cadence®

# Cadence License Manager

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active in the removal and replacement of inappropriate language from existing content. This product documentation may however contain material that is no longer considered appropriate but still reflects long-standing industry terminology. Such content will be addressed at a time when the related software can be updated without end-user impact.

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# Licensing Overview

This chapter contains information about these topics:


- About This Reference
- Overview of Cadence Licensing


## About This Reference

This reference is for Cadence system administrators, those providing the installation and licensing support for Cadence software on Linux 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 | Configuration guide of the application, if one exists |
| Additional licensing or configuration requirements for Cadence products | Postinstall `README` |
| Other product-specific information | Search the online documentation of the product in the Cadence online documentation system (Cadence Help) |
| More licensing information from our license manager vendor, Flexera Software | *FlexNet License Administration Manual* and Frequently Asked Questions, `https://www.flexera.com` |
| Specific commands and other information | Documentation of the operating system |

| | |
|---|---|
| Information specific to your hardware | Hardware documentation |

After you install your Cadence products and configure licensing, you can read the following reference information:

- 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 FlexNet™ license manager from Flexera Software. Cadence has added several features to FlexNet 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 FlexNet-based licensing
- Improved error messages and solutions(lic_error and Licensing Utilities)

Cadence does not support several FlexNet features, such as `INCREMENT`, `UPGRADE`, `FEATURESET`, `LINGER`.

The license server supports Amazon Elastic Compute Cloud (Amazon EC2), Google Compute Engine (GCE) and Microsoft Azure, which let you run the license server in the cloud.

⚠ IPv6 networks are supported for Cadence applications using License SDK version `19.02-p001` or above. You can determine the License SDK version from the Product Release notes or by running the application with the `CDS_LIC_QA_TesT` environment variable pointing to a log file. The License SDK version is displayed at the top of the generated log file.

Cadence applications connecting to the license manager using older versions of License SDK cannot recognize IPv6 network configurations. See Setting Variables for IPv6 Network Support for more information.

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# How to Configure Licensing

This chapter contains information about the following topics:


- Configuring Licensing
- After You Configure Licensing
- Managing Licenses
- Setting Variables for IPv6 Network Support
- Setting Up Fault-Tolerant License Servers
- Running Two Versions of Cadence Software
- Specifying Time-Outs
- Specifying License Queuing Options


## Configuring Licensing

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

Configuring licensing can include:

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

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

This section describes:

- What Do You Need to Know?
- What Do You Do Now?
- Configuring Licensing with Cadence Utilities
- Configuring Licensing without Utilities
- Configuring Licensing using Dongles

## What Do You Need to Know?

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

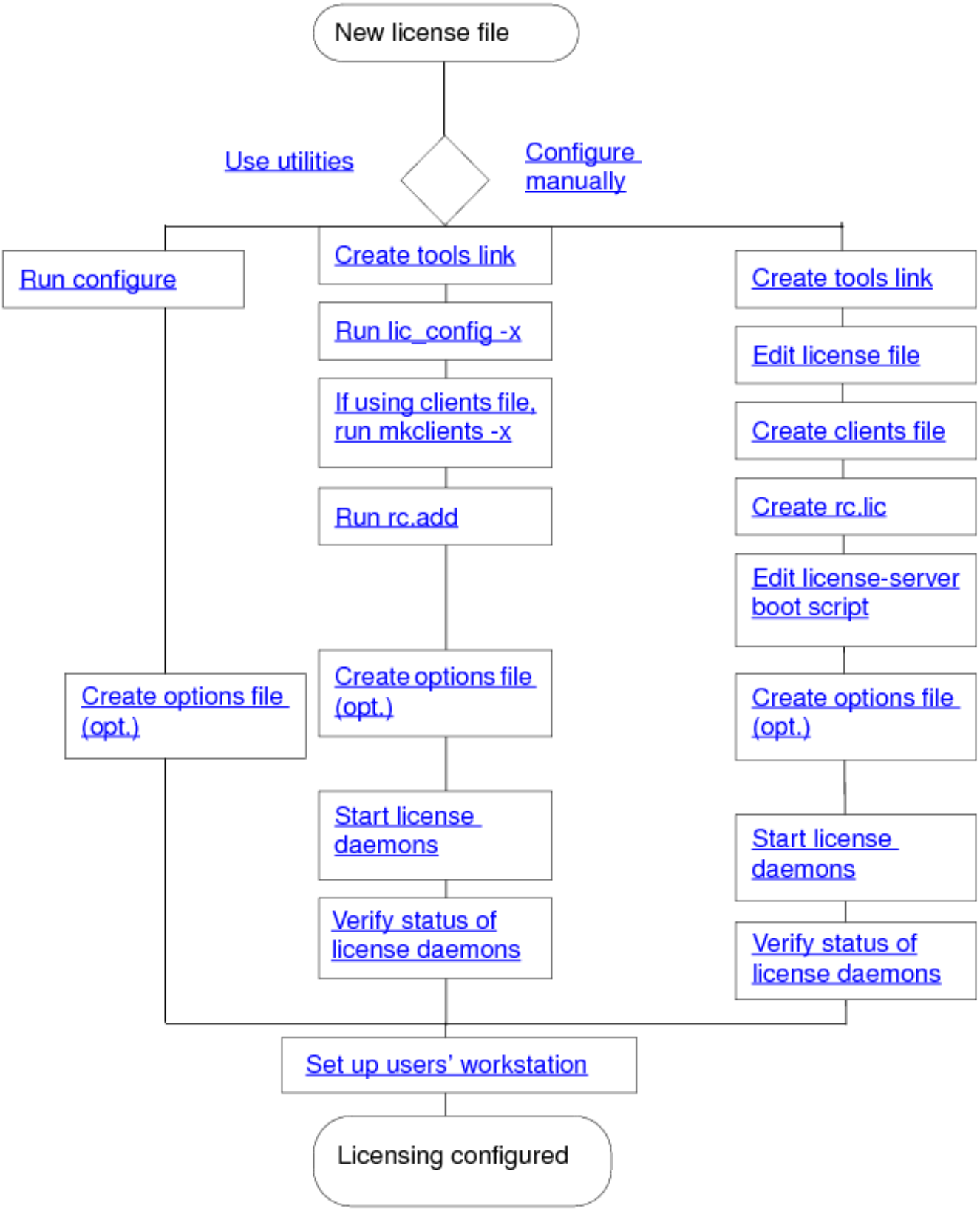
| What You Need to Know about the License File | Your Site |
|---|---|
| Where is the license file? | |
| Which license configuration does it support (how many SERVER lines does it have)?<br><br>One SERVER line: single license server<br><br>Three SERVER lines: fault-tolerant license server<br><br>Neither 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? | |
| Do you need to control access to the Cadence software? | |
| Do you want to manage licenses with an options file? | |
| 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 ? | |

## 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
Use utilities
Configure manually
Run configure
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
Create options file (opt.)
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 FlexNet-based software if you configure the Cadence products by following the Cadence procedures.

This section describes:

- Summary of License Configuration Utilities
- Configuring the License Server
- Sample Dialog
- Configuring the Clients File
- Sample Dialog
- Editing the License Server's Boot Script
- Sample Dialog
- 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
- Installing the HASP Dongle Drivers
- Checking the Dongle driver and USB Hardware
- Starting Up the License Server
- Validating Licenses
- Examples
- Checking Performance

# Summary of License Configuration Utilities

The licensing utilities modify the files listed below.

| Utility | Files Modified | Description |
|---|---|---|
| configure | License file<br>*install_dir* /share/license/ rc.lic<br>install_dir /share/license/ clients<br>/etc/rc.local, /etc/inittab<br>/sbin/rc2.d, /sbin/rc3.d,<br>or /etc/rc2.d directory<br>*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 | Modifies the license-server host name, daemon path, port number, and options file path. |
| | *install_dir* /share/license/ rc.lic | 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 | | Appends the script to start license daemons to the end of the license-server boot script. Depending on your operating system, you will need root permission to access or edit / etc files. |
| | `inittab` | Script that runs when a Linux computer boots. |

## Configuring the License Server

The configure utility 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.

Continue from the configure utility, or start the lic_config utility.

1. To use the defaults, type `lic_config`
   To customize licensing, type `lic_config -x`
2. Enter the top installation directory `<q to quit>`

Type the path to the top directory that 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?
```

- 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] ->
```

- 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] ->
```

- 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.
- 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.
- 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. The configure utility continues 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.

The configure utility continues running mkclients -x. Respond to the continuing prompts.

Continue from 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
```

The configure utility continues.

Configure the clients file <y/n/q> [y] →

All utilities continue.

Enter the top installation directory

- 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?

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

- 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?

- To allow all workstations to access this license server, type n to use the defaults (only in the

configure utility).

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

- 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*

> 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

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.

- Continue the configure utility, or start rc.lic. To start rc.lic, as root type

  ```
  rc.lic
  ```

  The configure utility continues by running the rc.add utility. Respond to the continuing prompts.

Edit *hostname* 's boot script?

- 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).
  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?

- 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).
- 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** |
|---|---|
| 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 the Cadence license daemons are not running, type `y` at the prompt to start the license daemons.
- To verify the license daemons are running, type

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

- If you have multiple license servers, repeat this entire procedure (beginning with Configuring the License Server) 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
`Cadence License Manager Guide'.

# 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 FlexNet-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
- Validating Licenses
- Checking Performance

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 licensing utilities, or if you do not have a tools link, you must create a tools link by following these steps:

- Change to the installation directory.

  cd *install_dir*

- Create the tools link.

  ln -s tools. *xxx* tools

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

| Platform | Directory Name |
|---|---|
| Linux | tools.lnx86 |

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

- Gather the information you need by completing the checklist.
- 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. Change to the Cadence installation directory.

  cd *install_dir*

- Verify the host ID of the license server.

  tools/bin/lmhostid

  The computer returns the host ID expected by Cadence licensing.

  ```
  lmhostid - Copyright (C) 1989-2011 Flexera Software, Inc. All Rights
  Reserved.
  The FLEXnet Host ID of this machine is "abcd1234"
  ```

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

- On the license server, change to the *install_dir* /share/license directory.

  cd share/license

- 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
  ```

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

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

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

  ```
  cd install_dir /share/licens
  ```
- Copy the clients.sample template file to clients.

  ```
  cp clients.sample clients
  ```
- Change the permissions of the new file.

  ```
  chmod 644 clients
  ```
- 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.
  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:

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

  cd *install_dir* /share/license
- Copy rclic.sample to /etc/rc.lic

| Platform | Copy to |
|---|---|
| Linux | /etc/rc.lic |

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

  chown cdsmgr /etc/rc.lic
- Give the file the correct permissions.

| Platform | Command |
|---|---|

| | |
|---|---|
| Linux | `chmod 6744 /etc/rc.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:

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

  cd /etc
- To save the existing boot script listed below, copy it to a different name.

| Platform | Name of Boot Script |
|---|---|
| Linux | /etc/inittab |

  - For example, on a Linux, type

    cp ./etc/inittab /cic/inittab.old
- Open the original file with an editor.
- Add the following lines to the end of the file.

| Platform | File Name | Lines to Add |
|---|---|---|
| Linux | /etc/inittab | # Starting the Cadence license server<br>cds::once:sh /etc/rc.lic |

- 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.

To start the license daemons, follow these steps:

- On the license server, log in as cdsmgr or another non-root user.
- 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** |
|---|---|
| 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 the same process as installing software.
- If the new license file contains changes to licenses currently in use, users must exit and restart the applications to use the new features.

- If you see a "Trying connection to *host*" message, stop and restart the daemons.
  This message indicates that you are setting up fault-tolerantlicensing.
- If you are setting up multiple independent license servers, repeat these steps on each license server.
- Make sure that the license daemons are up and running.

  The FlexNet 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) 1989-2011 Flexera Software, Inc. All Rights
  Reserved.
  Flexible License Manager status on Wed 2/22/2012 16:15


  License server status: 5280@sjflex1
      License file(s) on sjflex1: /licenses/licadm/iLicense/
  license.cds.sjflex1:


     sjflex1: license server UP (MASTER) v11.10
  ```

  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.
  - 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 |
|---|---|
| Linux | /etc/rc.lic, /etc/fstab |

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

## Configuring Licensing using Dongles

HASP Dongles is now supported on Windows and Linux 64-bit platforms.

This section describes:

- Installing the HASP Dongle Drivers
- Checking the Status of the Dongle Driver and USB Hardware
- Starting up the License Server

## Installing the HASP Dongle Drivers

The HASP Dongle drivers are included in the Cadence License Server kit.

For Linux, the driver (aksusbd-X.X-X. x86_64.rpm) can be found under tools.lnx86/bin/. To install it, you must have root privilege. Change directory to tools.lnx86/bin/ (or use the absolute path of the driver package, e.g. /tmp/install/ tools.lnx86/bin/aksusbd-2.5-1.i386.rpm) and run the following in a terminal:

rpm -i aksusbd-2.5-1.i386.rpm(if in the tools.lnx86/bin directory)

OR

rpm -i <absolute path of driver package>

The installation will add two files to the machine under the /usr/sbin directory:

- /usr/sbin/aksusbd
- /usr/sbin/winehasp

For Windows, to install the driver, run the appropriate executable installer found in the flexid directory. For more Windows Dongle installation and details, refer to the README which can be found in the same flexid directory.

NOTE: There is a limitation that the user space dongle dynamic libraries, haspsrm_win32.dll and haspsrm_win64.dll for 32 and 64 bit platforms respectively, are not installed when this installer is run. This is because these dlls are specific to Flexera Software and therefore cannot be included as part of haspdinst.exe.

These dlls are present in the toolkit platform folder. The dongle dlls can be installed this way,

On 64-bit Windows systems, copy haspsrm_win64.dll to %windir%/System32 and

haspsrm_win32.dll to %windir%/SysWOW64.

## Checking the Dongle driver and USB Hardware

To check whether the Dongle driver has been successfully installed, plug in the USB Dongle hardware, and run the following:

./lmutil lmhostid -flexid

The output should show the FLEX ID of the HASP Dongle.

On Windows only, an alternative way to check the Dongle installation is to open lmtools and select the System Settings tab to check for the flexid.

If an error is reported or the FLEX ID could not be returned, refer to Aladdin's website: http://www.aladdin.com for more details and troubleshooting tips.

## Starting Up the License Server

The instructions to start up a license server with Dongle is the same as starting up a normal license server, except that the USB Dongle hardware must be plugged-in to a port on the host and assure that the Dongle license file is updated with the proper host name.

A Cadence Dongle license file contains a SERVER line similar to the following:

SERVER Cadence_Server FLEXID=9-3B325844 5280

Modify "Cadence_Server" to the name of the system which will host as the server. This must be modified when the host is changed.

Refer to the previous sections on configuring licensing for details on starting up the license server.

## Validating Licenses

After setting up the license server, the administrator can test out the server setup without the need to launch a Cadence product by running the "ckout_test" program. The ckout_test program is a client test program which tests the different Cadence licensing features. It can be run to perform a checkout and checkin of a license for validation of the server setup.

There may also be cases where the attention of Cadence support is needed, such as application crashes or suspected licensing bugs. When this occurs, the Cadence support team would occasionally ask the customer to run the ckout_test program with various options and see how it behaves.

./ckout_test [options]

Below describes the basic options that are frequently used to validate licenses. For details of other options supported by ckout_test, refer to the help menu by typing ./ckout_test -h.

**Options**:

| | |
|---|---|
| -l | Test lmCheckIn*() and exit. This option will simply do a checkout and a checkin of a license and exit immediately. |
| -c <n\|q\|w> | Specify the checkout return type flag<br>n - no wait: By specifying this checkout return type, upon failure, checkout will return immediately without blocking.<br>q - queue: This type indicates to place the request for a license in the queue if the license is currently not available and return immediately. Once the licenses are available, the request in the queue will automatically checkout the requested number of licenses.<br>w - wait: This type indicates to block in checkout if the licenses are currently not available. It will block until the licenses become available upon being released by other license holders. |
| -f [<f1>...<fn>] | Specify one or more features separated by a space. |
| -n <n1>...<nn | Specify one or more # of licenses separated by a space. |
| -v [<v1>... <vn>] | Specify one or more version separated by a space. |

# Examples

- To validate the server setup using a simple regular checkout/checkin:
  ./ckout_test -f F1 -v 1.0 -n 1 r -l
  - Output:
    checkout 1 license(s) of F2 succeeded.
    checkin of F2 succeeded.
- To validate the server setup using a queuing return type of checkout and checkin:
  ./ckout_test -f F1 v 1.0 -n 1 r -c q -l
- To validate the server setup using a nowait return type of checkout and checkin:
  ./ckout_test -f F1 -v 1.0 -n 1 r -c n -l

- To validate the server setup using a wait return type of checkout and checkin:
  ./ckout_test -f F1 -v 1.0 -n 1 r -c w -l
- Besides the simple checkout and checkin, the program could also be run in the interactive mode by omitting the -l option:
  ./ckout_test -f F1 -v 1.0 -n 1 r -c w
- This specifies that the program to checkout F1 feature, with the regular checkout and do a block if the license is currently not available. The result of the output will be as follows:
  - checkout 1 license(s) of 'F2' succeeded.
  - Press 'q' to quit, 'u' for user list, 'f' for featureexist, 's' for status, or 'c' to check in, 'r' to recheck, 'v' to check status, 'l' for list of features, or 'n' to return number of licenses checked out.

From this menu, the user may interactively select the available options for other feature queries, such as `s' for status, `v' to check status, `l' for list of features, etc. To quit, type `q' and return. Upon exiting the program, the license will be returned to the server license pool.

## Checking Performance

In an environment where you have licenses served across multiple servers spread over a WAN network, users can experience significant delays during application start up because Cadence applications search all the license servers to acquire a license.

perf_test utility can be used to run a diagnostic test to determine the license checkout performance on a feature by feature basis and across each server. The tests can be looped and repeated over a period of time to calculate the average, median, max, and min times for each checkout.

