Cadence License Manager

Product Version 6.1
March 2001

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Printed in the United States of America.

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1

Licensing Overview

This chapter contains information about these topics:

- About This Reference on page 7
- Overview of Cadence Licensing on page 8
- Changes in This Release on page 9

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, GLOBEtrotter	*FLEXlm End User Manual* and *Frequently Asked Questions*, `http://www.globetrotter.com`

Information You Need	Where to Find It
Specific commands and other information	Operating system's documentation
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 licensing details and configurations

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 FLEXlm™ license manager from GLOBEtrotter Software, Inc. Cadence has added several features to FLEXlm licensing to better meet the needs of Cadence users:

- Alternative methods of locating the license file (`clients` file and `CDS_LIC_FILE`) so that Cadence licensing does not interfere with `LM_LICENSE_FILE` and other FLEXlm-based licensing
- A SKILL interface to licensing
- Improved error messages and solutions (`lic error`)

Cadence does not support several FLEXlm 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.

Changes in This Release

This release contains both GLOBEtrotter and Cadence changes:

- GLOBEtrotter changes
  - Cadence licensing software uses FLEXlm licensing, version 6.1

    The FLEXlm FAQ page describes differences between FLEXlm versions

    `http://www.globetrotter.com/flxlmfaq/TOC.htm`
  - New features in the `options` file: `EXCLUDEALL`, `INCLUDEALL`, `REPORTLOG`, `HOST_GROUP`, `USER_GROUP`
  - A single application process can now check out licenses from more than one license server
  - New default host ID for HP workstations: `uname -i`
- Cadence changes
  - Cadence now recommends using *`port@host`* to access the license server instead of using an actual file.

2

Licensing — How to Configure it

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
- Setting Up Fault-Tolerant License Servers 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 FLEXlm-based software if you configure the Cadence products by following the Cadence procedures.

This section describes

- 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 encoded or ASCII file?	
Is the license-server host ID correct?	
Where is the computer with that host ID?	
Are the products 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?	

What You Need to Know about License Administration	Your Site
Do you need to control access to the Cadence software?	
If you want to manage licenses with an options 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?	

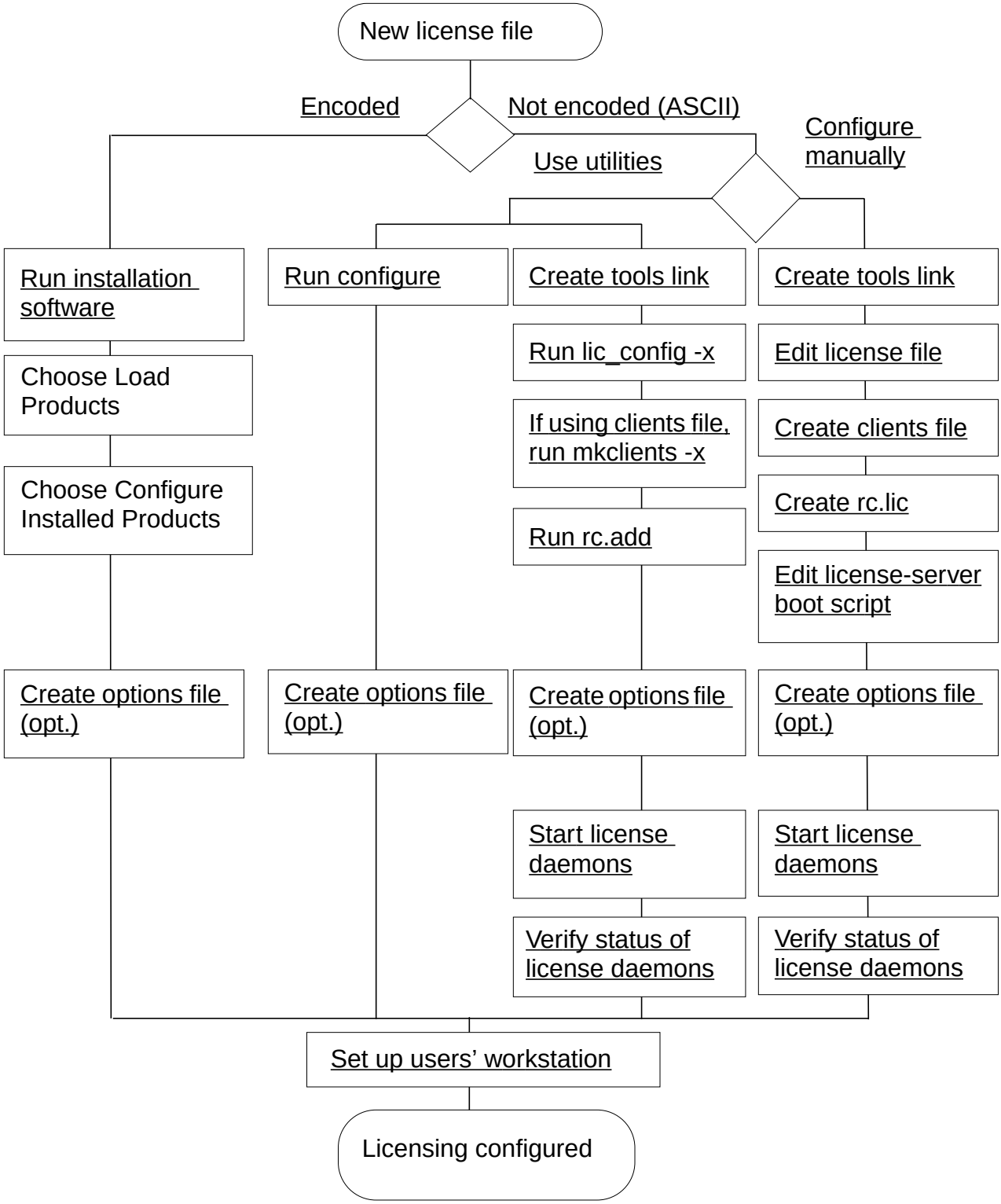
Which Format Is Your License File?

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*) *xxxxxxxx.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 *install_dir*/share/license 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	Licensing utilities or an editor

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.


New license file
Encoded
Not encoded (ASCII)
Use utilities
Configure manually
Run installation software
Choose Load Products
Choose Configure Installed Products
Create options file (opt.)
Run configure
Create options file (opt.)
Create tools link
Run lic_config -x
If using clients file, run mkclients -x
Run rc.add
Create options file (opt.)
Start license daemons
Verify status of license daemons
Create tools link
Edit license file
Create clients file
Create rc.lic
Edit license-server boot script
Create options file (opt.)
Start license daemons
Verify status of license daemons
Set up users' workstation
Licensing configured

Configuring Licensing with Cadence Utilities

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

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

Utility	Files Modified	Description
configure	License file *install_dir*/share/license/rc.lic *install_dir*/share/license/clients /etc/rc.local, /etc/inittab /sbin/rc2.d, /sbin/rc3.d, or /etc/rc2.d directory *install_dir*/tools link	Runs the lic_config -x, the mkclients -x utility, the rc.add utility, creates the tools link, starts the licensing daemons if you request it, or forces the license daemons to read the new license file.
lic_config	License file *install_dir*/share/license/rc.lic	Modifies the license-server host name, daemon path, port number, and options file path. Creates or modifies the script to start the correct daemon and create the log file.
mkclients	*install_dir*/share/license/clients	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	 inittab /sbin/rc2.d or /sbin/rc3.d directory, or /etc/rc2.d directory (rc2.d/S??cds_lic)	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. Script that runs when an HP, IBM, or Solaris computer boots. Script that runs when an HP, IBM, or Solaris computer boots

Using Cadence Installation Software

To use Cadence installation software, complete the following steps:

1. Gather the information you need by completing the checklist.
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 GLOBEtrotter 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 license server as returned by `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		

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.”

