

```
{
FILE* sfile;
int count = 0;

sfile = fopen("file", "r");

if( sfile == NULL)
{
    return -1;
}

while(1)
{
    char c;
    c = fgetc(sfile);
    if(c == EOF)
    {
        break;
    }
    else
    {
        // Process character
    }
}

return c;
}
```

# FLEXIm

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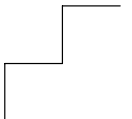
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## **MANUAL PURPOSE AND STRUCTURE**

### **PURPOSE**

This manual how to install and use the FLEXlm license management software with TASKING products.

### **MANUAL STRUCTURE**

Conventions Used In This Manual

1. Software Installation  
Describes how to install and use the license management software.
2. Flexible License Manager (FLEXlm)  
Contains a more detailed description of the Flexible License Manager.

### **CONVENTIONS USED IN THIS MANUAL**

The notation used to describe the format of call lines is given below:

{ }            Items shown inside curly braces enclose a list from which you must choose an item.

[ ]            Items shown inside square brackets enclose items that are optional.

|            The vertical bar separates items in a list. It can be read as OR.

*italics*       Items shown in italic letters mean that you have to substitute the item. If italic items are inside square brackets, they are optional. For example:

*filename*

means: type the name of your file in place of the word *filename*.

...            An ellipsis indicates that you can repeat the preceding item zero or more times.



**screen font** Represents input examples and screen output examples.

**bold font** Represents a command name, an option or a complete command line which you can enter.

### ***For example***

*command* [*option*]*... filename*

This line could be written in plain English as: execute the command *command* with the optional options *option* and with the file *filename*.

### ***Illustrations***

The following illustrations are used in this manual:



This is a note. It gives you extra information.



This is a warning. Read the information carefully.



This illustration can be read as “See also”. It contains a reference to another command, option or section.

# CHAPTER

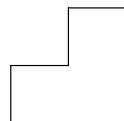
## SOFTWARE INSTALLATION

---

# 1



TASKING



---

# 1

# CHAPTER

---

## **1.1 INTRODUCTION**

This chapter describes how you can install the FLEXlm License Manager software on a Windows system or on a Linux or UNIX host.

## **1.2 INSTALLATION FOR WINDOWS**

1. Start Windows, if you have not already done so.
2. Insert the CD-ROM into the CD-ROM drive.
3. If the installation program does not start automatically, browse to your CD-ROM drive and run the program **setup.exe**.

*The TASKING Setup dialog box appears.*

4. Select a product and click on the **Install** button.
5. Follow the instructions that appear on your screen.
6. If you purchased a protected TASKING product, license the software product as explained in section 1.6, *Licensing TASKING Products*.

## **1.3 INSTALLATION FOR LINUX**

Each product on the CD-ROM is available as a gzipped tar file. For each product the following file is present:

**SWproduct-version.tar.gz**

1. Login as a user.

Be sure you have read, write and execute permissions in the installation directory. Otherwise, login as "root" or use the **su** command.

2. Insert the CD-ROM into the CD-ROM drive. Mount the CD-ROM on a directory, for example **/cdrom**. See the Linux manual pages about **mount** for details.
3. Go to the directory on which the CD-ROM is mounted:

**cd /cdrom**

4. To install the products from the **.tar.gz** files in the directory **/usr/local**, issue the following command for each product:

```
tar xzf SWproduct-version.tar.gz -C /usr/local
```

Every **.tar.gz** file creates a single directory in the directory where it is extracted.

## **1.4 INSTALLATION FOR UNIX HOSTS**

1. Login as a user.

Make sure you have read, write and execute permissions in the installation directory. Otherwise, login as "root" or use the **su** command.

If you are a first time user, decide where you want to install the product. By default it will be installed in **/usr/local**.

2. Insert the CD-ROM into the CD-ROM drive and mount the CD-ROM on a directory, for example **/cdrom**. Make sure to use an ISO 9660 file system with Rock Ridge extensions enabled. See the UNIX manual pages about **mount** for details.

3. Go to the directory on which the CD-ROM is mounted:

```
cd /cdrom
```

4. Run the installation script:

```
sh install
```

Follow the instructions appearing on your screen.

First a question appears about where to install the software. The default answer is **/usr/local**.

If the script detects that the software has been installed before, the following messages appear on the screen:

```
*** WARNING ***
SWxxxxxx xxxx.xxxx already installed.
Do you want to REINSTALL? [y,n]
```

Answering **n** (no) to this question causes installation to abort and the following message being displayed:

```
=> Installation stopped on user request <=
```

Answer **y** (yes) to continue with the installation. The last message will be:

```
Installation of SWxxxxxxx xxxx.xxxx completed.
```

5. If you purchased a protected TASKING product, license the software product as explained in section 1.6, *Licensing TASKING Products*.

1.5 SOFTWARE CONFIGURATION

Now you have installed the software, you can configure the command line environment. To facilitate the invocation of the tools from the command line (either using a Windows command prompt or using Linux or UNIX), you can set *environment variables*.

You can set the following variables:

| Environment Variable | Description   |
|----------------------|---|
| PATH                 | With this variable you specify the directory in which the executables reside (for example: <code>c:\flexlm\bin</code> ). This allows you to call the executables when you are not in the <code>bin</code> directory. Usually your system already uses the <code>PATH</code> variable for other purposes. To keep these settings, you need to add (rather than replace) the path. Use a semicolon (;) to separate pathnames. |
| LM_LICENSE_FILE      | With this variable you specify the location of the license data file. You only need to specify this variable if the license file is not on its default location ( <code>c:\flexlm</code> for Windows, <code>/usr/local/flexlm/licenses</code> for UNIX).  |
| TASKING_LIC_WAIT     | If you set this variable on the PC or workstation where the TASKING toolset is installed, the tool will wait for a license to become available, if all licenses are taken. If you have not set this variable, the tool aborts with an error message.  |

Table 1-1: Environment variables

## 1.6 LICENSING TASKING PRODUCTS

TASKING products are protected with license management software (FLEXlm). To use a TASKING product, you must install the license key provided by TASKING for the type of license purchased.

You can run TASKING products with a node-locked license or with a floating license. When you order a TASKING product determine which type of license you need (UNIX products only have a floating license).

### ***Node-locked license (Windows only)***

This license type locks the software to one specific PC so you can use the product on that particular PC only. For this type of license you do not have to install the FLEXlm license manager software.

### ***Floating license***

This license type manages the use of TASKING product licenses among users at one site. This license type does not lock the software to one specific PC or workstation but it requires a network. The software can then be used on any computer in the network. The license specifies the number of users who can use the software simultaneously. A system allocating floating licenses is called a **license server**. A license manager running on the license server keeps track of the number of users.



See Chapter 2, *Flexible License Manager (FLEXlm)*, for more information.

### 1.6.1 OBTAINING LICENSE INFORMATION

Before you can install a software license you must have a "License Key" containing the license information for your software product. If you have not received such a license key follow the steps below to obtain one. Otherwise, you can install the license.

#### ***Windows***

1. Run the License Administrator during installation on the server and follow the steps to **Request a license key from Altium by E-mail**.
2. E-mail the license request to your local TASKING sales representative. The license key will be sent to you by E-mail.



## UNIX

1. If you need a floating license on UNIX, you must determine the host ID and host name of the computer where you want to use the license manager. Also decide how many users will be using the product. See section 1.6.6, *How to Determine the Host ID* and section 1.6.7, *How to Determine the Host Name*.
2. When you order a TASKING product, provide the host ID, host name and number of users to your local TASKING sales representative. The license key will be sent to you by E-mail.

## 1.6.2 INSTALLING FLOATING LICENSES

If you do not have received your license key, read section 1.6.1, *Obtaining License Information*, before continuing.

1. Install the FLEXlm software product (SW000098) following the installation procedure described earlier in this chapter on the computer or workstation where you want to use the license manager.
2. Create a license file on the server by importing a license key or create one manually:

### ***Import a license key (Windows only)***

During installation on Windows you will be asked to run the License Administrator. Otherwise, start the License Administrator (**licadmin.exe**) manually.

In the License Administrator follow the steps to **Import a license key received from Altium by E-mail**. The License Administrator creates a license file for you.

### ***Create a license file manually***

If you prefer to create a license file manually on Windows, create a file called "license.dat" in the **c:\flexlm** directory, using an ASCII editor and insert the license key information received by E-mail in this file. This file is called the "license file". If the directory **c:\flexlm** does not exist, create the directory.

On UNIX, you always have to insert the license key manually in the license file. The default location of the license file **license.dat** is in directory **/usr/local/flexlm/licenses** for UNIX.



If you wish to install the license file in a different directory, see section 1.6.5, *Modifying the License File Location*.



If you already have a license file, add the license key information to the existing license file. If the license file already contains any SERVER lines, make sure that the number of SERVER lines and their contents match, otherwise you must use another license file. See section 1.6.5, *Modifying the License File Location*, for additional information.

3. The installation of the license manager on Windows also sets up the license manager daemon to run automatically whenever a license server reboots. On UNIX you have to perform the steps as described in section 1.6.4, *Setting Up the License Manager to Run Automatically*.
4. Now all license information is entered, the license manager must be started (see section 1.6.3). Or, if it is already running you must notify the license manager that the license file has changed by entering the command (located in the flexlm `bin` directory):

#### **lmreread**

On Windows you can also use the graphical FLEXlm Tools (**lmtools**): Start **lmtools** (if you have used the defaults this can be done by selecting **Start -> Programs -> TASKING FLEXlm version -> FLEXlm Tools**). On the **Service/License File** tab, select **Configuration using Services** and select FLEXLM License Manager for TASKING. On the **Start/Stop/Reread** tab, click on the **ReRead License File** button. Another option is to reboot your PC.

The software product and license file are now properly installed.

#### ***Where to go from here?***

The license manager (daemon) must always be up and running. Read section 1.6.3 on how to start the daemon and read section 1.6.4 for information how to set up the license manager to run automatically.

Make sure that on each PC or workstation where you will use the TASKING toolset software the location of a license file must be known. Either create a local license file or point to a license file on a server: See the installation chapter of the TASKING product for more information.

If the license manager is running, you can now start using the TASKING product.