./perf_test [options] …

The following is the usage of the test program:

**Options:**

| | |
|---|---|
| -f <feature> | Feature name to be used for all tests.<br>Can be specified more than once for multiple features for the Network Latency Test |
| -v <version> | Feature version associated with feature name.<br>Default is 1.000 |

| | |
|---|---|
| -h | Print this message and exit |
| -o <file> | Output result to this file in XML format |
| -test_nl | Run network latency tests ( default ) (see Details Section for test description |
| -test_cp | Run checkout performance tests (this test includes sub-tests see Details Section) |
| -test_fe | Run feature exists tests (this test includes sub-tests see Details Section |
| -test_sl | Run server load tests (see Details Section) |

### Additional Tunability Options:

| | |
|---|---|
| -lc <count | Loop count for checkout performance and server load tests. Default is 100. |
| -pc <count | Number of sub processes for server load test. Default is 50. |
| -rc <count | Test repeat count. Re-run the tests <count> number of times. Default is 1. |
| -ri <interval | Test repeat interval. Valid only if -rc is specified. Re-run the tests every <interval> seconds. Default is 3600 seconds (1 hour) |

### Details

| Test name<br>-test_nl<br>(default) | Subtest A<br>To determine the license checkout performance on a feature by feature basis and across each server. | Subtest B | Subtest C | Subtest D |
|---|---|---|---|---|
| -test_cp | Loop of checkout calls checking out the same feature with additional (upgrade) license each iteration of the loop. The server maintains on job with number of licenses over the course of this test. The first license server will be used if there are more than one servers specified in the license path. | Loop of checkout calls checking out the same feature with additional (incremental) license each iteration of the loop. The server maintains the number of jobs with one license each over the course of this test. The first license server will be used if there are more than one servers specified in the license path. | Loop of checkout and checkin calls each iteration of the loop. The server maintains one job with one license over the course of this test. The first license server will be used if there are more than one server specified in the license path. | Loop of checkout calls each iteration of the loop.License will be checked out from any of the available license server specified in the license path. |
| -test_fe | Feature exists test against the license server(s) specified in the license path. | Feature exists test against each license server specified in the license path until the feature is found. | | |
| -test_sl | Determine the number of clients that the server can handle. | | | |

**Note:** Running -test sl might severely affect the performance of servers in production. Please use with care.

### Examples

Basic license check-out test

If `-lc 5' is passed as the options on a license file which has 5 Virtuoso_Layout_Migrate licenses, then only 5 successes is expected:

*% perf_test -f Analog_Design_Environment_GXL -lc 5*

```
- Network Latency Test -
Description: To determine the license checkout performance on a
feature by feature basis and across each server.
CDS_LIC_FILE:
/net/sunny/usr1/johnny/licenses/licfile_no_ade_1:5280@breezy:2800
0@windy

Test started at 02/10/2009 12:05:01
FEATURE: Analog_Design_Environment_GXL VERSION: 1.000

-----------------------------------------------------------------
Attempting to check out feature 'Analog_Design_Environment_GXL'
version 1.000 from license server
/net/sunny/usr1/johnny/licenses/licfile_no_ade_1 at 02/10/2009
12:05:03
Checkout success at 02/10/2009 12:05:04 ( 1 second )
Ping time to license server machine 'sunny.Cadence.COM': 199.756
ms
-----------------------------------------------------------------
-----------------------------------------------------------------
Attempting to check out feature 'Analog_Design_Environment_GXL'
version 1.000 from license server 5280@breezy at 02/10/2009
12:05:06
Checkout success at 02/10/2009 12:05:07 ( 1 second )
Ping time to license server machine 'breezy': 100.503 ms
-----------------------------------------------------------------
-----------------------------------------------------------------
Attempting to check out feature 'Analog_Design_Environment_GXL'
version 1.000 from license server 28000@windy at 02/10/2009
12:05:07
Checkout failed at 02/10/2009 12:05:07 ( 0 second ) ( ERROR )
Ping time to license server machine 'windy': 0.253 ms
ERROR (LMF-02097): License call failed for feature
Analog_Design_Environment_GXL, version 1.000 and quantity 1. The
license server search path is defined as 28000@windy. The FLEXnet
error message is as follows,
FLEXnet ERROR(-97, 0, 0): The desired vendor daemon is down.
Run 'lic_error LMF-02097' for more information.
-----------------------------------------------------------------
Test completed at 02/10/2009 12:05:07
```

### Basic license check-out with failure

- Run -test_cp and look at subtest A
- License file has only 5 Virtuoso_Layout_Migrate licenses, so do a -lc 10, expect only 5 out of 10 successes

*% perf_test -f Virtuoso_Layout_Migrate -test_cp -lc 10*

```
- Checkout Performance Test A -

Description: Loop of checkout calls checking out the same feature
with additional ( upgrade ) license each iteration of the loop.
The server maintains one job with number of licenses over the
course of this test. The first license server will be used if
there are more than one servers specified in the license path.

CDS_LIC_FILE:
/net/sunny/usr1/johnny/licenses/licfile_no_ade_1:5280@breezy:2800
0@windy

Feature: Virtuoso_Layout_Migrate
Number of checkouts: 10
Test started at 02/10/2009 15:13:45
Ping time to license server machine 'sunny.Cadence.COM': 29.771 ms
Number of successful checkouts: 5 out of 10 ( ERROR ) Total time:
1 second
Average time: 0.200000 second
Minimum time: 0 second
Median time: 0 second
Maximum time: 1 second
Range time: 1 second
Most frequent occurrence time: 0 second ( 4 times )
-------------------------------------------------------------
ERROR (LMF-02004): License call failed for feature
Virtuoso_Layout_Migrate, version 1.000 and quantity 6. The
license server search path is defined as
/net/sunny/usr1/johnny/licenses/licfile_no_ade_1. The FLEXnet
error message is as follows,
FLEXnet ERROR(-4, 0, 0): Licensed number of users already
reached.
Run 'lic_error LMF-02004' for more information.
-------------------------------------------------------------
Test finished at 02/10/2009 15:13:46
```

- Note that the output of Subtest D, where it looks for licenses from any of the license servers specified.
- There are only 5 Virtuoso_Layout_Migrate licenses from the first license server, and at least another 5 from breezy, so this test will succeed.

```
- Checkout Performance Test D -

Description: Loop of checkout calls each iteration of the loop.
License will be checked out from any of the available license
server specified in the license path.
```

```
CDS_LIC_FILE:
/net/sunny/usr1/johnny/licenses/licfile_no_ade_1:5280@breezy:2800
0@windy

Feature: Virtuoso_Layout_Migrate
Number of checkouts: 10
Test started at 02/10/2009 15:38:14
Ping time to license server machine 'sunny.Cadence.COM': 3.685 ms
Ping time to license server machine 'breezy': 50.999 ms
Ping time to license server machine 'windy': 0.280 ms

Number of successful checkouts: 10 out of 10 Total time: 3 seconds
Average time: 0.300000 second
Minimum time: 0 second
Median time: 0.000000 second
Maximum time: 1 second
Range time: 1 second
Most frequent occurrence time: 0 second ( 7 times )
Test finished at 02/10/2009 15:38:17
```

**Repeat testing over regular interval**

- This test is useful to determine if there's a time-of-day element in any licensing issue. Perhaps check-outs are slower when it's mid night in Asia and a huge rsync job is being run over WAN.
- This example runs the check-out performance test 10 times (-rc 5) with an interval of 1800s between tests (-ri 1800) and ouputs the results to an XML file (as well as to your tty)

```
% perf_test -f Virtuoso_Layout_Migrate -test_cp -lc 10 -rc 5 -ri 1800
   -o ~/perf_test_output.xml
```

# 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 CDNSHelp 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.

5. An additional option provided at the client side for user accessibility is the Cadence Client Filter. This option provides a way for the administrator to manage the local licensing environment, such as restricting specific users from checking out a license or used to filter license features that the applications search for, and which may not exist in the customer environment. The following outlines the steps of using the client filter:
6. A client filter program needs to be created in the form of a binary or shell script with two arguments:
   a. feature - the feature being requested
   b. version - the version being requested
7. In the local environment of the running application, set environment variable CDS_LICFLTR to the filter program.
8. The product will either continue or exit depending on the return status of the filter program. If the return status of the filter program is 0, then the product will continue and try to check out the requested license. If the client filter program returns a non-zero status, then the product will not checkout a license and return with an error status.

## Example 1: A filter program written in C

```
setenv CDS_LICFLTR /cds/mytools/bin/mycheck

file: mycheck.c
main( int argc, char *argv[] )
{
        … /* rest of the code */

        /* argv[1] = feature, argv[2] = version */
        if ( myCheckPermission( thisUser, argv[1], argv[2] ) ==
                SUCCESS ) /* SUCCESS */
                return( 0 );
        else
                return ( 1 );
}
```

## Example 2: A filter program written using Korn Shell script

```
setenv CDS_LICFLTR /cds/mytools/bin/mycheck.sh

file: mycheck.sh:

#!/usr/bin/ksh

myCheckPermissions $1 $2

if [ $? –eq 0 ]; then
        echo “Feature $1 can be checked out.”
        exit 0
else
        echo “Feature $1 cannot be checked out.”
        exit 1
fi
```

# 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.

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 CDNSHelp to see which options your product recognizes.

## Creating an Options File

To create an options file, complete the following steps:

- 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.

- Change to the *install_dir*/share/license directory.

  cd *install_dir*/share/license

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

  A product can require more than one unique license feature. A FEATURE line in the license file lists each license.

  For example, to manage access to Incisive Unified Simulator, you must specify each feature used by Incisive Unified Simulator. The license file lists all licensed features, so it includes these entries as well as many others. An example of a feature line is as follows:

```
FEATURE VERILOG-XL cdslmd 9999.999 31-jul-2006 3 7D64A871DA8D3AC2824E \
   VENDOR_STRING=J:PERM DUP_GROUP=NONE vendor_info=1-may-2006 \
   ISSUED=01-may-2006 SN=2006-05-01T01:33:08:819 SIGN2="105E 1584 \
   9657 9E22 FBC0 76EC 2DF7 D750 7DE2 D6DC 2EA7 CB33 F7C6 7A64 \
```

```
17B1 139B B5EB 8A35 CC13 D2D1 DE2B D132 8C56 F966 3737 A19A \
F63B 1EF2 BF7A A8C9" V7.1_LK=EDF49831CC82D9A60ADF
```

The product to feature mapping information is available inside the license file. For the Incisive Unified Simulator example, it is

```
# Product Id : 29300, [Version: Version Independent]
# Product Name: Incisive(TM) Unified Simulator
# Type: Floating Exp Date: 31-jul-2006 Qty: 1
# Feature: VERILOG-XL [Version: 9999.999]
# Feature: Affirma_NC_Simulator [Version: 9999.999]
# Feature: Incisive_Verif_Engine [Version: 9999.999]
# Feature: Incisive_Verif_Environ [Version: 9999.999]
# Feature: Affirma_sim_analysis_env [Version: 9999.999]
```

To manage access to Incisive Unified Simulator, you must list VERILOG-XL,

Affirma_NC_Simulator, and all the other features under 29300.

- 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 4000 characters.
- A backslash (\) continues a line onto the next line.

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. Restricting licenses is a complex procedure. For more information, see the *FlexNet License Administration Manual* at https://www.flexera.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 | UNSUPPORTED}
REPORTLOG file
RESERVE number feature { USER | HOST | DISPLAY | GROUP | HOST_GROUP | INTERNET } name
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
AUTOMATIC_REREAD {ON | OFF}
```

- 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 FlexNet 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 FlexNet 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 CDNSHelp to determine if your product supports TIMEOUT).

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

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

TIMEOUT *feature seconds*

| **TIME-OUT** | |
|---|---|
| Default: | Licenses do not time out |
| Minimum: | Sixty minutes (3600 seconds) |
| Maximum: | None |

For example, if you want Allegro™ PCB Editor to time out in 2 hours of inactivity, the entry is

```
TIMEOUT allegro 7200
```

## Disabling Automatic Reread

To turn off the automatic reread feature, add the AUTOMATIC_REREAD line to the options file.

When a reread is performed, such as calling the lmreread command, it forces the server to source the license file without having to shut down the server. This allows the system administrators to make changes to the license file without stopping and restarting the server.

At midnight each day, a check of each license is made to determine if it has expired. When any license is found to have expired and AUTOMATIC_REREAD is enabled, all license files are reread. A refresh list of available feature sets on the server is determined. Any existing checkouts from a client would be remembered so additional checkouts would not take place via a client heartbeat.

When any license is found to have expired and AUTOMATIC_REREAD is disabled, it is removed from the pools of available licenses. Reread of the licenses will not occur and hence any updated features will not be depcited and will not be part of the pool of available licenses.

```
AUTOMATIC_READ OFF
```

| **AUTOMATIC_REREAD OFF** | |
|---|---|
| Defaults | The automatic reread feature is turned on. |

**Note:** Current behavior for clients that have performed a checkout prior to lmreread will retain usage of the licecnse. After midnight, the client continues to be active unless a check-in or exit is called. This behavior only happens when there is at least one or more unexpired licenses still valid on the

server after the midnight reread. If all of the licenses are expired at midnight, then all clients will report an error message: "-97 server is down" because the daemon is shutdown after it detects that all feature are expired and will exit.

When AUTOMATIC_REREAD is disabled, the following known behavior is displayed on the debug log.

0:00:05 (cdslmd) f1 expired -- rereading to update

0:00:05 (cdslmd) Rereading license file and option file is disabled...

0:00:05 (cdslmd) EXPIRED: f1

0:00:05 (cdslmd) Server started on XGAMES for: f2

0:00:05 (cdslmd) Support removed for feature f1(00DF BDAA D31F 335C )

0:00:05 (cdslmd) Updating feature f2

0:00:05 (cdslmd) ...Finished rereading

**Note:** The log correctly shows that rereading is disabled and that the exipred option is removed. But note that at the end, it states that it finished rereading. This information is incorrect. There is actually no rereading happening here.

## Restricting Access

→ To allow or prevent access to Cadence products, add INCLUDE, EXCLUDE, INCLUDEALL, and EXCLUDEALL lines to the options file, or use the Cadence Client Filter. For the details and usage of the Cadence Client Filter, refer to section, "Letting Users Access Products."

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 |

ⓘ 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 Flexera web site:

http://www.flexerasoftware.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 | UNSUPPORTED

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.
- UNSUPPORTED Does not log error messages that report a failure due to the feature being unsupported.

Search your product's documentation in CDNSHelp 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 FlexNet report log files, contact Flexera for the FlexNet Manager.

## Creating FlexNet report log Files

If you want to create detailed usage 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 the FlexNet Manager. In order to turn this option on, you need the following information in the license server OPTIONS file.

REPORTLOG +file_name

If you begin file_name with a + 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. 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 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 DAEMONline 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.
3. If the license daemons are already running, stop and restart them.

⚠ The license options file can contain an IPv6 address to specify host restrictions when using the following options and keywords:

- INTERNET enter these keywords: EXCLUDE, EXCLUDEALL, INCLUDE, INCLUDEALL, MAX, and RESERVE.
- HOST enter these keywords: EXCLUDE, EXCLUDE_ENTITLEMENT, EXCLUDEALL, EXCLUDE_BORROW, INCLUDE, INCLUDE_ENTITLEMENT, INCLUDEALL, INCLUDE_BORROW, MAX, and RESERVE.
- HOST_GROUP keyword (it takes IP addresses).

# Setting Variables for IPv6 Network Support

## CDS_LIC_USE_FLEX_11_16 (Client only)

This environment variable can be used with Cadence products that support the IPv6 network to enable communications over IPv6. It should be set to 1 on the product side to enable communication with the IPv6 network.

The `ckout_test` utility shipped with this release of Cadence License Manager supports the IPv6 network, and this environment variable can be used to test server communication over an IPv6 network.

## Possible Values

| Value | Description |
|---|---|
| 0 (default) | The older version of the licensing library (FlexNet 11.11) is used by the client to communicate with Cadence License Manager.<br>⚠ FlexNet 11.11 does not support IPv6 communication. |
| 1 | The new version of the licensing library (FlexNet 11.16) is used by the client to communicate with Cadence License Manager.<br>⚠ FlexNet 11.16 supports IPv6 communication. |

## FNP_IP_PRIORITY

Set this environment variable to specify the IP priority for hostname resolution, and apply it to the server, client, or utilities like `lmhostid`.

## Possible Values

| Value | Description |
|---|---|
| 4 (default) | The hostname resolution is attempted to IPv4 address first. If that fails, resolution to IPv6 address is attempted.<br>⚠ This value is not recommended for an IPv6 environment. |
| 6 | The hostname resolution is attempted to IPv6 address first. If that fails, resolution to IPv4 address is attempted. |

## FNP_IP_ENV (Client only)

In some licensing models, it may be desirable for the server to operate on a NAT-translated IP address instead of the client's actual IP address. For example, if using the `EXCLUDE` keyword in an options file to exclude all clients originating from behind a specific firewall.

To enable such use cases, set this environment variable to 1 on the client machine. Setting this environment variable prevents the client resolving its own hostname to an IP address, which means the server instead obtains an IP address for the client from the socket connection.

## Possible Values

| Value | Description |
|---|---|
| 0 | The client resolves its hostname to both an IPv4 and an IPv6 address. |
| 1 (default) | The client-side hostname resolution is bypassed. Instead, the client's IP address is used.<br>⚠ The address is determined from the socket connection at the server, which means that a NAT-translated IP address can be obtained for the client. |
| 4 | The client resolves its hostname only to an IPv4 address. |
| 6 | The client resolves its hostname only to an IPv6 address. |

# 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

   /etc/rc.lic

> ⓘ 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) 1989-2011 Flexera Software, Inc. All Rights
Reserved.
Flexible License Manager status on Wed 2/22/2012 17:24

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, 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.

### 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 should support this time-out.

# Specifying License Queuing Options

All Cadence products should support queuing for licenses as an option. Check the product's documentation on how to enable queuing. When a Cadence application queues for a license, all queued requests are attached to the first server containing the requested feature in the license server path. Even as licenses become available on other servers in the path, the request will remain queued on the first server. This is the default FlexNet behavior.

Cadence now supports an optional polling option, which allows the application to poll other servers in the server path for available licenses while queued on the first server. When there are enough licenses to satisfy the queued request, the application will check out the available licenses and dequeue from the attached server.

**Note:** Please note that this option has just been made available and not all Cadence products would have implemented this option yet. Please check the product notes to ascertain whether this option is supported.

Even when the product supports this option, it is turned off by default. To turn on the option, set the environment variable CDS_LIC_QUEUE_POLL as follows:

If you are using Bourne or ksh:

```
CDS_LIC_QUEUE_POLL=1;

export CDS_LIC_QUEUE_POLL;
```

If you are using csh:

setenv CDS_LIC_QUEUE_POLL 1;

## Polling Interval

The polling interval depends on how often the application polls. But the minimum poll interval is set to 30 seconds.

To increase the polling interval, set the environment variable CDS_LIC_QUEUE_POLL_INT as follows:

If you are using Bourne or ksh:

CDS_LIC_QUEUE_POLL_INT=n;

export CDS_LIC_QUEUE_POLL_INT;

If you are using csh:

setenv CDS_LIC_QUEUE_POLL_INT n;

where n is greater than 30 seconds.

If CDS_LIC_QUEUE_POLL_INT is set to a value less than 30 seconds, it will be reset back to 30 seconds.

## Server reset timeout when queued for a license

If polling encounters a condition where the server was reset, it will attempt to re-establish connection with the server. If it fails to reconnect with the server within a timeout, the resulting behavior is dependent on the individual running application.

The default timeout is 5 minutes (300 seconds).

To increase the queue retry, set the environment variable CDS_LIC_QUEUE_RETRY_TIMEOUT as follows:

If you are using Bourne or ksh:

CDS_LIC_QUEUE_RETRY_TIMEOUT=n;

CDS_LIC_QUEUE_RETRY_TIMEOUT;

If you are using csh:

CDS_LIC_QUEUE_RETRY_TIMEOUT n;

where, n is greater than 300 seconds.

If CDS_LIC_QUEUE_RETRY_TIMEOUT is set to a value less than 300 seconds, it will be reset back to 300 seconds.

A complete polling operation for a queued license consists of checking the servers for available licenses, performing a checkout, and dequeuing. Thus, the run time of an application can be longer with the option turned on and when there are many licenses queued. The polling time will also depend on the number of servers to search and their location settings. The server logging will also show more activity than usual with the option turned on.

3

# License Maintenance

This chapter contains information about the following topics:

- Tracking License Expiration
- Monitoring Licensing
- Stopping and Starting the License Daemons
- Changing the License File

## Tracking License Expiration

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

- Server Model License Expiration Notification
  Use the lmCheckExpiration.cds script to periodically check all your licenses.

  ⚠ The `lmCheckExpiration.cds` script is supported on Linux only.

- Client Model License Expiration Notification
  Use the CDS_LIC_EXPIRE environment variable to tell so-equipped Cadence software to report license expiration warnings upon startup.

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

### Server Model License Expiration Notification

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

The tool has the following format:

lmCheckExpiration.cds (UNIX)
[-c license_file] [-d days_to_expire] [-m email_address] [features]

Where:

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

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

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

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

- Show a message only if the licenses are expiring today:
  lmCheckExpiration.cds
  -c 5280@cds11574:/cds/share/license/license.dat
  -cpe 34500
- Show and send a message if the licenses are expiring within 30 days:
  lmCheckExpiration.cds

-c 5280@cds11574:/cds/share/license/license.dat

-d 30 -m user@company.com

-cpe 34500

This may generate the following message:

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

cpe 4.4 24-apr-2015 14 days

34500 4.4 09-may-2015 25 days

## Client Model License Expiration Notification

Cadence applications can notify you when licenses are nearing their expiration dates.

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

Use the following formats to set the variable:

- C-shell:
  setenv CDS_LIC_EXPIRE *<days>*
- Bourne and Korn shells:
  CDS_LIC_EXPIRE=*<days>*; export CDS_LIC_EXPIRE
- MS-DOS Window:
  set CDS_LIC_EXPIRE=*<days>*

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

For example:

- Show a message only if the license is expiring today:
  setenv CDS_LIC_EXPIRE 0
- Show a message if the license is expiring within 30 days:
  setenv CDS_LIC_EXPIRE 30

This may generate the following message:

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

cpe 4.4 24-apr-2015 14 days

34500 4.4 09-may-2015 25 days

# 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 Flexera 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.

**lmstat - Copyright (c) 1989-2014 Flexera Software LLC. All Rights Reserved.**

**Flexible License Manager status on Fri 7/10/2015 11:57**

**License server status: 5280@lnxmfg**

**License file(s) on lnxmfg: /lan/license_10604B5C4201.dat.**

**lnx-mfgop1.cadence.com: license server UP (MASTER) v11.13.0**

**Vendor daemon status (on lnxmfg):**

**11:57:16 (cdslmd) TCP_NODELAY NOT enabled**

**cdslmd: UP v11.13.0**

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,report, and diagnostic log files 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:

  11:33:09 (lmgrd) ----------

  11:33:09 (lmgrd) Please Note:

  11:33:09 (lmgrd)

  11:33:09 (lmgrd) This log is intended for debug purposes only.

  11:33:09 (lmgrd) In order to capture accurate license

  11:33:09 (lmgrd) usage data into an organized repository,

  11:33:09 (lmgrd) please enable report logging. Use Flexera Software LLC's

  11:33:09 (lmgrd) software license administration solution,

  11:33:09 (lmgrd) FlexNet Manager, to readily gain visibility

  11:33:09 (lmgrd) into license usage data and to create

11:33:09 (lmgrd) insightful reports on critical information like

11:33:09 (lmgrd) license availability and usage. FlexNet Manager

11:33:09 (lmgrd) can be fully automated to run these reports on

11:33:09 (lmgrd) schedule and can be used to track license

11:33:09 (lmgrd) servers and usage across a heterogeneous

11:33:09 (lmgrd) network of servers including Windows NT, Linux

11:33:09 (lmgrd) and UNIX. Contact Flexera Software LLC at

11:33:09 (lmgrd)

www.flexerasoftware.com for more details on how to

11:33:09 (lmgrd) obtain an evaluation copy of FlexNet Manager

11:33:09 (lmgrd) for your enterprise.

11:33:09 (lmgrd)

11:33:09 (lmgrd) ----------

11:33:09 (lmgrd)

11:33:09 (lmgrd)

11:33:09 (lmgrd) Server's System Date and Time: Fri Jul 10 2015 11:33:09 PDT

11:33:09 (lmgrd) SLOG: Summary LOG statistics is enabled.

licint@lnxmfg 11:33:09 (lmgrd) FlexNet Licensing (v11.13.0.3 build 165046 i86_lsb) started on lnxmfg (linux) (7/10/2015)

11:33:09 (lmgrd) Copyright (c) 1988-2014 Flexera Software LLC. All Rights Reserved.

11:33:09 (lmgrd) World Wide Web:

http://www.flexerasoftware.com

11:33:09 (lmgrd) License file(s): license_10604B5C4201.txt

11:33:09 (lmgrd) lmgrd tcp-port 5280

11:33:09 (lmgrd) (@lmgrd-SLOG@) ===========================================

11:33:09 (lmgrd) (@lmgrd-SLOG@) === LMGRD ===

```
11:33:09 (lmgrd) (@lmgrd-SLOG@) Start-Date: Fri Jul 10 2015 11:33:09 PDT

11:33:09 (lmgrd) (@lmgrd-SLOG@) PID: 23419

11:33:09 (lmgrd) (@lmgrd-SLOG@) LMGRD Version: v11.13.0.3 build 165046 i86_lsb ( build 165046 (ipv6))

11:33:09 (lmgrd) (@lmgrd-SLOG@)

11:33:09 (lmgrd) (@lmgrd-SLOG@) === Network Info ===

11:33:09 (lmgrd) (@lmgrd-SLOG@) Listening port: 5280

11:33:09 (lmgrd) (@lmgrd-SLOG@)

11:33:09 (lmgrd) (@lmgrd-SLOG@) === Startup Info ===

11:33:09 (lmgrd) (@lmgrd-SLOG@) Server Configuration: Single Server

11:33:09 (lmgrd) (@lmgrd-SLOG@) Command-line options used at LS startup: -c license_10604B5C4201.txt

11:33:09 (lmgrd) (@lmgrd-SLOG@) License file(s) used: license_10604B5C4201.txt

11:33:09 (lmgrd) (@lmgrd-SLOG@) ===============================================

11:33:09 (lmgrd) Starting vendor daemons ...

