemon name (cdslmd), the path to the cdslmd executable, and an optional *options* file.

DAEMON cdslmd path [options]

Usually, the license file you receive from Cadence contains only one daemon, and Imgrd daemon starts that daemon.

cdslmd Name of the Cadence daemon for all Cadence applications.

path Absolute path to the *cdslmd* daemon.

[options] Path to the options file. This path is optional and you can omit it.

For example, this cdslmd daemon uses an options file with path

/usr/cds/share/license/options

DAEMON cdslmd /usr/cds/tools/bin/cdslmd /usr/cds/share/license/options

FEATURE Line

The FEATURE line specifies the license information.

How Licensing Works



You cannot edit this line without corrupting your license file.

FEATURE name daemon version exp_date qty code "type" [HOSTID]

Cadence license files can have both floating and node-locked licenses. A floating license lets anyone on the network who can reach the license server use the software, unless the number of licenses specified in the license file are all in use. A floating license uses no host ID for individual features.

A node-locked license lets only the computer with the matching host ID access the feature. You can restrict licenses to specific computers with a node-locked license or with the options file.

If your license file contains both node-locked and floating licenses, Cadence lists the node-locked licenses first so that the specified computer uses the appropriate licenses first.

name	Name of the feature.
daemon	Vendor daemon name. All Cadence applications use cdslmd.
version	Latest (highest-numbered) version of this feature supported (three decimal places). You can check out earlier versions, but you cannot check out later versions than this one.
exp_date	Expiration date in the format: ${\tt dd-mmm-yyyy}.$ A year of 00 has no expiration date.
qty	Number of licenses for this feature. The number 0 represents unlimited use.
code	Encryption code for this feature line.
"type"	Type of licensing for this feature, enclosed in double quotes.

Type	Description
J	The feature uses a new license each time it starts
UHD	User-Host-Display. The feature uses one license each time it is started by the same user on the same host on the same display.

How Licensing Works

Туре	Description	
S	The feature allows unlimited use by any number of users within a site (campus within a one mile or 1.6 km radius) on the specified host ID. Only a few Cadence tools use a site license.	
[HOST1	String returned by the lmhostid utility identifying a particular host if someone has locked the feature to a single host ID. Only features node-locked to a specific workstation include this item.	

Which Products Are in the License File?

One Cadence product can require more than one license (FEATURE). The *Software Manufacturing and Completion Report* (shipped with your CD-ROMs or e-mail installation information) and the <u>Product to Feature Map</u> list the licenses each product needs.

When you receive your license file from Cadence manufacturing, you also receive a corresponding License_Map.HOSTID file. After installing the license file with SoftLoad, use the UNIX more command or an editor to look at the

install_dir/share/license/License_Map.HOSTID file. This file maps the
features to the products in the corresponding license file, using this format:

```
product quantity release [description] feature_name version type
```

For example, if the License_Map.HOSTID lists these features for the Verilog-XL Logic Simulator:

```
26000 4.4 9702 Verilog-XL Logic Simulator
VERILOG-XL 2.6 J
VXL-VLS 2.6 J
21900 5.3 UHD
```

the license file includes these entries:

```
FEATURE VERILOG-XL cdslmd 2.600 20-aug-2002 1 1C825FD47B54B9FFC884 "J" FEATURE VXL-VLS cdslmd 2.600 20-aug-2002 1 DC92EF54EBA73B10E00D "J" FEATURE 21900 cdslmd 5.300 20-aug-2002 1 4C823F947E4BC4F5EE5B "UHD"
```

If you have temporary licenses not generated by Cadence manufacturing, the e-mail header lists all products in the license file.

Which Products Are Available?

After locating an appropriate license file, the application contacts the defined license server for a license. If the application cannot get a license from the first license server, it continues down the list of license servers until a server grants a license or the list is exhausted.

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How Licensing Works

The cdslmd daemon reads license files from the beginning, checking out the first available license. Several factors affect which licenses are available:

- The application uses any appropriate license file.
- An <u>options</u> file could restrict licenses.
- Multiple licenses for the same FEATURE with enabled start dates (start dates previous to the start or reread date of that the server) are valid according to the following rules:
 - All temporary keys with enabled start dates are available. Cadence defines a temporary key as one with a 45-day limit.
 - □ For permanent keys, only the set with the latest enabled start date is available.
 - ☐ There is no interaction between temporary and permanent FEATURES.
 - ☐ The treatment of Node-locked FEATURES and floating FEATURES is not separate.

Note: Encrypted start dates are in the license file. You will not be able to tell allowable sets or those ignored by reading the license file. You will get error messages when you try to use the ignored FEATURES. The log file also indicates ignored features. If you have several licenses for the same feature, contact your Cadence applications engineer if you cannot use all of them.

When Your License File Contains Both Node-Locked and Floating Licenses

If you have both node-locked and floating licenses in the license file, your license server may need two separate license files: the license-server license file supplied by Cadence and a client version of the same file. Common reasons for having two versions of the file are if

- You want the corresponding workstation to use the the node-locked licenses first.
 - Usually, Cadence license files list node-locked FEATURE lines before floating FEATURE lines so that a workstation uses the appropriate node-locked license first.
- You do not want specific workstations accessing certain licenses.
- You want to use the <u>options</u> file to control licensing.

Because restrictions imposed by the options file apply to the first license encountered in the file, you can place the restrictions on node-locked licenses instead of on floating licenses.

How Licensing Works

If you have two versions of the same license file, both the license server and the application client can have their own license file but list the same FEATURE lines in different sequences. For more information, see the *FLEXIm User Guide*

```
http://www.macrovision.com
```

To set up an application client with different feature ordering than the license server, follow the steps in this example:

1. Copy the license file.

```
cp license_file license_file.client
```

The client workstations use the client license file, license_file.client

- **2.** Verify the client license file, license_file.client.
 - □ Locate the appropriate FEATURE lines in the license file.
 - Verify that the node-locked license appears on the list before the floating license.

As an example, the Cadence license file at Jan's site contains these lines showing the node-locked license before the floating license, as Cadence normally delivers the file.

```
SERVER sunny 17007ea8 5280

DAEMON cdslmd /usr/cds/tools/bin/cdslmd /usr/cds/share/license/options

FEATURE QPlace cdslmd 4.000 20-aug-2002 1 7CF22FA422F217E464FE "J" abcd1234

FEATURE QPlace cdslmd 4.000 20-aug-2002 1 7CF22FA422F217E464FE "J"
```

If Jan uses this client license file, she can use the node-locked QPlace license if she is on the workstation with the specified host ID or she can use the floating license.

- 3. Edit the server license file, license_file.
 - Locate the appropriate FEATURE lines in the license file.
 - ☐ Move the floating license above the node-locked license.

The license daemon then finds the floating license first because the software uses the first matching FEATURE line.

```
SERVER sunny 17007ea8 5280
DAEMON cdslmd /usr/cds/tools/bin/cdslmd /usr/cds/share/license/options
FEATURE QPlace cdslmd 4.000 20-aug-2002 1 7CF22FA422F217E464FE "J"
FEATURE QPlace cdslmd 4.000 20-aug-2002 1 7CF22FA422F217E464FE "J" abcd1234
```

This ordering lets you use the <u>options</u> file to restrict the floating license without restricting the node-locked license.

- 4. Determine how the client workstations will find the correct license file.
 - If they locate the license file using the clients file, edit the license server's clients file.

How Licensing Works

The clients file identifies the license file to use. To restrict usage, client workstations must use the client license file, such as license_file.client

hostname license file.client

If you use the server license file instead of the server clients file, you will receive floating licenses before node-locked licenses.

☐ If they locate the license file using variables, edit the variable paths.

You cannot use the port@host format.

5. If the license daemons are already running, <u>stop</u> and <u>restart</u> them to force them to see the new license files.

Combining License Files from Other Vendors

Consider these points when combining FLEXIm-based license files from several vendors:

- The license files must use the same license server (using the same host ID)
- The license server must be running the latest lmgrd license daemons used by any of the vendors
- Your license and file servers must be using the latest Cadence licensing tools (utilities)
- If you use options file, you must use a separate options file for each daemon
- You can specify which vendor daemon to bring down when you use lmdown to shutdown the license server.
- Troubleshooting becomes more difficult
- You can specify which license daemon should reread the license file

For more complete information, see the FLEXIm End User Manual and the FAQ at

http://www.macrovision.com

How Licensing Components Interact

The licensing components interact in the following ways:

- The license file functions as the communication medium for all parts of Cadence licensing software:
- The license server must have a license file to determine which licenses to serve.

How Licensing Works

- The application must determine which license server to contact for licenses. It does so by
 - Using its own copy of the license file or
 - Sharing the license file used by the license server via port@host
- The licensing utilities must have the license file to determine which license servers to contact for administrative actions.