See Chapter 2, *Flexible License Manager (FLEXlm)*, for more information.

### 1.6.3 STARTING THE LICENSE MANAGER

The license manager (daemon) must always be up and running. To start the daemon complete the following steps on each license server:

#### **Windows**

On Windows, the installation procedure configures the license manager to start automatically after a reboot, and starts the license manager for you. If you choose not to do this during installation, follow these steps:

1. From the Windows **Start** menu, select **Programs -> TASKING FLEXlm version -> FLEXlm Tools**.

*The license manager tool appears.*

2. On the **Service/License File** tab, select **Configuration using Services** and select **FLEXLM License Manager for TASKING**
3. On the **Start/Stop/Reread** tab, click on the **Start Server** button.
4. Close the program by selecting **Exit** from the **File** menu.

#### **UNIX**

1. Log in as the operating system administrator (usually root).
2. Change to the FLEXlm installation directory (default `/usr/local/flexlm`):

```
cd /usr/local/flexlm
```

3. Start the license manager daemon by typing the following:

```
bin/lmgrd -2 -p -c licenses/license.dat \  
-l /var/tmp/license.log -local &
```

The **-2** and **-p** options restrict the use of the **lmdown** and **lmremove** license administration tools to the license administrator. You can omit these options if you want. Refer to the usage of **lmgrd** in Chapter 2, *Flexible License Manager (FLEXlm)*, for more information.

### **1.6.4 SETTING UP THE LICENSE MANAGER TO RUN AUTOMATICALLY**

To set up the license manager daemon so that it runs automatically whenever a license server reboots, follow the instructions below that are appropriate for your platform, on each license server:

#### ***Windows***

On Windows, the installation procedure does this for you. If you choose not to do this during installation, follow these steps:

1. From the Windows **Start** menu, select **Programs -> TASKING FLEXlm version -> FLEXlm Tools**.

*The license manager tool appears.*

2. On the **Config Services** tab, select **FLEXLM License Manager for TASKING**.
3. Enable the **Use Services** check box.
4. Enable the **Start Server at Power Up** check box.
5. Close the program by selecting **Exit** from the **File** menu. If a question appears, answer **Yes** to save your settings.

#### ***UNIX***



In performing any of the procedures below, keep in mind the following:

- Before you edit any system file, make a backup copy.

#### ***HP-UX***

1. Log in as the operating system administrator (usually root).
2. In the directory `/etc/rc.config.d` create a file named `rc.lmgrd` with the following contents. Replace `FLEXLMDIR` by the FLEXlm installation directory (default `/usr/local/flexlm`):

```
#!/sbin/sh
FLEXLMDIR/bin/lmgrd -2 -p -c FLEXLMDIR/licenses/license.dat \
    -l /var/tmp/license.log -local &
```

After the `-c` option, you have to specify the correct location of the license file.

**SunOS4**

1. Log in as the operating system administrator (usually root).
2. Append the following lines to the file `/etc/rc.local`. Replace *FLEXLMDIR* by the FLEXlm installation directory (default `/usr/local/flexlm`):

```
FLEXLMDIR/bin/lmgrd -2 -p -c FLEXLMDIR/licenses/license.dat \
-l /var/tmp/license.log &
```

**Linux and SunOS5 (Solaris 2)**

1. Log in as the operating system administrator (usually root).
2. In the directory `/etc/init.d` create a file named `rc.lmgrd` with the following contents. Replace *FLEXLMDIR* by the FLEXlm installation directory (default `/usr/local/flexlm`):

```
#!/bin/sh
FLEXLMDIR/bin/lmgrd -2 -p -c FLEXLMDIR/licenses/license.dat \
-l /var/tmp/license.log -local &
```

3. Make it executable:

```
chmod u+x rc.lmgrd
```

4. Create an 'S' link in the `/etc/rc3.d` directory to this file and create 'K' links in the other `/etc/rc?.d` directories:

```
ln /etc/init.d/rc.lmgrd /etc/rc3.d/Snumrc.lmgrd
ln /etc/init.d/rc.lmgrd /etc/rc?.d/Knumrc.lmgrd
```

*num* must be an appropriate sequence number. Refer to your operating system documentation for more information.

**1.6.5    MODIFYING THE LICENSE FILE LOCATION**


The default location for the license file on Windows is:

```
c:\flexlm\license.dat
```

On UNIX this is:

```
/usr/local/flexlm/licenses/license.dat
```

If you want to use another name or directory for the license file, specify the path of the license file when you start the license manager, on the **lmgrd** command line (**-c** option). On Windows you can also use the FLEXlm Tools.

 See Chapter 2, *Flexible License Manager (FLEXlm)*, for detailed information.


**1.6.6    HOW TO DETERMINE THE HOST ID**

The host ID depends on the platform of the machine. Please use one of the methods listed below to determine the host ID.

| Platform      | Tool to retrieve host ID   | Example host ID |
|---------------|--|-----------------|
| HP-UX         | <b>lanscan</b><br>(use the station address without the leading '0x') | 0000F0050185    |
| Linux         | <b>/sbin/ifconfig eth0</b><br>(use the HWaddr without colons)        | 00400516E525    |
| SunOS/Solaris | <b>hostid</b>  | 170a3472        |
| Windows       | <b>licadmin</b> (License Administrator, or use <b>lmhostid</b> )     | 0060084dfbe9    |

*Table 1-2: Determine the host ID*

On Windows, the License Administrator (**licadmin**) helps you in the process of obtaining your license key.

 When you want to determine the host ID of a laptop, be sure that the laptop is not connected to a network, before starting the License Administrator. Otherwise, your license will not work when you disconnect your laptop from the network.



If you do not have the program **licadmin** you can download it from our Web site at: <http://www.tasking.com/support/flexlm/licadmin.zip> . It is also on every product CD that includes FLEXlm, in directory **licensing**.

**1.6.7 HOW TO DETERMINE THE HOST NAME**

To retrieve the host name of a machine, use one of the following methods.

| Platform | Method   |
|----------|--|
| UNIX     | <b>hostname</b>  |
| Windows  | <b>licadmin</b> or:<br>Go to the Control Panel, open "System". On the "Computer Name" tab look for "Full computer name". |

*Table 1-3: Determine the host name*

# CHAPTER

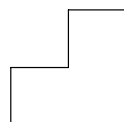
# 2

## **FLEXIBLE LICENSE MANAGER (FLEXlm)**

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**TASKING**





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# 2

# CHAPTER

---

## **2.1 INTRODUCTION**

This chapter discusses Flexera Software's Flexible License Manager and how it is integrated into the TASKING toolchain. It also contains descriptions of the Flexible License Manager license administration tools that are included with the package, the license manager log file and its contents, and the use of options files to customize your use of the TASKING toolchain.

## **2.2 LICENSE ADMINISTRATION**

### **2.2.1 OVERVIEW**

The Flexible License Manager (FLEXlm) is a set of utilities that, when incorporated into software such as the TASKING toolchain, provides for managing access to the software.

The following terms are used to describe FLEXlm concepts and software components:

|               |   |
|---------------|---|
| feature       | A feature could be any of the following: <ul style="list-style-type: none"><li>• A TASKING software product.</li><li>• A software product from another vendor.</li></ul>  |
| license       | The right to use a feature on one specific PC (node-locked license), or on a network (floating license). FLEXlm restricts licenses for features by counting the number of licenses for features in use when new requests are made by the application software. It also checks if the application is running on the correct machine. |
| client        | A TASKING application program.  |
| daemon        | A process that "serves" clients. Sometimes referred to as a <i>server</i> .   |
| vendor daemon | The daemon that dispenses licenses for the requested features. This daemon is built by an application's vendor, and contains the vendor's personal encryption code. <b>Tasking</b> is the vendor daemon for the TASKING software.   |

### license manager

The daemon process that sends requests from client processes to the correct vendor daemon on the correct machine. The same license manager is used by all applications from all vendors, as this daemon neither performs encryption nor dispenses licenses. The license manager processes no user requests on its own, but forwards these requests to other daemons (the vendor daemons).

**server node** A computer system that is running both the license manager and vendor daemon software. The server node will contain all the dynamic information regarding the usage of all the features.

**license file** An end-user specific file that contains descriptions of the server nodes that can run the license daemons, the various vendor daemons, and the restrictions for all the licensed features.

### debug log file

A debug log file contains status and error messages useful for debugging the license server. A license server always generates debug log output. Some of the debug log output describes events specific to the license manager and some of the debug log output describes events specific to each vendor daemon.

For floating licenses, the TASKING software is granted permission to run by FLEXlm daemons; the daemons are started when the TASKING toolchain is installed and run continuously thereafter. Information needed by the FLEXlm daemons to perform access management is contained in a license data file that is created during the toolchain installation process. As part of their normal operation, the daemons log their actions in a log file, which can be used to monitor usage of the TASKING toolchain.

For node-locked licenses, you only need the license file.

The following sections discuss:

- Installation of the FLEXlm license manager to provide for access to the TASKING toolchain.
- Customizing your use of the toolchain through the use of an options file.
- Utilities that are provided to assist you in performing license administration functions.

- The debug log file and its contents.

For additional information regarding the use of FLEXlm, refer to Chapter 1, *Software Installation*.

### **2.2.2 PROVIDING FOR UNINTERRUPTED FLEXLM OPERATION**

TASKING products licensed through FLEXlm using floating licenses contain a number of utilities for managing licenses. These utilities are bundled in the form of an extra product under the name SW000098 and is only necessary for floating licences.

If you have already installed FLEXlm (for example, as part of another product) then it is not needed to install the bundled SW000098. After installing SW000098 on UNIX the directory `/usr/local/flexlm` will contain two subdirectories, `bin` and `licenses`. After installing SW000098 on Windows the directory `c:\flexlm` will contain the subdirectory `bin`. The exact location may differ if FLEXlm has already been installed as part of a non-TASKING product but in general there will be a directory for executables such as `bin`. That directory must contain a copy of the **Tasking** daemon, which is present on every product CD that includes FLEXlm, in directory `licensing`. It also contains the files:

- `lmgrd` The FLEXlm license manager daemon.
- `lm*` A group of FLEXlm license administration utilities.