11:33:09 (lmgrd) Started cdslmd (internet tcp_port 52267 pid 23424)

11:33:09 (cdslmd) FlexNet Licensing version v11.13.0.3 build 165046 i86_lsb

CADENCE_INFO_MSG: Cadence kit version: 12.05-p001
```

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 Flexera.

## Report Log File

You can generate additional usage information from the non-ASCII report log file by using FlexNet Manager.

# 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.

> ⓘ Ensure that you stop and restart the license manager during low activity time. Do **not** use the -9 option of the kill command.

Follow these steps to stop the daemons.

- Notify users that you are terminating the license daemons so that they can exit the products properly.
- Verify that no users are accessing FlexNet licenses.

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

- 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.

- 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.

- 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.

ⓘ Ensure that you stop and restart the license manager during low activity time. Do **not** use the -9 option of the kill command.

- Start the license daemons.
  - You must have write permission to the log file to start the license daemons.
  - The license server must be started with the `-c <license_file>` option. The license file specified using `LM_LICENSE_FILE` or the default path "`/usr/local/flexlm/licenses/license.dat`" are not supported for starting the server.
  - 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)

  Depending on the settings on your machine, sometimes take as long as five minutes to close a port after you have shut down the daemons. Wait and try again.
- 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 need to restart the license server to read the new license files. The license daemons do not see the changes until they restart the license file.

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

a. On the license server, log in as cdsmgr.

b. Configure the new license file with Cadence installation software or an editor.

c. Decide if you must shut down the license daemons.

| What Changed | Stop and Restart License Daemons |
|---|---|
| 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) | |

1. stop and restart the daemons if you need to.
2. 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 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.

4

# Setting Up Licensing on Windows


- Overview
- Verifying Networking
- Configuring the License Server
- Configuring the User's Workstation
- Checking License Server Status
- Restarting License Server


## Overview

To set up licensing on Windows, you need to:

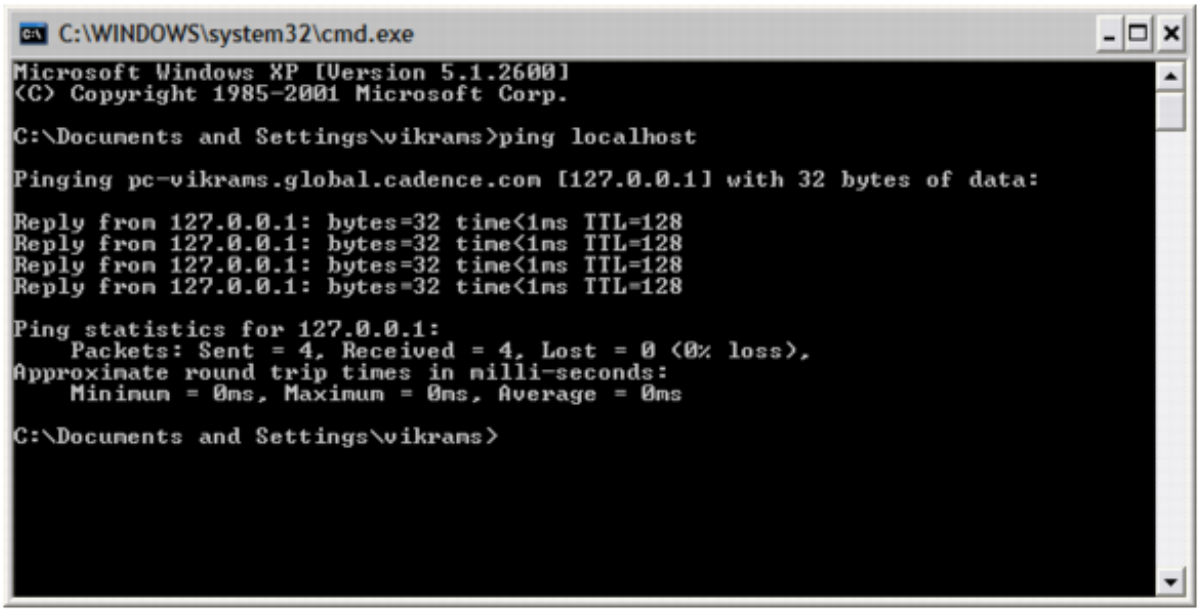
1. Install the Cadence License Server Configuration utility on the machine that you intend to use as the license server.
2. Install the Cadence License Client Configuration utility on the machines that need to access Cadence products licenses.
3. Know the locaton of the license file that you have received from Cadence.

These utilities are installed as part of your product installation. You can also also install these utilities directly by downloading the Lic+Config_Utils (LCU ) release from downloads.cadence.com.

## Verifying Networking

On the command prompt, enter the following:

```
ping localhost
```



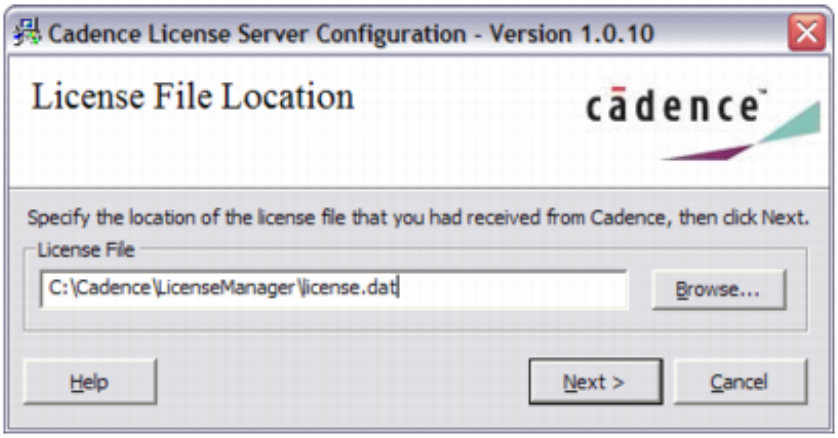

ⓘ You should be able to successfully ping yourself. If the ping fails, then you need to correct it. Without networking, FlexNet licensing will not work. For troubleshooting, see Q. What do I do to make a standalone machine work as a license server? (Applicable for Linux and Windows) .

# Configuring the License Server

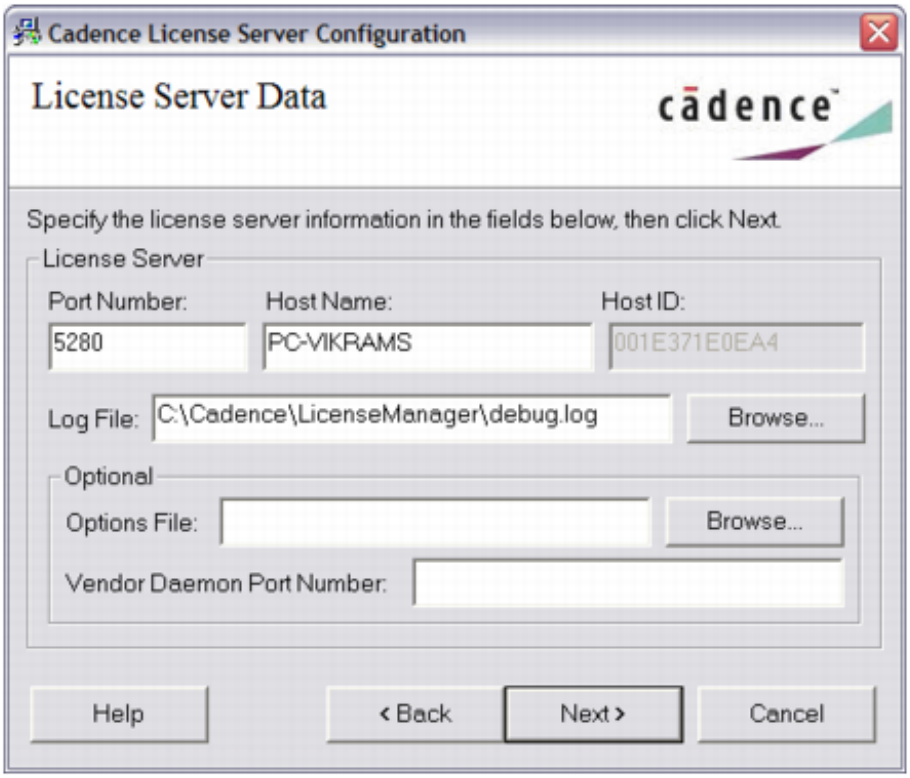
The license server configuration utility allows you to start the license server, update the licenses on the server, and install the license manager as a service.

To start the License Server Configuration Utility:

1. Run Start > Cadence > License Manager >License Server Configuration Utility.
2. Specify the location of the license file that you had received from Cadence.




3. Specify the license server information.




*Port Number:*
The TCP/IP port number that the license server uses to serve license requests. The default port number is 5280. Cadence applications will use this port number to access the license server.

*Host Name:*
Name of the computer that hosts the license server.

*Log File:*
Specify the location of the debug.log file. All license server activity, including status and error messages useful for debugging the license server will be recorded in this log file.

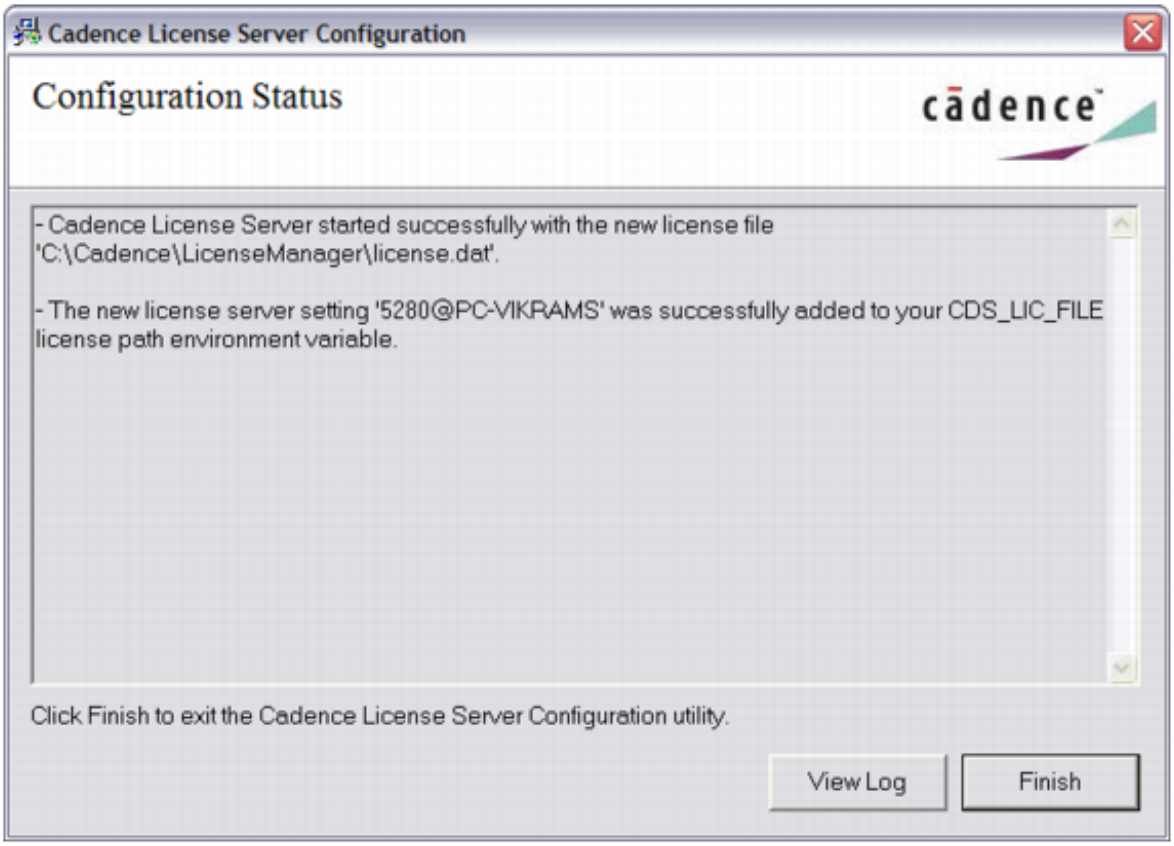
*Optional Information:*
You can provide optional information, which includes the following fields:

*Options File:*
You can use the options file to manage licensing beyond the limits provided by the license file. You can use an options file to:

- Return idle licenses to the license pool.
- Define groups to avoid listing individual users or hosts.
- Reserve copies of a feature for specific workstations or specific users.
- Allow or prevent specific users from using certain products.
- For more information on options file, see *FlexNet End User Guide*.

*Vendor Daemon Port Number:*
The TCP/IP port number for the Cadence vendor daemon cdslmd to communicate with lmgrd. This can be left blank. By default, the port is chosen during runtime (recommended). However, for some sites with Internet firewalls, you may need to specify the TCP/IP port number for the vendor daemon and allow the port in your firewall for the vendor daemon and lmgrd to communicate.

4. Click *Next* to complete the configuration process.




View Log will allow you to view the license server log file.

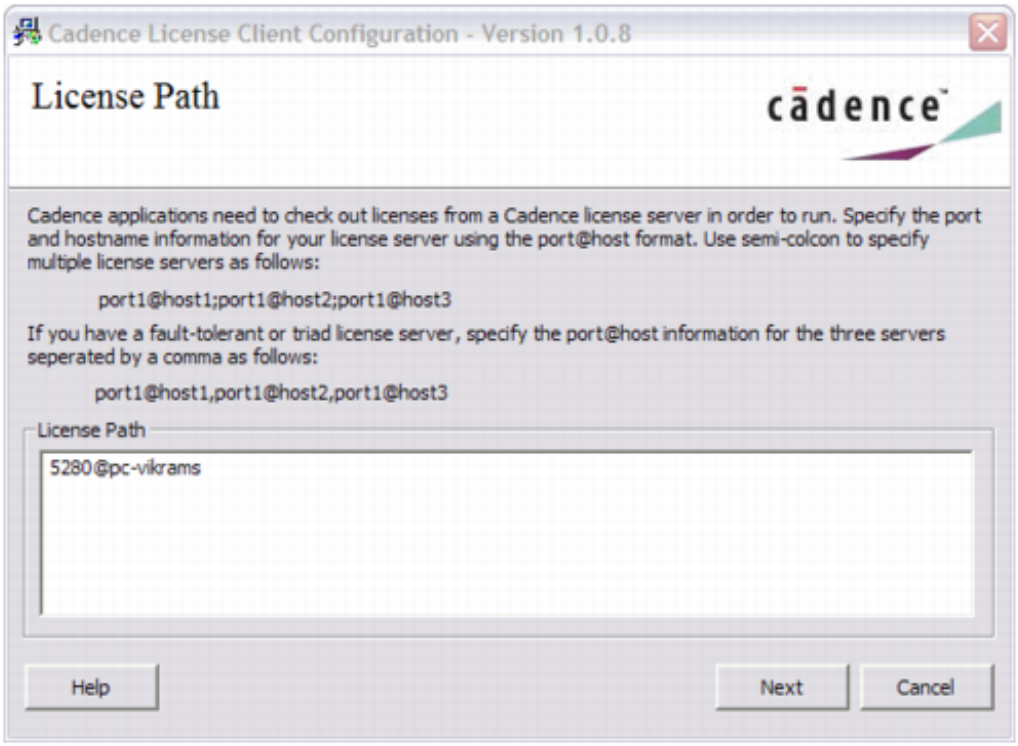
5. Click *Finish* to complete the license server setup.

# Configuring the User's Workstation

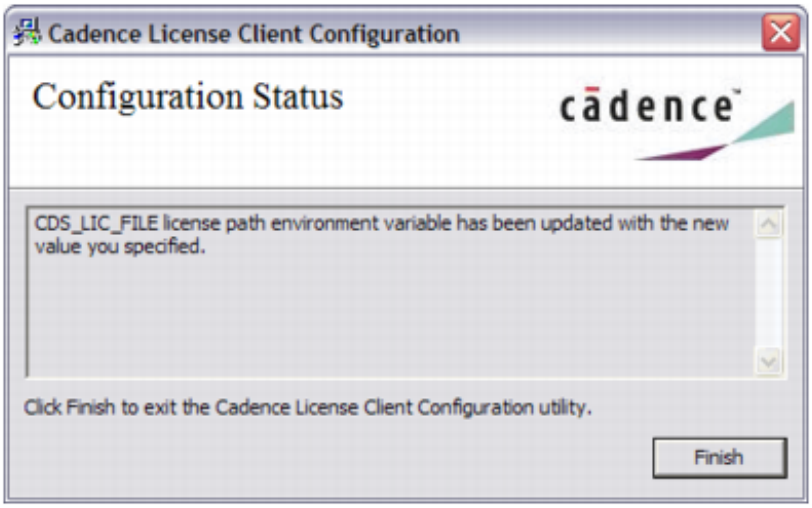
You must configure licensing before using Cadence products. When you start a product, a license gets checked out from a license server. The license server determines which products are available and distributes licenses on a first-come, first-served basis until all licenses for a given product are in use. When you exit the product, the license is returned to the license server.

To configure the user's workstation:

1. Run Start > Cadence > License Manager > License Client Configuration Utility.
2. Specify the port and hostname information for your license server using the port@host format.




3. Click *Next* to complete the configuration process.



# Checking License Server Status

1. Run Start > Cadence > License Manager > lmTools.
2. To view license server status, select the Server Status tab and click *Perform Status Enquiry*.
3. To view license server log file, select the Config Services tab and click *View Log*.

# Restarting License Server

To restart the license server, follow the same steps as in Configuring the License Server. You can also restart the license server by using the lmtools utility. For more information on restarting the License Server using the lmtools utility, refer to *FlexNet End User Guide*.

***Make sure you restart your license server during lean time. Cadence applications that have already consumed a license will continue to work during the restart. However, new applications that are run when the license server is restarted will fail.***

5

# Setting Up Licensing on Cloud

This section describes how to complete the setup and installation for running license server on Amazon Elastic Compute Cloud (Amazon EC2), Google Compute Engine (GCE), and Microsoft Azure.

It includes the following topics:

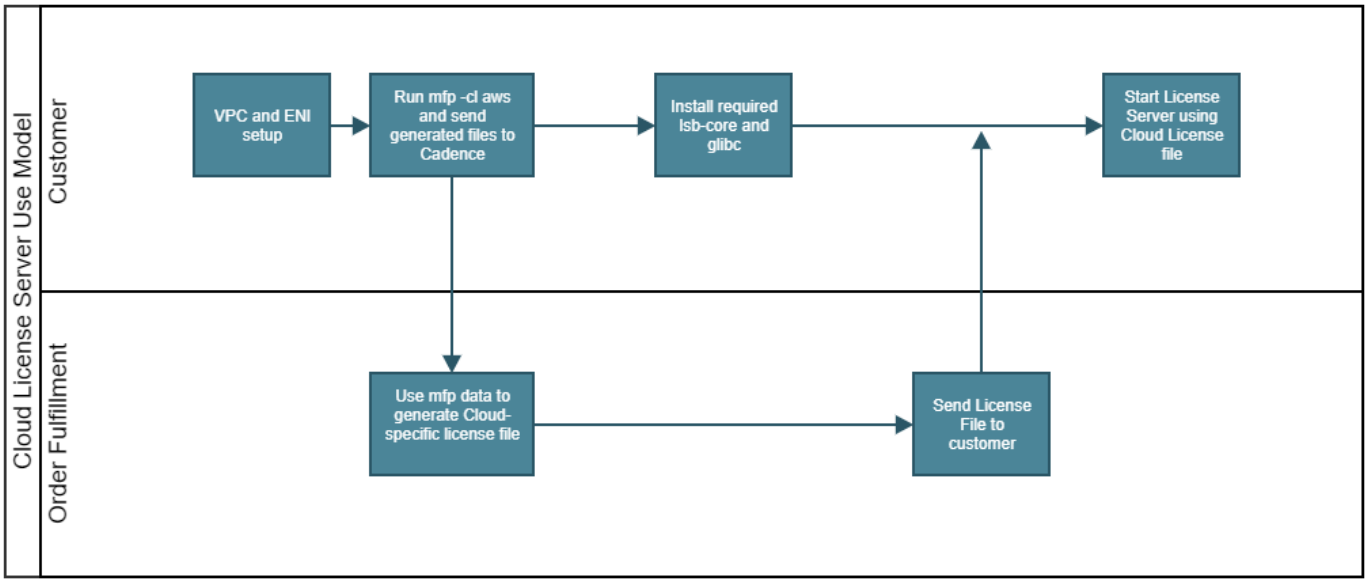

- Software Requirements (on Linux)
- Cloud License Server Use Model
- Setting Up VPC and ENI on Amazon EC2
- Generating a License for Amazon EC2
- Migrating Amazon ENI Instances
- Generating a License for GCE
- Generating a License for Microsoft Azure


## Software Requirements (on Linux)

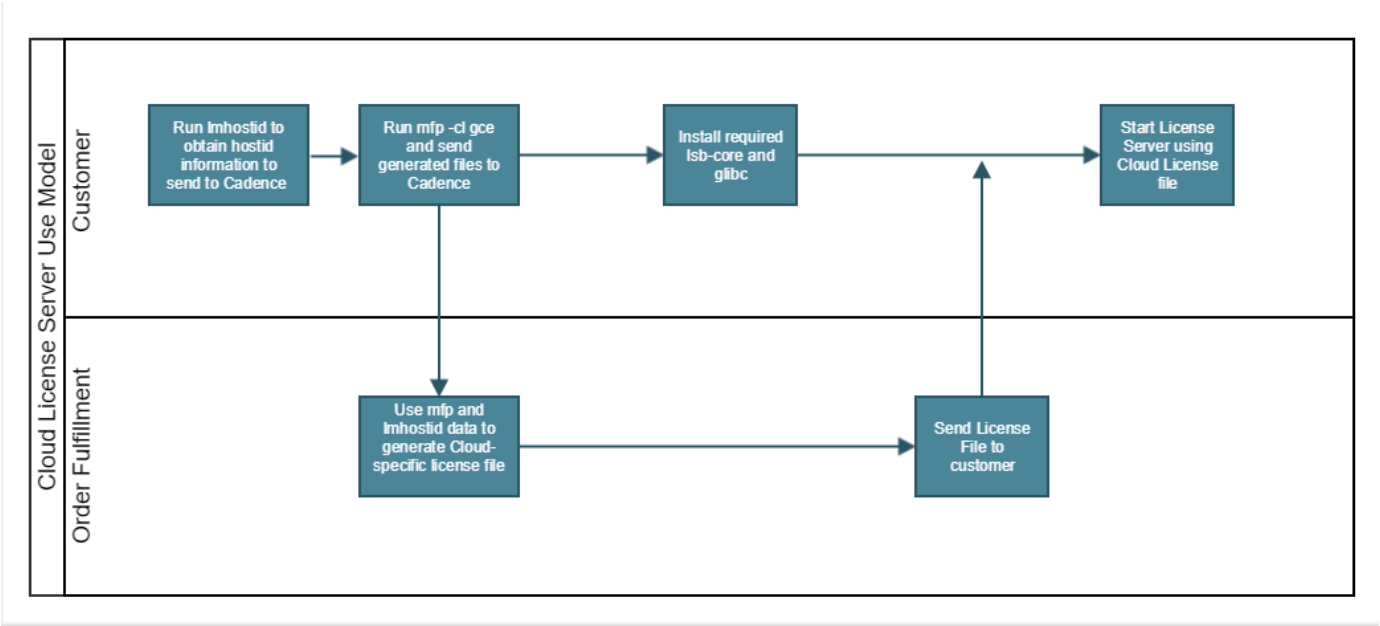
- `lsb-core` is required to run Flexera utilities, like lmutil and lmstat, as well as the server (`lmgrd`). On Red Hat instances, you can use `redhat-lsb-core`
- Update `glibc` to version 2.14 or above
- Latest version of the License Server is SftShrTools 22.01-s002

## Cloud License Server Use Model

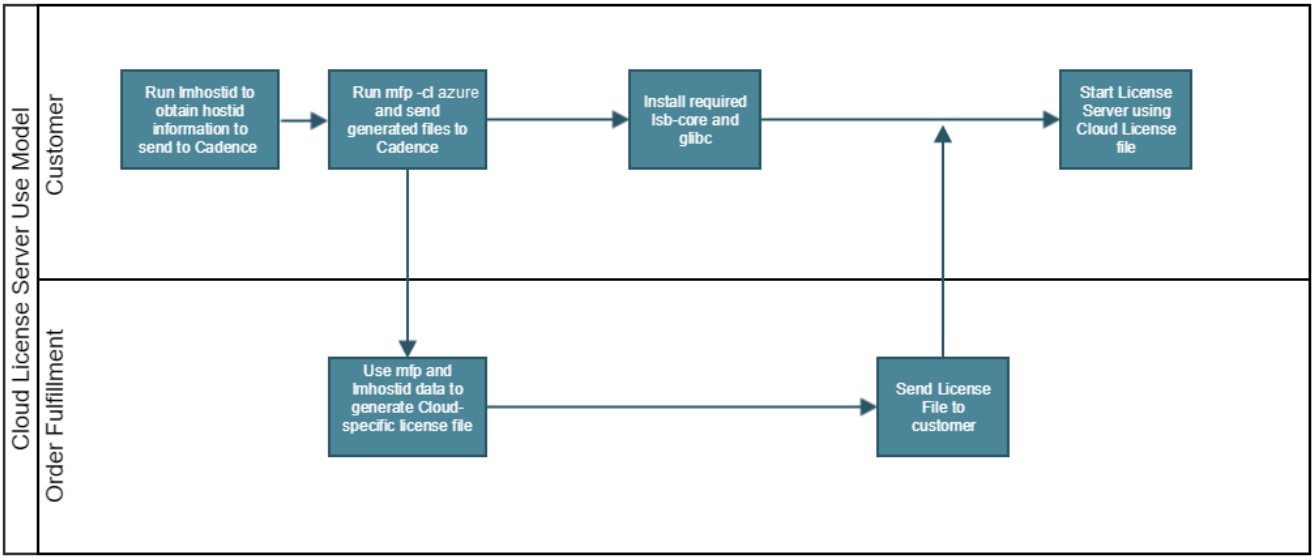
- The following image illustrates the cloud license server use model on Amazon EC2:




- The following image illustrates the cloud license server use model on Google Compute Engine:




- The following image illustrates the cloud license server use model on Microsoft Azure:




# Setting Up VPC and ENI on Amazon EC2

Cadence requires a MAC address from an elastic network interface (ENI) to generate a License File.

Perform the following steps to set up the ENI:

1. Set up the virtual private cloud (VPC) for the cloud environment within which the license server and clients will reside. Refer to Getting Started with Amazon VPC and Default VPC and Default Subnets on the Amazon documentation website for more information.
2. Create an ENI and attach it to the Amazon web services (AWS) instance that will be used as the server within this VPC. Refer to Elastic Network Interfaces on the Amazon documentation website for more information.

# Generating a License for Amazon EC2

Perform the following steps:

1. Once the ENI is created, run the `mfp` tool with the `-cl aws` option to determine the MAC address to use as host ID, as shown below:

```
[ec2-user@ip-172-17-33-91 ~]$ ./mfp -cl aws

Host name: ip-172-17-33-91.us-west-2.compute.internal
Domain name: us-west-2.compute.internal
Running mfp with Amazon EC2 cloud option

2 hostids found for this machine
Please pick which of the following macs you would like to use. Enter a n umber
from 1 to 2

1. 0a:3e:a3:f9:80:7e
2. 0a:d5:e1:5b:10:16
1


Generating text file: mfp_out.txt with this information
Generating XML file: mfp_out.xml with this information
Please forward these files to Cadence Design Systems.
```

Following is an example of the `mfp` output generated on an Amazon EC2 instance:

```
HostName=ip-172-17-33-91.us-west-2.compute.internal
DomainName=us-west-2.compute.internal
IPAddress=172.17.33.91
CloudType=Amazon EC2
UniqueID=eni-54f24455
MAC=0a:3e:a3:f9:80:7e
~
~
~
~
~
~
~
~
~
~
~
~
"mfp_out.txt" 6L, 178C
```

2. Send the `mfp_out.txt` and `mfp_out.xml` files that are generated to a Cadence representative to generate the license.

⚠ Before starting the license server,

- Ensure that the ports for the license server and vendor daemon allow incoming connections.
- The port used for vendor daemon (`cdslmd`) is randomly assigned. To assign a specific port, make the following change to your license file,
  **from**: DAEMON cdslmd ./cdslmd
  **to**: DAEMON cdslmd ./cdslmd PORT=6820
- Allow outgoing traffic to update1.cadence.com on port 443 or 80.
- Set the appropriate EC2 security group to control access to the license server and daemon ports. The related commands are listed on the Changing the Security Group page on the Amazon documentation website.

Although multiple ENIs can be attached to the same AWS instance, you should not run two instances of the license server on the same instance.

# Migrating Amazon ENI Instances

Once license file is created with the ENI mac address, it works as a regular license file created with MAC addresses during the lifetime of the instance which uses the ENI. If the server needs to be hosted on a different Amazon instance, detach the ENI from the old instance and attach it to the new instance. Methods to detach and attach ENI are described on the following pages on the Amazon documentation website:

- Detaching a Network Interface from an Instance
- Attaching a Network Interface When Launching an Instance
- Attaching a Network Interface to a Stopped or Running Instance

# Generating a License for GCE

On Google Compute Engine, Cadence uses the instance ID for secondary verification. Hence, license server can be run only on the instance for which the license file is generated.

⚠ If the license server needs to be moved to another instance, a rehost, that is, a regeneration of license file with the `mfp` data from the new instance is required.

Perform the following steps on the GCE instance that will be used to run the server:

1. Run the `lmhostid` command to get the host ID or MAC address that will be used to generate license file.
2. Run the `mfp` tool with the cloud option of GCE, as shown below:

```
[hprachi@redhatgcplic01 ~]$ ./mfp -cl gce

Multiple IP Addresses detected.
**Use an IP adress that will not change over time.
IP Addresse(s) are:
1) 10.17.192.4
2) 10.17.200.4

Pick an IP Address to use (Type in a number between 1 and 2):1

Host name: redhatgcplic01
Domain name: c.cdns-licensing.internal
Running mfp with Google Compute Engine option
Found instance id


Generating text file: mfp_out.txt with this information
Generating XML file: mfp_out.xml with this information
Please forward these files to Cadence Design Systems.
```

Following is an example of the `mfp` output generated for GCE:

```
HostName=redhatgcplic01
DomainName=c.cdns-licensing.internal
IPAddress=10.17.192.4
CloudType=Google GCE
UniqueID=1379392967683858313
~
~
~
~
~
~
~
~
~
~
~
~
~
"mfp_out.txt" 5L, 133C
```

3. Provide the lmhostid information and mfp files generated to Cadence for license file generation.

⚠ Before starting the license server,

- Ensure that the ports for the license server and vendor daemon allow incoming connections.
- The port used for vendor daemon (cdslmd) is randomly assigned. To assign a specific port, make the following change to your license file,
  **from** : DAEMON cdslmd ./cdslmd
  **to**: DAEMON cdslmd ./cdslmd PORT=6820
- Allow outgoing traffic to update1.cadence.com on port 443 or 80

# Generating a License for Microsoft Azure

Cadence uses the instance ID for secondary verification. Therefore, the license server can be run only on the instance for which the license file has been generated.

⚠ If the license server needs to be moved to another instance, a rehost, that is, a regeneration of license file with the `mfp` data from the new instance is required.

Perform the following steps on the Microsoft Azure instance that will be used to run the server:

1. Run the `lmhostid` command to get the host ID or MAC address that will be used to generate license file.
2. Run the `mfp` tool with the azure cloud option of Microsoft Azure, as shown below:

```
[user@LicenseLinTest02 64bit]$ ./mfp -cl azure
mfp, 12.12-p001
Copyright © 2012-2018 Cadence Design Systems, Inc. All rights reserved
worldwide.
Host name: LicenseLinTest02
Domain name: lqjzxlatawcutbr4xiwkpfvhxf.dx.internal.cloudapp.net
IPAddress: 10.17.31.135
CloudType: Microsoft Azure
UniqueID: f8202b22-3fa2-42ec-b816-4463a2761ed2
Generating text file: mfp_out.txt with this information
Generating XML file: mfp_out.xml with this information
Please forward these files to Cadence Design Systems.
```

Following is an example of the `mfp` output generated for Microsoft Azure:

```
[user@LicenseLinTest02 64bit]$ cat mfp_out.txt
HostName=LicenseLinTest02
DomainName=lqjzxlatawcutbr4xiwkpfvhxf.dx.internal.cloudapp.net
IPAddress=10.17.31.135
CloudType=Microsoft Azure
UniqueID=f8202b22-3fa2-42ec-b816-4463a2761ed2
```

3. Provide the lmhostid information and mfp files generated to Cadence for license file generation.

⚠ Before starting the license server,

- Ensure that the ports for the license server and vendor daemon allow incoming connections.
- The port used for vendor daemon (cdslmd) is randomly assigned. To assign a specific port, make the following change to your license file:
  **from** : DAEMON cdslmd ./cdslmd
  **to**: DAEMON cdslmd ./cdslmd PORT=6820
- Allow outgoing traffic to update1.cadence.com on port 443 or 80

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# Distributed and Heterogeneous Installations

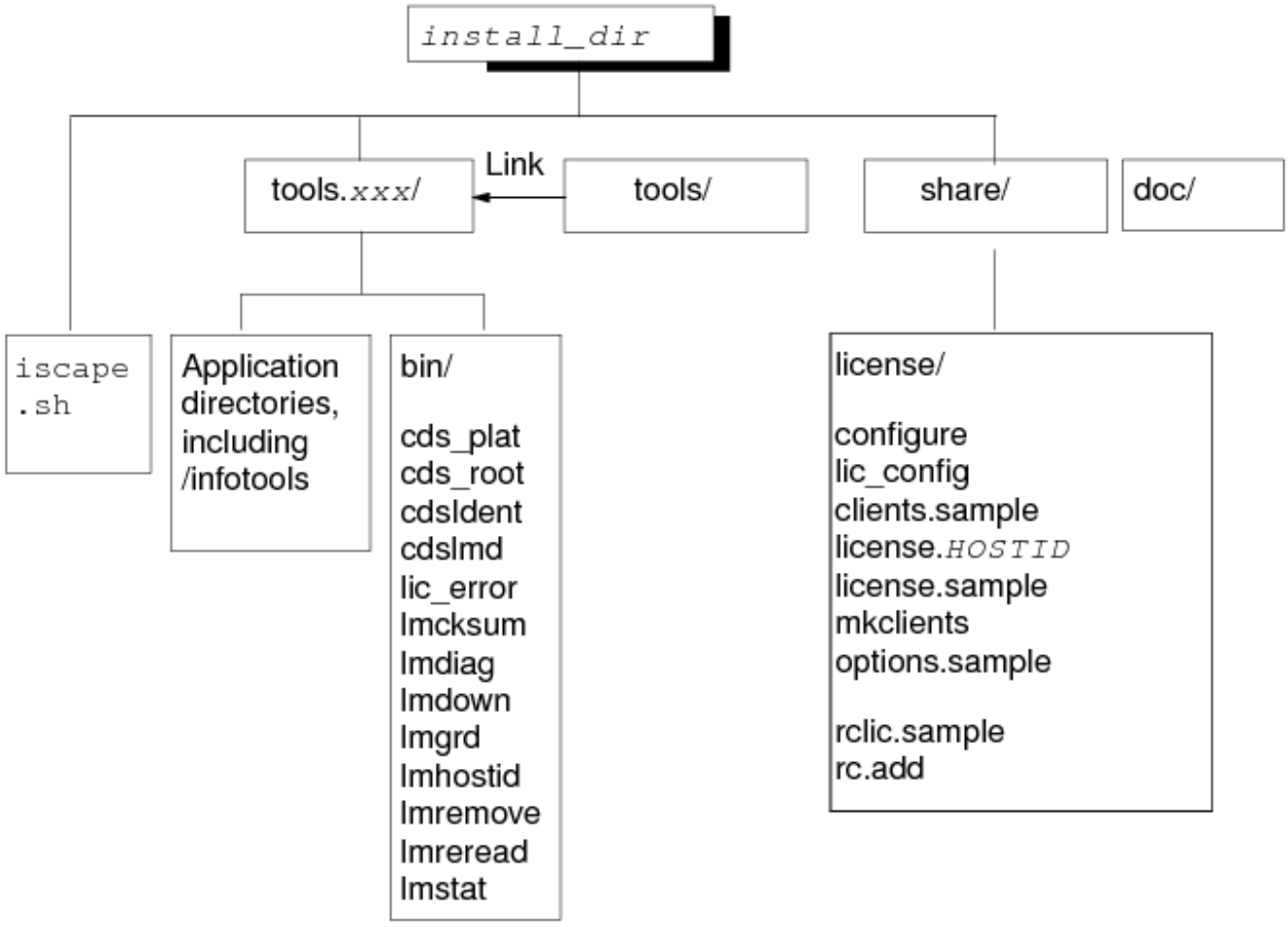
This appendix contains information about these topics.

- Cadence Hierarchy
- Distributed Software Installations
- Heterogeneous Networks

## 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 Cadence installation software 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 |
| 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 FlexNet 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.lnx86

## 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.lnx86 \
                  server2:/cds/tools.lnx86 \
                  server3:/cds/tools.lnx86
```

