Chapter

6 *A Primer on Licensing*

This chapter introduces the licensing system used in Telelogic Tau. Provided are both background material and practical tips on setting up and maintaining your licenses.

The following topics are discussed:

- **A general overview of the FLEXlm licensing system.**
- **Details about the FLEXlm system, including types of licenses, usage options and possibilities, structure of a license key and pitfalls to avoid.**

Telelogic Tau Licensing – A General Overview

The FLEXlm Licensing System

FLEXlm, made by Globetrotter Software, provides either a node-locked or network-based "floating" license system. This system allows users on a network to check out individual licenses from a common shared set. When a user ends a software session, all licenses used by that session are returned to the pool of available licenses. The system is available for both the UNIX and Windows versions of Telelogic Tau. It is possible to share licenses between the platforms; that is, both UNIX and Windows users can share licenses from the same common shared set.

The licensing system is introduced in detail below. You should have received your licensing materials with your delivery of Telelogic Tau.

If you have not yet received your license materials, or, if after reading this chapter you have questions, contact Telelogic Customer Support (see "How to Contact Customer Support" on page *iv in the Release Guide*).

Expirations and Renewals

The FLEXlm licensing system uses license keys which have individual expiration dates set by Telelogic, and can be renewed when needed.

Typically, license keys given for *evaluation* of the tool set are set for 30 days, renewable upon request and with approval from the appropriate Telelogic Area Manager.

Post-purchase license keys are typically set for one year, and are renewed. Customers with maintenance agreements will receive updated license keys for new versions of the tool upon their release. Customers without maintenance agreements will receive renewed keys for the version of Telelogic Tau that they initially purchased (that is, license keys for newer, up-to-date versions of Telelogic Tau will not be delivered).

Speak with your Telelogic Area Manager for further details on license renewals.

Licensing by Feature

Licensing is done by “features”, which are individual components of the Telelogic Tau tool set, such as the SDL Simulator or the TTCN suite’s TTCN to C compiler.

A license key specifies the number of “seats” (simultaneously available licenses) for each feature of the tool set listed in the license key. FLEX-lm (floating) licenses allow the number of licenses available to be specified on a feature-by-feature basis.

FLEXlm Licensing Details

General Information About FLEXlm

FLEXlm can either provide node-locked (dongle) or a network licensing system which consists of one or several license keys, license server "daemons", and the application(s) for which licenses are served. Licenses dynamically float around the network as needed.

The license "daemons" are background processes which run on a chosen "license server" machine. They administer the check-in and check-out of licenses for each feature of each application which uses FLEXlm.

Each machine on a network has two attributes which distinguish it uniquely from all other machines: the *hostname* and *hostID*. Host names are usually straightforward names for machines given by, perhaps, a system administrator. Examples are "einstein" and "suns20". The hostID is a number that uniquely identifies the machine and is obtained from different sources within a machine depending on the architecture. Examples are "80874ab9" (typical Sun style) and "080009734a85" (typical HP style).

There is one main FLEXlm daemon called "lmgrd", and one "vendor" daemon for each vendor whose software on the system uses FLEXlm. Telelogic's vendor daemon is simply called "telelogic". The "lmgrd" daemon will manage the vendor daemons, which in turn manage the licenses for their respective vendors' software. The "lmgrd" daemon and the vendor daemon(s) must run on the same physical node of the network, but they can run on any node; that is, you can choose any node on your network to be the FLEXlm *license server*.

A FLEXlm license key is a specially formatted text file containing:

- Information about the machine on which the license daemons will run (the hostname and hostID).
- The UNIX path information for the vendor daemon(s).
- A line for each feature in the tool set of the vendor(s) which specifies the number of available licenses and the expiration date for that feature.

Details of the structure of a FLEXlm license key are covered below.

Types of FLEXlm Keys

FLEXlm license keys can come in three categories: “license keys”, “evaluation license keys”, and “DEMO license keys”.

Both “license keys” and “evaluation license keys” require a valid hostname and hostID and require that the “lmgrd” and vendor daemon are correctly running on the license server specified in the license key file. The only difference between them is their durations; evaluation keys, of course, last for a much shorter time than “real” post-purchase keys.