#### ***License File***

A license file must be present containing the information of all licenses. This file is usually called `license.dat`. The default location of the license file is in directory `c:\flexlm` for Windows and in directory `/usr/local/flexlm/licenses` for UNIX. If you did install SW000098 then the `licenses` directory on UNIX will be empty, and on Windows the file `license.dat` will be empty. In that case you can copy the license file received from Altium by E-mail to this directory.



Be very careful not to overwrite an existing `license.dat` file because it contains valuable data.

Example of a `license.dat`:

```
SERVER elliot 5100520c 7594
DAEMON Tasking /usr/local/flexlm/bin/Tasking
FEATURE SW008002-32 Tasking 3.000 1-jan-00 4 0B1810310210A6894 "123456"
```

If the `license.dat` file already exists then you should make sure that it contains the DAEMON and FEATURE lines from your license key. An appropriate SERVER line should already be present in that case. You should only add a new SERVER line if no SERVER line is present. The third field of the DAEMON line is the pathname to the **Tasking** daemon and you may change it if necessary.

The default location for the license file on Windows is:

```
c:\flexlm\license.dat
```

On UNIX this is:

```
/usr/local/flexlm/licenses/license.dat
```

If the pathname of the resulting license file differs from this default location then you must set the environment variable **LM\_LICENSE\_FILE** to the correct pathname. If you have more than one product using the FLEXlm license manager you can specify multiple license files by separating each pathname (*lfp<sub>path</sub>*) with a ';' on Windows, or ':' on UNIX:

Windows:

```
set LM_LICENSE_FILE=lfppath;lfppath...
```

UNIX:

```
setenv LM_LICENSE_FILE lfppath:lfppath...
```

If you are running the TASKING software on multiple nodes, you have three options for making your license file available on all the machines:

1. Place the license file in a partition which is available (via NFS on UNIX systems) to all nodes in the network that need the license file.
2. Copy the license file to all of the nodes where it is needed.
3. Set LM\_LICENSE\_FILE to "*port@host*", where *host* and *port* come from the SERVER line in the license file.

When the main license manager daemon **lmgrd** already runs it is sufficient to type the command:

```
path/lmreread
```

for notifying the daemon that the **license.dat** file has been changed. Otherwise, you must type the command:

```
path/lmgrd -l /usr/tmp/license.log -local &
```

Both commands reside in the **flexlm/bin** directory mentioned before.

### 2.2.3 THE OPTIONS FILE

It is possible to customize the use of TASKING software using an options file. This options file allows you to reserve licenses for specified users or groups of users, to restrict access to the TASKING toolchain, and to set software timeouts. The following table lists the keywords that are recognized at the start of a line of an options file.

| Keywords | Function  |
|----------|---|
| RESERVE  | Ensure that TASKING software will always be available to one or more users or on one or more host computer systems. |
| INCLUDE  | Specify a list of users who are allowed exclusive access to the TASKING software.                                   |
| EXCLUDE  | Specify a list of users who are not allowed to use the TASKING software.  |
| GROUP    | Specify a group of users for use in the other commands.   |
| TIMEOUT  | Allow licenses that are idle for a specified time to be returned to the free pool, for use by someone else.         |
| NOLOG    | Causes messages of the specified type to be filtered out of the debug log file.                                     |
| DEBUGLOG | Writes debug log information for this vendor daemon to the specified file.  |

*Table 2-1: Options file keywords*

In order to use the daemon options capability, you must create an options file and list its pathname as the fourth field on the **DAEMON** line for the **Tasking** daemon in the license file. For example, if the daemon options were in file `/usr/local/flexlm/Tasking.opt` (UNIX), then you would modify the license file **DAEMON** line as follows:

```
DAEMON Tasking /usr/local/flexlm/bin/Tasking /usr/local/flexlm/Tasking.opt
```

An options file consists of lines in the following format:

```
RESERVE      number feature {USER | HOST | DISPLAY | GROUP} name
INCLUDE      feature {USER | HOST | DISPLAY | GROUP} name
EXCLUDE      feature {USER | HOST | DISPLAY | GROUP} name
GROUP        name <list_of_users>
TIMEOUT      feature timeout_in_seconds
NOLOG        {IN | OUT | DENIED | QUEUED}
DEBUGLOG     file
```

Lines beginning with the sharp character (#) are ignored, and can be used as comments. For example, the following options file would reserve one copy of feature **SWxxxxxx-xx** for user “pat”, three copies for user “lee”, and one copy for anyone on a computer with the hostname of “terry”; and would cause **QUEUED** messages to be omitted from the log file. In addition, user “joe” and group “pinheads” would not be allowed to use the feature **SWxxxxxx-xx**:

```
GROUP        pinheads moe larry curley
RESERVE 1    SWxxxxxx-xx USER pat
RESERVE 3    SWxxxxxx-xx USER lee
RESERVE 1    SWxxxxxx-xx HOST terry
EXCLUDE     SWxxxxxx-xx USER joe
EXCLUDE     SWxxxxxx-xx GROUP pinheads
NOLOG       QUEUED
```

## 2.3 BORROWING FLOATING LICENSES

### *What is Borrowing?*

With ‘borrowing’ you can use a floating license, even when you are not connected to the network.

You indicate how long you want to borrow the license, and a copy of the license will be stored on your PC. During that time the floating license will be kept in use by the license server; other network users cannot use that feature.

After the specified time the floating license will be released, and the feature can be used by other network users again.

The maximum borrowing time is 3 weeks (504 hours). If you need a longer period, contact your local Altium representative.

To be able to use borrowing, you need a license file which allows borrowing. The **FEATURE** line must contain the keyword **BORROW**.

If you are also using an older version of a tool, that does not support borrowing, make sure that you use *port@host* to specify the license file, instead of referencing a local license file (even if you are working on the license server).

### ***How to start Borrowing***

To initiate borrowing using the graphical interface:

1. From the Windows **Start** menu, select **Programs -> TASKING FLEXlm version -> FLEXlm Tools**, or start **Imtools** from the `\licensing` directory on the FLEXlm product CD.

*The license manager tool appears.*

2. Click the **Borrowing** tab.
3. Specify **Tasking** at the **Vendor Name** field.
4. Specify the **Return Date** and optionally the **Return Time** fields.
5. Click the **Set Borrow Expiration** button.

Example of initiating borrowing using the command line:

**lmborrow Tasking 11-oct-2012**

Start all the tools you intend to use (compiler, assembler, linker, debugger, etc.) at least once, so the borrowed license can be stored on your computer. After that, you can unplug the network cable.



### ***How to stop Borrowing***

To stop borrowing using the graphical interface:

1. From the Windows **Start** menu, select **Programs -> TASKING FLEXlm version -> FLEXlm Tools**, or start **lmtools** from the \licensing directory on the FLEXlm product CD.

*The license manager tool appears.*

2. Click the **Borrowing** tab.
3. Click the **Don't Borrow Anymore Today** button.

To stop borrowing using the command line:

**lmborrow -clear**

## **2.4 LICENSE ADMINISTRATION TOOLS**

The following utilities are provided to facilitate license management by your system administrator. In certain cases, execution access to a utility is restricted to users with root privileges. Complete descriptions of these utilities are provided at the end of this section.

### ***lmborrow***

Supports borrowing of floating licenses.

### ***lmdiag***

Diagnoses license checkout problems.

### ***lmdown***

Gracefully shuts down all license daemons (both **lmgrd** and all vendor daemons, such as **Tasking**) on the license server.

### ***lmgrd***

The main daemon program for FLEXlm.

### ***lmbostid***

Reports the host ID of a system.

***lmpath***

Shows the license path, or sets the license path in the FLEXlm registry (Windows) or `$HOME/.flexlmrc` (UNIX).

***lmremove***

Removes a single user's license for a specified feature.

***lmreread***

Causes the license daemon to reread the license file and start any new vendor daemons.

***lmstat***

Helps you monitor the status of all network licensing activities.

***lmswitch***

Switches the debug log file.

***lmver***

Reports the FLEXlm version of a library or binary file.

***lmtools*** (*Windows only*)

This is a graphical Windows version of the license administration tools.

***tsk\_licmaint***

Test for hanging licenses and remove them.

### 2.4.1 LMBORROW

#### Name

**lmborrow** - borrow floating licenses

#### Synopsis

**lmborrow** {*vendor* | **all**} *enddate* [*time*]

**lmborrow -clear**

**lmborrow -status**

**lmborrow -return** [ **-c** *license\_file* ] [ **-d** *display* ] *feature*

#### Description

**lmborrow** supports borrowing of licenses that contain the **BORROW** attribute. It must be run on the machine where licenses are borrowed. It is used to perform the following:

- Initiating borrowing by setting the borrow period.  
This has the effect of setting **LM\_BORROW** with the borrow period in either the registry (Windows) or in **\$HOME/.flexlmrc** (UNIX).
- Clearing the borrow period
- Determining borrow status
- Returning a borrowed license early

#### Parameters

*vendor*      The vendor daemon name that serves the licenses to be borrowed (e.g. **Tasking**), or **all** specifies all vendor daemons in that license server.

*enddate* [*time*]      Date the license is to be returned in *dd-mmm-yyyy* format. *time* is optional and is specified in 24-hour format (*hh:mm*) in the FLEXlm licensed application's local time. If *time* is unspecified, the checkout lasts until the end of the given end date.

*feature*      The name of the borrowed feature to be returned early. Use **lmborrow -status** to get a list of borrowed feature names.

## Options

**-c** *license\_file*

Use the specified *license\_file*. If no **-c** option is specified, **lmborrow** looks for the environment variable **LM\_LICENSE\_FILE** in order to find the license file to use. If that environment variable is not set, **lmborrow** looks for the file **c:\flexlm\license.dat** (Windows), or **/usr/local/flexlm/licenses/license.dat** (UNIX).

**-d** *display*

Used to specify the display from which the borrow was initiated. Required if your current display is different than what was used to initiate the borrow. On Windows, it is the system name or, in the case of a terminal server environment, the terminal server client name. On UNIX, it is in the form **/dev/ttyxx** or the X-Display name.