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
```

> 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.

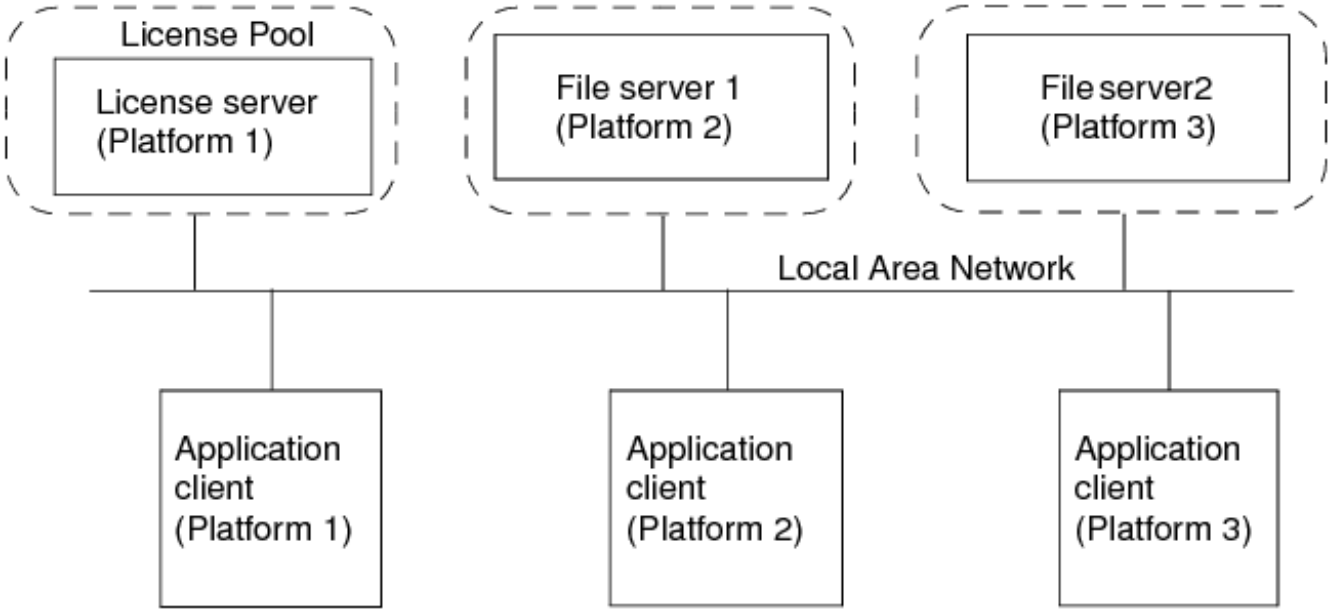
For more information about automounting, see the documentation for your operating system.

# Heterogeneous Networks

Heterogeneous networks (more than one platform, such as a network with Sun 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 DVDs. 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.



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# How Licensing Works

This appendix contains information about the following topics:

- Components of Licensing Configurations
- How Licensing Components Interact
- Types of Licensing Configurations

## 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 FlexNet 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 FlexNet 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 -I
  - 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 |
|---|---|---|
| Linux | Ethernet address | /sbin/ifconfig -a \| grep eth0 \| awk '{print $NF}' \| sed s/://g |

## Cadence Licensing Tools

Cadence licensing tools include the license daemons and licensing utilities. Cadence licensing software requires two daemons, the FlexNet 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 FlexNet-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 Cadence_SERVER 83795ddb 5280

DAEMON cdslmd ./cdslmd

# DO NOT REMOVE THE USE_SERVER LINE

USE_SERVER

FEATURE NC_VHDL_Simulator cdslmd 9999.999 31-jul-2006 1 \

ADE4C8A10A40A8649256 VENDOR_STRING=J:PERM DUP_GROUP=NONE \

vendor_info=1-may-2006 ISSUED=01-may-2006 \

SN=2006-05-01T01:33:08:819 SIGN2="106D 1CFE ECFF 507A EABA \

3147 CD97 760A A18F 75A6 F1DF 5F9A EB97 2F8D 3AD8 1A5B 6FCC \

2D3F 46CC DE1E A9FF 9DEB 9FEE 3006 F75D 70D9 D7E5 8558 DCB4 \

CC10" V7.1_LK=4D94A891F2B6F6B6E7F1

FEATURE Affirma_sim_analysis_env cdslmd 9999.999 31-jul-2006 9 \

8D3468113BA0A7BC009E VENDOR_STRING=UHD:PERM DUP_GROUP=UHD \

vendor_info=1-may-2006 ISSUED=01-may-2006 \

SN=2006-05-01T01:33:08:819 SIGN2="03B5 01A1 F242 8AD8 B43C \

6BEE 45A5 9408 C589 54BA 33B0 1440 FABD 5E91 DFC6 16A4 D79E \

704F D1F7 F0E9 D7E7 5813 0978 E3C2 954F ADE5 C6BE 3A20 63DF \

EE52" V7.1_LK=CD1448F198849CE06357
```

**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 FlexNet-based products. However, if you want to combine license files, see the *FlexNet License Administration*

*Manual*, `https://www.flexera.com`

You can edit only

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

> ***You corrupt the license file by***
>
> - **Editing a FEATURE line**
> - **Using a host name longer than 32 characters**

## SERVER Line

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

SERVER *hostname HOSTID* [*port_number*]

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

> The `SERVER` lines of the license file can use a hostname that resolves to an IPv6 address.

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.
*port_number* TCP/IP port number to use if /etc/services or the equivalent NIS database does not assign a port to FlexNet.

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

```
FlexNet     5280    # Cadence FlexNet daemons
```

The TCP/IP port number in the license file overrides the FlexNet 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.

***You cannot edit this line without corrupting your license file.***

FEATURE <FEATURE_NAME> cdslmd <VERSION> <EXPIRATION_DATE> <QUANTITY> <SIGNATURE> DUP_GROUP=<NONE|SITE|UHD> ISSUED=<ISSUED_DATE> ISSUER=<ISSUER> VENDOR_STRING= <UHD|J|S:PERM|DEMO>

SN=<SERIAL_NUMBER> vendor_info=<START_DATE> SIGN2=<TRL_SIGNATURE> V7.1_LK=<SIGNATURE>

Cadence license files contain only floating 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.

| Feature | Description |
|---|---|

| | |
|---|---|
| <FEATURE_NAME> | Feature name that identifies this FEATURE. |
| cdslmd | Cadence vendor daemon name |
| <VERSION> | Version of this FEATURE. |
| <EXPIRATION_DATE> | Expiration date of this feature. |
| <QUANTITY> | Number of licenses for this FEATURE. |
| <SIGNATURE> | This signature is provided for backward compatibility to support older applications that are not integrated with TRL. |
| DUP_GROUP | Provides the duplicate grouping for this feature. The syntax is UHD\|SITE\|NONE. Setting the DUP_GROUP in the license file overrides the DUP_GROUP requested by the client during checkout. Going forward, Cadence products will use DUP_GROUP to determine the license type. |
| ISSUED | Date that the license was issued. |
| ISSUER | Cadence authentication signature |
| VENDOR_STRING | The syntax is UHD\|S\|J:PERM\|DEMO. The "UHD\|S\|J" part is provided for backward compatibility. Newer versions of Cadence products will use DUP_GROUP to determine the license type. The "PERM\|DEMO" part determines whether this FEATURE is a permanent or demo key. Only a demo license will be allowed to be pasted to a license file. |
| SN | Serial Number. Date and time when the license was generated will denote the serial number. The format of the serial number will be the following,<br>YYYY-MM-DDThh:mm:ss:lll, where "lll" indicates the milliseconds and "T" differentiates date from time. |
| vendor_info | Stores the start date in "dd- mmm-yyyy" format for debugging or analysis purpose. |
| SIGN2 | TRL signature for the FEATURE. This is the new enhanced security signature. |

| | |
|---|---|
| V7.1_LK= <SIGNATURE> | The signature in addition to the <SIGNATURE> field ensures backward compatibility for older supported Cadence products |

## Which Products Are in the License File?

One Cadence product can require more than one license (FEATURE). The product to feature mapping in the license file lists the licenses each product needs.

For example, if the license filelists these features for the NC-VHDL Simulator:

```
Product Name: Cadence(R) NC-VHDL Simulator

# Type: Floating Exp Date: 31-jul-2006 Qty: 1

# Feature: NC_VHDL_Simulator [Version: 9999.999]

# Feature: Affirma_sim_analysis_env [Version: 9999.999]
```

The license file includes these entries:

```
FEATURE NC_VHDL_Simulator cdslmd 9999.999 31-jul-2006 1 \

   ADE4C8A10A40A8649256 VENDOR_STRING=J:PERM DUP_GROUP=NONE \

   vendor_info=1-may-2006 ISSUED=01-may-2006 \

   SN=2006-05-01T01:33:08:819 SIGN2="106D 1CFE ECFF 507A EABA \

   3147 CD97 760A A18F 75A6 F1DF 5F9A EB97 2F8D 3AD8 1A5B 6FCC \

   2D3F 46CC DE1E A9FF 9DEB 9FEE 3006 F75D 70D9 D7E5 8558 DCB4 \

   CC10" V7.1_LK=4D94A891F2B6F6B6E7F1

FEATURE Affirma_sim_analysis_env cdslmd 9999.999 31-jul-2006 9 \

   8D3468113BA0A7BC009E VENDOR_STRING=UHD:PERM DUP_GROUP=UHD \

   vendor_info=1-may-2006 ISSUED=01-may-2006 \

   SN=2006-05-01T01:33:08:819 SIGN2="03B5 01A1 F242 8AD8 B43C \

   6BEE 45A5 9408 C589 54BA 33B0 1440 FABD 5E91 DFC6 16A4 D79E \

   704F D1F7 F0E9 D7E7 5813 0978 E3C2 954F ADE5 C6BE 3A20 63DF \

   EE52" V7.1_LK=CD1448F198849CE06357
```

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.

**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.

## Combining License Files from Other Vendors

Consider these points when combining FlexNet-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 FlexNet License Administration Manual and the FAQ at `https://www.flexera.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. |
| Environment variables<br>CDS_LIC_FILE<br>LM_LICENSE_FILE | Specifies one or more license files.<br><br>ⓘ You can set the CDS_LIC_ONLY environment variable to ignore the LM_LICENSE_FILE variable setting. By setting the CDS_LIC_ONLY environment variable, SoftShare will only look for the setting of the CDS_LIC_FILE environmental variable, the *<install_dir>*/share/license/clients file, and the *<install_dir>*/share/license/license.dat file.<br><br>On Unix:<br><br>setenv CDS_LIC_ONLY 1<br><br>On NT:<br><br>set CDS_LIC_ONLY=1 |

# With the clients File

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

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

*hostname* *license_file*

where *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 ULMlicse.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.<br><br>You can set the CDS_LIC_ONLY environment variable to ignore the LM_LICENSE_FILE variable setting. By setting the CDS_LIC_ONLY environment variable, SoftShare will only look for the setting of the CDS_LIC_FILE environmental variable, the *<install_dir>*/share/license/clients file, and the *<install_dir>*/share/license/license.dat file.<br><br>On Unix:<br><br>setenv CDS_LIC_ONLY 1<br><br>On NT:<br><br>set CDS_LIC_ONLY=1 |

Set the environment variables as shown in this example for CDS_LIC_FILE

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

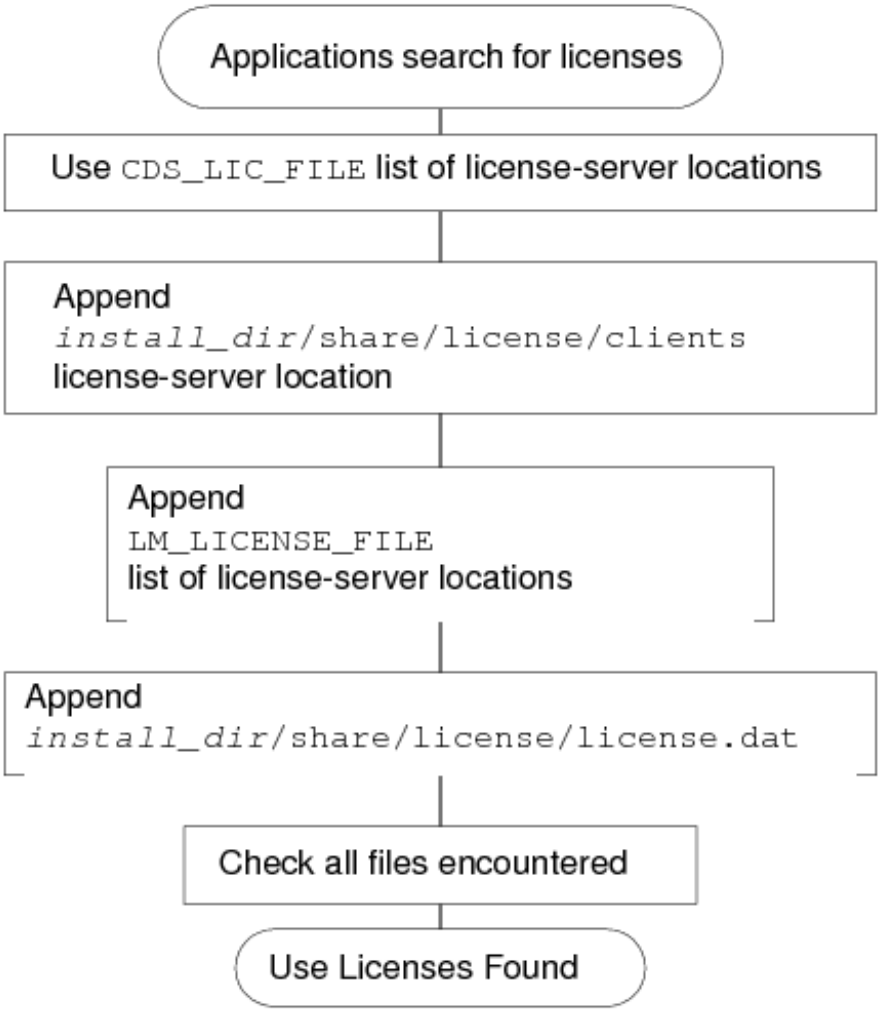
An environment variable can specify either a single path or a delimiter-separated list of multiple license file paths to be searched sequentially.

**Note:** AFS lets you specify paths using an at sign (@). However, because the FlexNet 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.

ⓘ 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 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

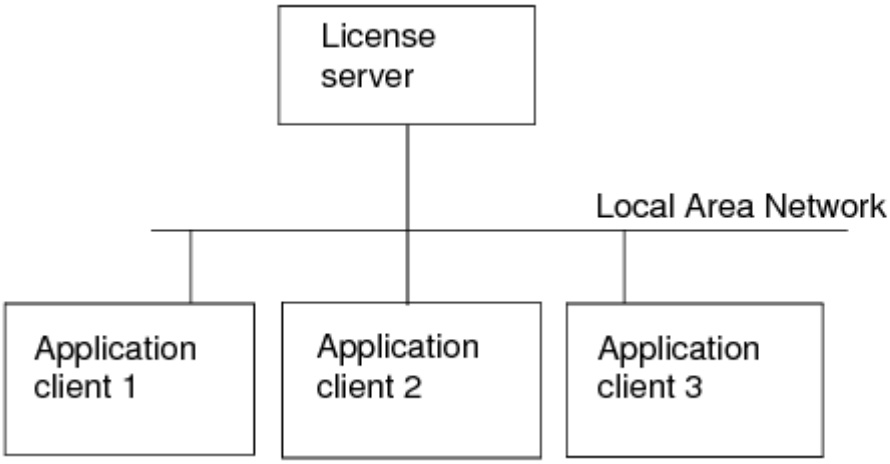
Your license file includes this information as well as the licenses for the Cadence products ordered for your site. You can determine your type of licensing configuration by looking at the number of SERVER lines in your license file.

| 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

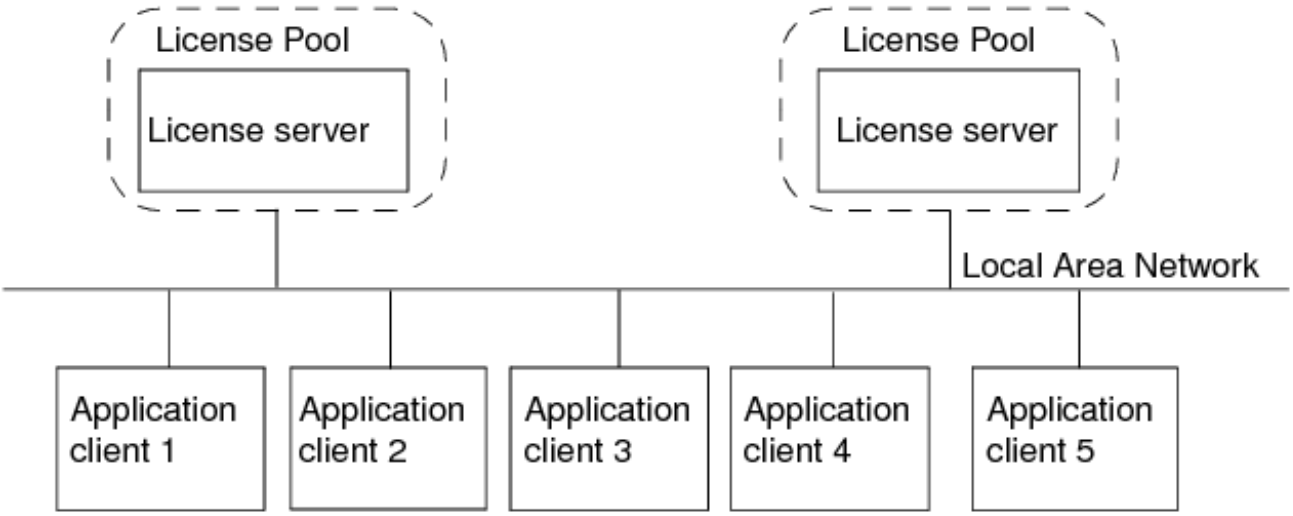
With a single license server, one license server manages all Cadence licenses. A benefit of this setup is its ease of maintenance. Cadence recommends this setup if there are few users.




**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.



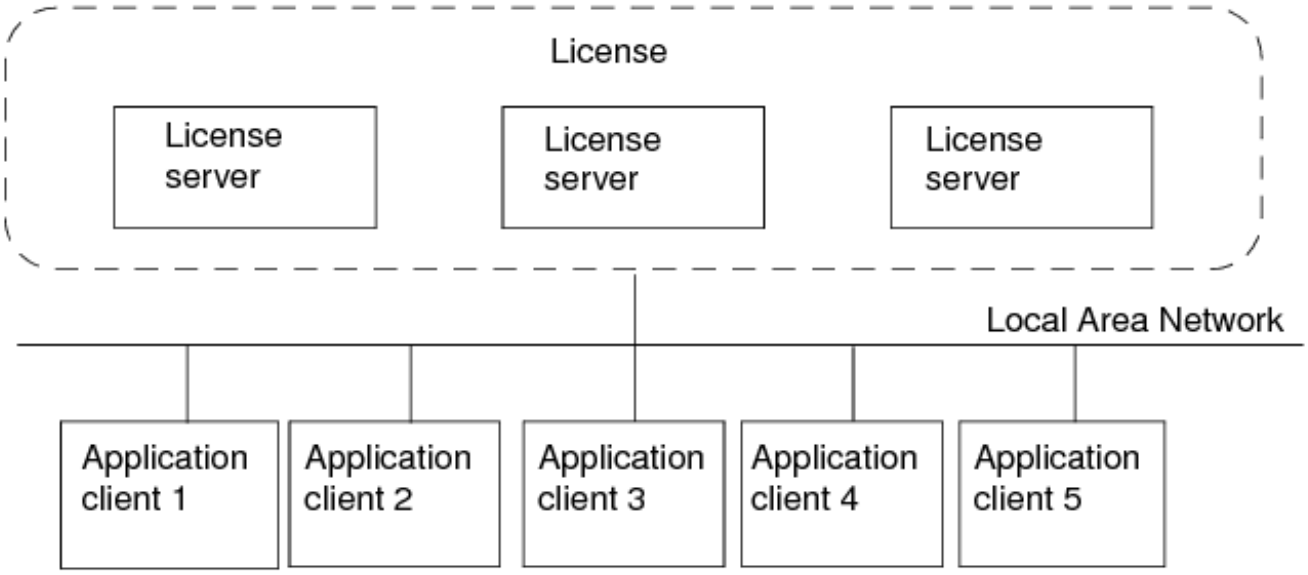

Each license server uses its own license file and distributes licenses independently. For example, if

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.




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

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# Licensing and Installation Commands

This appendix contains information about the following topic:

- Licensing Utilities

## Licensing Utilities

This section describes the FlexNet and the Cadence utilities.

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

| Function | Description |
|---|---|
| `configure` | Runs `lic_config`, `mkclients`, and `rc.add` |
| `lic_config` | Configures the license file. |
| `lic_error` | Explains error messages. |
| `lmdiag` | Diagnoses license checkout problems. |
| `lmdown` | Shuts down the license daemons gracefully. |
| `lmgrd` | Specifies the FlexNet license daemon. |
| `lmhostid` | Returns the unique system-specific identifier used by the license manager to discern one computer from another. |
| `lmnewlog` | Moves the existing report log information to a new file name and starts a new report log file with the existing file name. |
| `lmremove` | Releases any license that an abandoned or zombie process has locked and returns the license to the license pool of available licenses. |
| `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. |
| `lmswitch` | Controls debug log location and size. |
| `lmswitchr` | Changes the report log file as specified in the options file (the enhanced log file, not the debug log file). |
| `lmver` | Displays the FlexNet version that a binary or library file uses. |
| `mkclients` | Modifies the `clients` file. |
| `rc.add` | Modifies the startup file of the computer. |

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# Cadence License Server Diagnostics Utilities

⚠ Cadence License Server Diagnostics Utilities are only provided on WINDOWS platforms.

Cadence License Server Diagnostics Utilities consists of three command line test utilities and a GUI wrapper.