“DEMO license keys” are used in uncommon situations when it may be difficult or impossible to obtain a proper hostname and/or hostID. This type of key does **not** require a specific hostname and hostID, nor does it require that the license daemons be running. This type of key is distinguished with the keyword “DEMO” appearing at the end of each feature line of the license key file. Also, the field in each feature line showing the number of seats is set to zero, although the feature can still be used. This type of key is typically reserved for emergency situations.

License keys for Telelogic training sessions will typically be evaluation license keys with very short durations (perhaps 5 days or so).

Installation and Network Possibilities

It is not necessary to install your Telelogic Tau software on the same node of the network that your license server runs on, although this is a common situation. You could install Telelogic Tau on a local disk and have your licenses served by another node on the network (to put it differently, you do not have to install Telelogic Tau on a disk that belongs to the same machine on which the license server will run). This is useful in situations when one member or a small part of a large organization will be using Telelogic Tau exclusively, but there is already an organization-wide FLEXlm license server on the network.

Since FLEXlm is designed for the possibility to manage many software packages from many vendors, it allows all license and daemon information for all vendors to be combined into one license key text file, instead of having to deal with a separate file for each vendor. If you already use FLEXlm for other software when you install Telelogic Tau, our Installation Guide will tell you how to add the license information you receive from Telelogic to your master license key text file.

If Telelogic Tau brings you to FLEXlm for the first time, then you will have only the “lmgrd” and “telelogic” daemons running, and the license key information you receive from Telelogic will make up your entire license key text file.

We suggest using the FLEXlm software included in the Telelogic Tau CD-ROM; for first time FLEXlm users this is of course what you will do. Existing FLEXlm users, however, may wish to upgrade their license server software with the Telelogic Tau-included version, if they are running an older version. Although this will cause a temporary interruption in availability for all FLEXlm administered software, it is a good idea since newer versions of the system are quite different. Although Telelogic keys are always backwards compatible, we cannot speak for other vendors, so it is generally best to make sure you run the latest daemons so as to be able to take advantage of new FLEXlm features.

Structure of a FLEXlm License Key

On the following pages we give two examples of typical FLEXlm license keys as they appear when received from Telelogic. The first is a “real” license key (one requiring a valid hostname and hostID) and the second example is a DEMO key. Each example describes the “anatomy” of the license key. Being familiar with the different parts is very useful when trying to install the key properly.

Note:

The license keys you receive may contain additional or slightly different information compared to the descriptions on the following pages.

When installed, the license key text file received from Telelogic should be saved with the filename `license.dat`. While this is not strictly necessary, some startup scripts may search for the license file using this name. This name is the standard in the FLEXlm “lingo” anyway.

Note:

The default location for the `license.dat` file **on UNIX** is `$telelogic/license.dat`; i.e. the Telelogic Tau top-level installation directory. **In Windows 98, NT, 2000 and XP**, it is `C:\Telelogic\SDL_TTCN_Suite4.5\license.dat`.

FLEXlm License Key – First Example

Here is a FLEXlm "real" license key as it would appear when delivered by Telelogic.

Example 2: "Real" license key ————————————————————————

```
SERVER test 12345678 7598
VENDOR telelogic /usr/appl/telelogic/flex/archflex
FEATURE Telelogic telelogic 3.400 15-dec-99 2 1B5890E1960AFE22A57B ck=116
FEATURE SDT-Base telelogic 3.400 15-dec-99 1 0B58E0922F3034C3C29F ck=89
FEATURE SDT-MSCE telelogic 2.200 15-dec-99 1 AB58C08192E26573643B ck=133
FEATURE SDT-OME telelogic 1.100 15-dec-99 1 DBC8C061034073C86AD4 ck=68
FEATURE SDT-Cbasic telelogic 2.200 15-dec-99 3 DBC322E12E1F4E6A7DC9 ck=124
FEATURE SDT-Simulator telelogic 2.200 15-dec-99 1 5BA830E2597AAED4E6DF ck=48
FEATURE SDT-Validator telelogic 2.200 15-dec-99 1 5BB3F0A11CDD96D4C1FF ck=182
FEATURE SDT-TTCN-Link telelogic 1.200 15-dec-99 1 DBB87061BDA40AF3D222 ck=154
FEATURE TTCN Framework telelogic 3.300 15-dec-99 1 FBF53071C228F9AF0CA7 ck=112
```