The License Server and the License File

License servers use the license file to determine which daemon to contact to serve the requested licenses. License servers provide licenses to any workstation that contacts them. Here are some reasons why a license may not be available:

- Unmatched host ID for a node-locked license
 - In this case, the license server still serves the license, but only the computer that has the matching host ID can check out the license. Usually, the application client and the license server are different computers, but they can be the same computer.
- An <u>options</u> file is restricting access

Cadence Products and the License File

Cadence products use the license files to determine which licenses they can check out from which license servers. A single application process (binary) can check out licenses from more than one license server. The benefit of using multiple license servers is for improved reliability. For example,

- If one server goes down, all applications committed to that server automatically reconnect to the other servers.
- If one license server is not available, the application can get a license from another license server.

Methods of Locating License Files

Every Cadence product must be able to access a Cadence license file using one of the methods below. Cadence recommends using the clients file.

Method	Description
clients file	Specifies license files for application clients.

How Licensing Works

Method	Description
Environment variables CDS_LIC_FILE	Specifies one or more license files.
LM_LICENSE_FILE	Important
	You can set the CDS_LIC_ONLY environment variable to ignore the LM_LICENSE_FILE variable setting. By setting the CDS_LIC_ONLY environment variable, SoftShare will only look for the setting of the CDS_LIC_FILE environmental variable, the <install_dir>/share/license/clients file, and the <install_dir>/share/license/license. dat file.</install_dir></install_dir>
	On Unix:
	setenv CDS_LIC_ONLY 1
	On NT:
	set CDS_LIC_ONLY=1

With the clients File

The clients file lists the license files that application clients can access. Cadence products search the clients file for the appropriate entries and then contact the specified license server for licenses. Cadence products request licenses for an application client from the first license server available to that application client listed in the clients file.

The format of the clients file specifies the path to the license file on a host basis:

```
hostname license_file
```

where <code>hostname</code> is either the name of the workstation or an asterisk (*) to indicate all workstations, and <code>license_file</code> is the path to the license file. You can also specify the <code>port@host</code> format instead of the path to the license file.

In the following example, the first line specifies that any application running on the host sunny should look for its license file in /usr/local/ULMlicense.dat. The second line specifies that all workstations (as denoted by the asterisk) should look for their license file in /net/major server/usr/local/allhosts.license.

```
sunny /usr/local/ULMlicense.dat

* /net/major_server/usr/local/allhosts.license
```

How Licensing Works

The computer sunny looks in both paths for the license file, but other application clients look only on major_server.

Using the port@host format, if the license server specified in the ULMlicese.dat is cloudy, the license server specified in

/net/major_server/usr/local/allhosts.license is windy, and the port number is 5280, the clients file would look like this:

sunny 5280@cloudy sunny 5280@windy

You can also use a clients file to prioritize the search for licenses. In the following example, the application client sunlight searches for licenses from license.00012345 before attempting to access licenses from license servers specified in license.54321000. The application client sunrise searches for licenses in the same manner as sunlight. The application client sundown checks only license.00012345 and cannot access features licensed by the second license file.

```
sundown /usr1/cds/share/license/license.00012345
sunlight /usr1/cds/share/license/license.00012345
sunlight /usr1/cds/share/license/license.54321000
sunrise /usr1/cds/share/license/license.00012345
```

Using the port@host format, if the license server specified in

/usr1/cds/share/license/license.00012345 is breezy and the port number is 5280, the clients file would look like this:

sundown	5280@breezy
sunlight	5280@breezy
sunlight	path
sunrise	5280@breezy
gunrige	n = t h

Each application file server should have only one clients file.

A license server needs a clients file only when it is also a Cadence application file server.

With Environment Variables

Several environment variables affect where the Cadence products look for the license file.

Environment Variable	Description
CDS_LIC_FILE	The path to the license file. Cadence products use this exclusive environment variable.

How Licensing Works

Environment Variable	Description
LM_LICENSE_FILE	The path to the license file. Other vendors can use this environment variable. If users are already using LM_LICENSE_FILE for non-Cadence software, setting it for the Cadence software can prevent their non-Cadence software from running correctly.
	Important
	You can set the CDS_LIC_ONLY environment variable to ignore the LM_LICENSE_FILE variable setting. By setting the CDS_LIC_ONLY environment variable, SoftShare will only look for the setting of the CDS_LIC_FILE environmental variable, the <install_dir>/share/license/client s file, and the <install_dir>/share/license/license e.dat file.</install_dir></install_dir>
	On Unix:
	setenv CDS_LIC_ONLY 1
	On NT:
	set CDS_LIC_ONLY=1

Set the environment variables as shown in this example for CDS_LIC_FILE

■ UNIX colon (:) delimited list setenv CDS_LIC_FILE port@host:pathA:pathB:pathC

An environment variable can specify either a single path or a delimiter-separated list of multiple license file paths to be searched sequentially.

Note: AFS lets you specify paths using an at sign (@). However, because the FLEXIm software uses the @ to identify remote hosts in license file paths, AFS users cannot use @ in their license file paths. However, they can copy the license file to the local file server so that there is no @ in the name.

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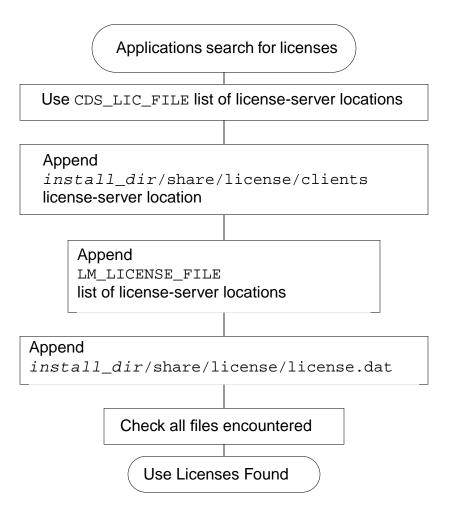
How Licensing Works

Where Applications Look for Licenses

The application must find the correct license-server location. This figure summarizes how Cadence products build a list of license-server locations.



If the first file encountered in the list is invalid, the application will not start.



- 1. The CDS_LIC_FILE setting, if already set, is the first server location, or set of server locations, on the list of license-server locations.
 - Cadence applications use the exclusive CDS_LIC_FILE environment variable. This environment variable is either a single path or a delimiter-separated list of multiple paths.
- 2. (UNIX only) Cadence licensing software adds the license-server locations in the Cadence directories to the list of license-server locations.

How Licensing Works

Cadence licensing software locates the necessary files and directories.

□ Cadence licensing software first locates cds_root and install_dir.

To locate cds_root , it is necessary to know about the directory from which the application started.

If the user started the application using a fully-specified path to the application's executable, the UNIX search path does not need to be searched.

If the user did not use a fully-specified path to the application's executable, the application looks at the user's UNIX search path to determine the full path to the application.

After the application discovers the full path to the executable, it incrementally searches upwards for an executable version of tools/bin/cds_root. If it finds cds_root (normally in a standard Cadence hierarchy), Cadence licensing software uses the result of running cds_root as the path to the Cadence software.

If the Cadence licensing software has still not found the executable or tools/bin/cds_root, the application uses the older strategy of searching the user's UNIX path for a tools/bin directory anywhere containing cds_root. For the first one found, it uses the path two levels above cds_root as the installation root (install_dir).

If Cadence licensing software cannot find a tools/bin directory, it searches the user's entire path a second time, this time looking for an executable cds_root anywhere. If the application finds cds_root, it assumes the installation root to be two levels above cds_root.

If Cadence licensing software cannot find <code>install_dir</code>, it defaults to the current directory.

Cadence licensing software locates the share/license directory.

After Cadence licensing software locates <code>install_dir</code>, it expects a <code>share/license</code> subdirectory to reside below. This <code>share/license</code> directory should have a <code>clients</code> file that contains one or more lines to specify where applications should look for the appropriate license-server location.

With neither LM_LICENSE_FILE nor CDS_LIC_FILE set, the directory must contain either a clients or license.dat file, or applications cannot find a license-server location.

The default path uses the installation root and expects a <code>install_dir/share/license/license.dat file.</code>

How Licensing Works

The applications read all legitimate license-server locations to determine the list of available FEATURES and the corresponding license servers.

Types of Licensing Configurations

Your license file determines your license configuration. When your company ordered your Cadence products, your company specified

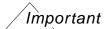
- A license-server configuration
 - Single License Server
 - □ Multiple, Independent License Servers
 - □ Fault-Tolerant License Servers (UNIX only)
- The identification numbers (host IDs) of the computer systems designated to be the Cadence license servers

You must use the computer systems specified as the license servers.

Possibly, the host name of the license server

Your license file includes this information as well as the licenses for the Cadence products ordered for your site. You can determine your type of licensing configuration by looking at the number of SERVER lines in your license file.