## ServerStatus.exe

Checks if the license server is currently running on a machine for the license file provided. It also provides information about other server instances currently running on the machine.

usage: `ServerStatus.exe [-h] [-c LIC] [-l LOGFILE]`

## LicenseFileValidity.exe

Checks if a license file is good. Performs preliminary checks for license file validity and feature expiration dates. It will then start a server instance with the license file provided to check if the license file is correct and usable on the machine.

usage: `LicenseFileValidity.exe [-h] [-c LIC] [-l LOGFILE]`

## FeatureValidity.exe

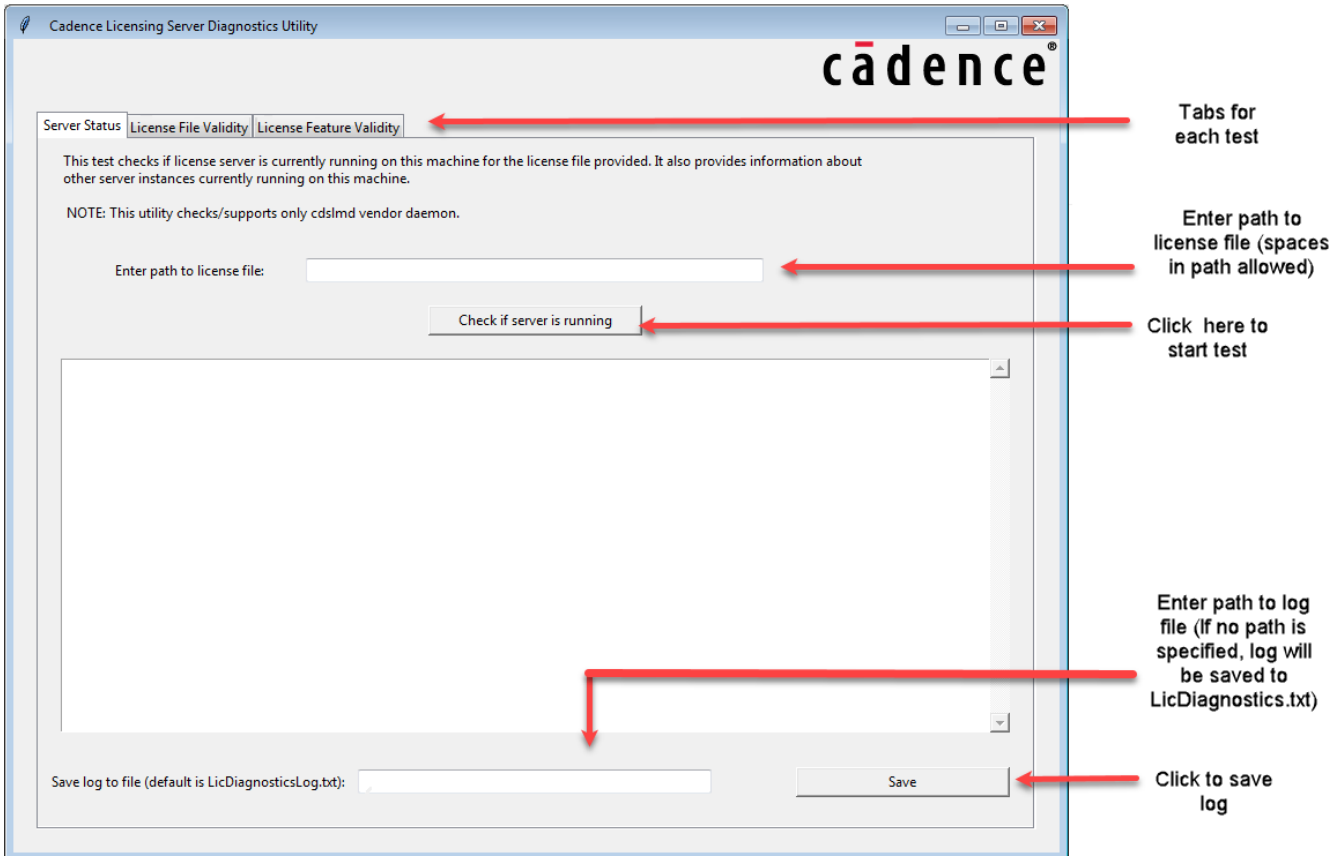
Checks if all features in the license file are good. It starts a server instance and performs checkout of max quantity supported for each feature in the license file. If the license server is already running on the machine, this test will check if all the features in the current license file are being served by the license server.

usage: `FeatureValidity.exe [-h] [-c LIC] [-l LOGFILE]`

ⓘ All of the above tests can be run through a GUI as well.

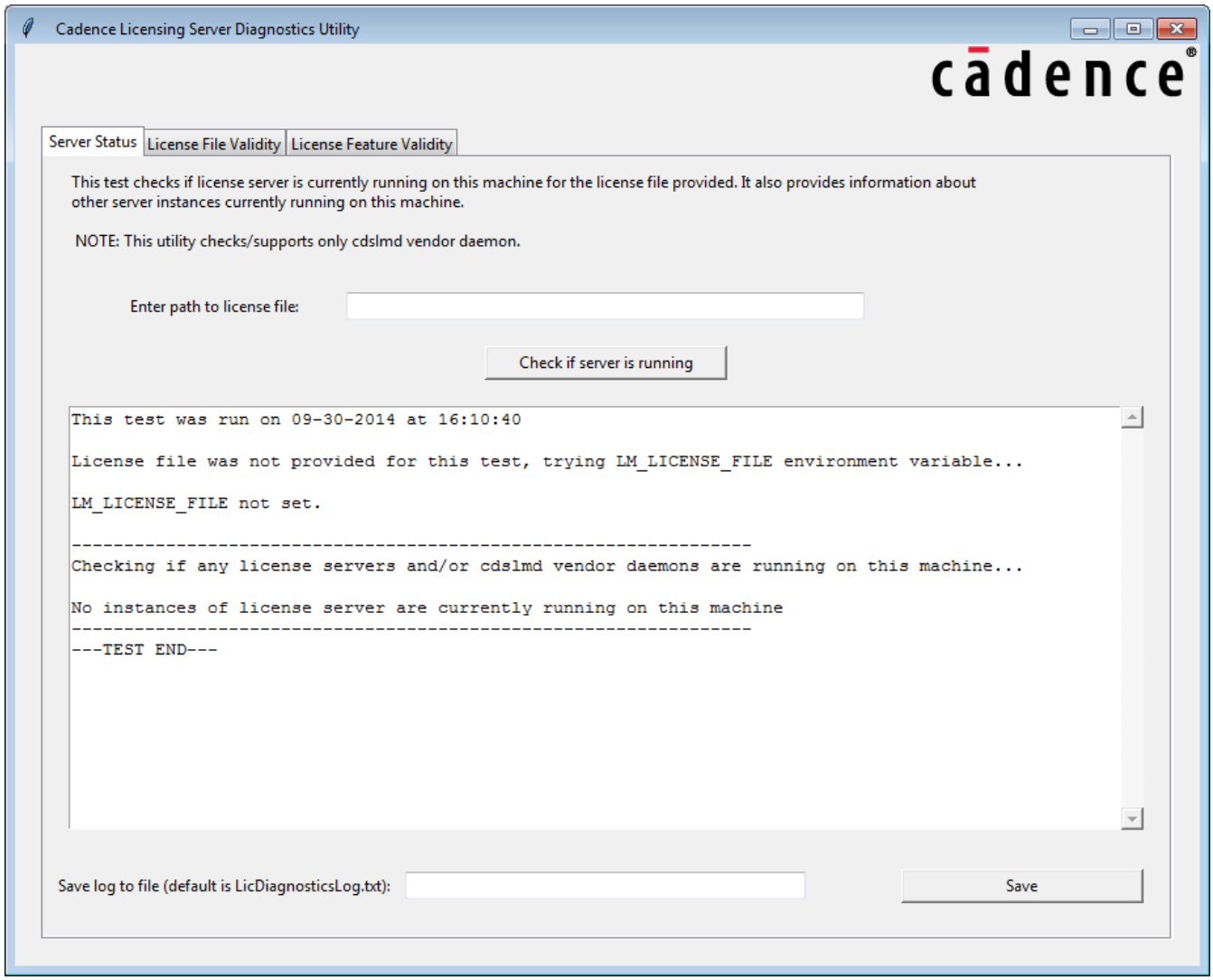
# Run the Tests through GUI

1. Launch the utility as GUI by running `LicenseServerDiagnostics.exe`.
2. Each of the three tests mentioned above are available on a separate tab in the GUI. Select the tab for the test you wish to run.
3. Once on the page for the test you wish to run, enter the path to the license file you want to run the test for and click on the button to run the test.
4. You can save the test results in a file with the *Save Button* provided at the bottom of the page. By default the log is saved to `LicDiagnosticsLog.txt`.

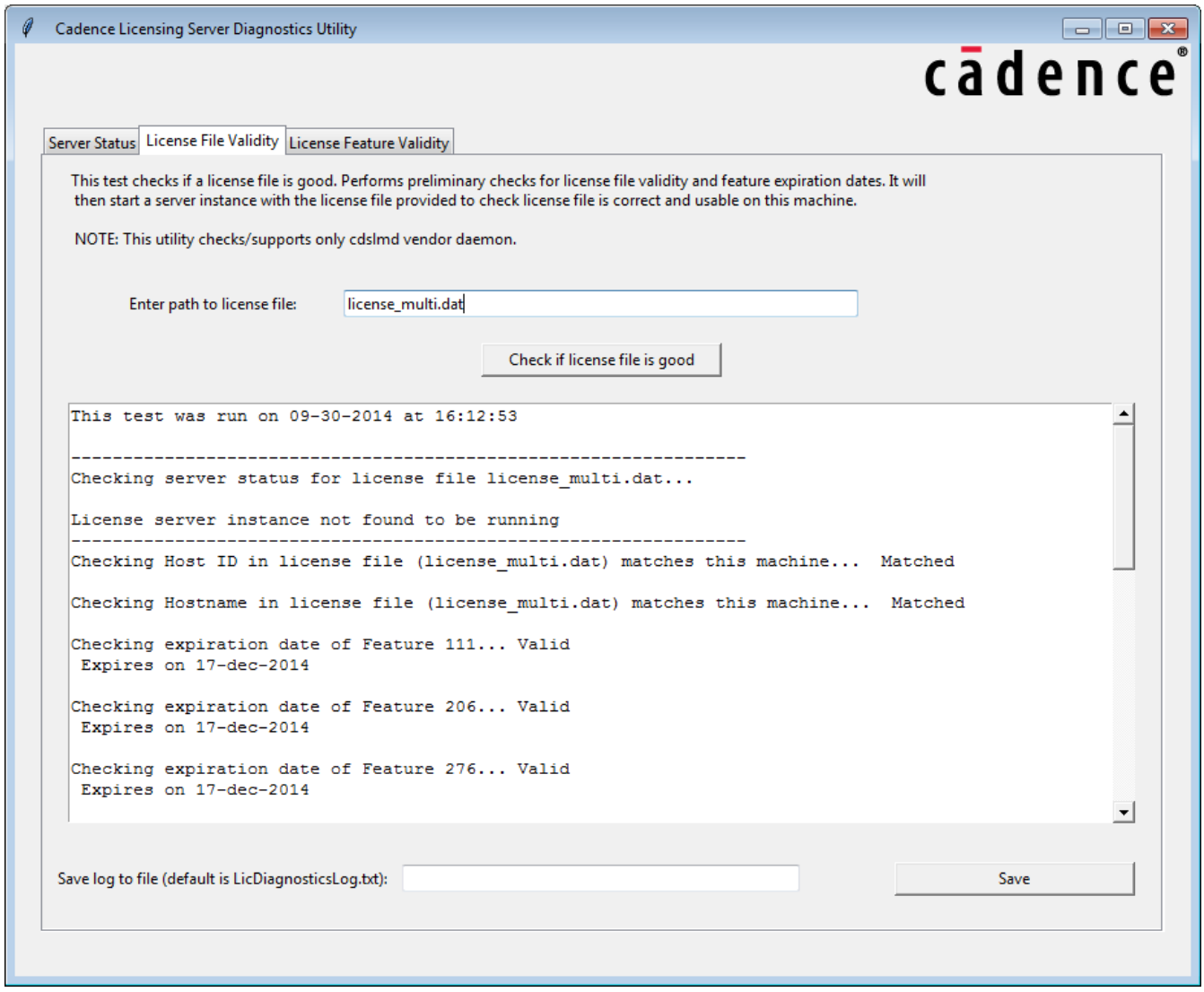



# Sample License File Test Runs

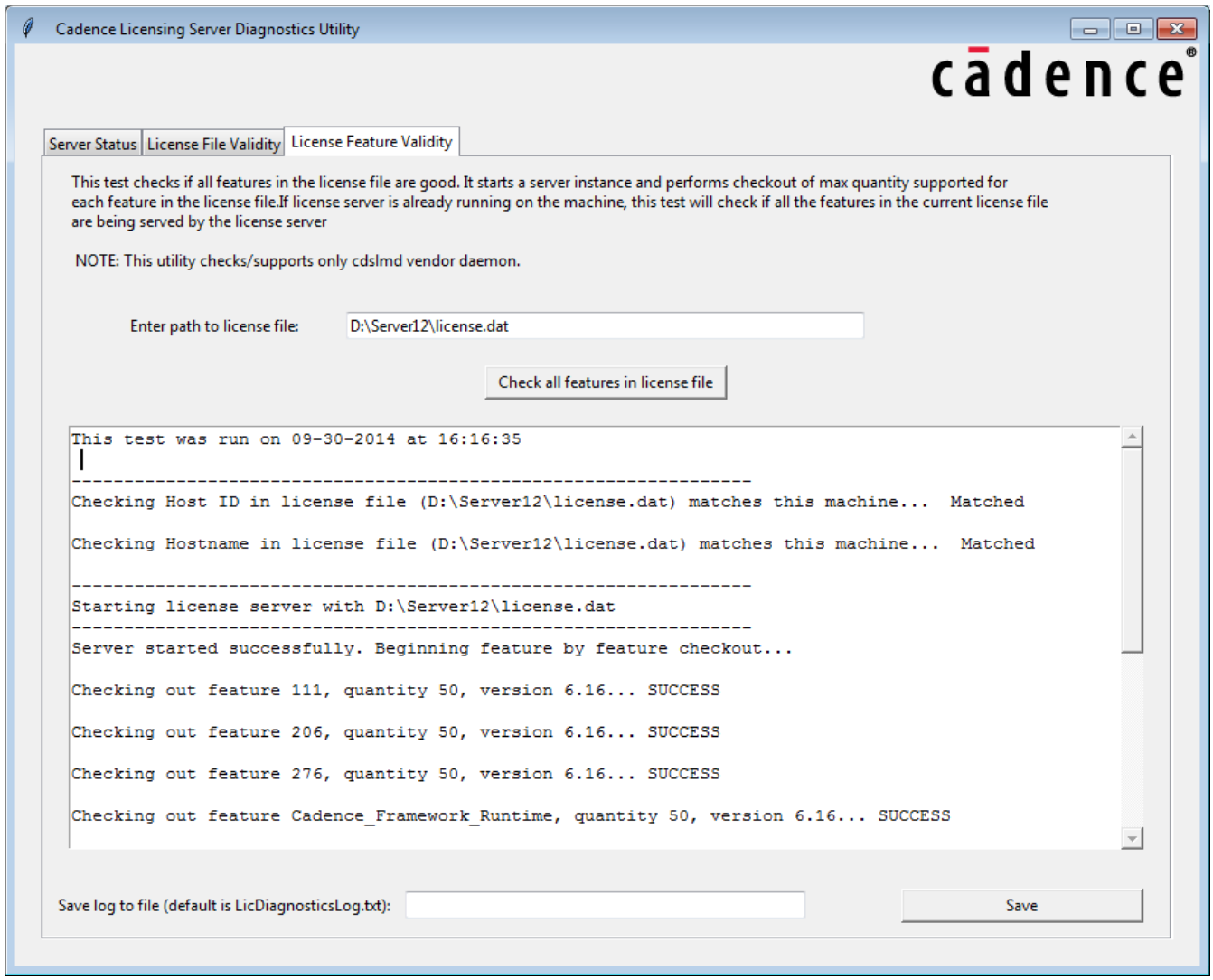
- Server Status test: Path to the license file is not provided and the license server was not found running on the machine.




- License File Validity test: An instance of the license server was not running on the machine and the license file is valid.




- License Feature Validity test: The license server is already running on the machine, so Feature Exists test was run.


Cadence Licensing Server Diagnostics Utility
cadence
Server Status
License File Validity
License Feature Validity
This test checks if all features in the license file are good. It starts a server instance and performs checkout of max quantity supported for each feature in the license file.If license server is already running on the machine, this test will check if all the features in the current license file are being served by the license server
NOTE: This utility checks/supports only cdslmd vendor daemon.
Enter path to license file:
D:\Server12\license.dat
Check all features in license file
This test was run on 09-30-2014 at 16:16:35
Checking Host ID in license file (D:\Server12\license.dat) matches this machine... Matched
Checking Hostname in license file (D:\Server12\license.dat) matches this machine... Matched
Starting license server with D:\Server12\license.dat
Server started successfully. Beginning feature by feature checkout...
Checking out feature 111, quantity 50, version 6.16... SUCCESS
Checking out feature 206, quantity 50, version 6.16... SUCCESS
Checking out feature 276, quantity 50, version 6.16... SUCCESS
Checking out feature Cadence_Framework_Runtime, quantity 50, version 6.16... SUCCESS
Save log to file (default is LicDiagnosticsLog.txt):
Save

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# Troubleshooting - Basic

This appendix contains some frequently asked questions about troubleshooting licensing.

**Q. How should my network topology be?**

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

**Q. Should my license server be a dedicated machine?**

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

**Q. Can license files be combined?**

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

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

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

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

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

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

**Q. Are duplicated FEATURE lines allowed?**

**Ans:** Except for temporary keys, Cadence does not allow multiple lines for a FEATURE.

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

**Ans:** It is very important that the FEATURE lines be consistent in both the application client and the license server versions of the license file (which may be different for a variety of reasons). The

UNSUPPORTED line in the log file is most likely due to a mis-match in these two license files. Usually, a license if available is granted.

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

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

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

To access this testability code, execute the following at the command prompt (in Linux):
setenv CDS_LIC_QA_TesT /tmp/client_debug_log.out

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

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

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

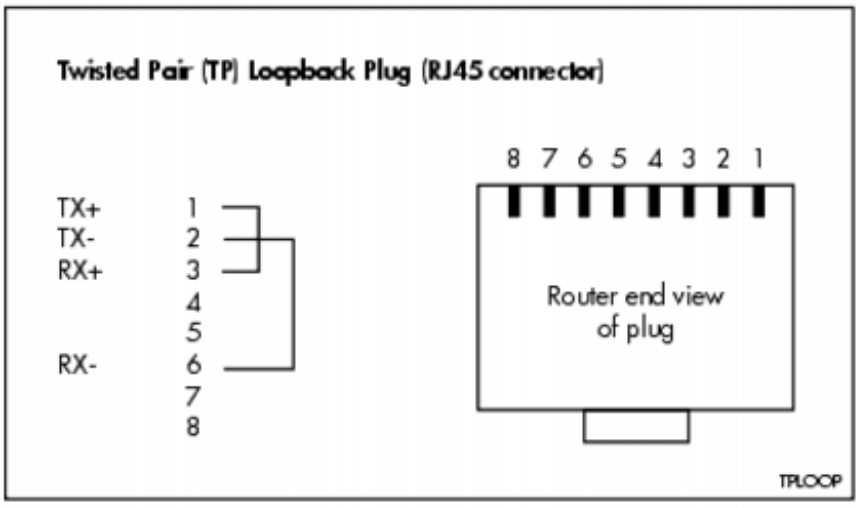
**Ans:** Only homogeneous platforms of the same OS release are supported. All three servers in a fault-tolerant configuration must be of the same OS version and platform, and the systems should belong to the same subnet block.

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

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

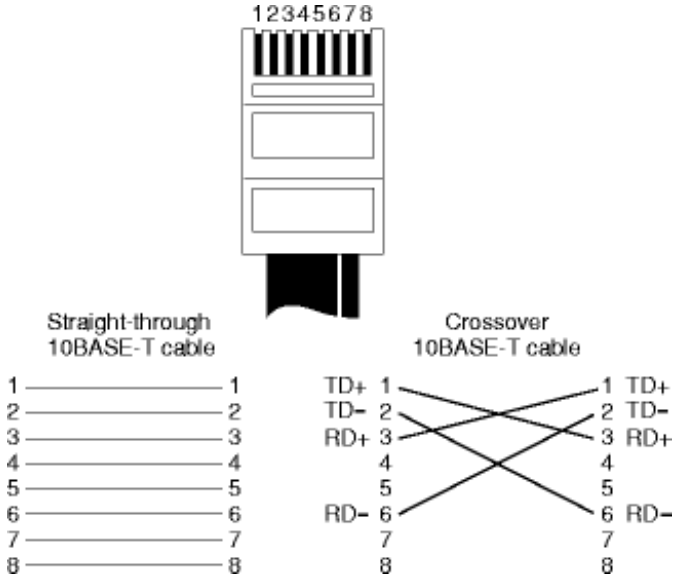
First, ensure that the hardware is enabled. The hardware solution is to make a simple loop back plug (one that routes the transmit to the receive). The Ethernet will interpret this as being connected.