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 licensing utilities or an editor.

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_config 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 Cadence Hierarchy 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?
   <y/n/q> [y] ->
   ```

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? <y/n/q> [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 `lmgrd` 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:

`lmgrd -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`

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>`

   - 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`

- Type the `lmgrd` 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] ->
```

```
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
```

```
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 locate licenses. If you do not use a `clients` file, go on to Editing the License Server's Boot Script.

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 <y/n/q> [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 Cadence Hierarchy 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.

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.

```
Configure the clients file <y/n/q> [y] ->              # only in configure

*************************************************************

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

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 Setting Up Fault-Tolerant License Servers, type `n` so that you do not start the license daemons (only in the configure utility).

   You must start 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	**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

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 `lmstat`; 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 Using 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'.
```

```
# 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

        o You are configuring the license server files on
          another workstation

*************************************************************

Start the license server daemons? <y/n/q> [n] -> y
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 FLEXlm-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
- 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 Cadence installation software 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`		

The `tools` link lets the Cadence software find the appropriate executable files for your computer's architecture easily. The section on the Cadence Hierarchy 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.

   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 GLOBEtrotter 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 *`install_dir`*`/share/license` 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 SERVER 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
  ```

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 locate licenses. If you do not use a clients file, go on to Starting the License Daemons.

Follow the steps below to create *install_dir*/share/license/clients.

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

- ❑ If you are configuring fault-tolerant license servers and if *install_dir* 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 *install_dir* 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`
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 `lmgrd -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`
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`
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.

Decide if you must shut the license daemons down.

What Changed	**Stop and Restart License Daemons**	**Reread License File using *lmreread***
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

              OLD log files in /usr/tmp:
-rw-r--r--  1 jan 302 Nov 20 11:16 /usr/tmp/license.log.Nov.20.11:16
-rw-r--r--  1 jan 302 Nov 27 14:34 /usr/tmp/license.log.Nov.27.14:34
-rw-r--r--  1 jan 2047 Nov 27 14:38 /usr/tmp/license.log.Nov.27.14:38
```

- If you are adding software, use `lmreread` by typing

  `lmreread -c` *`license_file`*

  For fault-tolerant license servers, use `lmreread` on one license server.

  If you have combined your Cadence license file with non-Cadence FLEXlm-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.

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

This message indicates that you are setting up fault-tolerant 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 FLEXlm 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 GLOBEtrotter 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

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	`/etc/inittab, /etc/filesystems, /etc/rc.lic`
Solaris	`/etc/rc2.d/S??cds_lic, /etc/vfstab`

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 locating the license files, you need to set other variables.

   - Source the file.

```
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.

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
- Define groups 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 *`install_dir`*`/share/license` 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
```

The License_Map.*HOSTID* 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 license file. 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 *FLEXlm User Guide* at

`http://www.globetrotter.com`

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
```

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 FLEXlm 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

```
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.

*`feature`*Name of the feature reserved.

*`type`*GROUP, USER, HOST, DISPLAY, or INTERNET address. The FLEXlm 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
…
```

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. (Design Framework II-based products do not support TIMEOUT.)

```
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.

```
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
Maximum:	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 GLOBEtrotter web site:

`http://www.globetrotter.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`.

```
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
```

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`	
Default:	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 FLEXlm 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.

`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 fault-tolerant licensing, 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:

1. 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.

- 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. Start 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 GLOBEtrotter 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.

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, stop them.
7. Start the license daemons.
8. Users specify the hierarchy to use by setting their search paths to point to the correct *`install_dir`*`/tools/bin`.

   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 `lmgrd -t` option. The default time-out is 10 seconds. There is no maximum.

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.

3

License Maintenance

This chapter contains information about the following topics:

- Monitoring Licensing on page 53
- Stopping and Starting the License Daemons on page 57
- Changing the License File on page 60

Monitoring Licensing

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

- Know the status of your licenses or license daemons
- Look at the log files
- Determine the license usage
- 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 GLOBEtrotter 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 `lmstat` 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
```

`lmstat` responds with something similar to this

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

License server status
(License file: /usr/cds/share/license/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 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 `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.

- Limit the messages 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:

```
15:33:50 (lmgrd) -----------------------------------------------
15:33:50 (lmgrd)   Please Note:
15:33:50 (lmgrd)
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, Globetrotter Software, Inc.
15:33:50 (lmgrd) US Patents 5,390,297 and 5,671,412.
15:33:50 (lmgrd) World Wide Web:  http://www.globetrotter.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              F2
15:33:50 (cdslmd) F2            F2              F3
15:33:50 (cdslmd) F4            F5              F8
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
15:33:50 (cdslmd) FEATURE   F2 INACTIVITY TIMEOUT set to 900 seconds
18:18:26 (cdslmd) OUT: "F1" jdoe@sunny
18:19:57 (cdslmd) OUT: "F2" joan@windy
18:21:42 (cdslmd) IN: "F1" jdoe@sunny
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 GLOBEtrotter.

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

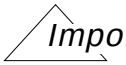
- After you modify
  - The path to the license file
  - The host name or port number in the license file
  - The `options` file
- To start a new debug log file

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

- Stopping the License Daemons
- Starting the License Daemons

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 FLEXlm 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

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
     ```

   - 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
   ```

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/lmreread -c` *license_file*

   For fault-tolerant license servers, use `lmreread` 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

- The `/usr/local/flexlm/licenses/license.dat` file

`lmreread` 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.