**-clear**

Clear the **LM\_BORROW** setting in the registry (Windows) or **\$HOME/.flexlmrc** (UNIX). Clearing the **LM\_BORROW** setting stops licenses from being borrowed until borrowing is initiated again. Clearing **LM\_BORROW** does *not* change the status for already-borrowed licenses.

**-status**

Print information about borrowed features. The borrowing system does not have to be connected to the network to determine the status.

**-return**

Return a borrowed license early. First you have to reconnect the borrowing system back to the network.

## 2.4.2 LMDIAG

### Name

**lmdiag** - diagnose license checkout problems

### Synopsis

**lmdiag** [ **-c** *license\_file* ] [ **-n** ] [ *feature* [*:keyword=value*] ]

### Description

**lmdiag** allows you to diagnose problems when you cannot check out a license.

If no *feature* is specified, **lmdiag** will operate on all features in the license file(s) in your path. **lmdiag** will first print information about the license, then attempt to check out each license. If the checkout succeeds, **lmdiag** will indicate this. If the checkout fails, **lmdiag** will give you the reason for the failure. If the checkout fails because **lmdiag** cannot connect to the license server, then you have the option of running "extended connection diagnostics".

These extended diagnostics attempt to connect to each port on the license server node, and can detect if the port number in the license file is incorrect. **lmdiag** will indicate each port number that is listening, and if it is an **lmgrd** process, **lmdiag** will indicate this as well. If **lmdiag** finds the vendor daemon for the feature being tested, then it will indicate the correct port number for the license file to correct the problem.

### Parameters

*feature*            Diagnose this feature only.

*keyword=value*

If a license file contains multiple lines for a particular feature, select a particular line for **lmdiag** to report on. For example:  
**lmdiag f1:HOSTID=12345678** attempts a checkout on the line with the host ID 12345678. *keyword* is one of the following: VERSION, HOSTID, EXPDATE, KEY, VENDOR\_STRING, ISSUER.

## Options

**-c** *license\_file*

Diagnose the specified *license\_file*. If no **-c** option is specified, **lmdiag** looks for the environment variable **LM\_LICENSE\_FILE** in order to find the license file to use. If that environment variable is not set, **lmdiag** looks for the file **c:\flexlm\license.dat** (Windows), or **/usr/local/flexlm/licenses/license.dat** (UNIX).

**-n**

Run in non-interactive mode; **lmdiag** will not prompt for any input in this mode. In this mode, extended connection diagnostics are not available.

### 2.4.3 LMDOWN

#### Name

**lmdown** - graceful shutdown of all license daemons

#### Synopsis

**lmdown** [ **-c** *license\_file* ] [ **-vendor** *vendor* ] [ **-q** ] [ **-all** ] [ **-force** ]

#### Description

The **lmdown** utility allows for the graceful shutdown of all license daemons (both **lmgrd** and selected or all vendor daemons, such as **Tasking**) on all nodes. You may want to protect the execution of **lmdown**, since shutting down the servers causes users to lose their licenses. See the **-p** option in Section 2.4.4, *lmgrd*.

**lmdown** sends a message to every license daemon asking it to shut down. The license daemons write out their last messages to the log file, close the file, and exit. All licenses which have been given out by those daemons will be revoked, so that the next time a client program goes to verify his license, it will not be valid.

When shutting down a three-server redundant license server, there is a one minute delay before the servers shut down. **lmdown** shuts down all three license servers of a set of redundant license servers. If you need to shut down one of a set of redundant license servers (not recommended because you are left with two points of failure), you must kill both the **lmgrd** and vendor daemon processes on that license server machine.



On UNIX, do not use **kill -9** to shut down the license servers. On Windows, if you must use the Task Manager to kill the FLEXlm service, be sure to end the **lmgrd** process first, then all the vendor daemon processes.

#### Options

**-c** *license\_file*

Use the specified *license\_file*. If no **-c** option is specified, **lmdown** looks for the environment variable **LM\_LICENSE\_FILE** in order to find the license file to use. If that environment variable is not set, **lmdown** looks for the file **c:\flexlm\license.dat** (Windows), or **/usr/local/flexlm/licenses/license.dat** (UNIX).

**-vendor** *vendor*

Shut down only this vendor daemon (for example **Tasking**). **lmgrd** continues running.

**-q**

Quiet mode. If this switch is not specified, **lmdown** asks for confirmation before asking the license daemons to shut down. If this switch is specified, **lmdown** will not ask for confirmation.

**-all**

If multiple servers are specified, automatically shuts down all of them. **-q** is implied with **-all**.

**-force**

If licenses are borrowed, **lmdown** runs only from the machine where the license server is running, and then only if you add **-force**.



lmgrd, lmstat, lmreread



## 2.4.4 LMGRD

### Name

**lmgrd** - flexible license manager daemon

### Synopsis

```
lmgrd [ -c license_file ] [ -l [+]logfile ] [ -2 -p ] [ -local ]
      [ -x lmdown ] [ -x lmremove ] [ -z ] [ -v ]
```

### Description

**lmgrd** is the main daemon program for the FLEXlm distributed license management system. When invoked, it looks for a license file containing all required information about vendors and features and starts those vendor daemons. On UNIX systems, it is strongly recommended that **lmgrd** be run as a non-privileged user (not root).

### Options

**-c** *license\_file*

Use the specified *license\_file*. If no **-c** option is specified, **lmgrd** looks for the environment variable **LM\_LICENSE\_FILE** in order to find the license file to use. If that environment variable is not set, **lmgrd** looks for the file **c:\flexlm\license.dat** (Windows), or **/usr/local/flexlm/licenses/license.dat** (UNIX).

**-l** [**+**]*logfile*

Specifies the debug log file to use. With the **+** character appends logging entries. Instead of using the **-l** option you can use output redirection (**>** or **>>**) to specify the name of the debug log file.

**-2 -p**

Restricts usage of **lmdown**, **lmreread**, and **lmremove** to a FLEXlm administrator who is by default root. If there is a UNIX group called "lmadmin" then use is restricted to only members of that group. If root is not a member of this group, then root does not have permission to use any of the above utilities. If **-2 -p** is used when starting **lmgrd**, no user on Windows can shut down the license server with **lmdown**. See the **-x** option how to stop **lmgrd**.

**-local**

Restricts the **lmdown** command to be run only from the same machine where **lmgrd** is running.

- x lmdown** Disable the **lmdown** command (no user can run **lmdown**). If **lmdown** is disabled, stop **lmgrd** via **kill pid** (UNIX) or stop the **lmgrd** and vendor daemon processes (**Tasking**) through the Windows Task Manager or Windows service. On UNIX, be sure the **kill** command does not have a **-9** argument.
- x lmremove** Disable the **lmremove** command (no user can run **lmremove**).
- z** Run in foreground. The default behavior is to run in the background. If **-l logfile** is present, then no windows are used, but if no **-l** argument is specified, separate windows are used for **lmgrd** and each vendor daemon.
- v** Prints **lmgrd** version number and copyright and exits.



lmdown, lmstat

2.4.5 LMHOSTID

Name

**lmhostid** - report the host ID of a system

Synopsis

**lmhostid** [-n] [-type]

Description

**lmhostid** returns the FLEXlm host ID of the current platform. Invoked without any arguments, **lmhostid** displays the default host ID type for the current platform. Otherwise, the host ID corresponding to the requested *type* is displayed, if supported on the current platform.

The output of **lmhostid** looks like this:

lmhostid - Copyright (c) 1989-2012 Flexera Software LLC.  
The FLEXlm host ID of this machine is "1200abcd"

Options

- n Only the host ID, itself, is returned as a string, which is appropriate to use with HOSTID= in the license file. Header text is suppressed.
- type One of the following host ID types. If not specified, the default host ID for the current platform is displayed.

| Option  | Description  |
|---------|--|
| -ether  | Ethernet address.  |
| -string | String id.   |
| -vsn    | Volume serial number. (Windows platforms only)                               |
| -flexid | Parallel or USB FLEXid hardware key identification. (Windows platforms only) |
| -long   | 32-bit host ID.  |

Table 2-2: Platform Dependent Host IDs

| Option           | Description   |
|------------------|---|
| <b>-user</b>     | Current user name.  |
| <b>-display</b>  | Current display name. On Windows, it is the system name or, in case of a terminal server environment, the terminal server client name. On UNIX, it is in the form /dev/ttyxx or the X-Display name. |
| <b>-hostname</b> | Current host name.  |
| <b>-internet</b> | IP address of current platform in the form ###.###.###.###.   |

*Table 2-3: Platform Independent Host IDs*

## 2.4.6 LMPATH

### Name

**lmpath** - control FLEXlm license path settings

### Synopsis

**lmpath** {-add | -override} {*vendor* | **all**} *license\_file\_list*

**lmpath** -status

### Description

The **lmpath** utility allows direct control over FLEXlm license path settings. It is used to add, override, or get the current license path settings.

**lmpath** works by setting the FLEXlm registry entry on Windows or \$HOME/.flexlmrc on UNIX.

### Parameters

*vendor*            The vendor daemon name (e.g. **Tasking**), or **all** specifies all vendor daemons in that license server.

*license\_file\_list*  
A colon-separated list on UNIX and a semicolon-separated list on Windows. If *license\_file\_list* is the null string, "", then the specified entry is deleted.

### Options

**-add**            Prepends *license\_file\_list* to the current license file list or creates the license file list, if it does not exist, initializing it to *license\_file\_list*. Duplicates are discarded.

**-override**      Overrides the existing license file list with *license\_file\_list*. If *license\_file\_list* is the null string, "", the specified list is deleted.

**-status**        Display the current license path settings.

### 2.4.7 LMREMOVE

#### Name

**lmremove** - remove specific licenses and return them to license pool

#### Synopsis

**lmremove** [ **-c** *license\_file* ] *feature user user\_host* [ *display* ]

or:

**lmremove** [ **-c** *license\_file* ] **-h** *feature server\_host port handle*

#### Description

The **lmremove** utility allows the system administrator to remove a single user's license for a specified feature. This could be required in the case where the licensed user was running the software on a node that subsequently crashed. This situation will sometimes cause the license to remain unusable. **lmremove** will allow the license to return to the pool of available licenses.

**lmremove** will remove all instances of *user* on node *user\_host* on display *display* from usage of *feature*. If the optional **-c** *license\_file* is specified, the indicated file will be used as the license file.