### Ethernet twisted pair loopback plug




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

**Straight-through and Crossover Cable Pinouts**




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

The FlexNet host ID of this machine is ""

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

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

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

solution.

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

sbin/insmod eepro100

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

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

If you do not want to use localhost, then make sure that the /etc/hosts file on Linux (and the `C:\Windows\System32\drivers\etc\hosts` file on Windows) has the information required to add the name of your machine to the loopback (127.0.0.1) address mapping.

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

ⓘ More information on troubleshooting is available at:

- Troubleshooting - Detailed Appendix
- The Licensing and Installation FAQ in the Cadence Support portal

### Q. Can I use lmremove to remove the licenses?

**Ans:** Cadence advises customers not to use lmremove to remove licenses from active or idle applications. See advisory note on page 124.

### Q. Can I use lmreread to restart my server?

**Ans:** Cadence does not recommend using lmreread and advises customers to restart the license server for any license updates. Lmreread has issues with certain keywords in the license and options files. Flexera has no plans to fixing lmreread for all cases. But Cadence has asked Flexera to provide us the situations where lmreread will work. Until then Cadence's recommendation is to restart the license server. Cadence applications can handle a license server restart without any issues.

### Q. How to use fixed ports for the license server?

**Ans:** The following two ways can be used to fix the license server ports:

- When you open the license file, the first two lines are as follows:

  ```
  SERVER lx-linux C858C0E96C7B 5280
  DAEMON cdslmd ./cdslmd
  ```

  `5280` is the port that is used by the `lmgrd` daemon. The `cdslmd` process looks for any free port available on the system. To ensure that `cdslmd` uses a fixed port, add the port number as shown below:

  ```
  SERVER lx-linux C858C0E96C7B 5280
  DAEMON cdslmd ./cdslmd PORT=5281
  ```

  When you restart the license server, `cdslmd` listens at the fixed port `5281`. Both `5280` and `5281` are TCP ports that are helpful for adding the rules to the firewall policy.
- In case you do not want to add the port number in the license file, start the license server in the command prompt as shown below:

  ```
  lmgrd -c <license_file> -l debug.log -reuseaddr
  ```

  The `-reuseaddr` argument ensures that `lmgrd` and `cdslmd` use the same ports on the next restart of the license server.

  ⚠ It is not recommended to use the `lmreread` binary to re-read the license file. Instead, restart the license server to read the license file again.

### Q. How to force lmgrd and cdslmd to use the old TCP port after restarting the license server?

**Ans.** With effect from FLEXnet version 10.8.5.0, `lmgrd` supports the `-reuseaddr` switch. It is designed to reuse the ports for both `lmgrd` and `cdslmd`.

- Start the license server in the command prompt as shown below:

  ```
  lmgrd -c  license_file -l log_file  -reuseaddr
  ```

- If your license file uses a fixed port for `cdslmd` as shown below:

  ```
  DAEMON cdslmd /installs/LCU/tools/bin/cdslmd port=5281
  ```

  Flexnet reuses this port, `5281`, for `cdslmd` in addition to reusing the designated port for `lmgrd`.

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# Troubleshooting - Detailed

This appendix contains information about the following topics:

- General Troubleshooting Hints
- Specific Problems
- Error Messages and What to Do about Them
- Error Message Syntax Description for Cadence releases prior to June 2006

## 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.
    a. 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.
          ```

    b. 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
    c. 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.

2. Look at your license file to see if it contains licenses from vendors other than Cadence.
    - If your license server exhibits any unusual FlexNet behavior and your license files contain FlexNet-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.)
3. For platforms not listed in this reference, contact your Cadence sales representative.
4. If you need more assistance, call Cadence Customer Support at 1-877-CDS-4911 ( North America ) or send email to support@cadence.com.

# 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 FlexNet 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.

    - If you just installed the Cadence products, verify that the previous user or system administrator configured the Cadence licensing software environment 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 |
|---|---|
| Linux | tools.lnx86 |

    - 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 |
|---|---|
| Linux | /etc/rc.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 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 |
|---|---|
| Linux | chmod 6744 /etc/rc.lic |

- Use lmstat to verify that the lmgrd and cdslmd daemons are running on the license server.
  ./lmstat -a -c *license_file*
- 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 (*Lic+Config_+Utils Release )* 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.

- 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 |
|---|---|
| All Unix platforms | /usr/bin/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 DISPLAYs do not match exactly, the software considers them to be two different users.

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

### 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.

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

# Error Messages and What to Do about Them

- Licensing error messages are reported by the Cadence products or reported in the license server debug log file.

### Licensing Error Messages reported by Cadence Products

All Cadence products releases released after June 2006 will provide FlexNet messages as is. This section describes the new error message syntax. For detailed decription of the old Cadence licensing error messages please refer to Appendix A

The licensing error messages can be classified as one of the following:

- Error
- Warning
- Info
- Question

You can also use the *lic_error* utility to return a detailed explanation and a possible corrective action.

# Detailed Syntax

The detailed syntax for an error message is as follows:

# Error (licensing)

ERROR (LMC|F-<License API Code><Cadence Error Code>|<FlexNet Error Code>): License call failed[ for <feature>][, <version>][ and <quantity>].[ The license server path is defined as <serverpath>.] <SoftShare Error Message>|FlexNet error message is as follows,

FlexNet ERROR( <Major Err#>, <Minor#>, <System#> ): <error string>.

Run 'lic_error LMC|F-<License API Code><SoftShare Error Code>|<FlexNet Error Code>' for more information.

Cadence advises customers not to use lmremove to remove licenses from active or idle applications. lmremove can cause licenses to become orphaned and thereby deny a license for a legitimate user. An orphaned license can be cleared only by restarting the license server. Customers should use the TIMEOUT option in the options file to reclaim any idle licenses. The minimum timeout interval is 3600 seconds or 1 hour.

# Error Message Syntax Description

| Parameter | Description |
|---|---|
| ERROR\|WARNING\|INFO\|QUESTION | The error tag. |
| LMC\|F-<CODE> | Specifies the error code, where:<br>LM - License Manager<br>C - Indicates that the error is local to the SoftShare API.<br>F - Indicates that the error is a Flexnet error.<br><Licence API Code> - (0-99) Indicates the licensing API that generated the error.<br><SoftShare Error/Warning/Info/Question Code> -. Errors that are local to Cadence source code.<br><FlexNet Error/Warning/Info/Question Code> - The Error code returned by FlexNet API. |
| License call failed | Basic error message header for all licensing errors. Warning, Info, and Question do not have a basic header. |
| Token call failed | Basic error message header for all token errors. Warning, Info, and Question do not have a basic header. |
| <feature>, <version> <quantity> and <serverpath> | The feature, version, quantity and serverpath that caused the error. These values are displayed where relevant. These fields are applicable only to errors. |
| <Cadence API Error/Warning/Info/Question Message> | The message explains the error/warning/info within Cadence. |
| <FlexNet Error Message> | The actual FlexNet message that explains the licensing failure. |

## *Example*

ERROR (LMF-02004): License call failed for feature 12111, version 5.0. The license server search path is defined as 5280@sunrise:5280@sunset. The FlexNet error message is as follows,

FlexNet ERROR(-4, 132, 0): Licensed number of users already reached.

Run 'lic_error LMF-xx02004' for more information.

# Error (token)

ERROR (LMC-<License API Code><SoftShare Error Code>: Token call failed. <SoftShare Error Message>

Run 'lic_error LMC-XX<License API Code><SoftShare Error Code>' for more information.

These error messages are reported by the token mechanism and are Cadence only errors.

For detailed description of the syntax refer to Error section above.

# Warning

WARNING (LMC|F-<License API Code><SoftShare Warning Code>|<FlexNet Warning Code>): <SoftShare Warning Message>|<FlexNet Warning Messsage>

Run 'lic_error LMC|F-<License API Code><SoftShare Warning Code>|<FlexNet Warning Code>' for more information.

For detailed description of the syntax refer to Error section above.

## *Example*

WARNING (LMC-07702): Unable to validate license feature(s)(first attempt). After the third attempt the application will wait indefinitely until the licenses become available. The feature(s) and version(s) are as follows

12111 5.0

cpe 5.0

Run 'lic_error LMC-07702' for more information.

# Info

INFO (LMC|F-<License API Code><SoftShare Info Code>|<FlexNet Info Code>): <SoftShare Info Message>|<FlexNet Info Messsage>

For detailed description of the syntax refer to Error section above.

## *Example*

INFO (LMC-07501): Regained all licenses. All licenses OK.

# Question

QUESTION (LMC|F-<License API Code><SoftShare Question Code>|<FlexNet Question Code>): <SoftShare Question Message>|<FlexNet Question Messsage>

For detailed description of the syntax refer to Error section above.

## *Example*

QUESTION (LMC-02601): All licenses for 12111 are in use. Do you want to wait? (y/n) [n]

## Cadence Error Messages

**Note:** Since API code is dynamic, we have marked it as 'XX'.

## *INFO (LMC-XX501): Regained all licenses. All licenses OK.*

## *WARNING (LMC-XX701): Max search path length exceeded - extra ignored.*

The combined length of license server search path specified in the *CDS_LIC_FILE*, applicable contents of the clients file, *LM_LICENSE_FILE* and the default location of install_dir/share/license/license.dat exceed the *MAXPATHLEN* on Unix systems. Typically this is 1024 chars. For Windows the limit is hardcoded to 512. The excess data is ignored.

If you use *LM_LICENSE_FILE* to specify other vendors search path, Cadence recommends that you use *CDS_LIC_ONLY* variable, which will limit your search path to *CDS_LIC_FILE* for Cadence applications.

## *WARNING (LMC-XX702): Unable to validate license feature(s)(first attempt). After the third attempt the application will wait indefinitely until the licenses become available.*

Applications revalidate licenses periodically and could not reconnect to the license daemon within the specified threshold value. This happens if the application is unable to communicate with the license server or if the license was reclaimed by the server and allocated to another user.

- 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.

## *WARNING (LMC-XX703): Unable to validate license feature(s)(second attempt). After the third attempt the application will wait indefinitely until the licenses become available.*

Applications revalidate licenses periodically and could not reconnect to the daemon within the specified threshold value. This happens if the application is unable to communicate with the license server or if the license was reclaimed by the server and allocated to another user.

- 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 (LMC-XX801): The protocol version used encode/decode the token is not supported.*

This error occurs when an application creates/decodes a token. This is an internal error within the application. Refer to application specific documentation for more information.

## *ERROR (LMC-XX802): This token has expired. It can no longer be used.*

This error occurs when an application decodes a token. This is an internal error within the application. Refer to application specific documentation for more information.

## *ERROR (LMC-XX803): The token input data exceeds the maximum allowed limit.*

This error occurs when an application creates a token. This is an internal error within the application. Refer to application specific documentation for more information.

## *ERROR (LMC-XX804): The token input data is empty.*

This error occurs when an application creates a token. This is an internal error within the application. Refer to application specific documentation for more information.

## *ERROR (LMC-XX805): The token is corrupted. Unable to decode.*

This error occurs when an application decodes a token. This is an internal error within the application. Refer to application specific documentation for more information.

## *ERROR (LMC-XX806): Cannot decode token. Check user key.*

This error occurs when an application decodes a token. This is an internal error within the application. Refer to application specific documentation for more information.

## *ERROR (LMC-XX807): Cannot read token.*

This error occurs when an application decodes a token. This is an internal error within the application. Refer to application specific documentation for more information.

## *ERROR (LMC-XX808): An internal error occurred while encoding/decoding the token.*

This error occurs when an application creates/decodes a token. This is an internal error within the application. Refer to application specific documentation for more information.

## *ERROR (LMC-XX901): Internal API error occured. Licensing API not initialized.*

This is a Cadence internal error. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMC-XX902): Can't find license file.*

The application cannot find a valid license file or port@host address to connect with the license server. Verify that the first license file or port@host address in the license file path is valid. You see this error if the first entry is not valid. Make sure your *CDS_LIC_FILE* and *LM_LICENSE_FILE* environment variable is pointing to a correct license file or port@host address.

## *ERROR (LMC-XX903): Malloc failed. Not enough memory.*

This is a Cadence internal error. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMC-XX904): Function/program set by CDS_LICFLTR is not defined or does not exist.*

If you have set the *CDS_LICFLTR* variable, then you must be able to access the program. If the program is not in the current directory, specify full path to it. If required, contact your license administrator.

## *ERROR (LMC-XX905): Function/program set by CDS_LICFLTR returned an error status.*

Your filter program filed with an error status. If you have set the *CDS_LICFLTR* variable, then the program returned a non-zero status. If required, contact your license administrator.

## *ERROR (LMC-XX906): Program set by CDS_LICFLTR must have read and execute permissions.*

You (as owner, group, or other) must have read and execute permission on this program. Contact your license administrator.

## *ERROR (LMC-XX907): Program set by CDS_LICFLTR is not an executable file.*

The program specified is not a regular executable/script file. Make sure it is not a directory, block device etc.

## *ERROR (LMC-XX908): vfork() failed while executing program set by CDS_LICFLTR.*

Cannot fork a child process to run the program set by *CDS_LICFLTR*. The vfork manual page describes some of the reasons why vfork might fail. The solutions include increasing your swap space. See the fork man page or contact your system administrator.

## *ERROR (LMC-XX909): exec() failed while executing program set by CDS_LICFLTR.*

exec cannot load program set by *CDS_LICFLTR*. This could be due to the following:

- The program is a zero length file.
- The program specified is not of the correct format.
    - If the program is a script make sure it has the correct header, for example #!/bin/sh,

#!/bin/csh.

- If the program is a binary, make sure it is for the platform it is being run.

See the exec man page for more information. Contact your license administrator.

## *ERROR (LMC-XX910): 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 (LMC-XX911): A different version of this feature has already been checked out. Attempt to check out another version is not allowed.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMC-XX912): Unable to validate license features checked out by the application.*

The application is unable to validate the license features it had checked out earlier. This happens if the application is unable to communicate with the license server or, if the license was reclaimed by the server and allocated to another user. Cadence applications validate the license features with the license server periodically. If the application cannot validate all the licenses, the application will block indefinitely ( and queue ) until it can regain all the licenses.

## *ERROR (LMC-XX913): Attempting to regain lost licenses.*

The application is attempting to regain the lost licenses.

## *ERROR (LMC-XX914): Unable to validate license features checked out by the application. Application will now wait until all the licenses become available again.*

Even the third attempt to regaining the licenses failed. The application will now block indefinetely ( and queue ) for a license until it can regain all the licenses.

## *ERROR (LMC-XX915): Unable to contact license server - session exiting.*

Applications revalidate licenses periodically and could not reconnect to the daemon within the specified threshold value. The current process is aborting. The communication to the license server was interrupted for some reason 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 (LMC-XX916): Wrong quantity specified during check-in. The check-in quantity must match the checkout quantity.*

This is a Cadence internal error. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMC-XX917): Bad user-defined data specified during check-in. The user-defined data doesn't match any of the user-defined data associated with the specified feature.*

This is a Cadence internal error. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMC-XX918): Unknown attribute type specified for one or more items in the attribute list. Please use one of the SS_ATTR_* attribute types defined in lmAPI.h.*

This is a Cadence internal error. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMC-XX919): The exit status of program set by CDS_LICFLTR could not be determined.*

The exit status of the *CDS_LICFLTR* program could not be determined.

## *ERROR (LMC-XX920): An unexpected error EINVAL was returned by waitpid.*

This is a Cadence internal error. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMC-XX921): An attempt to block the SIGCHLD signal failed.*

The attempt to block the SIGCHLD signal failed.

## *ERROR (LMC-XX922): An attempt to unblock the SIGCHLD signal failed.*

The attempt to unblock the SIGCHLD signal failed.

## *ERROR (LMC-XX923): Invalid attribute data found. Null and empty strings are not valid attribute data.*

This is a Cadence internal error. Contact Cadence support at support@cadence.com for further assistance.

## FlexNet Error Messages

**Note:** Since API code is dynamic, we have marked it as 'XX'.

### *ERROR (LMF-XX001): Cannot find license file.*

The application cannot find a valid license file or port@host address to connect with the license server. Verify that the first license file or port@host address in the license file path is valid. You see this error if the first entry is not valid. Make sure your *CDS_LIC_FILE* and *LM_LICENSE_FILE* environment variable is pointing to a correct license file or port@host address.

### *ERROR (LMF-XX002): Invalid license file syntax.*

You need a new license file. Reinstall the license file with Cadence Installation Software or contact Cadence support at support@cadence.com for further assistance.

### *ERROR (LMF-XX003): No license server system for this feature.*

The daemon name specified in the license file FEATURE line does not match the vendor daemon name specified in the VENDOR or DAEMON line.

Contact Cadence support at support@cadence.com for further assistance.

### *ERROR (LMF-XX004): Licensed number of users already reached.*

All available licenses for a particular application are in use. To add more licenses, contact your Cadence Sales Representative or Cadence support at support@cadence.com for further assistance.

### *ERROR (LMF-XX005): No such feature exists.*

The license server does not serve the requested feature. If licensing has not been configured correctly, this problem can result from using the wrong license file. If licensing is configured correctly when you receive this message, you need a new license file.

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX006): No port number in license file and \"FLEXlm\" service does not exist.*

This happens if the SERVER line does not specify a TCP/IP port number, and the TCP/IP license service does not exist in /etc/services. Make sure you specify an unused port ( Cadence ships with 5280 as default ) in the SERVER line. See the FlexNet Users Guide for more information on specifying the TCP/IP FLEXlm service in the /etc/services file.

## *ERROR (LMF-XX007): No socket connection to license server manager.*

Application attempted to diconnect from the server after the process had already been disconnected from the license server. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX008): Invalid (inconsistent) license key.*

The encryption code in 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 Cadence Installation Software or contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX009): Invalid host.*

The nodelocked hostid specified in the license server for the feature the application requested, does not match the hostid of the machine where the application is running.

## *ERROR (LMF-XX010): Feature has expired.*

The feature has expired. Today's date is after the expiration date in the license file. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX011): Invalid date format in license file.*

The start date, expiration date or the issue date specified in the license file is not valid. You need a new license file. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX012): Invalid returned data from license server system.*

Communication failed between the application and the license server. Perhaps, the license server did not respond to the application within the timeout period because of a busy network or due to server being busy due to a high volume of checkouts. If the license server is busy and not responding you need to restart the license server. If the network is frequently busy and your application is timing out, consider the following options:

- The amount of data sent between the license server and the client is minimal. But Cadence applications check with the license server periodically. So it is important that the connectivity time between the license server and the client is fast.
- A local license server as the primary license server and a central server as a backup is also recommended.
- For fault-tolerant license servers, increase the heartbeat interval between the license servers by specifying the interval value in the SERVER line in the license file. For more information on setting the heartbeat interval refer to FlexNet Users Guide.

## *ERROR (LMF-XX013): No SERVER lines in license file.*

There should be at least one SERVER line in the license file. Reinstall the license file with Cadence Installation Software or contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX014): Cannot find SERVER hostname in network database.*

The application cannot contact the hostname specified in the SERVER line of the license file. Verify the host name in the /etc/hosts file, NIS and DNS entries. Also verify that the client can reach the license server using the telnet command. The workaround is to use IP-Address (e.g., 123.456.789.123) instead of hostname.

## *ERROR (LMF-XX015): Cannot connect to license server system.*

The client cannot connect to the license server. If lmstat indicates the daemons are running, this error message can indicate that the network is not working properly. Verify that the client can reach the license server using the telnet command. You can also encounter this problem in a busy network. If the network is frequently busy and your application is timing out, consider the following options,

- The amount of data sent between the license server and the client is minimal. But Cadence applications check with the license server periodically. So it is important that the connectivity time between the license server and the client is fast.
- A local license server as the primary license server and a central server as a backup is also recommended.
- For fault-tolerant license servers, increase the heartbeat interval between the license servers by specifying the interval value in the SERVER line in the license file. For more information on setting the heartbeat interval refer to FlexNet Users Guide.