A

Distributed and Heterogeneous Installations

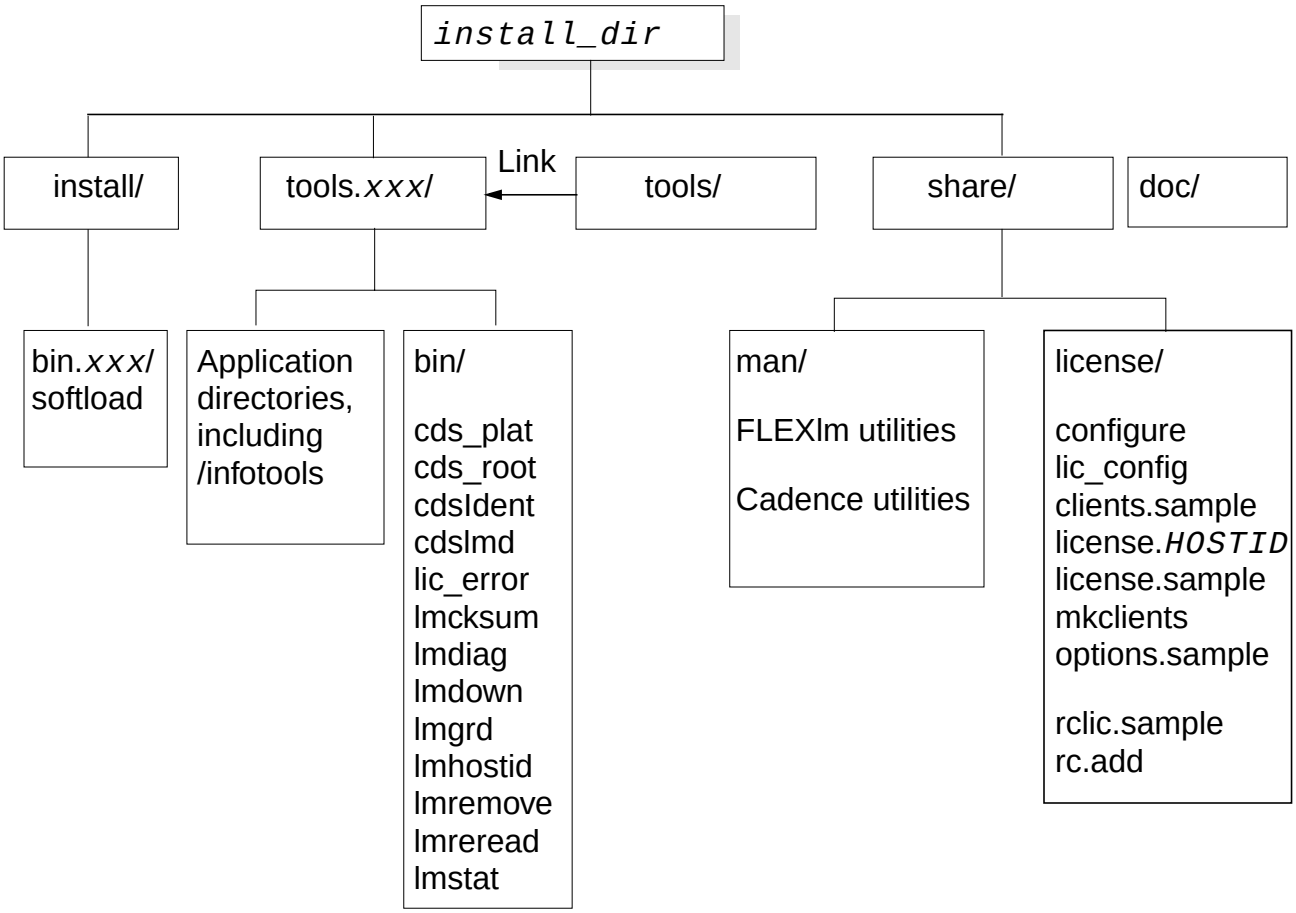
This appendix contains information about these topics.

- Cadence Hierarchy on page 63
- Distributed Software Installations on page 65
- Heterogeneous Networks on page 66

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 *install_dir*. Most Cadence applications are in their own directories under *install_dir*/tools.



Licensing Files

Cadence licensing uses these *install_dir*/share/license 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

install_dir/share/license	Purpose
rclic.sample	Sample script to start license daemons

Cadence licensing uses these *install_dir*/tools/bin 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
lm*	The FLEXlm utilities, such as lmstat

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.

Sharing Files among Platforms

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

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:

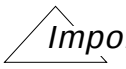
```
share  -ro,intr   server1:/cds/share \
                  server2:/cds/share \
                  server3:/cds/share

tools  -ro,intr   server1:/cds/tools.sun4v \
                  server2:/cds/tools.sun4v \
                  server3:/cds/tools.sun4v
```

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.

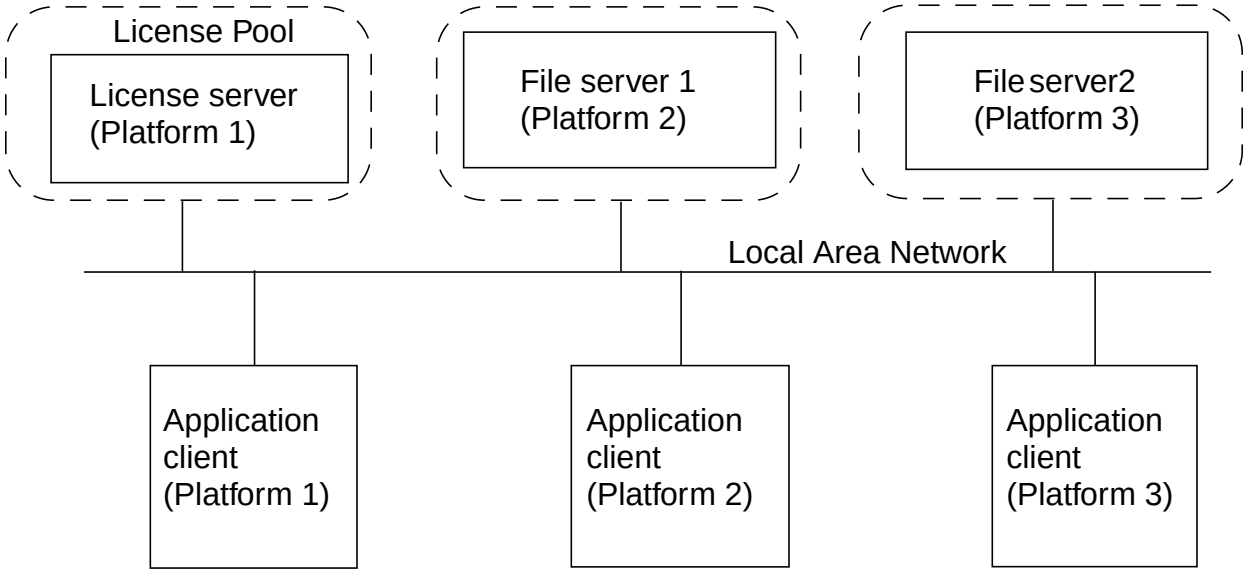
Heterogeneous Networks

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

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.



B

Licensing — How It Works

This appendix contains information about the following topics:

- Components of Licensing Configurations on page 69
- How Licensing Components Interact on page 79
- Types of Licensing Configurations on page 85

Components of Licensing Configurations

The overview of Cadence licensing gives a high-level view of licensing. This chapter describes the lower-level activities. Regardless of which licensing configuration 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.
Cadence licensing tools, including	Licensing binaries.
`lmgrd`	The FLEXlm 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.
License file	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.

The FLEXlm 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 Cannot open daemon lock file MULTIPLE “cdslmd” servers running.

- 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.

- 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 `lmstat` utility (normally found in *`install_dir`*`/tools/bin`):

  ```
  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.

- 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
		`dc ; Starts dc`
		`16 o ; Specifies output format`
		`n p ; Returns n in hexadecimal format`
		`q ; Exits dc`
		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 FLEXlm 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 FLEXlm-based software.

License File

The license file contains licenses for the Cadence products ordered 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 FLEXlm-based products. However, if you want to combine license files, see the *FLEXlm End User Manual,*

`http://www.globetrotter.com/manual.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

Caution

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.

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 `lmhostid` 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 FLEXlm 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 lmgrd 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.

Caution

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: `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.

Type	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.

[HOSTID] 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 Product to Feature Map 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.

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 `options` 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 `options` 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.

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 *FLEXlm User Guide*

`http://www.globetrotter.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 `options` 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.

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, stop and restart them to force them to see the new license files.

Combining License Files from Other Vendors

Consider these points when combining FLEXlm-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 FLEX*lm End User Manual* and the FAQ at `http://www.globetrotter.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.

- 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 `options` 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.

Method	Description
Environment variables CDS_LIC_FILE LM_LICENSE_FILE	Specifies one or more license files.

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 *`hostname`* is either the name of the workstation or an asterisk (*) to indicate all workstations, and *`license_file`* is the path to the license file. You can also specify the *`port@host`* 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
```