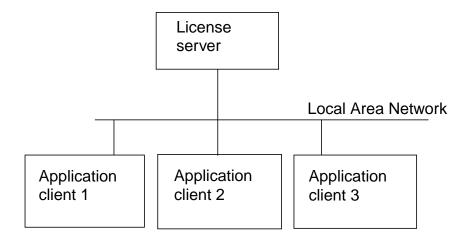
Number of SERVER Lines in License File	License-Server Configuration
One	Single license server or standalone workstation
Three (UNIX only)	Fault-tolerant license server
Neither one nor three	Invalid license file



Your license agreement with Cadence usually prohibits using a floating license outside of a one-mile (1.6 km) radius. To use your license on a Wide Area Network or outside the one-mile radius, contact your Cadence account representative.

Single License Server

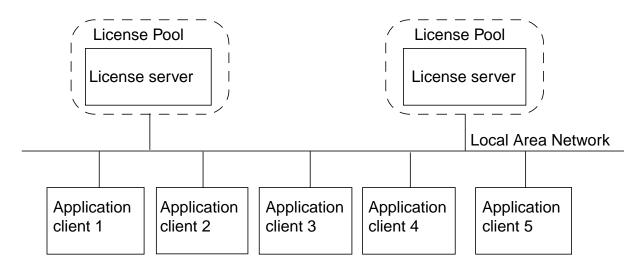
With a single license server, one license server manages all Cadence licenses. A benefit of this setup is its ease of maintenance. Cadence recommends this setup if there are few users.



Note: You would configure a standalone workstation as a single license server.

Multiple, Independent License Servers

With multiple, independent license servers, several license servers distribute Cadence licenses. The benefit of using this configuration is that other license servers can automatically serve users if the server in operation goes down. A multiple, independent license-server configuration looks similar to this one.



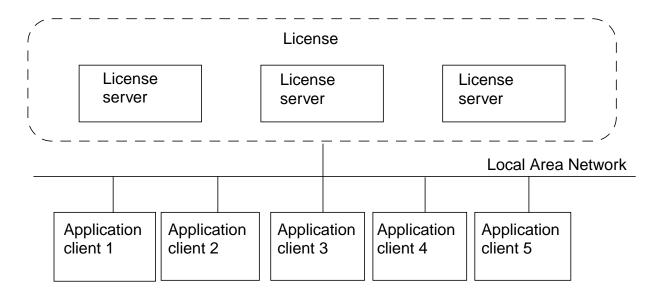
How Licensing Works

Each license server uses its own license file and distributes licenses independently. For example, if your network includes two license servers, one license server could distribute copies of the Allegro™ product while the other distributes copies of the Analog Workbench™ and Verilog-XL™ products.

You can set up multiple, independent license servers if you receive several license files, one for each license server. A single workstation can only act as a license server for one Cadence license file at a time.

Fault-Tolerant License Servers

With fault-tolerant (redundant-server) licensing, three license servers act as one "logical" license server—they manage a group of licenses that all application clients share. The one primary (master) and two secondary (standby or slave) license servers always know who is using what features. Two license servers must be up and running to serve licenses.



/Important

This redundancy provides fault-tolerant licensing by allowing continued access to licenses, even when one license server becomes unavailable (through a crash or an intentional shut down). If the master license server crashes, one of the remaining two license servers becomes the master. Each license server must have its own copy of the Cadence licensing software and license file. Users can still work if one of the license servers goes down, as long as two of the three servers maintain contact with each other.

How Licensing Works

Fault-tolerant licensing depends on a reliable network. A reliable, dedicated license server, possibly with restricted user access, can be a viable substitute for fault-tolerant license servers.

You cannot have fault-tolerant licensing with only one license server.

You can set up fault-tolerant licensing if

- You ordered the Cadence licenses for fault-tolerant licensing
- The license file lists three license servers (the license file has three SERVER lines—one entry for each license server)
- The license servers are on the same local area network so that they can communicate reliably with each other
- The three license servers are on the same hardware platform, run the same version of the UNIX operating system, and use the same version of Cadence licensing software
- Each license server has the same license files

Cadence License Manager How Licensing Works

C

Licensing and Installation Commands

This appendix contains information about the following topic:

■ <u>Licensing Utilities</u> on page 101

Licensing Utilities

This section describes the FLEXIm and the Cadence utilities.

Note: For more information about the licensing utilities, see the FlexIm End Users Guide (flexIm_enduser.pdf). This guide is located at *install_dir*/share/license.

Note: Only the license administrator should run these three utilities: lmremove, lmdown, and lmreread.

Function	Description
cdsldent	Displays the version of libraries built into the executables
configure	Runs lic_config, mkclients, and rc.add
lic_config	Configures the license file
lic_error	Explains error message
Imdiag	Diagnoses license checkout problems.
Imdown	Shuts down the license daemons gracefully
lmgrd	The FLEXIm license daemon
Imhostid	Returns the unique system-specific identifier used by the license manager to discern one computer from another
Imnewlog	Moves existing report log information to a new file name and starts a new report log file with existing file name.

Cadence License Manager
Licensing and Installation Commands

Function	Description
Imremove	Releases any license that an abandoned or zombie process has locked and returns the license to the license pool of available licenses
Imreread	Forces the license daemons to reread the license file
Imstat	Returns information on the status of the license server and the licenses it serves. This is the most valuable utility.
Imswitch	Controls debug log location and size.
Imswitchr	Changes the report log file as specified in the options file (the enhanced log file, not the debug log file)
Imver	Displays the FLEXIm version that a binary or library file uses
mkclients	Modifies the clients file
rc.add	Modifies the computer's startup file

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D

Troubleshooting - Basic

This appendix contains some frequently asked questions about troubleshooting licensing.

Q. How should my network topology be?

Ans: You should not have an overly congested network or one with too much delay. Both of these can cause "heartbeat" and other failures.

Q. Should my license server be a dedicated machine?

Ans: For maximum performance, and on sites with a large number of users, the license server should be a DEDICATED machine.

Q. Can license files be combined?

Ans: While it is technically possible to combine FLEXIm-based license files, there are a few disadvantages to this approach:

- There is a performance degradation associated with large license files.
- It makes debugging difficult as it is difficult to trace the origin of the problem.

Therefore, it is suggested that you maintain separate license files for each daemon and run multiple lmgrd daemons (one for each vendor daemon).

Q. Why are some FEATURES in the license file rejected when the server is started?

Ans: The license server accepts only valid FEATURE lines. A FEATURE line is considered valid when:

- the start date is less than the date the server is started or re-read
- date has not expired
- the 20-character encryption code is valid

Troubleshooting - Basic

Q. Are duplicated FEATURE lines allowed?

Ans: Cadence allows multiple lines for a FEATURE that has the start date already enabled. However, the behavior is different for temporary and permanent keys.

- All temporary keys are allowed.
- All permanent keys with the same start date are allowed.
- If there are multiple sets of permanent keys having different start dates, only the set with the latest enabled start_date is allowed.

Q: What does the UNSUPPORTED line in the log file mean?

Ans: It is very important that the FEATURE lines be consistent in both the application client and the license server versions of the license file (which may be different for a variety of reasons). The UNSUPPORTED line in the log file is most likely due to a mis-match in these two license files. Usually, a license if available is granted.

Note: It is possible that an UNSUPPORTED line in the log file is immediately followed by an OUT line.

Q. The server is fine. What else could be causing the problem?

Ans: It is possible that the license server is fine, but the application is causing the problem. You can access the internal testability code of the application. This code appends information representing version, search path, actions, run times, results, and other diagnostics to a specified file.

To access this testability code, execute the following at the command prompt (in UNIX):

```
setenv CDS_LIC_QA_TesT /tmp/client_debug_log.out
```

Q. How can I reclaim a license if it has been lying idle for some time?

Ans: You can use the TIMEOUT option in the options file to reclaim the license when the product has been idle for sometime.

Q: What configurations are supported with the fault-tolerant server setup?

Ans: Only homogeneous platforms of the same OS release are supported. For example, all three servers in a fault-tolerant configuration must be Sun/SunOS 4.1.3 machines.

Q: I have a license file with both node-locked and floating licenses. Why are the reservations I specified in the options file not working correctly?

Troubleshooting - Basic

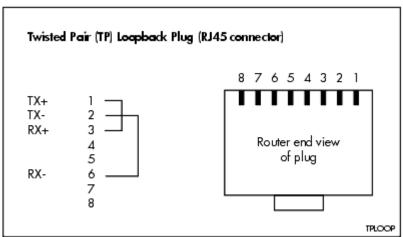
Ans: Normally, the node-locked lines appear first in the license file because they should be given out before any floating licenses. This is important to avoid the situation where locked nodes take all the floating licenses and other machines fail to get any of the licenses. The drawback with this setup is that if the node-locked lines appear in the license file first, those are the lines on which the server applies the specified reservation (or other options). Any option you specify will only be applied to the first line of the FEATURE in the license file. However, what is required is that options should be applied to the floating licenses, and not the node-locked licenses. This is not an unresolvable problem, because the options are applied by the license server, and licenses are checked out as requested by the clients. You need to do have the server machine use a modified license file in which the floating lines appear first and node-locked lines last, and have the clients use the normal file that has the node-locked lines first and the floating lines last. This results in the server applying any options to the floating lines (since those appear first in its version of the license file), and clients correctly checking out the node-locked licenses first (if they are the locked node).