The **-h** variation uses the *server\_host*, *port*, and license *handle*, as reported by **lmstat -a**.

You can protect the unauthorized execution of **lmremove** when you start up the license manager daemon, **lmgrd**, because removing a user's license is disruptive.

#### Options

**-c** *license\_file*

Use the specified *license\_file*. If no **-c** option is specified, **lmremove** looks for the environment variable **LM\_LICENSE\_FILE** in order to find the license file to use. If that environment variable is not set, **lmremove** looks for the file **c:\flexlm\license.dat** (Windows), or **/usr/local/flexlm/licenses/license.dat** (UNIX).



lmgrd, lmstat

## 2.4.8 **LMREREAD**

### **Name**

**lmreread** - tells the license daemon to reread the license file

### **Synopsis**

**lmreread** [ **-c** *license\_file* ] [ **-vendor** *vendor* ] [ **-all** ]

### **Description**

**lmreread** allows the system administrator to tell the license daemon to reread the license file and start any new vendor daemons that have been added. In addition, all currently running vendor daemons are signaled to reread the license file and their end-user options files for changes in feature licensing information or option settings. **lmreread** recognizes changes to server machine host names, but cannot be used to change server TCP/IP port numbers.

If the optional vendor daemon name is specified, only the named daemon rereads the license file and its end-user options file (in this case, **lmgrd** does not reread the license file).

The license administrator may want to protect the execution of **lmreread**. See the options **-p** and **-x** in Section 2.4.4, *lmgrd* for details about securing access to **lmreread**.

**lmreread** uses the license file from the command line (or the default file, if none is specified) only to find the license daemon to send it the command to reread the license file. The license manager daemon, **lmgrd**, will always reread the file that it loaded from the original path. If you need to change the path to the license file read by the license manager daemon, then you must shut down the daemon and restart it with that new license file path.

To stop and restart a single vendor daemon, use **lmdown -vendor vendor**, then use **lmreread -vendor vendor**, which restarts the vendor daemon.

## Options

### **-c** *license\_file*

Use the specified *license\_file*. If no **-c** option is specified, **lmreread** looks for the environment variable **LM\_LICENSE\_FILE** in order to find the license file to use. If that environment variable is not set, **lmreread** looks for the file **license.dat** in the default location.

### **-vendor** *vendor*

Only this one vendor daemon rereads the license file. **lmgrd** restarts the vendor daemon if necessary.

### **-all**

If more than one **lmgrd** is specified, instructs all lmgrds to reread.



lmgrd, lmdown



## 2.4.9 LMSTAT

### Name

**lmstat** - report status on license manager daemons and feature usage

### Synopsis

**lmstat** [ **-a** ] [ **-c** *license\_file* ] [ **-f** *feature* ] [ **-S** *vendor* ]

### Description

**lmstat** helps you monitor the status of all network licensing activities, including:

- Daemons that are running
- Users of individual features
- Users of features served by a specific **DAEMON**
- **BORROW** licenses borrowed

**lmstat** prints information that it receives from the license server; therefore, it does not report on unserved licenses such as uncounted licenses. To report on an uncounted license, the license must be added to a served license file and the application must be directed to use the license server for that license file (via *@host*, *port@host* or **USE\_SERVER**). Queued users and licenses shared due to duplicate grouping are also not returned by **lmstat**.

Example output of **lmstat -a**

```
License server status: 2700@myhost1
License file(s) on myhost1: /usr/local/flexlm/licenses/license.dat:
```

```
myhost1: license server UP (MASTER) v8.4
```

```
Vendor daemon status (on myhost1):
```

```
Tasking: UP v8.4
```

```
Feature usage info:
```

```
Users of SWxxxx-xx: (Total of 99 licenses issued; Total of 1
license in use)
```

```
"SWxxxx-xx" v99.900, vendor: Tasking
floating license
```

```
rb myhost2 /dev/tty (v99.9) (myhost1/2700 9242),
start Wed 5/26 11:42 (linger: 300)
```

where:

|   |                            |  |
|---|----------------------------|--|
| <code>rb</code>                                 | <code>user</code>          | User name.   |
| <code>myhost2</code>                            | <code>user_host</code>     | Host where user is running.  |
| <code>/dev/tty</code>                           | <code>display</code>       | Display where user is running..  |
| <code>v99.9</code>                              | <code>version</code>       | Version of feature.  |
| <code>myhost1</code>                            | <code>server_host</code>   | Host where license server is running.                                    |
| <code>2700</code>                               | <code>port</code>          | TCP/IP port on <code>server_host</code> where license server is running. |
| <code>9242</code>                               | <code>handle</code>        | License handle.  |
| <code>start Wed 5/26 11:42 (linger: 300)</code> | <code>checkout_time</code> | Time that this license was checked out..                                 |

The `user`, `user_host`, `display`, `server_host`, `port`, and `handle` information is used when removing licenses with **lmremove**.

## Options

- a** Display all information.
- c *license\_file*** Use the specified *license\_file*. If no **-c** option is specified, **lmstat** looks for the environment variable `LM_LICENSE_FILE` in order to find the license file to use. If that environment variable is not set, **lmstat** looks for the file `c:\flexlm\license.dat` (Windows), or `/usr/local/flexlm/licenses/license.dat` (UNIX).
- f *feature*** List all users of the specified *feature*(s).
- S *vendor*** List all users of the specified *vendor*'s features.



lmgrd

## 2.4.10 LMSWITCH

### Name

**lmswitch** - switch the debug log file

### Synopsis

**lmswitch** [ **-c** *license\_file* ] *feature new-file*

or:

**lmswitch** [ **-c** *license\_file* ] *vendor new-file*

### Description

The **lmswitch** utility switches the debug log file written by a particular vendor daemon (such as **Tasking**) by closing the existing debug log for that vendor daemon and starting a new debug log for that vendor daemon with a new file name. It also starts a new debug log file written by that vendor daemon if one does not already exist.

By default, debug log output from **lmgrd** and all vendor daemons started by that **lmgrd** get written into the same debug file. **lmswitch** allows companies to keep separate log files for different vendors and control the size of their debug log file.

If debug log output is not already directed to a separate file for this vendor daemon, **lmswitch** tells the vendor daemon to start writing its debug log output to a file, *new-file*. If this vendor daemon is already writing to its own debug log, **lmswitch** tells the vendor daemon to close its current debug log file and start writing its debug log output to *new-file*.



The effect of **lmswitch** continues only until the vendor daemon is shut down or its options file is reread via **lmreread**. When the vendor daemon is restarted or its options file is reread, it looks for a **DEBUGLOG** line in the options file to determine whether or not to write its debug log output into its own file and, if so, what file to write.

### Parameters

|                 |  |
|-----------------|--|
| <i>feature</i>  | Any feature this daemon supports.                        |
| <i>vendor</i>   | The name of the vendor daemon (such as <b>Tasking</b> ). |
| <i>new-file</i> | Path to new debug log file.                              |

## Options

### **-c** *license\_file*

Use the specified *license\_file*. If no **-c** option is specified, **lmswitch** looks for the environment variable **LM\_LICENSE\_FILE** in order to find the license file to use. If that environment variable is not set, **lmswitch** looks for the file **c:\flexlm\license.dat** (Windows), or **/usr/local/flexlm/licenses/license.dat** (UNIX).



Section 2.5, *The Debug Log File*.

### **2.4.11 LMVER**

#### **Name**

**lmver** - report the FLEXlm version of a library or binary file

#### **Synopsis**

**lmver** *filename*

#### **Description**

The **lmver** utility reports the FLEXlm version of a library or binary file.

Alternatively, on UNIX systems, you can use the following commands to get the FLEXlm version of a binary:

**strings** *file* | **grep** Copy

#### **Parameters**

*filename*      Name of the executable of a TASKING product, **lmgrd**, a license administration tool or a vendor daemon (**Tasking**).

## **2.4.12 TSK\_LICMAINT**

### **Name**

**tsk\_licmaint** - test for hanging licenses and remove them

### **Synopsis**

**tsk\_licmaint** *license\_file* *hours* [*logfile*]

### **Description**

The **tsk\_licmaint** utility allows the system administrator to check for floating licenses which appear to be hanging and automatically removes them.

You can start this utility manually, or periodically by creating a scheduled task.

When a license is freed, it takes the linger-time before it really is free and can be re-used again.

### **Parameters**

*license\_file*    The name of the license file to read licenses from.

*hours*            The number of hours to wait before a license is considered to be hanging and needs to be removed. 2 hours is the minimum.

*logfile*          The full path to a logfile to follow activities. This file is optional.

### **2.4.13 LICENSE ADMINISTRATION TOOLS FOR WINDOWS**

#### **2.4.13.1 LMTOOLS FOR WINDOWS**

For the 32-bit Windows platforms, an **lmtools.exe** Windows program is provided. It has the same functionality as listed in the previous sections but is graphically-oriented. Simply run the program (from the Windows **Start** menu, select **Programs -> TASKING FLEXlm version -> FLEXlm Tools**) and choose a tab for the functionality required. Refer to the previous sections for information about the options of each feature.