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
sunrise      path
```

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.
`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.

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.

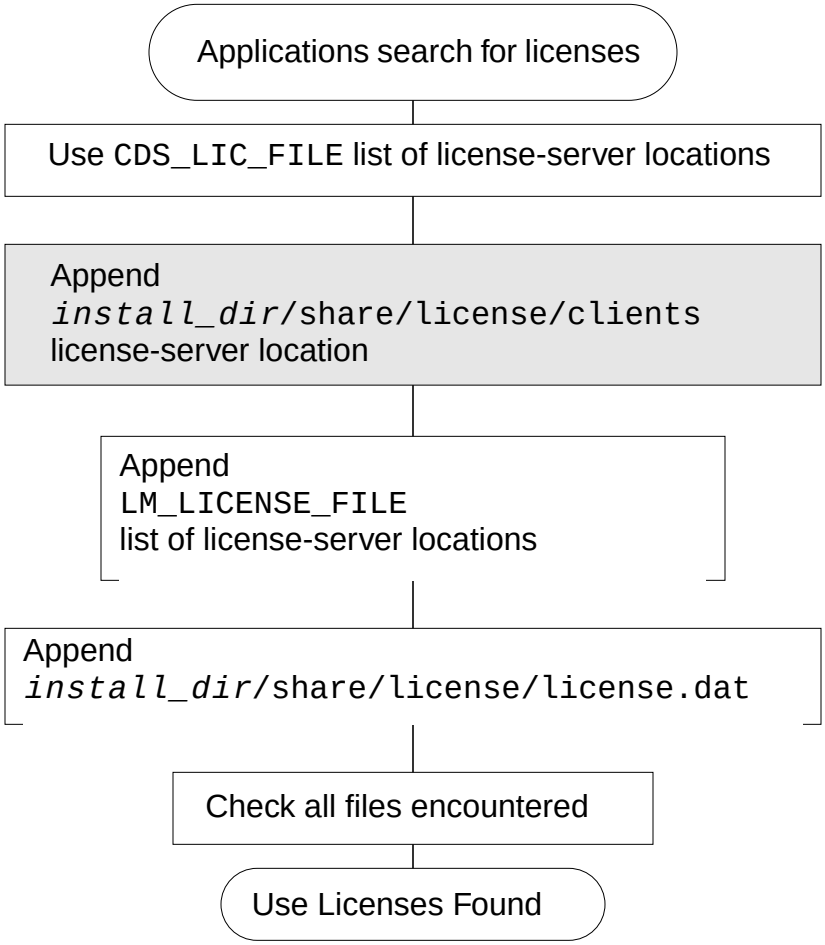
Note: AFS lets you specify paths using an at sign (@). However, because the FLEXlm software uses the @ to identify remote hosts in license file paths, AFS users cannot use @ in their license file paths. However, they can copy the license file to the local file server so that there is no @ in the name.

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.

Important

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.

   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 *install_dir*, it defaults to the current directory.

- Cadence licensing software locates the `share/license` directory.

  After Cadence licensing software locates `install_dir`, it expects a `share/license` subdirectory to reside below. This `share/license` directory should have a `clients` 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 *install_dir*`/share/license/license.dat` file.

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

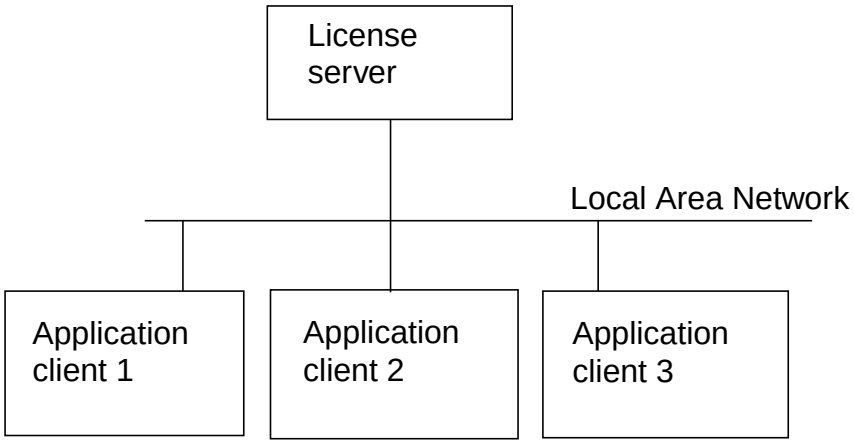
Your license file includes this information as well as the licenses for the Cadence products ordered for your site. You can determine your type of licensing configuration by looking at the number of SERVER lines in your license file.

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

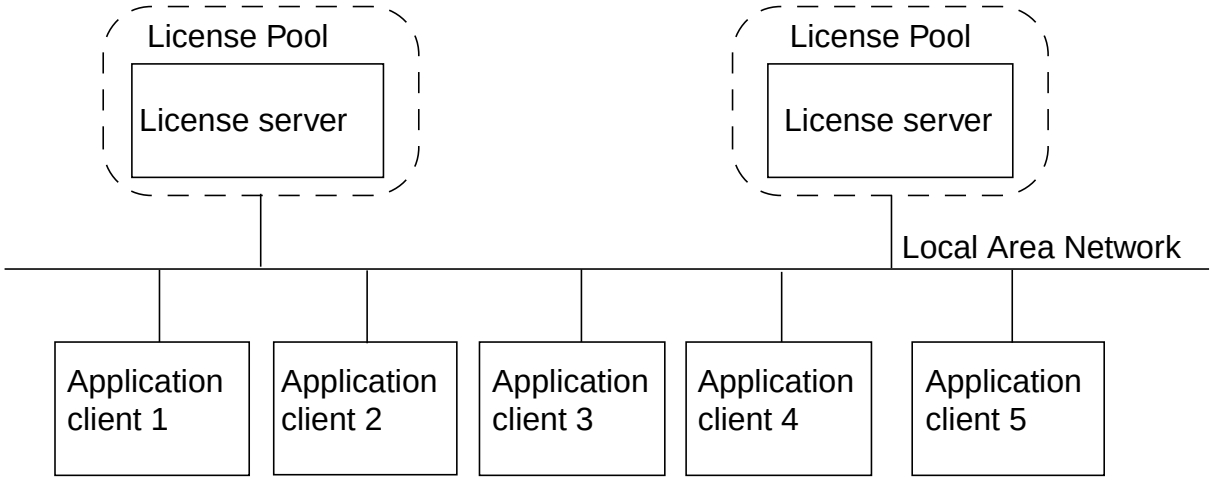
With a single license server, one license server manages all Cadence licenses. A benefit of this setup is its ease of maintenance. Cadence recommends this setup if there are few users.



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.

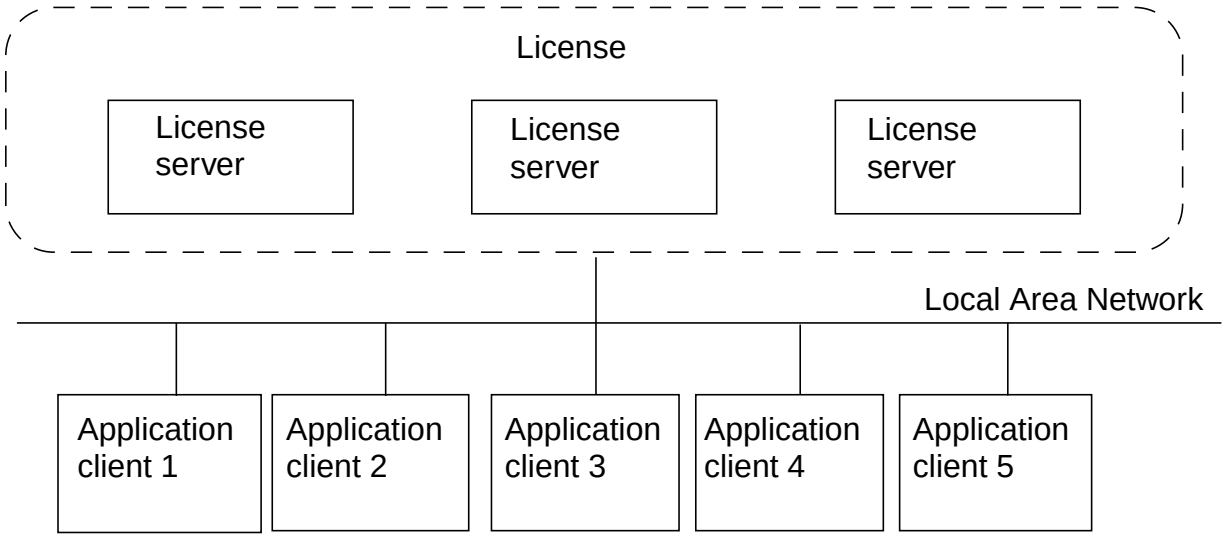


Each license server uses its own license file and distributes licenses independently. For example, if your network includes two license servers, one license server could distribute copies of the Allegro™ product while the other distributes copies of the Analog Workbench™ and Verilog-XL™ products.

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.

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

C

Licensing and Installation Commands

This appendix contains information about the following topic:

■ Licensing Utilities on page 89

Licensing Utilities

This section describes the FLEXlm and the Cadence utilities.

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

Function	Description
`cdsIdent`	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
`lmcksum`	Returns the checksum of each line in the license file
`lmdiag`	Displays information about *`license_file`* or *`feature`* and tries to check out each license. It will specify the reason if the check-out fails.
`lmdown`	Shuts down the license daemons gracefully
`lmgrd`	The FLEXlm license daemon
`lmhostid`	Returns the unique system-specific identifier used by the license manager to discern one computer from another
`lmremove`	Releases any license that an abandoned or zombie process has locked and returns the license to the license pool of available licenses

Function	Description
`lmreread`	Forces the license daemons to reread the license file
`lmstat`	Returns information on the status of the license server and the licenses it serves. This is the most valuable utility.
`lmswitchr`	Changes the report log file as specified in the options file (the enhanced log file, not the debug log file)
`lmver`	Displays the FLEXlm version that a binary or library file uses
`mkclients`	Modifies the `clients` file
`rc.add`	Modifies the computer's startup file

cdsIdent