Q. What do I do to make a standalone machine work as a license server? (Applicable for Linux and Windows)

Ans: The first thing to check is whether you can ping the machine that is supposed to be the server. If not, then that is the first thing to correct. Even in a single machine configuration, licenses require a working TCP/IP infrastructure, implying working hardware, name mapping, IP addresses, and so on.

First, ensure that the hardware is enabled. The hardware solution is to make a simple loop back plug (one that routes the transmit to the receive). The Ethernet will interpret this as being connected.

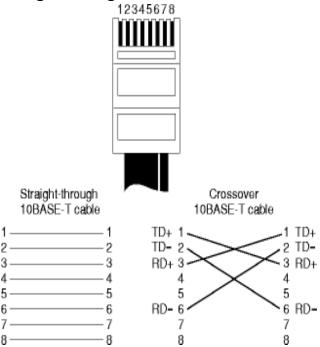
Ethernet twisted pair loopback plug



Troubleshooting - Basic

From looking at a diagram of a crossover cable, you can see which pin is which:

Straight-through and Crossover Cable Pinouts



If you do not fix this, you will see the lmhostid command returning a null value or "FFFFFFFFFFF" for the host ID of the machine. See the example below where the lmhostid was run with attaching the loopback plug.

The FLEXIm host ID of this machine is ""

After the loopback plug was attached, lmhostid returned the following:

The FLEX1m host ID of this machine is "0010a48977a0"

There is a software alternative as well. On Windows, there is a registry hack. You can find the information in the Microsoft knowledge base. However, it is recomended that you use the hardware solution.

On Linux, open the <code>/etc/modules.conf</code> file and find out which module (or driver) is aliased to the <code>eth0</code> interface. It might be something like an <code>eepro100</code>. Edit your <code>/etc/init.d/network</code> script and insert the equivalent of the following line just after the <code>"start)"</code> line:

sbin/insmod eepro100

Troubleshooting - Basic

This will load the module for your ethernet device regardless of whether you are connected to a working network.

Once the connectivity between the hardware and the OS is established, you have to make sure that the name resolution happens correctly. Since by default, there should be a host file that maps the IP addresses to the names, and localhost is a default name that should always be mapped, you can use that as the hostname for the license file (and the setting of the ENV variables to find the server).

If you do not want to use localhost, then make sure that the /etc/hosts file on Linux (and the hosts file on Windows) has the information required to add the name of your machine to the loopback (127.0.0.1) address mapping.

Finally, set the CDS_LIC_FILE environment variable to 5280@127.0.0.1 or 5280@localhost.



More information on troubleshooting is available at:

- Troubleshooting -Detailed Appendix
- The Licensing and Installation FAQ in SourceLink

Cadence License Manager Troubleshooting - Basic

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Troubleshooting - Detailed

This appendix contains information about the following topics:

- General Troubleshooting Hints on page 111
- Specific Problems on page 112
- Error Messages and What to Do about Them on page 118

General Troubleshooting Hints

If Cadence licensing is not working properly, or if you cannot start an application after installation, follow these steps.

- 1. Investigate the indication of what is wrong.
- **2.** Use the lic error utility to expand the error message.

If the screen or debug log file indicates a numbered Cadence licensing software message, you can use lic_error to display the solutions from this chapter. For example, if the debug log file displays

"ERROR (LM -24): Can't find license file," display the suggested solutions by typing

```
lic error -24
```

If you see the message below, verify that you used the dash before the number of the error message.

```
Sorry - error message 24 has no extended message.
```

3. Use Imstat to find out about license-server problems.

See if the server you are trying to use is up and running properly. The lmstat utility can also alert you to any sort of network connectivity problems.

Imstat indicates when the Daemons Are Not Running.

4. Look at the license debug log file.

Troubleshooting - Detailed

Sometimes the only way to understand a problem is by looking at the license debug log file. The licensing daemons output the debug log file, and so the debug log file exists only on the license server. To locate this file, you need to know how the user started the license daemon. If the user used the standard method, the /etc/rc.lic file on the license server contains the name of the license debug log file (the default is /usr/tmp/license.log).

- Check the license.log file first to determine if the problem involves licensing.
- □ Sometimes <u>You Cannot Find the License Debug Log File</u>.
- □ If the debug log file indicates the license server started correctly, use Imstat -a to display other licensing information.
- 5. Look at your license file to see if it contains licenses from vendors other than Cadence.

If your license server exhibits any unusual FLEXIm behavior and your license files contain FLEXIm-based products from multiple vendors (non-Cadence products), create a new license file for your Cadence products. (Place the Cadence SERVER, DAEMON, and FEATURE lines in a separate license file.)

- **6.** For platforms not listed in this reference, contact your Cadence sales representative.
- **7.** If you need more assistance, call Cadence Customer Support at 1-800-CDS-4911.

Specific Problems

This section describes the following problems.

- You Cannot Find the License Debug Log File
- Daemons Are Not Running
- The Hardware or Software Crashes
- An Application Client Cannot Run the Software
- Licenses Not Checked-in after Using Imremove

Troubleshooting - Detailed

Daemons Are Not Running

The most common installation problems involve starting the FLEXIm license daemon (lmgrd) and the Cadence daemon (cdslmd).

- Use Imstat to verify the daemon status.
- Check the /usr/tmp/license.log file.
 - D license manager: Not a valid server host, exiting.
 - □ <time>(cdslmd) Wrong hostid, exiting.
 - □ ERROR: time (cdslmd) Retrying socket bind (address in use)
 - □ ERROR: license daemon: execl failed: ...
- If you just installed the Cadence products, verify that the previous user or system administrator configured the Cadence licensing software environment with <u>Cadence</u> installation software or with an editor.
 - □ Verify that a symbolic (soft) link exists from install_dir/tools to tools.xxx, where tools.xxx is the platform-specific directory listed below.

Platform	Directory Name
HP Series 700	tools.hppa
IBM RS/6000	tools.ibmrs
Solaris	tools.sun4v

- ☐ If the link does not exist, see <u>Creating the Tools Link</u> for information on creating the tools link.
- Verify that the host ID given by the lmhostid utility matches the number of a license server listed in the license file.

If the host ID of the system running the license daemon does not match a SERVER line in the license file, the following error message appears in

/usr/tmp/license.log:

invalid host

□ Verify that /etc/rc.lic uses the correct license file.

Troubleshooting - Detailed

■ If the license server rebooted, verify that the file listed below executes /etc/rc.lic so that the daemons start automatically when the system reboots.

Platform	File Name	
HP Series 700	/etc/inittab	
IBM RS/6000	/etc/inittab	
Solaris	/etc/rc2.d/S??cds_lic	

You Cannot Find the License Debug Log File

The <u>debug log</u> file records all licensing activity unless the messages are restricted by the <u>options</u> file. In fault-tolerant licensing, the debug log file is on the master server.

The license.log file does not exist under these circumstances.

The command used to start the license daemons did not specify a log file.

By default, the license daemons write to a debug log file, /usr/tmp/license.log.

- If you started the license daemons using the lmgrd command on the command line, you have a debug log file only if you direct the output to a file.
- ☐ If you started the license daemons using /etc/rc.lic, the file could specify a log file different from the default location.

The /etc/rc.lic startup script should start the daemons and specify the debug log file.

□ Verify that /etc/rc.lic exists on the license server.

ls -l /etc/rc.lic

If it does not exist, create /etc/rc.lic with <u>Cadence installation software</u> (choose *Configure Products*) or with a text editor.

Troubleshooting - Detailed

☐ If the /etc/rc.lic file is not executable, log in as root and use the chmod command to change the permissions.

Platform	Command		
HP Series 700, 800, Solaris (optional)	chmod 6744 /etc/rc.lic		
IBM RS/6000	chmod 744 /etc/rc.lic		
Solaris HP Series 700 (optional) IBM RS/6000 (optional)	chmod 6744 /etc/rc2.d/S??cds_lic		

Use lmstat to verify that the lmgrd and cdslmd daemons are running on the license server.

```
./lmstat -a -c license file
```

If your license file contains only uncounted (any FEATURE line with a quantity of 0 in the license file) node-locked licenses, the license server does not need the lmgrd and cdslmd daemons.

If the license daemons are not running, verify correct installation of the daemons. List the contents of the install_dir/tools/bin directory on the license server.

```
ls -l install dir/tools/bin
```

If you cannot find the license daemons, reinstall them (SoftShare Tools) using Cadence installation software.

■ Check that the lmgrd and cdslmd daemons exist and are executable.

```
ls -l install_dir/tools/bin
```

If the daemons are not executable, change their permissions to 755.

```
chmod 755 lmgrd cdslmd
```

- Messages sometimes do not appear in license.log for several minutes. If you cannot locate the license.log file, wait several minutes and try again.
- For Solaris computers, it takes about five minutes to close a port after shutting down the daemons. Wait and try again.
- If the message indicates a <u>socket bind problem</u>, try again.
- The license server rebooted.