#### **2.4.13.2 FLEXLM LICENSE MANAGER FOR WINDOWS**

**lmgrd.exe** can be run manually or using the graphical Windows tool **lmtools.exe**.

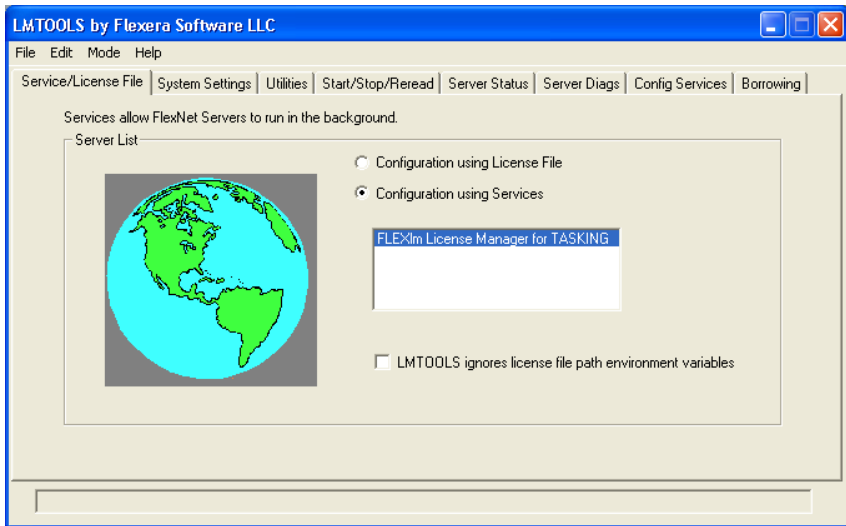
##### ***Configure a license manager as a service***

To configure a license manager as a service, you must have Administrator privileges:

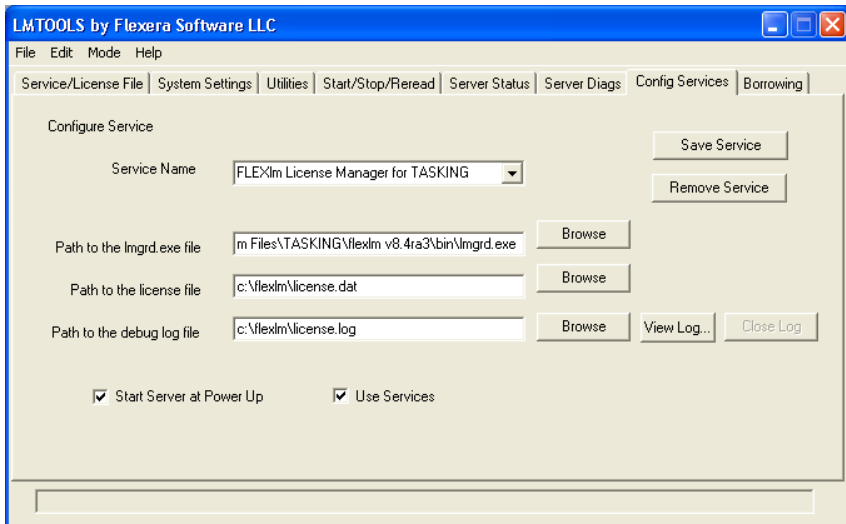
1. From the Windows **Start** menu, select **Programs -> TASKING FLEXlm version -> FLEXlm Tools**.

*The license manager tool appears.*

2. On the **Service/License File** tab, select **Configuration using Services** and select **FLEXLM License Manager for TASKING**



3. Open the **Config Services** tab.



4. Enter the information as shown in the image above (enable **Use Services** and **Start Server at Power Up**) and click on the **Save Service** button.

From now on, when the machine is rebooted, the license manager starts automatically as a Windows service.



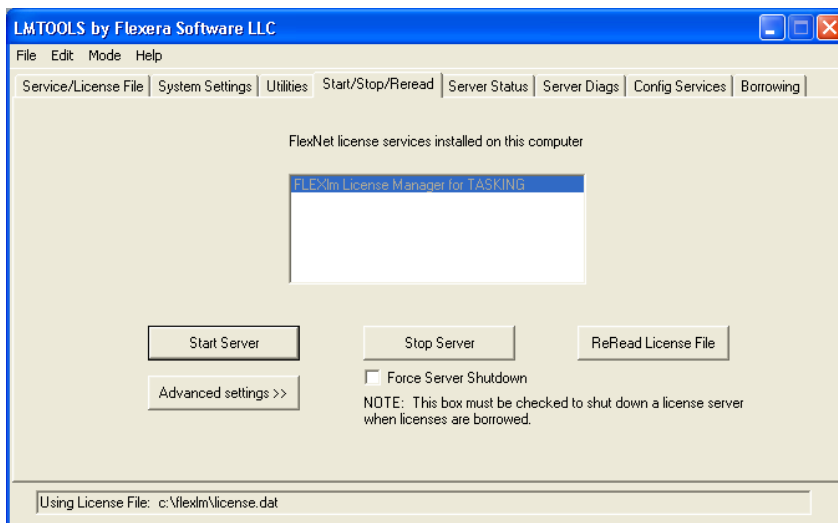
### ***Manually control the license manager***

Once the license manager service is configured, **lmgrd** is started by starting the service from the LMTOOLS interface:

1. From the Windows **Start** menu, select **Programs -> TASKING FLEXlm version -> FLEXlm Tools**.

*The license manager tool appears.*

2. On the **Service/License File** tab, select **Configuration using Services** and select **FLEXLM License Manager for TASKING**
3. On the **Start/Stop/Reread** tab, click on the **Start Server** button.



The **FLEXLM License Manager for TASKING** license server starts and writes its debug log output to **c:\flexlm\license.log**.

## **2.5 THE DEBUG LOG FILE**

The FLEXlm daemons all generate debug log files containing messages in the following format:

*hh:mm:ss (daemon) message*

Where:

*hh:mm:ss*            The time that the message was logged.

*daemon*            Either **lmgrd** or the vendor daemon name (**Tasking**).

In the case where a single copy of the daemon cannot handle all of the requested licenses, an optional “\_” followed by a number indicates that this message comes from a forked daemon.

*message*           The text of the message.

The log files can be used to:

- Inform you when it may be necessary to update your application software licensing arrangement.
- Diagnose configuration problems.
- Diagnose daemon software errors.

The messages are grouped below into the above three categories, with each message followed by a brief description of its meaning.

## 2.5.1 INFORMATIONAL MESSAGES

### ***Connected to host***

This daemon is connected to its peer on *host*.

### ***CONNECTED, master is host***

The license daemons log this message when a quorum is up and everyone has selected a master.

### ***DEMO mode supports only one SERVER host!***

An attempt was made to configure a demo version of the software for more than one server host.

### ***DENIED: N feature to user***

*user* was denied access to *N* licenses of *feature*. This message may indicate a need to purchase more licenses.

### ***EXITING DUE TO SIGNAL nnn***

### ***EXITING with code nnn***

All daemons list the reason that the daemon has exited.

### ***EXPIRED: feature***

*feature* has passed its expiration date.

### ***IN: "feature" user (num licenses)***

*user* has checked back in *num* licenses of *feature*.

### ***Lost connection to host***

A daemon can no longer communicate with its peer on node *host*, which can cause the clients to have to reconnect, or cause the number of daemons to go below the minimum number, in which case clients may start exiting. If the license daemons lose the connection to the master, they kill all the vendor daemons; vendor daemons shut themselves down.

### ***Lost quorum***

The daemon lost quorum, so will process only connection requests from other daemons.

***MULTIPLE vendor servers running. Please kill, and restart license daemon***

The license manager daemon, **lmgrd**, has detected that multiple vendor daemons for *vendor* are running. Shutdown **lmgrd** and all vendor daemons with the **lmdown** utility and then restart **lmgrd**.

***OUT: "feature" user (num licenses)***

*user* has checked out *num* licenses of *feature*.

***RESERVE feature for HOST host******RESERVE feature for USER user***

A license of *feature* is reserved for either *user* or *host*.

***REStarted vendor (internet port nnn)***

Vendor daemon *vendor* was restarted at internet port *nnn*.

***Retrying socket bind (address in use)***

The license servers try to bind their sockets for approximately 6 minutes if they detect *address in use* errors.

***Selected (EXISTING) master host***

This license daemon has selected an existing master *host* as the master.

***SERVER shutdown requested***

A daemon was requested to shut down via a user-generated **kill** command.

***Server started for: "feature-list"***

A (possibly new) server was started for the features listed.

***Shutting down vendor***

The license manager daemon is shutting down the vendor daemon *vendor*.

***SIGCHLD received. Killing child servers***

A vendor daemon logs this message when a shutdown was requested by the license daemon.

***Started vendor***

The license daemon logs this message whenever it starts a new vendor daemon.

***Trying connection to host***

The daemon is attempting a connection to *host*.

## **2.5.2 CONFIGURATION PROBLEM MESSAGES**

### ***host: Not a valid server host, exiting***

This daemon was run on an invalid host name.

### ***host: Wrong hostid, exiting***

The host ID is wrong for *host*.

### ***BAD CODE for feature***

The specified feature name has a bad encryption code.

### ***CANNOT OPEN options file file***

The options file specified in the license file could not be opened.

### ***Couldn't find a master***

The daemons could not agree on a master.

### ***License daemon: lost all connections***

This message is logged when all the connections to a server are lost, which often indicates a network problem.

### ***lost lock, exiting***

#### ***Error closing lock file***

#### ***Unable to re-open lock file***

The vendor daemon has a problem with its lock file, usually because of an attempt to run more than one copy of the daemon on a single node. Locate the other daemon that is running via a **ps** command, and kill it with **kill -9**.

### ***NO DAEMON line for vendor***

The license file does not contain a **DAEMON** or **VENDOR** line for *vendor*.

### ***No DAEMON lines, exiting***

The license daemon logs this message if there are no **DAEMON** or **VENDOR** lines in the license file. Because there are no vendor daemons to start, there is nothing for the license daemon to do.

***No features to serve!***

A vendor daemon found no features to serve. This could be caused by bad data in the license file.

***UNSUPPORTED FEATURE request: feature by user***

The *user* has requested a feature that this vendor daemon does not support. This can happen for a number of reasons: the license file is bad, the feature has expired, or the daemon is accessing the wrong license file.

***Unknown host: host***

The host name specified on a **SERVER** line in the license file does not exist in the network database (probably */etc/hosts*).

### **2.5.3 DAEMON SOFTWARE ERROR MESSAGES**

***accept: message***

An error was detected in the `accept` system call.

***Can't allocate server table space***

A `malloc` error. Check swap space.

***Connection to host: TIMED OUT***

The daemon could not connect to *host*.

***Illegal connection request to vendor***

A connection request was made to *vendor*, but this vendor daemon is not *vendor*.

***read: error message***

An error in a `read` system call was detected.

***select: message***

An error in a `select` system call was detected.

***Server exiting***

The server is exiting. This is normally due to an error.



## **2.6 FLEXLM LICENSE ERRORS**

### ***FLEXlm license error, encryption code in license file is inconsistent***

Check the contents of the license file using the license key for the product. Correct the license file and run the **lmreread** command. However, do not change the last (fourth) field of a SERVER line in the license file. This cannot have any effect on the error message but changing it will cause other problems.