```
cdsIdent
[ -a ]
binary
```

Description

Displays the version of libraries (dynamically or statically linked) built into the executables.

Arguments

binary	Name of the archive library or shared library executable for which to display the compiled-in version strings.
-a	Displays all compiled-in version strings. If you do not use this flag, `cdsIdent` extracts only those version strings that have CDS in them.

Example

Determine the version of `cds_root`.

```
cdsIdent cds_root
```

The system returns

```
cds_root:
$CDS: cds_root 01.00-p001 Mon Feb  6 11:33:07 PST 1995 jan $
```

Determine all compiled-in version strings.

```
cdsIdent -a cds_root
```

The system returns

```
cds_root:
     _crt1.S 1.4 92/05/21 SMI
     $CDS: cds_root 01.00-p001 Mon Feb  6 11:33:07 PST 1995 jan $
     fix_libc_.c 1.21 92/07/17 SMI
     decimal_bin.c 1.19 91/09/09 SMI
     __tbl_ntens.c 1.3 91/04/29 SMI
     _base_sup.c 1.9 91/05/22 SMI
     __floatprint.c 1.5 91/05/22 SMI
     __tbl_baselg.c 1.3 91/04/29 SMI
     __tbl_tens.c 1.3 91/04/29 SMI
     __x_power.c 1.10 91/11/17 SMI
     __tbl_10_b.c 1.2 91/04/29 SMI
     __tbl_10_h.c 1.2 91/04/29 SMI
     __tbl_10_s.c 1.2 91/04/29 SMI
     _tbl_2_b.c 1.3 91/04/29 SMI
```

```
__tbl_2_h.c 1.3 91/04/29 SMI
_tbl_2_s.c 1.3 91/04/29 SMI
_sprintf_sup.c 1.9 91/05/22 SMI
_crt2.c 1.2 91/05/22 SMI
divrem64.c 1.12 91/05/22 SMI
__tbl_fdq.c 1.3 91/04/29 SMI
_base_il4.S 1.9 92/02/10 SMI
divrem.S.m4 1.4 7/17/92 [1.13 88/02/08 SMI]
__ansi_fflush.c 1.1 91/10/03 Copyr 1991 Sun Micro
synonyms.h 1.5 92/06/02 SMI
```

configure

`configure`

Description

This Cadence utility runs three separate Cadence utilities that configure licensing: `lic_config -x`, `mkclients -x`, and `rc.add`. You can select the files to edit or create, such as

The license file

`install_dir``/share/license/rc.lic`

`install_dir``/share/license/clients`

`/etc/rc.local`, `/etc/inittab`, `/sbin/rc2.d`, `/sbin/rc3.d`, or `/etc/rc2.d` directory

`install_dir``/tools` link

Cadence installation software runs `configure`.

Example

To edit one or more licensing files at one time, type

`configure`

lic_config

```
lic_config
[ -x ]
```

Description

Modifies the license file and creates the `rc.lic` file. Run this utility from the *`install_dir`* when you are configuring Cadence licensing software, or configure licensing with Cadence installation software.

Arguments

`-x`	Runs `lic_config` interactively so that you can customize your licensing environment. Usually, you customize licensing with Cadence installation software.

Example

To edit the license file, type

```
cd /usr1/cds
./share/license/lic_config
```

lic_error

`lic_error` *`number`*

Description

Returns suggestions that give more detail about various license-related errors and warnings.

Arguments

`number`	The number given with the error message.

Example

Display information about error message LM -25.

```
lic_error -25
```

`lic_error` returns

```
ERROR (LM -25): unable to determine search path - check PATH setting

For some unknown reason, the user's PATH environment cannot be
determined using conventional (UNIX) methods. Verify that the
install_dir/tools/bin directory is in the user's PATH.
```

If you see this message,

```
Sorry - error message 25 has no extended message.
```

verify that you used the dash before the number of the error message.

lmcksum

```
lmcksum
[ -c license_file ]
[ daemon ]
```

Description

Verifies data entry errors by returning the checksum of each line in the license file. If you need to call the Customer Response Center, they can run `lmcksum` on your original license file.

Arguments

license_file	Specifies the license file (*license_file*). If you do not specify a license file, `lmcksum` uses the standard FLEXlm default, `/usr/local/flexlm/licenses/license.dat`
daemon	Forces `lmcksum` to check only the FEATURE lines that use *daemon.*

Example

To list the checksums of each line in the `license.abcd1234` file, type

```
cd /usr/cds/tools/bin
./lmcksum -c license.abcd1234
```

lmdiag

```
lmdiag
[ -c license_file ]
[ -n ]
[ feature ]
```

Description

Displays information about *feature* and tries to check it out. If you do not specify a feature, lmdiag displays information about *license_file* and tries to check out each license. If the check-out fails, it will specify the reason.

Arguments

-c *license_file*

Specifies the license file (*license_file*). If you do not specify a license file, *lmdiag* checks all license files in the license-finder path. If you do not set license finder, lmdiag checks

- The setting of the LM_LICENSE_FILE environment variable
- The /usr/local/flexlm/licenses/license.dat file

If you do not want to type in a long path to a license file for each lm* utility, create a new variable for the path before you run the lm* utilities. Setting LM_LICENSE_FILE can create problems for other FLEXlm-based software, such as compilers.

-n	Does not prompt for any information.
feature	Specifies *feature* to check out. If you do not specify a *feature*, lmdiag checks out all features in all license files in its path.

Example

To check out the 34500 license, type