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Typically, the computer deletes files in / tmp when it reboots. You can do one of two things to prevent this from happening in the future.

Modify the /etc/rc.lic file to place the debug log file, license.log, in /usr/tmp or another location.

The Hardware or Software Crashes

The Cadence applications become unavailable when

- The license servers become unavailable (through a crash or an intentional shut down)
- The application crashes
- The hardware crashes
- The network fails and the application disconnects from the license daemon

If the application crashes, the license daemons usually return the license to the pool of available licenses. However, if the application does not return the license to the pool, you can use one of the following lmremove commands to return the license to the pool.

```
lmremove [ -c license_file ] feature user host display
lmremove [ -c license_file ] -h feature host port handle
```

Note: If several license servers are in the license file path and the license daemon crashes or the network fails, the feature attempts to reconnect to another license daemon.

An Application Client Cannot Run the Software

If an application client cannot run the Cadence product, follow these steps.

Verify TCP/IP by typing the command below.

Platform	Command
HP Series 700	/usr/bin/telnet hostname
Other platforms	/usr/ucb/telnet hostname

Note: Do not use ping. It does not adequately ensure that the client can reach the license server.

If you are not using .rhosts and you receive a prompt for a password on hostname, the network configuration is correct.

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Type Control-d to exit. If the network configuration is not correct, see your operating system documentation.

- If you are using a clients file, follow these steps.
 - Verify that the client's host name is the license server's clients file.
 - You do not need to add the host name if the clients file contains an asterisk (*) because it indicates that all clients can access the license file.
 - Uverify that the Cadence product can access the license file as it appears in the clients file on each license server.
- If you are not using a clients file, verify how the application finds the license file.

```
CDS_LIC_FILE
LM_LICENSE_FILE
```

■ If you are trying to run Cadence software in the background (you start it with an ampersand, &), verify that the user's workstation allows background jobs to write to the terminal by typing stty.

If you see tostop without a dash, background programs cannot write to the terminal. The programs hang. To let background programs write to the terminal, type stty - tostop. For more information, see <u>Letting Users Access Cadence Products</u>.

■ Occasionally, you are not able to start another instance of an application if its FEATURE line in the license file indicates it is a <u>UHD</u> license. The basis of UHD licensing is the combination of the user, host, and the X display.

This can happen if you set your DISPLAY variable in your ~/.cshrc and then manually set it again later. Normally, you do this whenever you use a remote computer and direct the display back to your local workstation.

If the two DISPLAYS do not match exactly, the software considers them to be two different users.

To correct this, use one of these methods.

- Remove the setting of the DISPLAY variable from your ~/.cshrc file and source the file. When the X server initially starts, it sets the variable for you.
- Move the setting to a section of your .cshrc file that is only run during interactive sessions. For more information on this, consult your operating system and X Window System documentation.

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Licenses Not Checked-in after Using Imremove

Using Imremove does not check the licenses in, so licenses do not return to the license pool for others to use.

■ Use lmremove -h to specify the FEATURE's handle, as returned by Imstat.

```
lmremove -h feature license_server port handle
```

Release the licenses by <u>shutting the daemons down</u> and <u>restarting them</u>.



Do **not** kill the license manager daemon while licenses are in use because the users could lose their data. Do **not** use the -9 option of the kill command.

Error Messages and What to Do about Them

Licensing error messages appear either on the screen or in the debug log file. All Cadence licensing software error or warning messages use one of the following formats:

```
ERROR (LM -n): text... WARNING (LM n): text...
```

where n is the message number. The numbers do not appear in the debug log file. Use $lic_error -number$ to display this information about the error number.

All licenses for <feature> are in use. Do you want to wait? (y/n) [n]

All licenses for a feature are in use. You only see this message if the application you are using supports queueing (search your product's documentation in CDSDoc to determine if your product supports queueing).

You can select whether or not to wait for feature. If you answer y, the request for feature enters the queue on the first license server that has feature.

Attempting to contact redundant license servers (server, ...) - re-try request

The license server is attempting to contact all daemons in the fault-tolerant licensing configuration. This message occurs most frequently when one or more license daemons are no longer running or the network is slow.

Try to check the license in or out again.

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(daemon) BAD CODE for feature

- You need a new license file. Reinstall the license file with Cadence installation software or contact Cadence Customer Support.
- If you see this message in conjunction with the "XXACTD No quorum established, existing" message, you are trying to use Xilinx in a fault-tolerant license configuration.

The license file you receive from Cadence must include the correct host names of the license servers. Contact Support if the license file you received does not have the host names.

Can't find the install dir/tools link. Create it?

This message comes from the licensing utility you are using. The utility can create the link for you or you can create the $\underline{\texttt{tools}}$ link manually. You are required to use the $\underline{\texttt{tools}}$ link because it allows the Cadence software to easily find the appropriate executable files for your computer's architecture. The section on the $\underline{\text{Cadence Hierarchy}}$ illustrates this link.

Can't open Is_targetid

An HP needs an ls_targetid device that is not normally present in the /dev directory. You must create a link to the device.

- 1. Log in as root.
- 2. Change directories and create the device.

```
cd /dev
ln lan0 ls_targetid
```

name: cannot connect to license server (Connection refused)

The *name* is either the host name of a workstation or the name of a daemon.

Verify that you are using the correct license file.

The license daemons must run on the license server with the host ID that matches the host ID in the license file.

■ Use telnet to verify TCP/IP between the client and the license server.

Note: Do not use ping. It does not adequately ensure that the client can reach the license server.

Troubleshooting - Detailed

If you receive the prompt for a password on *hostname*, the network configuration is correct. If you can use telnet, TCP is running on your workstation.

Verify that TCP is running by typing one of these:

```
☐ netstat -a | grep tcp
```

- ☐ netstat -a | grep TCP
- □ netstat -l
- ifconfig ln0# (use netstat -rn to get interface
 # name, such as ln0)

For example, the netstat -a | grep tcp command returns information indicating tcp is running, similar to

tcp	0	0	sunny.6000	sunny.1071	ESTABLISHED
tcp	0	0	sunny.1071	sunny.6000	ESTABLISHED
tcp	0	0	*.6000	* . *	LISTEN
tcp	0	0	*.5280	* . *	LISTEN

See your operating system documentation for more information about TCP/IP.

Use Imstat to verify that the license daemons are running.

Cannot open daemon lock file MULTIPLE "cdslmd" servers running

The license daemons are already running.

Shutdown all license daemons and restart the license daemons.

You are trying to start the licensing daemons on a <u>diskless workstation</u>.

The license server must have its own operating system, file systems, and /usr/tmp directory on a local disk.

■ Someone or something removed the lock file, usually located at /usr/tmp/lockcdslmd

If you use a script or cron job to delete zero-length files, edit the script so that it does not delete this one.

Can't read data

Applications can find the license server but you are using an older cdslmd. Verify the cdslmd version you are using by looking at the debug log file (default location is

Troubleshooting - Detailed

/usr/tmp/license.log) or by running Imstat. Use the latest version of cdslmd that you have.

```
ERROR (LM -1): license error (error\_number) - contact Cadence CRC at 800-223-3622
```

This error occurs while you are running an application. Try to recall the conditions under which the problem occurred. Contact Cadence Customer Support.

```
ERROR (LM -2): encryption code in license file license_file is inconsistent
```

This error occurs when the license file contains a corrupted FEATURE line for the requested application. You need a new license file. Reinstall the license file with SoftLoad or contact Cadence Customer Support.

```
ERROR (LM -3): license server (Server, ...) communication error - try longer timeout
```

Communications failed between the license daemons and the license server. Perhaps the daemon did not respond to the license server within the time-out period because of a busy network or because the license file contains more than (or close to) 2000 FEATURE lines.

If the network is frequently busy, try increasing the time-out between the license server and the client with <u>CDS LIC TIMEOUT</u>.

```
ERROR (LM -4): invalid date format in license file license file
```

You need a new license file. Reinstall the license file with SoftLoad, or contact Cadence Customer Support.

```
ERROR (LM -5): attempted checkout of feature with incompatible types
```

The application checked out feature with one license type (such as single-job or single-user) and then made another attempt to check out the same feature with a different license type. It can only check out a feature using one license type.

Identify the problem and correct the license file.

Troubleshooting - Detailed

Either the license file has two FEATURE lines of incompatible types, or two different products are checking out the same feature in different ways.

You need a new license file. Contact Cadence Customer Support.

- Ask all users on the network using the feature to log out and complete one of the these steps.
 - Execute Imreread.
 - □ Shut down and restart the license daemons.

ERROR (LM -6): invalid syntax in license file license_file

You need a new license file. Reinstall the license file with SoftLoad, or contact Cadence Customer Support.

ERROR (LM -7): license server (server, ...) communication error - suspect bad daemons

cdslmd performs an encryption handshake operation with lmgrd before any licensing operations. This handshake operation failed. Use lmstat -a to verify that the daemons are up and running properly on server.

If lmstat indicates that the <u>Daemons Are Not Running</u>, you must <u>restart</u> the license daemons.