This error could also be the result of using an old version of **lmgrd** or **Tasking** daemon, in combination with a TASKING tool which requires a newer version of **lmgrd/Tasking** daemon, and using *port@host*.

### ***license file does not support this version***

If this is a first time install then follow the procedure for the error message:

```
FLEXlm license error, encryption code in license file is
inconsistent
```

because there may be a typo in the fourth field of a FEATURE line of your license file. In all other cases you need a new license because the current license is for an older version of the product.

Replace the FEATURE line for the old version of the product with a FEATURE line for the new version (it can be found on the new license data sheet). Run the **lmreread** command afterwards. You can have only one version of a feature (previous versions of the product will continue to work).

### ***FLEXlm license error, cannot find license file***

Make sure the license file exists. If the pathname printed on the line after the error message is incorrect, correct this by setting the **LM\_LICENSE\_FILE** environment variable to the full pathname of the license file.

### ***FLEXlm license error, cannot read license file***

Every user needs to have read access on the license file and at least execute access on every directory component in the pathname of the license file. Write access is never needed. Read access on directories is recommended.

***FLEXlm license error, no such feature exists***

Check the license file. There should be a line starting with:

```
FEATURE SWiiiiii-jj
```

where "iiiiii" is a six digit software code and "jj" is a two digit host code for identifying a compatible host architecture. During product installations the product code is shown, e.g. SW008002, SW019002. The number in the software code is the same as the number in the product code except that the first number may contain an extra leading zero (it must be six digits long).

The line after the license error message describes the expected feature format and includes the host code.

Correct the license file using the license key for the product and run the **lmreread** command. There is one catch: do not add extra SERVER lines or change existing SERVER lines in the license file.

***FLEXlm license error, license server does not support this feature***

If the `LM_LICENSE_FILE` variable has been set to the format *number@host* then see first the solution for the message:

```
FLEXlm license error, no such feature exists
```

Run the **lmreread** program to inform the license server about a changed license data file. If **lmreread** succeeds informing the license server but the error message persists, there are basically three possibilities:

1. The license key is incorrect. If this is the case then there must be an error message in the log file of **lmgrd**. Correct the key using the license key for the product. Finally rerun **lmreread**. The log file of **lmgrd** is usually specified to **lmgrd** at startup with the **-l** option or with **>**.
2. Your network has more than one FLEXlm license server daemon and the default license file location for **lmreread** differs from the default assumed by the program. Also, there must be more than one license file. Try one of the following solutions on the same host which produced the error message:

- type:

```
lmreread -c /usr/local/flexlm/licenses/license.dat
```

- set `LM_LICENSE_FILE` to the license file location and retry the **lmreread** command.

- use the **lmreread** program supplied with the product SW000098, Flexible License Manager. SW000098 is bundled with all TASKING products.
3. There is a protocol version mismatch between **lmgrd** and the daemon with the name "Tasking" (the vendor daemon according to FLEXlm terminology) or there is some other internal error. These errors are always written to the log file of **lmgrd**. The solution is to upgrade the **lmgrd** daemon to the one supplied in SW000098, the bundled Flexible License Manager product.

On the other hand, if **lmreread** complains about not being able to connect to the license server then follow the procedure described in the next section for the error message "Cannot read license file data from server". The only difference with the current situation is that not the product but a license management utility shows a connect problem.

### ***FLEXlm license error, Cannot read license file data from server***

This indicates that the program could not connect to the license server daemon. This can have a number of causes. If the program did not immediately print the error message but waited for about 30 seconds (this can vary) then probably the license server host is down or unreachable. If the program responded immediately with the error message then check the following if the **LM\_LICENSE\_FILE** variable has been set to the format *number@host*:

- is the number correct? It should match the fourth field of a **SERVER** line in the license file on the license server host. Also, the host name on that **SERVER** line should be the same as the host name set in the **LM\_LICENSE\_FILE** variable. Correct **LM\_LICENSE\_FILE** if necessary.

In any case one should verify if the license server daemon is running. Type the following command on the host where the license server daemon (**lmgrd**) is supposed to run.

On Windows:

From the Windows **Start** menu, select **Run** and enter **taskmgr**. On the **Processes** tab, look for **lmgrd**.

On Linux or SunOS 4.x:

```
ps wwax | grep lmgrd | grep -v grep
```

On HP-UX or SunOS 5.x (Solaris 2.x):

```
ps -ef | grep lmgrd | grep -v grep
```

If the command does not produce any output then the license server daemon is not running. See below for an example how to start **lmgrd**.

Make sure that both license server daemon (**lmgrd**) and the program are using the same license data. All TASKING products use the license file **c:\flexlm\license.dat** (Windows), or **/usr/local/flexlm/licenses/license.dat** (UNIX) unless overruled by the environment variable **LM\_LICENSE\_FILE**. However, not all existing **lmgrd** daemons may use the same default. In case of doubt, specify the license file pathname with the **-c** option when starting the license server daemon. For example:

```
lmgrd -c /usr/local/flexlm/licenses/license.dat \  
-l /usr/local/flexlm/licenses/license.log &
```

and set the **LM\_LICENSE\_FILE** environment variable to the **license.dat** pathname mentioned with the **-c** option of **lmgrd** before running any license based program (including **lmreread**, **lmstat**, **lmdown**). If **lmgrd** and the program run on different hosts, transparent access to the license file is assumed in the situation described above (e.g. NFS). If this is not the case, make a local copy of the license file (not recommended) or set **LM\_LICENSE\_FILE** to the form *number@host*, as described earlier.

If none of the above seems to apply (i.e. **lmgrd** was already running and **LM\_LICENSE\_FILE** has been set correctly) then it is very likely that there is a TCP port mismatch. The fourth field of a **SERVER** line in the license file specifies a TCP port number. That number can be changed without affecting any license. However, it must never be changed while the license server daemon is running. If it has been changed, change it back to the original value. If you do not know the original number anymore, restart the license server daemon after typing the following command on the license server host (UNIX):

```
kill PID
```

where **PID** is the process id of **lmgrd**.

To kill the process of **lmgrd** and **Tasking** on Windows: from the Windows **Start** menu, select **Run** and enter **taskmgr**. On the **Processes** tab, select **lmgrd** and click the **End Process** button. Select **Tasking** and click the **End Process** button

## **2.7 FREQUENTLY ASKED QUESTIONS (FAQS)**

### **2.7.1 LICENSE FILE QUESTIONS**

***I've received FLEXlm license files from two different companies. Do I have to combine them?***

You don't have to combine license files. Each license file that has any 'counted' lines (the 'number of licenses' field is >0) requires a server. It's perfectly OK to have any number of separate license files, with different **lmgrd** server processes supporting each file. Moreover, since **lmgrd** is a lightweight process, for sites without system administrators, this is often the simplest (and therefore recommended) way to proceed. With v6+ **lmgrd/lmdown/lmreread**, you can stop/reread/restart a single vendor daemon (of any FLEXlm version). This makes combining licenses more attractive than previously. Also, if the application is v6+, using '*dir/\**.lic' for license file management behaves like combining licenses without physically combining them.

***When is it recommended to combine license files?***

Many system administrators, especially for larger sites, prefer to combine license files to ease administration of FLEXlm licenses. It's purely a matter of preference.

***Does FLEXlm handle dates in the year 2000 and beyond?***

Yes. The FLEXlm date format uses a 4-digit year. Dates in the 20th century (19xx) can be abbreviated to the last 2 digits of the year (xx), and use of this feature is quite widespread. Dates in the year 2000 and beyond must specify all 4 year digits.

### **2.7.2 FLEXLM VERSION**

***Which FLEXlm versions does TASKING deliver?***

We deliver FLEXlm v8.4 on both Windows and UNIX.

***I have products from several companies at various FLEXlm version levels. Do I have to worry about how these versions work together?***

If you're not combining license files from different vendors, the simplest thing to do is make sure you use the tools (especially **lmgrd**) that are shipped by each vendor.

**lmgrd** will always correctly support older versions of vendor daemons and applications, so it's *always* safe to use the latest version of **lmgrd** and the other FLEXlm utilities. If you've combined license files from two vendors, you *must* use the latest version of **lmgrd**.

If you've received two versions of a product from the same vendor, you *must* use the latest vendor daemon they sent you. An older vendor daemon with a newer client will cause communication errors.

Please ignore letters appended to FLEXlm versions, for example, the "a" in v8.4a. The appended letter indicates a patch, and does NOT indicate any compatibility differences. In particular, some elements of FLEXlm didn't require certain patches, so a v8.4 **lmgrd** will work successfully with a v8.4a vendor daemon.

***I've received a new copy of a product from a vendor, and it uses a new version of FLEXlm. Is my old license file still valid?***

Yes. Older FLEXlm license files are always valid with newer versions of FLEXlm.

### **2.7.3 WINDOWS QUESTIONS**

***What Windows Host Platforms can be used as a server for Floating Licenses?***

The system being used as the server (where the FLEXlm License Manager is running) for Floating licenses, must be Windows 7, NT, 2000 or XP. The FLEXlm License Manager does not run properly with Windows 95/98/Me.

## 2.7.4 TASKING QUESTIONS

### *How will the TASKING licensing/pricing model change with License Management (FLEXlm)?*

TASKING will now offer the following types of licenses so you can purchase licenses based upon usage:

| License     | Description  | Pricing   |
|-------------|--|---|
| Node Locked | This license can only be used on a specific system. It cannot be moved to another system.  | The pricing for this license will be the current product pricing.             |
| Floating    | This license requires a network (license server and a TCP/IP (or IPX/SPX) connection between clients and server) and can be used on any host system ( <b>using the same operating system</b> ) in the network. | The pricing for this license will be 50% higher than the node locked license. |

### *How does FLEXlm affect future product ordering?*

For all licenses, node locked or floating, you must provide information that is used to create a license key. For node locked licenses we must have the host ID. Floating licenses require the host ID and host name. The host ID is a unique identification of the machine, which is based upon different hardware depending upon host platform. The host name is the network name of the machine.



TASKING Logistics CANNOT ship ANY orders that do not include the host ID and/or host name information.