```
cd /usr/cds/tools/bin
./lmdiag -c license.abcd1234 34500
```

lmdown

```
lmdown
[ -c license_file ]
[ -q ]
[ -v ]
```

Description

Shuts down the license-server process. The license daemons write out their last messages to the debug log file, close the file, and exit. All licenses granted by those daemons return to the license pool. So the next time a client program attempts to verify its license, the license is not valid. You must confirm that you want to shut down the license daemons.

You will not be able to use `lmdown` if lmgrd was started with the `-p -2` or `-x` option.

Important

Do not shut the license daemons down while licenses are in use because the users could lose their data. `lmdown` shuts down ALL license daemons in the license file or license file path.

Arguments

`-c license_file`

Specifies the license file (*`license_file`*). If you do not specify a license file, `lmdown` checks all license files in the license-finder path. If you do not set license finder, `lmdown` checks

- The setting of the `LM_LICENSE_FILE` environment variable

  If you are `root`, you must confirm the license servers (listed with this environment variable) on which you want to shut down the license daemons.

- The `/usr/local/flexlm/licenses/license.dat` file

If you do not want to type a long path to a license file for each `lm*` utility, create a new variable for the path before you run the `lm*` utilities. Setting `LM_LICENSE_FILE` can create problems for other FLEXlm-based software, such as compilers.

`-q` Suppresses confirmation before shutting down license daemons.

`-v` Displays the `lmdown` version number.

Example

To shut down all license daemons in the `license.abcd1234` license file, type

```
cd /usr/cds/tools/bin
./lmdown -c license.abcd1234
```

To shut down all license daemons in all license files, type

```
cd /usr/cds/tools/bin
./lmdown
```

lmgrd

```
lmgrd [ -b ] [ -c license_file ] [ -l log_file] [ -p ][ -t timeout ]
[ -s interval ][ -v ][ -x | utility ][ -2 ]
```

Description

FLEXlm license daemon. Cadence bases its licensing software on `lmgrd`. The `/etc/rc.lic` file starts the `lmgrd` daemon (and specifies a debug log file) if you have configured your computer to start the daemons when the computer boots.

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:

`lmgrd -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`. You can only shut down the license daemons with `kill`.

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

`lmgrd -x lmremove`

No one, not even `root`, can run `lmremove`. You can only stop the licenses with `kill`.

When `lmgrd` starts, it looks for a license file containing all required information and starts the Cadence daemon, `cdslmd` (also known as the vendor daemon).

When `lmgrd` locates the license file, it

1. Parses for a SERVER line.
2. Checks the license-server host ID against the host ID of the current computer. If they do not match, `lmgrd` continues parsing for the next SERVER line.
3. Checks that the host names match if the host IDs match.

4. Starts the `cdslmd` daemon according to the specified path.
5. The `cdslmd` then
   - ❑ Eliminates lines with duplicate encryption codes.
   - ❑ Begins reading and validating FEATURE lines if both the license-server host ID and the host name match.
   - ❑ Uses the first appropriate FEATURE line encountered and ignores other lines.

Arguments

`-b` — Allows you to use older versions of FLEXlm vendor daemons with the current `lmgrd` (except for version 2.0 vendor daemons). This is the default. For example, if you have software using the 1.3 version of FLEXlm and the Cadence software using version 2.4, you can use the version 4.1 `cdslmd` to run both the Cadence software and the 1.3 software. Both daemons can run on the same node concurrently.

Note: You cannot use this argument if you use the `-p` argument.

`-c` *`license_file`*

Uses the specified *`license_file`* and overrides the setting of `LM_LICENSE_FILE`. If you do not specify the license file, `lmgrd` looks for all license files in the license- finder path. If you do not set license finder, `lmgrd` looks at the setting of the `LM_LICENSE_FILE` environment variable.

`-l` *`log_file`* — Record daemon output in *`log_file`* instead of stdout.

`-p` — When used with `-2`, specifies that only `cdsmgr` or a user belonging to group `0` or in the `lmadmin` group can use `lmdown`, `lmreread`, or `lmremove`.

`-t` *`timeout`* — Specifies the time-out interval (*`timeout`*), in seconds, during which the daemons in a fault-tolerant license configuration must connect to each other. The default time-out is 10 seconds. You can use a larger value if the daemons run on busy computers or a heavily loaded network.

`-s` *`interval`*	Specifies the debug-log-file-time-stamp interval in minutes. The default is 360 minutes.
-v	Displays the `lmgrd` version number.
`-x` *`utility`*	Disables the `lmdown` or `lmremove` utility.
-2	Required if you want to restrict `lm*` utilities (using the `-p` option) to those with license manager privileges, such as `cdsmgr`.

Example

Start the `lmgrd` daemon from the command line and direct the log information to `/tmp/license.log`.

```
nohup lmgrd -c /usr1/cds/share/license/license.abcd1234 \
-l /usr/tmp/license.log
```

lmhostid

```
lmhostid
[ -ether ]
[ -internet ]
[ -long ]
[ -n ]
[ -v ]
```

Description

Returns the unique system-specific identifier used by FLEXlm and Cadence licensing software to discern one computer from another. By default, runs `lmhostid -long`.

Arguments

`-ether`	For HP, displays the Ethernet address as with `lanscan`. If `/dev/lan*` is not readable by all users, `lmhostid` displays "No such file or directory."
`-internet`	Returns the internet address of the computer.
`-long`	Returns the 32-bit host ID of the computer. For HP, returns the hex number from the `uname -i` command.
`-n`	Returns the host ID of the computer without the header.
-v	Displays the `lmhostid` version number.

Example

If you run:

```
./usr/cds/tools/bin/lmhostid
```

The system returns:

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

If you run:

```
/usr/cds/tools/bin/lmhostid -n
```

The system returns:

```
abcd1234
```

lmremove

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

Description

Releases any license that an abandoned or zombie process has locked and returns the license to the license pool of available licenses. It does not remove active licenses.

You sometimes need to use `lmremove` if a computer crashes when software is running. A crash can leave the license checked out. You cannot use `lmremove` within two minutes of starting the license-server daemons. You cannot remove a license within two minutes of checking it out. On Solaris computers, licenses sometimes do not return to the license pool for five minutes

You will not be able to use `lmremove` if you started `lmgrd` with the `-p -2` or `-x` option.

Arguments

`-c license_file` Specifies the *`license_file`*.

If you do not specify the license file and you have set `FLEXLM_USE_FINDER`, `lmremove` looks for all license files in the license-finder path.

If you do not specify the license file and you have not set `FLEXLM_USE_FINDER`, `lmremove` looks at

- The setting of the `LM_LICENSE_FILE` environment variable
- The `/usr/local/flexlm/licenses/license.dat` file

If you do not want to type a long path to a license file for each `lm*` utility, create a new variable for the path before you run the `lm*` utilities. Setting `LM_LICENSE_FILE` can create problems for other FLEXlm-based software, such as compilers.

`feature` Name of feature to remove.

`user` Name of user to remove.

`host` Name of host to remove.

display Name of display to remove. If you specify an incorrect *display*, licenses appear to have returned, but are not available to other users. Use the full specification as returned by the lmstat utility. If you do not use a full specification and licenses become unavailable, shut down and restart the license-server daemons.

-h *license_server port handle*
Specifies the *license_server port handle* (returned by lmstat) of the license to remove. See the example below.

-v Displays the lmremove version number.

Hint

If lmremove does not return the feature to the license pool, use lmremove -h.

Example

Use lmstat to verify the license to remove.

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

The system returns