ERROR (LM -8): can't find SERVER hostname server in network database

The application cannot contact the license-server host name as specified in the license file using network resources.

- Verify the host name in /etc/hosts or equivalent database.
- Verify that the application client can reach the license server using the command listed below, replacing hostname with the name of the license server.

Platform	Command
HP Series 700	/usr/bin/telnet hostname
Other platforms	/usr/ucb/telnet hostname

Use the host name listed in the license file.

Troubleshooting - Detailed

Note: Do not use ping. It does not adequately ensure that the client can reach the license server.

If you are not using .rhosts and you receive the prompt for a password on hostname, the network configuration is correct.

Type Control-d to exit. If the network configuration is not correct, see your operating system documentation.

```
ERROR (LM -9): time difference between client and server is > 60 days
```

The system date on the application client does not agree closely enough with the date on the license server. The difference can be no greater than 60 days.

```
ERROR (LM -10): license file license_file does not support version version of feature
```

The version levels of feature in use and the license file on your system do not match. You need a new license file. Contact Cadence Customer Support.

```
ERROR (LM -12): unable to contact license server (server, ...) - check network
```

The feature cannot find the license daemons. If Imstat indicates the daemons are running, this error message can indicate that the network is not working properly.

- Verify that the lmgrd daemon is running.
 - □ Log into the license server and type the appropriate command.

Platform	Command
HP Series 700	ps -edaf grep lmgrd grep -v grep
IBM RS/6000	ps waux grep lmgrd grep -v grep
Solaris	ps -waux grep lmgrd grep -v grep ps -edaf grep lmgrd grep -v grep
SunOS 4.1.3	ps -waux grep lmgrd grep -v grep

The system should return an lmgrd process. If it returns nothing, the license-manager daemon is not running.

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If the correct license daemon is not running, check the messages in the debug log file. Respond to the error messages. For more information, see <u>Daemons Are Not Running</u>.

Verify that the cdslmd license daemon is running.

Replace lmgrd with cdslmd in the command listed above. The system should return a cdslmd process. If cdslmd is not running, see <u>Daemons Are Not Running</u>.

■ Use telnet to verify TCP/IP (the client can reach the license server).

Platform	Command
HP Series 700	/usr/bin/telnet hostname
Other platforms	/usr/ucb/telnet hostname

Use the host name listed in the license file. A license server must be able to telnet itself. Type Control-d to exit.

Note: Do not use ping. It does not adequately ensure that the client can reach the license server.

If you are not using .rhosts and you receive the prompt for a password on hostname, the network configuration is correct.

If you cannot establish connection to the license server, the network configuration is not correct. See your operating system documentation.

■ Verify that the host name of the license server is correct on the first line of the license file.

The host name is case-sensitive.

- If the network is busy frequently, consider increasing the time-out value.
 - □ For fault-tolerant license servers, increase the time-out among the license servers by starting the license daemons with lmgrd -t.

The default time-out is ten seconds.

□ Increase the time-out among other license servers and clients with CDS LIC TIMEOUT.

ERROR (LM -14): license file path too long or unable to allocate memory

The license manager could not allocate memory, usually because a license file path is too long. The combined length of all license file paths cannot exceed 1024 characters.

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ERROR (LM -15): license server (server, ...) communication error - try longer timeout

The process could not contact the daemon within the time-out interval.

■ For fault-tolerant license servers, increase the time-out among the license servers by starting the license daemons with lmgrd -t.

The default time-out is ten seconds.

■ Increase the time-out among other license servers and clients with <u>CDS_LIC_TIMEOUT</u>.

```
ERROR (LM -16): can't determine installation root from PATH
```

The <code>install_dir/tools/bin</code> directory is not in your path. The daemon cannot locate the installation root with its license files.

- \blacksquare Add the install_dir/tools/bin directory to the path.
 - □ For the C shell, type

```
set path = ($path install_dir/tools/bin)
```

□ For the Bourne shell, type

PATH=\$PATH: install_dir/tools/bin; export PATH

Add the path to your .cshrc or .profile.

The *install_dir*/tools/bin directory must be in your path. Type cds_root to display the full path to the top Cadence directory.

Verify that the tools link exists.

```
ERROR (LM -17): license server (server, ...) communication error - try longer timeout
```

The process could not write data to the daemon after it made the connection. The process could not contact the license daemon within the time-out interval.

- If the network is busy,
 - □ For fault-tolerant license servers, increase the time-out among the license servers by starting the license daemons with lmgrd -t.

The default time-out is ten seconds.

Increase the time-out among other license servers and clients with <u>CDS_LIC_TIMEOUT</u>.

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■ If the license daemon's operation halted while in contact with the application.

Try to repeat your procedure. Contact your license administrator.

ERROR (LM -18): feature feature check-in on server server failure detected

The check-in request did not receive a proper reply from cdslmd. The license server either considers the license still in use or not checked out. You can ignore this message.

ERROR (LM -19): user/host/display **on option EXCLUDE li**st for feature feature

The <u>options</u> file prevents the user, host, or display from using <u>feature</u>. Contact your license administrator.

ERROR (LM -20): user/host/display not on o**ption INCLUDE lis**t for feature feature

The <u>options</u> file prevents the user, host, or display from using feature. The list does not specifically indicate the user, host, or display as being able to use feature. If the options file has an INCLUDE line for feature, the application automatically prevents everyone else from using feature unless specifically included.

Contact your license administrator.

ERROR (LM -21): no more licenses are available for feature feature

All available licenses for feature are in use. You can check the time-out value for idle licenses in the options file. To add more licenses, contact your Cadence sales representative.

ERROR (LM -22): clock setting check not available in daemon

The system date on the application client does not agree closely enough with the date on the license server. The difference can be no greater than 60 days.

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ERROR (LM -23): license file *license_file* doesn't include a license for feature

The license file does not contain a feature line for feature. If you have not configured licensing or not configured it correctly, this problem can result from using the wrong license file. Use lmstat to verify the path to the license file.

If you have configured licensing correctly when you receive this message, you need a new license file. Contact Cadence Customer Support.

ERROR (LM -24): can't find license file license_file

The application cannot find the license file.

- Use telnet to verify that the license server is not down.
- Verify that the first license file in the license file path exists.

You see this error if the first file does not exist.

- Verify that the install_dir/tools/bin directory is in your PATH.
- If you are using the CDS_LIC_FILE or LM_LICENSE_FILE environment variable (and not using the clients file), verify that the variable points to the correct license file.
- The license file does not exist.

Verify the existence of the license file. If a license file does not exist in the share directory, mount the directory, copy the directory, or reinstall the license file using SoftLoad.

- If you are using a <u>clients</u> file to locate the license file, verify that the file is configured correctly.
 - \Box Verify that the install_dir/share/license/clients file exists.
 - □ Verify that the location of the license file is correct in the install_dir/share/license/clients file.
 - ☐ If a clients file does not exist in that directory, run the mkclients utility, or copy the clients.sample file and edit it.
 - ☐ If an install_dir/share/license/clients file exists, verify that it includes either the correct host name of your client or an asterisk (*), and that the listed license file is accessible from that workstation.

If you do not use * as the host name in the clients file, each workstation running Cadence applications must have a separate entry in the clients file.

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Enter the correct host name (from /etc/hosts or equivalent file, not an alias) and path information, then check out the feature again.

■ You could also see the Failed to checkout license for Lib Kit 'library '.. message.

ERROR (LM -25): unable to determine search path - check PATH setting

For some unknown reason, the application cannot determine your path using conventional (UNIX) methods.

- Verify that the install_dir/tools/bin directory is in your PATH.
- Verify that PATH is an export (Bourne or Korn shell) or a global environment variable.

ERROR (LM -26): can't read license file *license_file* - check license file permissions

- The license file is not readable, probably because the UNIX permissions of the license file prohibit read access.
- If you are using the clients file and the permissions on the license file are correct, check the permissions on the clients file because the application cannot find the license file if the clients file is not readable.

ERROR (LM -27): inconsistency detected in license file license_file

You need a new license file. Reinstall the license file with SoftLoad, or contact Cadence Customer Support.

ERROR (LM -28): no SERVER lines in license file license file

You need a new license file. Reinstall the license file with SoftLoad, or contact Cadence Customer Support.

ERROR (LM -29): TCP port not specified on SERVER line in license file *license file*

The SERVER line in the license file has no TCP/IP port number, and no TCP/IP FLEXIm service exists in /etc/services. See the FLEXIm documentation available on the World Wide Web.

http://www.macrovision.com

Troubleshooting - Detailed

- Add an unused port.
- You may need a new license file. Reinstall the license file with SoftLoad, or contact Cadence Customer Support.

ERROR (LM -30): license server (**Server**, ...) does not support feature **feature**

- Use the Imstat utility to verify that the license server daemons are up and running.
 - ./lmstat -a -c license file
- If you are using both client and server license files, verify that the FEATURE lines in the license files are identical.
- The feature is not supported because
 - The feature on the license server expired
 - The start date of the feature has not arrived
 - ☐ The version requested is greater than the highest supported version
- Contact Cadence Customer Support.