### *What if I do not know the information needed for the license key?*

On Windows we have a software utility (**licadmin.exe**) which will obtain and display the host ID so a customer can easily obtain this information. This utility is available from our web site, placed on all product CDs (which support FLEXlm), and from technical support. If you have already installed FLEXlm, you can also use **lmhostid**.

On UNIX you can use **/sbin/ifconfig eth0** on Linux, or **hostid** on SunOS/Solaris or **lanscan** on HP-UX to retrieve the host ID. Use **hostname** to retrieve the host name.

- In the case of a *Node locked license*, it is important that the customer runs this utility on the exact machine he intends to run the TASKING tools on.
- In the case of a *Floating License*, the utility to retrieve the host ID and/or host name should be run on the machine on which the FLEXlm license manager will be installed, e.g. the server.



See also section 1.6.6, *How to Determine the Host ID* and section 1.6.7, *How to Determine the Host Name* in chapter *Software Installation*.

### ***How will the “locking” mechanism work?***

- For node locked licenses, FLEXlm will first search for an ethernet card. If one exists, it will lock onto the number of the ethernet card. If an ethernet card does not exist, FLEXlm will lock onto the hard disk serial number. If multiple ethernet cards are found, the user can select which one to use.
- For floating licenses, the ethernet card number will be used.

### ***What happens if I try to move my node locked license to another system?***

The software will not run. You will have to obtain a new license key for the new system.

### ***What does linger-time for floating licenses mean?***

When the TASKING product starts to run, it will try to obtain a license from the license server. The license server keeps track of the number of licenses already issued, and grants or denies the request. When the software has finished running, the license is kept by the license server for a period of time known as the “linger-time”. If the same user requests the TASKING product again within the linger-time, he is granted the license again. If another user requests a license during the linger-time, his request is denied until the linger-time has finished.

### ***What is the length of the linger-time for floating licenses?***

The length of the linger-time for both the Windows and UNIX floating licenses is 5 minutes.

### ***Can the linger-time be changed?***

Yes. A customer can change the linger-time to be larger (but not shorter) than the time specified by TASKING.



***What happens if my system crashes or I upgrade to a new system?***

You will need to contact Technical Support for temporary license keys due to a system crash or to move from one system to another system. You will then need to work with your local sales representative to obtain a permanent new license key.

**2.7.5 USING FLEXLM FOR FLOATING LICENSES*****Can I borrow a floating license?***

Yes, you can borrow a floating license if it contains the **BORROW** keyword. (Contact your sales representative if you do not have one).

Borrowing allows you to use the floating license while disconnected from the network. The license will be kept occupied by the license manager for the duration of the borrowing period.

Use FLEXlm Tools (**Borrowing** tab of LMTOOLS on Windows) or **lmborrow** to initiate borrowing.

***If all floating licenses are in use, can I wait for a license to become available?***

Yes, you set the environment variable **TASKING\_LIC\_WAIT** on the client system.

***Does FLEXlm work across the internet?***

Yes. A server on the internet will serve licenses to anyone else on the internet. This can be limited with the 'INTERNET=' attribute on the FEATURE line, which limits access to a range of internet addresses. You can also use the INCLUDE and EXCLUDE options in the options file to allow (or deny) access to clients running on a range of internet addresses.

***Does FLEXlm work with Internet firewalls?***

Many firewalls require that port numbers be specified to the firewall. FLEXlm v5 **lmgrd** and vendor daemons support this. Append "port=*port-number*" to the DAEMON line in the license file.

### ***If my FLEXlm-licensed application dies, does the server free the license?***

Yes, unless the FLEXlm-licensed application's whole system crashes. Assuming communications is TCP, the license is automatically freed immediately. If communications are UDP, then the license is freed after the UDP timeout, which is set by each vendor, but defaults to 45 minutes. UDP communications is normally only set by the end-user, so TCP should be assumed. If the whole system crashes, then the license is not freed, and you should use **lmremove** to free the license.

### ***What happens when the license server dies?***

FLEXlm applications send periodic heartbeats to the server to discover if it has died. What happens when the server dies is then up to the application:

- Continue periodic attempts to re-checkout the license when the server comes back up.
- Attempt to re-checkout a license a few times, and then, presumably with some warning, exit.
- In the case of GUI applications, present pop-ups to the user periodically letting them know the server is down and needs to be restarted.

### ***How do you tell if a port is already in use?***

99.44% of the time, if it's in use, it's because **lmgrd** is already running on the port - or was recently killed, and the port isn't freed yet. Assuming this is not the case, then use '**telnet host port**' - if it says "Can't connect", it's a free port.

### ***Does FLEXlm require root permissions?***

No. There is no part of FLEXlm, **lmgrd**, vendor daemon or application, that requires root permissions. In fact, it is strongly recommended that you do not run the license server (**lmgrd**) as root, since root processes can introduce security risks.

If **lmgrd** must be started from the root user (for example, in a system boot script), we recommend that you use the '**su**' command to run **lmgrd** as a non-privileged user:

```
su username -c "/path/lmgrd -c /path/license.dat \  
-l /path/log -local"
```

where *username* is a non-privileged user, and *path* is the correct paths to **lmgrd**, **license.dat** and debug log file. You will have to ensure that the vendor daemons listed in */path-to-license/license.dat* have execute permissions for *username*. The paths to all the vendor daemons in the license file are listed on each DAEMON line.

### ***Is it OK to run lmgrd as 'root' (UNIX only)?***

It is not prudent to run any command, particularly a daemon, as root on UNIX, as it may pose a security risk to the Operating System. Therefore, we recommend that **lmgrd** be run as a non-privileged user (not 'root'). If you are starting **lmgrd** from a boot script, we recommend that you use

```
su username -c "umask 022; /path/lmgrd \
-c /path/license.dat -l /path/log -local"
```

to run **lmgrd** as a non-privileged user.

### ***Does FLEXlm licensing impose a heavy load on the network?***

No, but partly this depends on the application, and end-user's use. A typical checkout request requires 5 messages and responses between client and server, and each message is < 150 bytes.

When a server is not receiving requests, it requires virtually no CPU time. When an application, or **lmstat**, requests the list of current users, this can significantly increase the amount of networking FLEXlm uses, depending on the number of current users. Also, prior to FLEXlm v5, use of '*port@host*' can increase network load, since the license file is down-loaded from the server to the client. '*port@host*' should be, if possible, limited to small license files (say < 50 features). In v5+, '*port@host*' actually improves performance.

### ***Does FLEXlm work with NFS?***

Yes. FLEXlm has no direct interaction with NFS. FLEXlm uses an NFS-mounted file like any other application.

### ***Does FLEXlm work with ATM, ISDN, Token-Ring, etc.?***

In general, these have no impact on FLEXlm. FLEXlm requires TCP/IP or SPX (Novell Netware). So long as TCP/IP works, FLEXlm will work.

***Does FLEXlm work with subnets, fully-qualified names, multiple domains, etc.?***

Yes, although this behavior was improved in v3.0, and v6.0. When a license server and a client are located in different domains, fully-qualified host names have to be used. A fully-qualified hostname is of the form:

*machine.domain*

where *machine* is the local host name (usually returned by the '**hostname**' command or '**uname -n**') *domain* is the internet domain name, e.g. 'globes.com'.

To ensure success with FLEXlm across domains, do the following:

1. Make the sure the fully-qualified hostname is the name on the SERVER line of the license file.
2. Make sure ALL client nodes, as well as the server node, are able to 'telnet' to that fully-qualified hostname. For example, if the host is locally called 'speedy', and the domain name is 'corp.com', local systems will be able to logon to speedy via 'telnet speedy'. But very often, '**telnet speedy.corp.com**' will fail, locally. Note that this telnet command will always succeed on hosts in other domains (assuming everything is configured correctly), since the network will resolve **speedy.corp.com** automatically.
3. Finally, there must be an 'alias' for speedy so it's also known locally as **speedy.corp.com**. This alias is added to the **/etc/hosts** file, or if NIS/Yellow Pages are being used, then it will have to be added to the NIS database. This requirement goes away in version 3.0 of FLEXlm.

If all components (application, **lmgrd** and vendor daemon) are v6.0 or higher, no aliases are required; the only requirement is that the fully qualified domain name, or IP address, is used as a host name on the SERVER, or as a host name in the **LM\_LICENSE\_FILE** environment variable (*port@host* or *@host*).

***Does FLEXlm work with NIS and DNS?***

Yes. However, some sites have broken NIS or DNS, which causes FLEXlm to fail. In v5 of FLEXlm, NIS and DNS can be avoided to solve this problem. In particular, sometimes DNS is configured for a server that is not currently available (e.g., a dial-up connection from a Windows system). Again, if DNS is configured, but the server is not available, FLEXlm fails.

In addition, some systems, particularly Sun, SGI, HP, require that applications be linked dynamically to support NIS or DNS. If a vendor links statically, this can cause the application to fail at a site that uses NIS or DNS. In these situations, the vendor will have to relink, or recompile with v5 FLEXlm. Vendors are strongly encouraged to use dynamic libraries for libc and networking libraries, since this tends to improve quality in general, as well as making NIS/DNS work.

On Windows, if a checkout seems to take 3 minutes and then fails, this is usually because the system is configured for a dial-up DNS server which is not currently available. The solution here is to turn off DNS.

Finally, hostnames must NOT have periods in the name. These are not legal hostnames, and they will not work with DNS.

***We're using FLEXlm over a wide-area network. What can we do to improve performance?***

With the most common uses of FLEXlm, traffic is negligible. In particular, checkout, checkin, and heartbeats use very little networking traffic. There are two items, however, which can send considerably more data:

- **'lmstat -a'** should be used sparingly. Network traffic increases as the amount of concurrent users and features increases. As a rule of thumb, avoid using this command when there are more than 20 concurrent users or features.
- Prior to FLEXlm v5, the *port@host* mode of the **LM\_LICENSE\_FILE** environment variable should be avoided, especially when the license file has many features, or there are a lot of license files included in **LM\_LICENSE\_FILE**. The license file information is sent via the network, and can place a heavy load. Failures due to *port@host* generate the error **LM\_SERVNOREADLIC (-61)**.

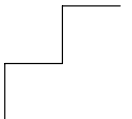
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