```
lmstat - Copyright (C) 1989-1999 Globetrotter Software, Inc.
Flexible License Manager status on Tue 12/5/95 12:09

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

Vendor daemon status (on trn64):
cdslmd (v3.x): UP
Feature usage info:

Users of 111: (Total of 1 licenses available)
joe cds1 server:0 (v1.000) (cds3/5280 603),
                           license_server port handle
start Wed 6/2 15:13
```

To remove license 111 checked out to joe on cds1 using display server:0, type
lmremove -c /cds/share/license/license.abcd1234 111 joe cds1 server:0

To use the *license_server port handle* from the lmstat message (cds3/5280 603) to remove license 111, type

```
lmremove -h 111 cds3 5280 603
```

lmreread

```
lmreread -c license_file
[ -v ]
[ daemon ]
```

Description

Forces the license daemons to reread the license file (presumably because you added new information or otherwise updated the file). `lmreread` uses the license file only to find the correct vendor daemon to notify to reread the license file. The vendor daemon always rereads the original file.

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

You must stop and restart the daemons (instead of using `lmreread`) if you have changed

- Path to license file
- SERVER host names
- TCP/IP port numbers
- `options` file

  `lmreread` does not read an `options` file. If the new license file specifies a different `options` file, `lmreread` ignores that information. If the `options` file needs rereading, you must stop and restart the daemons.

You will not be able to use `lmreread` if you started `lmgrd` with the `-p -2` option.

Arguments

`-c` *`license_file`* Specifies the license file (*`license_file`*).

If you do not specify a license file, `lmreread` checks all license files in the license-finder path. If you do not set license finder, `lmreread` checks for the license file sequentially in

- The setting of the `LM_LICENSE_FILE` environment variable
- The `/usr/local/flexlm/licenses/license.dat` file

If you do not want to type a long path to a license file for each `lm*` utility, create a new variable for the path before you run the `lm*` utilities. Setting `LM_LICENSE_FILE` can create problems for other FLEXlm-based software, such as compilers.

-v	Displays the `lmreread` version number.
daemon	Specifies which licensing daemon rereads its license file. The `lmgrd` daemon does not reread the license file.

Example

To have the daemons see the changes in the license file, type

```
lmreread -c /usr1/cds/share/license/license.abcd1234
```

lmstat

```
lmstat
[ -a ]
[ -A ]
[ -c license_file ]
[ -f feature ]
[ -i [ feature ] ]
[ -l pattern ]
[ -s server ]
[ -S daemon ]
[ -t timeout ]
[ -v ]
```

Description

Returns information on the status of the license server and the licenses it serves. This is the most valuable utility.

Because license files specified with environment variables append to a list of license files, you can include a specific license file several times. Because `lmstat` does not notice the same file listed twice, the user list contains one line for each time `lmstat` checks the same license file, thereby listing duplicate lines.

Note: `lmstat` does not count node-locked S type licenses with count of `0,` nor does it reflect the contents of the `clients` file or Cadence variables.

Arguments

`-a`	Displays status of all FLEXlm licenses.
`-A`	Lists all active licenses.
`-c` *`license_file`*	Specifies the license file (*`license_file`*). If you do not specify a license file, `lmstat` looks for all license files in the license-finder path. If you do not set license finder, `lmstat` looks at

- The setting of the `LM_LICENSE_FILE` environment variable
- The `/usr/local/flexlm/licenses/license.dat` file

If you do not want to type a long path to a license file for each `lm*` utility, create a new variable for the path before you run the `lm*` utilities. Setting `LM_LICENSE_FILE` can create problems for other FLEXlm-based software, such as compilers.

`-f` *`feature`*	Lists all users of the feature (*`feature`*).
`-i [`*`feature`*`]`	Displays license file information about all features in the license file or only about a specified feature (*`feature`*), including version, expiration date, number of licenses, and daemon name.
`-l` *`pattern`*	Lists all users of the features matching *`pattern`* (no wildcards). This option is not available on HP-UX and Solaris platforms.
`-s` *`server`*	Displays the status of the license server (*`server`*).
`-S` *`daemon`*	Lists all users of the daemon's (*`daemon`*) features.
`-t` *`timeout`*	Specifies the time-out interval (*`timeout`*), in seconds, to wait for the return of the licensing status. The default value is 10 seconds. You can use a larger value if the daemons run on busy computers or a heavily loaded network.
`-v`	Displays the `lmstat` version number.

Example

For example, to return the status of the licenses in `license.abcd1234`, type

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

The system returns

```
lmstat - Copyright (C) 1989-1999 Globetrotter Software, Inc.
Flexible License Manager status on Tue 12/5/95 12:09

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

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

Feature usage info:

Users of cpe:  (Total of 2 licenses available)
     “cpe” v2.100, vendor: cdslmd
     1 nodelocked licenses, locked to hostid “abcd.1234”

jan sunny unix:0 (v1.000) (sunny/5280 201), start Thu 1/4 14:48

     “cpe” v2.100, vendor: cdslmd
     1 floating licenses

joe cds3 cds3:0.0 (v2.000) (cds3/5280 101), start Thu 1/4 14:48
```

The *license_server port handle* used by lmremove is cds3/5280 101.

lmswitchr

`lmswitchr [ feature ] reportlog_file`

Description

Designates a new report log file, *REPORTLOG* (specified in the `options` file, not the usual debug log file started with `lmgrd`), for *feature* while the license daemons are running.

Arguments

feature

Name of feature for which to start a new report log file. If you do not specify a *feature*, it creates a new log file for all features.

reportlog_file

Name of the new report log file.

Example

Start a new report log file for the `111` feature.

```
lmswitchr 111 /usr1/cds/share/license/logs/111.Jan96
```

lmver

```
lmver [ file_name ]
[ -v ]
```

Description

Displays the FLEXlm version that a binary or library file, *file_name*, uses. If you do not specify *file_name*, `lmver` assumes the file name is `liblmgr.a` and returns an error message if it cannot find the `liblmgr.a` file.

Arguments

file_name	Name of the binary or library file for which to show the version.
-v	Displays the `lmver` version number, but also displays a `Failed to open file` message, which you can ignore.

Example

To determine the FLEXlm version, type

```
cd /usr/cds/tools/bin
./lmver cdslmd
```

The system returns

```
lmver - Copyright (C) 1989-1999 Globetrotter Software, Inc.
FLEXlm 6.1 (liblmgr_as.a), Copyright (C) 1988-1994 Globetrotter Software, Inc.
FLEXlm 6.1 (liblmgr_s.a), Copyright (C) 1988, 1993 Globetrotter Software, Inc.
FLEXlm 4.1 (liblmgr.a), Copyright (C) 1988-1994 Globetrotter Software, Inc.
```

To determine the version of the `lmver` utility, type

```
lmver -v
```

The system returns

```
lmver v6.1
lmver - Copyright (C) 1989-1999 Globetrotter Software, Inc.
```

mkclients

```
mkclients
[ -x ]
```

Description

Creates or modifies the `clients` file, adding the application clients allowed to access the license file on this license server. Run this utility from the *`install_dir`*. Usually, you configure the `clients` file when you configure licensing with Cadence installation software. The `clients` file is one of several methods of locating the license file.

Each application file server should have only one `clients` file. The Cadence licensing software searches the `clients` file for the appropriate entries and then contacts the specified license servers for a license.

The license server needs a `clients` file to allow each application to access the license file if either of the following is true.

- The license server will be running Cadence applications
- Application clients will use the applications installed on the license server

Arguments

-x	Runs `mkclients` interactively so that you can customize the clients file for your site. See Configuring the Clients File.

Example