ERROR (LM -31): host hostname is not licensed to run feature feature

None of the host IDs specified in the license files match the host ID of the system attempting to run the application.

ERROR (LM -33): license file *license_file* does not **support version** version of feature

The version specified in the checkout request for this feature is higher than the version number of the feature the daemon supports. Contact Cadence Customer Support.

ERROR (LM -34): license for feature feature is not yet time-enabled

The application has not enabled the feature yet. The current date is before the feature start date. Contact Cadence Customer Support.

Troubleshooting - Detailed

ERROR (LM -35): license for feature feature has expired

The feature has expired. Today's date is later than the expiration date in the license file. Contact Cadence Customer Support.

ERROR (LM -36): unable to contact license **Server** (server, ...) - session exiting

Cadence products revalidate licenses periodically and could not reconnect to the license daemon. The current process is aborting. For some reason there was an interruption in the communication to the license server while the program was executing.

- Use <u>telnet</u> to <u>verify TCP/IP</u> (the client can reach the license server).
- Use Imstat -a to verify that the license daemons are running correctly.

ERROR (LM -37): more copies (number) of feature feature are requested than are licensed

An application attempted to check out more features than are in the license file, such as trying to check out three licenses when only two licenses are available in the license file.

```
ERROR (LM -38): machine or process limitation-can't get < number >  bytes
```

The license manager cannot allocate the specified number of bytes. This problem is usually caused by computer or process limitations.

Check the length of the license file paths. The combined length of all license file paths in the license finder or in the list below cannot exceed 1024 characters.

- CDS_LIC_FILE
- LM_LICENSE_FILE
- Applicable contents of the clients file
- **Default license location of** *install_dir/*share/license/license.dat

ERROR (LM -39): function/program set by CDS_SKILL_LICFLTR or CDS_LICFLTR is not defined or does not exist

Contact your license administrator or the person who wrote the function or program.

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ERROR (LM -40): function/program set by CDS_SKILL_LICFLTR or CDS_LICFLTR returned an error status

Contact your license administrator or the person who wrote the function or program.

ERROR (LM -41): program set by CDS_LICFLTR must have read and execute permissions

The file specified must be readable and executable. Contact your license administrator or the person who wrote the function or program.

ERROR (LM -42): program set by CDS_LICFLTR is not an executable file

The file specified must be readable and executable. Contact your license administrator or the person who wrote the function or program.

ERROR (LM -43): vfork failed while executing program set by CDS LICFLTR

Contact your license administrator or the person who wrote the function or program.

ERROR (LM -44): exec failed while executing program set by CDS_LICFLTR

Contact your license administrator or the person who wrote the function or program.

ERROR (LM -45): program set by CDS_LICFLTR was terminated by a signal

The CDS_LICFLTR program received a signal, usually a kill signal from the user. Try to start the application again.

ERROR: license daemon: execl failed: ...

The debug log file indicates that the cdslmd daemon is lost, does not exist, or is not executable. The license manager daemon (lmgrd) failed to start cdslmd.

- Verify that the path to the cdslmd daemon listed on the DAEMON line in the license file is correct.
 - Correct the path to cdslmd in the license file.
 - Shut down the license daemons.

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- □ Start the license daemons by executing /etc/rc.lic.
- Verify the existence and the permissions of the cdslmd daemon in install_dir/tools/bin.

If you are unable to find the cdslmd daemon in this directory, you must verify mounting of the file systems and existence of the links. You may need to reinstall the Cadence licensing software tools containing the Cadence daemons.

Verify that the cdslmd daemon is executable.

Use the chmod command to change the permissions if the cdslmd daemon is not executable. If you are still in the <code>install_dir/tools/bin</code> directory, type chmod 755 cdslmd

If the cdslmd daemon exists and has the correct permissions, this error message comes up because the path to cdslmd, as listed in the license file, is incorrect.

■ If you have moved install_dir/tools/bin to another location, edit your license file and correct the path to cdslmd.

ERROR: time (cdslmd) Retrying socket bind (address in use)

Another process is using the same TCP/IP port address. This error message indicates that the license daemon was already running when it started again or that the daemon improperly stopped recently and the daemon did not release the port.

- For Solaris computers, it could take about five minutes to close a port after you shut down the daemons. Wait and try again.
- Determine if more than one lmgrd is running.

If an lmgrd is already running for the Cadence software, usually lmgrd failed to start the cdslmd daemon.

Use the ps command to list the license daemons and determine their process ID numbers (pid).

If more than one version is running, use an editor to modify the license file and change the TCP/IP number.

For example, if both license files use 5210 as the TCP/IP port, change one of them to 5220. See the FLEXIm documentation available on the World Wide Web at

http://www.macrovision.com.

Use the <u>lmstat</u> utility to review the status of all Cadence features and determine if users are accessing a license.

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```
cd install_dir/tools/bin
./lmstat -c license file -a
```

☐ If more than one lmgrd is running, shut the daemons down and restart them.

Important

Do **not** kill the license manager daemon while licenses are in use because the users could lose their data. Do **not** use the -9 option of the kill command.

If users do not exit before you shut the license daemons down, they will see the <u>WARNING (LM 100) waiting <num_sec> seconds to regain <feature> license message until the license server comes back up.</u>

■ Check /etc/services to see if the socket should be busy.

ERROR: Using license file /usr/local/flexlm/licenses/license.dat

You did not use /etc/<u>rc.lic</u> to start the license daemons and you did not specify the license file (the lmgrd -c option) when you started the license daemons.

Restart the license daemons with

```
nohup lmgrd -c license_file -l /usr/tmp/license.log
```

The Imgrd daemon cannot find the license file.

Verify that the /etc/<u>rc.lic</u> file has the correct license file and host ID.

When checking for the correct host ID, you must verify the entry exactly because license files are case sensitive.

```
Failed to checkout license for Lib Kit 'library '.
```

Received with <u>ERROR (LM -24)</u>: can't find < license file > license file and "Unable to check out feature" messages.

You tried to configure *library* before you configured licensing. When installing, loading, and configuring Cadence libraries, the license daemons must be running and they must be using the new license file before you configure *library*.

Configure the library from Cadence installation software by following the directions in the *Cadence Installation Guide*.

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Inconsistent encryption code for feature

This problem can happen if you installed the license file manually, without Cadence installation software. Some mail systems wrap lines or reformat the message when forwarding your mail. You receive a license file, but you see a message similar to this in your license log file after you start to use the new file.

```
7:00:28 (lmgrd) Started cdslmd
7:00:29 (cdslmd) Inconsistent encryption code for feature
```

The mail system altered your file.

For Qualcomm's Eudora, if you still have the original Cadence mail in a Eudora folder, turn off the *wordwrap* + *QP* options from the tool bar before forwarding it to a UNIX system or saving the mail to a file again.

For ZMail from Network Computing Devices, Inc., users forwarding mail from the *Compose* screen must disable *Autoformat* in their *Options* menu.

Correct the e-mail you received and install the license file again with Cadence installation software.

license manager: Not a valid server host, exiting.

■ If you did not use /etc/<u>rc.lic</u> to start the license daemons and you did not specify the license file when you started the license daemons, restart the license daemons with the lmgrd -c command or with /etc/rc.lic

```
nohup lmgrd -c license_file > /usr/tmp/license.log
```

- If you started the license daemons with /etc/rc.lic, verify that
 - $\hfill \Box$ The file uses the lmgrd shipped with the Cadence software.

```
install_dir/tools/bin/lmgrd -c license_file
```

- The license file contains the full path to the Cadence daemon directory.
- The license file contains the correct host name and host ID of the license server.

The name on any SERVER line must match the host name of the license server.

- Restart the license daemons.
- If you use LM_LICENSE_FILE to locate the license file, it could be conflicting with other FLEXIm-based products.
 - Determine if you set the environment variable LM LICENSE FILE.

```
printenv | grep LM_LICENSE_FILE
```

Troubleshooting - Detailed

If you set the environment variable, the output is

LM_LICENSE_FILE = license_file

☐ Use CDS LIC FILE to set the correct path or append the correct path to LM LICENSE FILE.

setenv LM_LICENSE_FILE oldpath:newpath

If you add the variable to your .cshrc or .profile file, you must source the file afterward.

■ If the license daemons exist and have the correct permissions, check the path to the daemon.

If you have moved $install_dir/tools/bin$ to another location, you must edit your license file and enter the correct path to cdslmd.

- Verify proper network communication.
 - Use <u>telnet</u> to <u>verify TCP/IP</u> (the client can reach the license server). Use the host name listed in the license file.

Note: Do not use ping. It does not adequately ensure that the client can reach the license server.

If you receive a prompt for a password on <code>hostname</code>, the network configuration is correct.

☐ Type Control-d to exit.

If the network configuration is not correct, see your operating system documentation.

No features to serve!

The cdslmd daemon has no features to serve. Look at the license file.

- If you are starting an application that checks out features from a license file that contains only uncounted node-locked licenses, you do not need the daemons and this is just an informational message.
- Verify that your license file has no leading or ending spaces on FEATURE lines.

Troubleshooting - Detailed

Other users (user1, user2, ...) are waiting for feature feature to be available

One or more users are queued for feature. You only see this if the application you are using supports queueing (search your product's documentation in CDSDoc to determine if your product supports queueing).

Re-establishing contact with redundant license servers (server, ...) - re-try request

The license server contacted all daemons in the fault-tolerant licensing configuration and is re-establishing normal operation.

Try to check licenses in or out again.