## *ERROR (LMF-XX016): Cannot read data from license server system.*

Communication failed between the application and the license server. Perhaps, the license server did not respond to the application within the timeout period because of a busy network or due to server being busy due to a high volume of checkouts. The license server could have also died before the application attempted to read data from it. If the license server is busy and not responding or if the vendor daemon died, you may need to restart the license server. If the network is frequently busy and the application is timing out, consider the following options:

- The amount of data transferred between the license server and the client is minimal. But Cadence applications check with the license server periodically. So it is important that the connectivity time between the license server and the client is fast.
- A local license server as the primary license server and a central server as a backup is also recommended.
- For fault-tolerant license servers, increase the heartbeat interval between the license servers by specifying the interval value in the SERVER line in the license file. For more information on setting the heartbeat interval refer to FlexNet Users Guide.

## *ERROR (LMF-XX017): Cannot write data to license server system.*

Communication failed between the application and the license server. Perhaps, the license server did not respond to the application within the timeout period because of a busy network or due to server being busy due to a high volume of checkouts. The license server could have also died before the application attempted to read data from it. If the license server is busy and not responding or if the vendor daemon died, you may need to restart the license server. If the network is frequently busy and the application is timing out, consider the following options

- The amount of data transferred between the license server and the client is minimal. But Cadence applications check with the license server periodically. So it is important that the connectivity time between the license server and the client is fast.
- A local license server as the primary license server and a central server as a backup is also recommended.
- For fault-tolerant license servers, increase the heartbeat interval between the license servers by specifying the interval value in the SERVER line in the license file. For more information on setting the heartbeat interval refer to FlexNet Users Guide.

## *ERROR (LMF-XX018): License server system does not support this feature.*

The feature is probably not supported because:

- the feature on the license server expired
- the feature has not yet started (the start date has not arrived)
- the version requested is greater than the highest supported version

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX019): Error in select system call.*

The select system call failed.

## *ERROR (LMF-XX020): License server system busy (no majority).*

The license server is busy establishing a quorum in fault-tolerant configration so that licensing can start. This error is very rare, and checkout should be retried if this occurs.

## *ERROR (LMF-XX021): License file does not support this version.*

The version requested by the application for this feature is higher than the version number of the feature the daemon supports. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX022): Feature checkin failure detected with license server system.*

The checkin request did not receive a proper reply from the license server. You can ignore this message.

## *ERROR (LMF-XX023): License server system temporarily busy (new server connecting).*

The license server is busy establishing a quorum in fault-tolerant configration so that licensing can start. New requests from applications are deferred during this period. This request should be retried.

## *ERROR (LMF-XX025): License server system does not support this version of this feature.*

The version requested by the application for this feature is higher than the version number of the feature the daemon supports. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX026): Request for more licenses than this feature supports.*

Application attempted to check out more features than there are in the license file feature line, such as, three licenses when only two licenses are available in the license file.

## *ERROR (LMF-XX027): Cannot read /dev/kmem.*

Application attempted to read /dev/kmem and failed.

## *ERROR (LMF-XX028): Cannot read /vmunix.*

Application cannot read /vmunix and failed.

## *ERROR (LMF-XX029): Cannot find ethernet device.*

Application cannot locate the ethernet device on the machine.

## *ERROR (LMF-XX030): Cannot read license file.*

The license file is not readable, probably because the system 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 license file cannot be found if the clients file is not readable.

## *ERROR (LMF-XX031): Feature start date is in the future.*

The feature is not enabled yet. The current date is before the feature start date.

## *ERROR (LMF-XX032): No such attribute.*

Application used a unknown attribute with the FlexNet get and set attribute API's. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX033): Bad encryption handshake with vendor daemon.*

This handshake operation between Cadence vendor daemon and lmgrd 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 (LMF-XX034): Clock difference too large between client and license server system.*

The system date on the client does not agree closely enough with the date on the license server. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX036): Feature database corrupted in vendor daemon.*

The daemon's run-time feature data structures have become corrupted. This is an internal daemon error. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX037): Duplicate selection mismatch for this feature.*

A feature was checked out with one license type(dupgroup), and then another attempt was made to check out the same feature with a different license type. A feature can only be checked out using one license type. Either the license file has two feature lines of incompatible types, or two different applications are checking out the same feature in different ways. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX038): User/host on EXCLUDE list for feature.*

The options file excludes the user, host, or display from using feature. Contact your license administrator or contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX039): User/host not on INCLUDE list for feature.*

The options file does not include the user, host, or display for this feature. If you have an INCLUDE line in the options file you automatically exclude everyone else unless you specifically include them.

Contact your license administrator or contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX040): Cannot allocate dynamic memory.*

malloc failed to allocate sufficient memory. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX041): Feature was never checked out.*

Application attempted to check the status of a feature that was never checked out. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX042): Invalid parameter.*

Application specified an invalid attribute with the FlexNet get and set attribute API's. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX043): No key data supplied in call to lc_new_job() or lc_init().*

Application specified no key data during FlexNet initialization. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX044): Invalid key data supplied.*

Application specified incorrect key data during FlexNet initialization. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX045): Function not available in this version.*

This FlexNet Licensing client function is not available.This could be due to incorrect initialization. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX046): Software is evaluation version.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX047): Clock setting check not available in vendor daemon.*

The license server cannot verify compatible system clock settings. The system date on the application client does not agree closely enough with the date on the license server.

## *ERROR (LMF-XX048): Platform not enabled.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX049): Date invalid for binary format.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX050): Key data has expired.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX051): Not initialized.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX052): Vendor daemon did not respond within timeout interval.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX053): Checkout request rejected by vendor-defined checkout filter.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX054): No FEATURESET line in license file.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX055): Incorrect FEATURESET line in license file.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX056): Cannot compute FEATURESET data from license file.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX057): socket() call failed.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX058): setsockopt() call failed.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX059): Message checksum failure.*

Communications error messages between the FLEXenabled application and license server are encrypted and checksummed for security and integrity. The checksum will usually fail because of poor networking communications. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX060): License server system message checksum failure.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX061): Cannot read license file data from license server system.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX062): Network software (tcp/ip) not available.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX063): You are not a license administrator.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX064): lmremove request before the minimum lmremove interval.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX065): Unknown VENDORCODE struct type passed to lc_new_job() or lc_init().*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX066): Include file/library version mismatch.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX067): No licenses available to borrow.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX068): License BORROW support not enabled.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX069): FLOAT_OK can't run standalone on license server system.*

This error can occur because the license server isn't running, or the application needs to add @localhost with the lmpath command.

## *ERROR (LMF-XX070): Meter already being updated, locked.*

lmutil lmborrow -startupdate was issued but not updated yet. To override this, stop and restart the license server system.

> ***Overriding may cause loss of licenses.***

## *ERROR (LMF-XX071): Invalid TZ environment variable.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX072): Old VENDORCODE (3-word) struct type passed to lc_new_job() or lc_init().*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX073): Local checkout filter rejected request.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX074): Attempt to read beyond end of license file path.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX075): SYS$SETIMR call failed.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX076): Internal Error - Please report to Macrovision Corporation.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX077): Bad version number - must be floating point number, with no letters.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX078): FLEXadmin API functions not available.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX079): Internal error -79.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX080): Internal error -80.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX081): Internal error -81.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX082): Invalid PACKAGE line in license file.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX083): Version of vendor daemon is too old.*

Vendor daemon version is older than the application's FlexNet Licensing version. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX084): USER_BASED license has no specified users -- see license server system log.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX085): License server system does not support this request.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX086): License object already in use.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX087): Checkout exceeds MAX specified in options file.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX088): System clock has been set back.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX089): This platform not authorized by license.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX090): Future license file format or misspelling in license file.*

The file was issued for a later version of FlexNet Licensing than this program understands. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX091): Encryption seeds are non-unique.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX092): Feature removed during lmreread, or wrong SERVER line hostid.*

Checkout failure due to two possible causes:

- The feature is removed during lmreread, but the FLEX enabled application is reading an old copy of the license file which still has removed feature.
- The hostid on the SERVER line is for a different host, so all features in this license file were removed.

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX093): This feature is available in a different license pool.*

This is a warning condition. The license server system has pooled one or more INCREMENT lines into a single pool, and the request was made on an INCREMENT line that has been pooled. If this is reported as an error, it's an internal error.

## *ERROR (LMF-XX094): Attempt to generate license with incompatible attributes.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX095): Network connect to THIS_HOST failed.*

The license file indicates THIS_HOST, and the server is not running on this host. If it's running on a different host, THIS_HOST should be changed to the correct host.

## *ERROR (LMF-XX096): License server machine is down or not responding.*

See the system administrator about starting the license server system, or make sure you're referring to the right host (see *LM_LICENSE_FILE*). Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX097): The desired vendor daemon is down.*

Check the *lmgrd* log file, or try to restart the license daemon.

## *ERROR (LMF-XX098): This FEATURE line can't be converted to decimal format.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX099): The decimal format license is typed incorrectly.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX100): Cannot remove a linger license.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX101): All licenses are reserved for others.*

The system administrator has reserved all the licenses for others. Reservations are made in the options file. The license server system must be restarted for options file changes to take effect.

## *ERROR (LMF-XX102): A FLEXid borrow error occurred.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX103): Terminal Server remote client not allowed.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX104): Cannot borrow that long.*

Retry the checkout again for a shorter period.

## *ERROR (LMF-XX105): Feature already returned to license server system.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX106): License server system is out of network connections.*

The vendor daemon can't handle any more users. See the license server manager (lmgrd) debug log for further information.

## *ERROR (LMF-XX107): Cannot borrow a PACKAGE component.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX110): Cannot read dongle: check dongle or driver.*

Either the hardware dongle is not attached, or the necessary software driver for this dongle type is not installed. In order to read the dongle hostid, the correct driver must be installed. The drivers are included as part of the Cadence licensing software. You can also find these drivers at http://www.revenera.com. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX111): lmgr.res, Windows Resource file, not linked.*

When linking Windows binaries, you must link with lmgr.lib as well as lmgr.res.

## *ERROR (LMF-XX112): Missing Dongle Driver.*

In order to read the dongle hostid, the correct driver must be installed. These drivers are included as part of the Cadence licensing software. You can also find these drivers at http://www.revenera.com. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX114): SIGN= keyword required but missing from the license certificate.*

This is probably because the license is older than the application. Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX115): Error in Public Key package.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX116): TRL not supported for this platform.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX117): BORROW failed.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX118): BORROW period expired.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX119): lmdown/lmreread must be run on the license server machine.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX120): Cannot lmdown the server when licenses are borrowed.*

Use lmstat to find the users that have the licenses borrowed.

## *ERROR (LMF-XX121): FLOAT_OK requires exactly one dongle hostid.*

Use one line per dongle.

## *ERROR (LMF-XX122): Unable to delete local borrow info.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX123): Returning a borrowed license early is not supported.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX124): Error returning borrowed license.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX125): A PACKAGE component must be specified.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX126): Composite hostid not initialized.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX127): An item needed for composite hostid missing or invalid.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX128): Error, borrowed license doesn't match any known server license.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX129): Internal Error (NULL pointer).*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX130): Internal Error (Bad handle).*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX131): Internal Error (Empty string).*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX132): Internal Error (Bad memory access).*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX133): Internal Error (Operation not supported).*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX134): Job handle is NULL. .*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX135): Error enabling event log.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX136): Event logging is disabled.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX137): Error writing to event log.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX138): Internal error (Bad index).*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX139): Timeout.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX140): Bad message command.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX141): Error writing to socket. Peer has closed socket.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX142): Error, cannot generate version specific license tied to a single hostid, which is composite.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX143): Version-specific signatures are not supported for uncounted licenses.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX144): License template contains redudant signature specifiers.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX145): Invalid V71_LK signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX146): Invalid V71_SIGN signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX147): Invalid V80_LK signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX148): Invalid V80_SIGN signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX149): Invalid V81_LK signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX150): Invalid V81_SIGN signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX151): Invalid V81_SIGN2 signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX152): Invalid V84_LK signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX153): Invalid V84_SIGN signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX154): Invalid V84_SIGN2 signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX155): License key required but missing from the license certificate.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX156): Invalid AUTH={} signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX157): Specified operation is not allowed.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX158): Cannot open TS.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX159): Invalid fulfillment record.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX160): Invalid activation request received.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX161): No fulfillment exists in trusted storage which matches the request.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX162): Invalid activation response received.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX163): Can't return the fulfillment.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX164): Return would exceed max count(s).*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX165): No repair count left.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX166): Specified operation is not allowed.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX167): User/host on EXCLUDE list for entitlement.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX168): User/host not in INCLUDE list for entitlement.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX169): Activation error.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX170): Invalid date format in trusted storage.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX171): Message encryption failed.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX172): Message decryption failed.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX173): Bad filter context.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX174): SUPERSEDE and SUPERSEDE_SIGN can't be used at the same time.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX175): Invalid SUPERSEDE_SIGN syntax.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX176): SUPERSEDE_SIGN does not contain any license signature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX177): ONE_TS_OK is not supported in this Windows Platform.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX178): Failed to create or reopen the mutex. Terminal Server Remote Client checkout not allowed.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX179): Only One Terminal Server Remote Client checkout is allowed for this feature.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX180): Internal Error -180.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX181): Internal Error -181.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX182): Internal Error -182.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX183): More than one ethernet hostid not supported in composite hostid definition.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX184): The number of characters in the license file paths exeeds the permissible limit.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX185): Invalid TZ keyword syntax.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX186): Invalid time zone override specification in the client.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX187): The time zone information could not be obtained.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX188): License client time zone not authorized for license rights.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX189): Invalid VM_PLATFORMS syntax.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX190): Feature can be check-out from Physical machine only.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX191): Feature can be check-out from Virtual machine only.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX192): VM platform not authorized by license.*

Contact Cadence support at support@cadence.com for further assistance.

## *ERROR (LMF-XX193): FNP vendor keys do not support Virtualization feature.*

Contact Cadence support at support@cadence.com for further assistance.

***ERROR (LMF-XX194):*** **Checkout request denied as it exceeds the MAX limit specified in the options file.**

Contact Cadence support at support@cadence.com for further assistance.

***ERROR (LMF-XX195):*** **Binding agent API - Internal error.**

Contact Cadence support at support@cadence.com for further assistance.

***ERROR (LMF-XX196*): Binding agent communication error**

Contact Cadence support at support@cadence.com for further assistance.

***ERROR (LMF-XX*197): Invalid Binding agent version.**

Contact Cadence support at support@cadence.com for further assistance.

***ERROR (LMF-XX*201): Invalid IP address used while overriding**.

The IP address specified for the LM_A_INTERNET_OVERRIDE attribute, used to override the existing IP address, is invalid.

Contact Cadence support at support@cadence.com for further assistance.

## License Server/Configuration Error Messages

This section describes some of the server and license configuration errors.

For detailed description of the error messages reported in license server debug log file, refer to FlexNet End User Guide shipped as part of the SoftShare License Tools.

## *Cannot open daemon lock file MULTIPLE "cdslmd" servers running*

The license daemons are already running. Shut down all license daemons and re start 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. If the /usr/tmp/lockcdslmd file is removed more than 5+ times, the license server will stop serving licenses and will need to be restarted.

## *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.

## *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 debu g log file (default location is /usr/tmp/license.log) or by running lmstat. Use the latest version of cdslmd that you have.

## *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. Next, shut down the license daemons. Start the license daemons by executing /etc/rc.lic. Finally, 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. Next, 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.

To free up the ports faster run the following command before restarting the license server

/usr/sbin/ndd -set /dev/tcp tcp_time_wait_interval 2400

The command above resets the tcp_time_wait_interval to 2.4 seconds so that the OS can free up the ports in 2.4 seconds.

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 port number.

For example, if both license files use 5210 as the TCP/IP port, change one of them to 5220. See the FlexNet documentation available on the World Wide Web at https://www.flexera.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.

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 the following command:

```
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 the following:

- 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 FlexNet-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. Verify if all the licenses have expired or not started yet.

# Error Message Syntax Description for Cadence releases prior to June 2006

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 queuing (search your product's documentation in Cadence Help to determine if your product supports queuing).

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*.

### *ERROR (LM -1): license error (error_number) - contact Cadence CRC at 800-223-3622*

This error occurs while you are running an application. Try to recall the conditions under which the problem occurred. Contact Cadence Customer Support.

## *ERROR (LM -2): encryption code in license file license_file is inconsistent*

This error occurs when the license file contains a corrupted FEATURE line for the requested application. You need a new license file. Reinstall the license file or contact Cadence Customer Support.

## *ERROR (LM -3): license server (server, ...) communication error - try longer timeout*

Communications failed between the license daemons and the license server. Perhaps the daemon did not respond to the license server within the time-out period because of a busy network or because the license file contains more than (or close to) 2000 FEATURE lines.

If the network is frequently busy, try increasing the time-out between the license server and the client with CDS_LIC_TIMEOUT.

## *ERROR (LM -4): invalid date format in license file license_file*

You need a new license file. Reinstall the license file or contact Cadence Customer Support.

## *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 Cadence Customer Support.
- Ask all users on the network using the feature to log out, shutdown 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 or contact Cadence Customer Support.

## *ERROR (LM -7): license server (server, ...) communication error - suspect bad daemons*

cdslmd performs an encryption handshake operation with *lmgrd* before any licensing operations. This handshake operation failed. Use lmstat -a to verify that the daemons are up and running properly on *server*.

If lmstat indicates that the 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 |
|---|---|
| All Unix 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 Cadence Customer Support.

## *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 |
|---|---|
| Linux | ps auxww \| 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 |
|---|---|
| All Unix platforms | /usr/bin/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 . Use *lmstat* to verify the path to the license file.

If you have configured licensing correctly when you receive this message, you need a new license file. Contact Cadence Customer Support.

## *ERROR (LM -24): can't find license file license_file*

The application cannot find the license file.

- Use telnet to verify that the license server is not down.
- Verify that the first license file in the license file path exists.
  You see this error if the first file does not exist.
- Verify that the *install_dir*/tools/bin directory is in your PATH.
- If you are using the *CDS_LIC_FILE* or *LM_LICENSE_FILE* environment variable (and not using the clients file), verify that the variable points to the correct license file.
- The license file does not exist.
  Verify the existence of the license file. If a license file does not exist in the share directory, mount the directory, copy the directory, or reinstall the license file.
- 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 or contact Cadence Customer Support.

## *ERROR (LM -28): no SERVER lines in license file license_file*

You need a new license file. Reinstall the license file or contact Cadence Customer Support.

## *ERROR (LM -29): TCP port not specified on SERVER line in license file license_file*

The SERVER line in the license file has no TCP/IP port number, and no TCP/IP FlexNet service exists in /etc/services. See the FlexNet documentation available on the World Wide Web,

http://www.flexerasoftware.com

- Add an unused port.
- You may need a new license file. Reinstall the license file or contact Cadence Customer Support.

## *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 Cadence Customer Support.

## *ERROR (LM -31): host hostname is not licensed to run feature feature*

None of the host IDs specified in the license files match the host ID of the system attempting to run the application.

## *ERROR (LM -33): license file license_file does not support versionversion 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 Cadence Customer Support.

## *ERROR (LM -34): license for feature feature is not yet time-enabled*

The application has not enabled the feature yet. The current date is before the feature start date. Contact Cadence Customer Support.

## *ERROR (LM -35): license for feature feature has expired*

The feature has expired. Today's date is later than the expiration date in the license file. Contact Cadence Customer Support.

## *ERROR (LM -36): unable to contact license server (server, ...) - session exiting*

Cadence products revalidate licenses periodically and could not reconnect to the license daemon. The current process is aborting. For some reason there was an interruption in the communication to the license server while the program was executing.

- Use 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_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_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.

## *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 CDNSHelp to determine if your product supports queueing).

## *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 FlexNet. There might be a problem if the application tries to use functionality only available in the later version of FlexNet, such as node-locked and floating licenses in the same license file. Contact Cadence Customer Support if you experience problems because of this.

## *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 FlexNet version.
  - If your license server exhibits any unusual FlexNet behavior and your license files contain FlexNet-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.
- 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 CDNSHelp to determine if your product supports queueing).

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# Supported Platforms and Compatibility

Following platforms are supported for the current version:

| Supported Platforms | Supported OS Versions |
|---|---|
| Linux | RHEL 7 (>= 7.4)<br>RHEL 8<br>SLES 12<br>SLES 15<br>CentOS 7 (>= 7.4) |
| Windows | Windows 10<br>Windows 11<br>Windows Server 2016<br>Windows Server 2019 |

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# 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

***CD host***

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.

**FlexNet**

Flexible License Manager software from Flexera Software. SoftShare is based on FlexNet.

**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 FlexNet.

***HOSTID***

Variable representing the FlexNet 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 Flexera method to locate a license file. See the *FlexNet License Administration Manual* , http://www.flexerasoftware.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

FlexNet 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 Cadence installation software. 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 FlexNet Manager.

## S

**Cadence installation software**

Utility you use to install Cadence products.

**SoftShare**

Network license manager used by Cadence products. Cadence designed SoftShare around FlexNet.

**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.