```
cd /usr/cds
./share/license/mkclients
```

rc.add

`rc.add`

Description

Copies the `rc.lic` file created by Cadence installation software or `lic config` to `/etc`. Depending on the platform, appends a line to the end of `/etc/rc.local` or `/etc/inittab` or creates a file in `/etc/rc2.d` or `/sbin/rc3.d`, `/etc/rc2.d`. After editing or creating the file, the license daemons start when the computer boots.

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

Usually, you configure licensing with Cadence installation software, which creates and appends the necessary licensing files.

Example

As `root`, type

```
cd /usr/cds
./share/license/rc.add
```

D

Troubleshooting

This appendix contains information about the following topics:

- General Troubleshooting Hints on page 115
- Specific Problems on page 116
- Error Messages and What to Do about Them on page 122

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 `lmstat` 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.

   `lmstat` indicates when the Daemons Are Not Running.
4. Look at the license debug log file.

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 You Cannot Find the License Debug Log File.
- If the debug log file indicates the license server started correctly, use `lmstat -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 FLEXlm behavior and your license files contain FLEXlm-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 the Customer Response Center 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 lmremove

Daemons Are Not Running

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

- Use `lmstat` to verify the daemon status.
- Check the `/usr/tmp/license.log` file.
  - `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 Cadence 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 Creating the Tools Link 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.

- 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 debug log file records all licensing activity unless the messages are restricted by the `options` 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.

- `/etc/rc.lic` does not exist, or is not executable.

  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 Cadence installation software (choose *Configure Products*) or with a text editor.

- 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 socket bind problem, try again.
- The license server rebooted.

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.

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.
  - Verify 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 Letting Users Access Cadence Products.
- Occasionally, you are not able to start another instance of an application if its `FEATURE` line in the license file indicates it is a `UHD` 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 `DISPLAY`s 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.

Licenses Not Checked-in after Using `lmremove`

Using `lmremove` 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 `lmstat`.

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

- Release the licenses by shutting the daemons down and restarting them.

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.

(*daemon*) BAD CODE for feature

- You need a new license file. Reinstall the license file with Cadence installation software or contact the Customer Response Center (CRC).
- 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 the CRC 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 `tools` link manually. You are required to use the `tools` link because it allows the Cadence software to easily find the appropriate executable files for your computer's architecture. The section on the Cadence Hierarchy illustrates this link.

Can't open ls_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.

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 `lmstat` 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 diskless workstation.

  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

`/usr/tmp/license.log`) or by running `lmstat`. 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 the Customer Response Center.

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 the Customer Response Center.

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 `CDS_LIC_TIMEOUT`.

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 the Customer Response Center.

ERROR (LM -5): attempted checkout of feature *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.

  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 the Customer Response Center.

- Ask all users on the network using the feature to log out and complete one of the these steps.

- Execute `lmreread`.
- 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 the Customer Response Center.

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 Daemons Are Not Running, you must restart 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.

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 *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 the Customer Response Center.

ERROR (LM -12): unable to contact license server (server, …) - check network

The feature cannot find the license daemons. If lmstat 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.

  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 Daemons Are Not Running.

- 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 Daemons Are Not Running.

- 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.

`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 CDS_LIC_TIMEOUT.

ERROR (LM -16): can't determine installation root from PATH

The *install_dir*/tools/bin directory is not in your path. The daemon cannot locate the installation root with its license files.

- 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 CDS_LIC_TIMEOUT.
- 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 list for feature *feature*

The options file prevents the user, host, or display from using *feature*. Contact your license administrator.

ERROR (LM -20): user/host/display not on option INCLUDE list for feature *feature*

The options 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.

ERROR (LM -23): license file *license_file* doesn't include a license for feature *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 the Customer Response Center.

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 clients file to locate the license file, verify that the file is configured correctly.
  - 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.

    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 the Customer Response Center.

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 the Customer Response Center.

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 FLEXlm service exists in `/etc/services`. See the FLEXlm documentation available on the World Wide Web,

`http://www.globetrotter.com`

- Add an unused port.
- You may need a new license file. Reinstall the license file with SoftLoad, or contact the Customer Response Center.

ERROR (LM -30): license server (*server*, …) does not support feature *feature*

- Use the `lmstat` 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 the Customer Response Center.

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 *feature*

The version specified in the checkout request for this feature is higher than the version number of the feature the daemon supports. Contact the Customer Response Center.

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 the Customer Response Center.

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 the Customer Response Center.

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 `telnet` to verify TCP/IP (the client can reach the license server).

- Use `lmstat -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.

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.
  - 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 *`install_dir`*`/tools/bin` 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 FLEXlm documentation available on the World Wide Web at

    `http://www.globetrotter.com.`

  - Use the `lmstat` utility to review the status of all Cadence features and determine if users are accessing a license.

    ```
    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 `WARNING (LM 100) waiting` *<num_sec>* `seconds to regain` *<feature>* `license` message until the license server comes back up.

- 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/rc.lic` 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 `lmgrd` daemon cannot find the license file.

  Verify that the `/etc/rc.lic` 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 ERROR (LM -24): can't find < *`license file`* > license_file and "`Unable to check out feature 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*.

`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/rc.lic` 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
  - 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 FLEXlm-based products.
  - Determine if you set the environment variable `LM_LICENSE_FILE`.

    ```
    printenv | grep LM_LICENSE_FILE
    ```

    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 `telnet` to verify TCP/IP (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 *`hostname`*, 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.

`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 fault-tolerant licensing configuration. Contact the Customer Response Center.

`Trying connection to host`

In fault-tolerant licensing, 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 FLEXlm. There might be a problem if the application tries to use functionality only available in the later version of FLEXlm, such as node-locked and floating licenses in the same license file. Contact the Customer Response Center 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.

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 `telnet` to verify TCP/IP (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 `lmver` to verify that all vendor daemons are based on the same FLEXlm version.
  - If your license server exhibits any unusual FLEXlm behavior and your license files contain FLEXlm-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.

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 host ID 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 `lmhostid` 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).

E

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:

```
Product: (Name [Version])
                        Qty   Exp. Date    NodeLock/Floating Hostid
FEATURE_1/Version#/Type [FEATURE_2/Version#/Type ...]

Here is an example:
BG100: (Envisia(TM) synthesis tool)
                         2     1-jan-0     {floating}
BuildGates/2.3 libcompile/2.3
```

Glossary

A

app_dir
Variable representing the directory containing an installed Cadence product, such as dfII 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.

B

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.

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.

E

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.

FLEXlm
Flexible License Manager software from GLOBEtrotter Software, Inc. SoftShare is based on FLEXlm.

floating license
License not bound to a specific workstation.

H

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 FLEXlm.

HOSTID
Variable representing the FLEXlm identification string for a computer.

I

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 GLOBEtrotter method to locate a license file. See the *FLEXlm End User Manual*, `http://www.globetrotter.com`.

license pool
Group of licenses available as defined by a license file or license files.

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`
FLEXlm 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.

N

node-locked license
License bound to a specific workstation.

P

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.

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 log file 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 FLEXlm.

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.

T

tapehost
Computer attached to the tape drive.

tool
See application.

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.

V

vendor daemon
See `cdslmd`.

W

workstation
Usually, the computer on the user's desktop.

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