```
There are n servers we can't read from! (quorum: 2):
```

This message refers to a <u>fault-tolerant licensing</u> configuration. Contact Cadence Customer Support.

```
Trying connection to host
```

In <u>fault-tolerant licensing</u>, you must start the licensing daemons on each license server within three minutes. If you don't do this on at least two servers within three minutes, the first daemon shuts down and you must begin again.

```
WARNING: Client/Server comm version mismatch (Client:version, server:version)
```

This is only an informational message. The application client and license server are using different versions of FLEXIm. There might be a problem if the application tries to use functionality only available in the later version of FLEXIm, such as node-locked and floating licenses in the same license file. Contact Cadence Customer Support if you experience problems because of this.

```
*WARNING* XXfindVmBlock: Ran out of memory
```

On an HP 700 Series, large jobs can cause problems if the maxdsize is not 256 Mbytes. You need to change this parameter.

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Troubleshooting - Detailed

Use sam to set the maxdsize to 268435456 bytes (256 Mbytes) and reconfigure the kernel. The default is 64 Mbytes. See your operating system documentation for more information.

WARNING (LM 100): waiting < num_sec > seconds to regain < feature > license...

If the connection to the license daemon is lost, num_sec increases as the Cadence licensing software tries to reconnect. Users see this message if someone shuts down the license daemons while they are still working with the Cadence products.

- On the license server, use the ps command to verify that the lmgrd daemon is running.
 If the correct license daemon is not running, check the messages in the debug log file.
- Verify that your license servers are currently supported platforms (not clones).
- Use <u>telnet</u> to <u>verify TCP/IP</u> (the application client can reach the license server).
 - If you receive a prompt for a password on *hostname*, the network configuration is correct. Use Control-d to exit.
 - ☐ If the network configuration is not correct, refer to the operating system documentation that came with your workstation.
 - Increase the time-out between the license server and the application client with CDS_LIC_TIMEOUT.
 - □ For fault-tolerant license servers, increase the time-out among the license servers by starting the license daemons with lmgrd -t.

The default time-out is ten seconds.

- If your license server uses one lmgrd daemon for multiple vendor daemons (not recommended), use Imver to verify that all vendor daemons are based on the same FLEXIm version.
 - ☐ If your license server exhibits any unusual FLEXIm behavior and your license files contain FLEXIm-based products from multiple vendors (non-Cadence products), create a new license file for your Cadence products. (Place the Cadence SERVER, DAEMON, and FEATURE lines in a separate license file.)
- Restart the daemons.

Troubleshooting - Detailed

WARNING (LM 101): max search path length of <max_length> exceeded - ignoring excess

The application ignores excess data if the combined length of license file names in the following locations exceeds 1024 characters:

- CDS_LIC_FILE
- LM_LICENSE_FILE
- Applicable contents of the clients file
- Default license location of install_dir/share/license/license.dat

```
<time>(cdslmd) Wrong hostid, exiting.
```

The <u>host ID</u> of your system does not match the host ID for which you created the license file. You cannot modify the host ID in the license file.

- Start the license daemon on the computer for which you created the license file.
- On an HP, certain software packages, such as LANSCAN, might change an HP computer's Ethernet address, which affects licensing.

If this happens after you have installed Cadence software and if you use the Ethernet address as the licensing mechanism, you need a new license file.

You can also use the hardware module ID as the host identifier. For this reason, use the module ID as the licensing identifier whenever possible.

You can run the Imhostid utility to determine the ID used for licensing on a particular computer. In some cases, you need to provide the ether option to lmhostid to retrieve the Ethernet address ID (that is, lmhostid ether).

- On an IBM RS/6000, you sometimes need a new license file if you upgrade your operating system.
- Contact your Cadence sales representative. You cannot modify the host ID field in the license file.

You have been added to the queue for feature **feature** which is being used by the following user(s): user@host, ...

The application added your name to feature's queue. You only see this message if the application you are using supports queueing (search your product's documentation in CDSDoc to determine if your product supports queueing).

Cadence License Manager Troubleshooting - Detailed

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Cadence License Manager Troubleshooting - Detailed

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F

Product to Feature Map

The product to feature map changes frequently. The *Software Shipment Confirmation Report* that you received as an e-mail (or with your CDs) lists the products (and features) in your shipment. The information appears in the following format:

Cadence License Manager Product to Feature Map

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Glossary

Α

app_dir

Variable representing the directory containing an installed Cadence product, such as dfll or verilog, under the tools directory.

application

The binary that you run for a Cadence product; what you type in to start the product.

application client

Workstation that uses the application and the license server's license file.

application directory

Directory containing an installed Cadence product, such as install_dir/tools/verilog. See "app_dir."

application file server

Computer that contains the Cadence products but is not necessarily the license server. A site frequently has more file servers than license servers.

В

bundle

Collection of one or more products. Usually, more related to installation than licensing.

C

CDhost

Workstation attached to a CD-ROM drive.

cdslmd

Cadence licensing daemon.

Glossary

cdsmgr

An account that Cadence recommends you create exclusively for managing Cadence software. You can use this account to install, configure, and manage licensing of Cadence products throughout your network.

client

See application client.

control information

See installation information.

counted licenses

Feature that has a quantity of one or more in the license file.

Ε

encoded license file

E-mail file that contains the encoded installation information and has lines beginning with "C Begin."

F

fault-tolerant licensing

Configuration in which three license servers act as one virtual license server. Only one of the license servers (the master or primary) manages licensing at one time, but if that license server goes down for any reason, one of the remaining two license servers manages the licenses.

feature

License. A product or application usually requires several features (licenses, keys). The SoftShare license manager supplies licenses.

file server

See application file server.

FLEXIm

Flexible License Manager software from Macrovision Software, Inc. SoftShare is based on FLEXIm.

floating license

License not bound to a specific workstation.

Glossary

Н

heterogeneous network

Network consisting of more than one type of hardware platform.

host ID

Unique identification string for a computer. The host ID from the operating system might be different from the one used by FLEXIm.

HOSTID

Variable representing the FLEXIm identification string for a computer.

ı

install_dir

Variable representing the top directory containing installed Cadence software, such as / cds.

installation information

License file and other related information. Known as control information in earlier releases.

L

license

Unit measure for usage authorization. Also known as a "key."

license daemons

License-server processes, lmgrd and cdslmd.

license file

Contains licenses for the Cadence products ordered for your site.

license finder

One Macrovision method to locate a license file. See the *FLEXIm End User Manual*, http://www.macrovision.com.

license pool

Group of licenses available as defined by a license file or license files.

Glossary

license server

Computer that contains the Cadence licensing software and license files on its local disk. It issues licenses to application clients.

license type

Characteristics defining the issuance (such as UHD or J) of a license, which determine the conditions under which you check out another license rather than use the current license. For example, the license type determines if you need a new license each time you start an application that runs concurrently with the same application on your workstation.

lmgrd

FLEXIm license daemon.

M

mount point

Directory on which you mount the CD-ROM drive.

multiple independent license servers

Several license servers, each using its own license file. Each license server can issue different licenses.

Ν

node-locked license

License bound to a specific workstation.

Ρ

package

Smallest piece of software that you can install using SoftLoad. A package can be an application, product, utility (such as a plotting program), or even a license file. Usually, a package relates to installation, not licensing.

product

Software, such as Design Framework II, or libraries that you purchase. A product is one or more packages.

Glossary

R

redundant server

License server in a fault-tolerant licensing configuration.

remote CDhost

Remote computer attached to the CD-ROM drive.

remote tapehost

Remote computer attached to the tape drive.

reportlog

The non-ASCII <u>log file</u> that provides detailed usage information for third-party report generators.

S

SoftLoad

Utility you use to install Cadence products.

softloadhost

Computer from which you are running SoftLoad.

SoftShare

Network license manager used by Cadence products. Cadence designed SoftShare around FLEXIm.

standalone

Computer that runs locally installed and licensed applications.

system ID

Alphanumeric string assigned by Cadence to identify the license file for the Cadence Customer Response Center.

Т

tapehost

Computer attached to the tape drive.

tool

See application.

Glossary

U

uncounted licenses

Feature with a quantity of zero in the license file.

user

Person who uses the application software and who is not the system administrator.

user data server

Computer containing user data, such as design data.

٧

vendor daemon

See cdslmd.

W

workstation

Usually, the computer on the user's desktop.

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