——

Here are detailed explanations for this license key example:

- **SERVER line**: This line has 4 fields; the `SERVER` label, the host-name and hostID of the machine on which the license daemons will run, and a TCP/IP port number. Here we see that the machine `test` has hostID `12345678`. The TCP/IP port number is `7598`, which is the port number on which the license daemons will communicate.
- **VENDOR line**: This line has 3 fields; the `VENDOR` label, the name of the vendor daemon (in this case `telelogic`), and a field to hold the path to the vendor daemon executable. In this case, the path is a "dummy" path generated by default when the license key is made. When you install your key, you must supply the correct path, which depends on your choice of installation directory and architecture. See "FLEXlm Licensing Pitfalls to Avoid" on page 68 for additional information.

- **FEATURE lines**: It is here that the actual permissions are specified for each component of Telelogic Tau that the customer has. A FEATURE line has eight fields:
  - The `FEATURE` keyword.
  - The name of the licensed component.
  - The name of the vendor daemon responsible for handling the feature (in all Telelogic Tau cases this is `telelogic`).
  - The version number of the feature.
  - The expiration date (inclusive) of the license for the feature.
  - The number of licenses or “seats” available for that feature.
  - A 20-character (hex) encryption code for the FEATURE line; this is determined by the exact character-by-character makeup of the `FEATURE` line, and by the hostID of the license server, specified on the `SERVER` line.
  - A double-quoted field which can contain a “note” for the line.

Caution!

Licenses delivered from Telelogic have a brief label for the key (company name/contact person, etc.) usually in the quote field of the first FEATURE line only. All FEATURE lines after the first will have nothing between the quotes. This does not have to be the case in general; any number of FEATURE lines can have something in the quotes. It is possible that sometime you might receive such a key from Telelogic. **Do not delete any such information in quotes; this will invalidate the FEATURE line.**

FLEXlm License Key – Second Example

Here is a FLEXlm DEMO license key as it would appear when delivered by Telelogic.

Example 3: DEMO license key ––

```
SERVER hostname hostid 7598
VENDOR telelogic /usr/appl/telelogic/flex/archflex
FEATURE Telelogic telelogic 3.400 15-aug-98 0 4BF862B1049767F837DE ck=116 DEMO
FEATURE SDT-Base telelogic 3.400 15-aug-98 0 0B98B051C0144041B74C ck=89 DEMO
FEATURE SDT-MSCE telelogic 2.200 15-aug-97 0 EB98B0F1BF88E260FE2A ck=133 DEMO
FEATURE SDT-OME telelogic 1.100 15-aug-97 0 7B58E0C15A7D37B767B4 ck=68 DEMO
FEATURE SDT-Cbasic telelogic 2.200 15-aug-97 0 3BAB8081FEC65F761608 ck=124 DEMO
FEATURE SDT-Simulator telelogic 2.200 15-aug-97 0 8B28405166A00320F584 ck=48 DEMO
FEATURE SDT-Validator telelogic 2.200 15-aug-97 0 0B9810F1EB7103F3EA94 ck=182 DEMO
FEATURE SDT-TTCN-Link telelogic 1.200 15-aug-97 0 FB5820C123607B34A759 ck=154 DEMO
FEATURE ITEX-Base telelogic 3.300 15-aug-97 0 EBB8F0B71216A0C373E6 ck=112 DEMO
```

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Here are detailed explanations for this license key example:

- **SERVER line:** This line has 4 fields; the `SERVER` label, two dummy placeholders for where a specific `hostname` and `hostID` would be placed in a “real” key, and a TCP/IP port number. Of course the port number is irrelevant, since with a `DEMO` key no license daemons need to be running, and thus do not need a port on which to communicate.
- **VENDOR line:** This line has 3 fields; the `VENDOR` label, the name of the vendor daemon (in this case `telelogic`), and a field to hold the path to the vendor daemon executable. The path is again a “dummy” when you get your key from Telelogic Customer Support, but you will not need to put in the correct path for the `telelogic` daemon since the master `lmgrd` daemon never needs to start it – neither daemon needs to run when you use a DEMO key.
- **FEATURE lines:** These are very similar to the FEATURE lines in a “real” key, except for the addition of the word `DEMO` at the end of each. Also, the number of seats available is set to 0 (zero) on each FEATURE line. This is merely an implementation that “tricks” Telelogic Tau into allowing you to run the software even though the FLEXlm system is not operational. As before, the quoted field of the first FEATURE line will contain some text describing the license key (customer name, perhaps a contact person’s name, etc.). All FEATURE lines after the first will have nothing between the quotes. **Note, however, that the encryption codes are still valid for a DEMO key.**

The number of licenses specified for some features is dependent on the number specified for certain others. For each seat of the SDT-Simulator, SDT-Validator, and SDT-TTCN-Link features, there should be one seat of the SDT-Cbasic feature. For each SDT-Base or TTCN Framework, there should be one Telelogic feature (which is the Organizer). So, for example, a customer who has 3 each of the SDL Simulator, Validator, and TTCN-Link should have 9 seats of Cbasic. A customer with 3 SDL Framework licenses and 2 TTCN Framework licenses should have 5 Organizers.

FLEXlm Licensing Pitfalls to Avoid

When installing a new FLEXlm license key from Telelogic there are a few “pitfalls” to watch out for:

- Since FLEXlm license keys are text files and are often sent to customers via email, usually some line wraparound occurs during the transmission. Recall that each FEATURE line has a unique encryption code as its seventh field. When a line wraps, this introduces a newline character into the FEATURE line and invalidates the encryption code. To check for wraparound, make sure that each FEATURE line begins with the keyword `FEATURE` and ends with a double-quote field (remember the first FEATURE line will have the customer name in this field).
- FLEXlm license files are **case significant**.
- It is easy to forget to put the full path to the “telelogic” daemon in the VENDOR line. This must be done when the license daemons are running on a UNIX machine, and depends on the choice of Telelogic installation directory and machine architecture. The correct path is not specified when you receive your key since your installation directory is not known to Telelogic Customer Support. A correct example for a SunOS 5 machine with Telelogic Tau installed in `/appl/telelogic` would be:

  ```
  /appl/telelogic/flex/sunos5flex/telelogic
  ```

  On a Windows machine, if you use the FLEXlm software included with Telelogic Tau (i.e. you are not adding your FEATURE lines to a preexisting server) it is not necessary to specify the exact path (although you can, if you want to be thorough). Since both daemon executables are in the same directory within the Telelogic Tau instal-

lation (`\flex`), the “lmgrd” master daemon can find the “telelogic” vendor daemon to start it up even when the path is unspecified:

```
VENDOR telelogic telelogic.exe
```

This is how the VENDOR line looks when the license key comes from Telelogic Customer Support since your choice of installation directory is unknown to us. A full path example (with the default case of `\Telelogic\SDL_TTCN_Suite4.5` on the `C:` drive as the installation directory) is:

```
VENDOR telelogic
C:\Telelogic\SDL_TTCN_Suite4.5\flex\wini386flex\telelogic.
exe
```

If for any reason you move the “telelogic” daemon from its normal place (`\Telelogic\SDL_TTCN_Suite4.5\flex`) or **if you make use of a preexisting FLEXlm server** you must specify the complete path to it.

- An uncommon problem is a TCP/IP port conflict with another application (recall that the last field of the FLEXlm license key’s SERVER line is the TCP/IP port number). An error message will be logged in the `license.log` file if the conflict occurs. You can change the port number without invalidating your key. While this is purely a trial-and-error affair, as a “rule of thumb”, numbers above 5000 (but below 20000) should not cause conflicts (most applications use numbers below port number 5000). Port number 7598 is often the “default” found in keys delivered by Telelogic.
- Often customers whom for whatever reason need to use a DEMO license key believe that they must enter their actual machine hostname and hostID in place of the dummy `hostname` and `hostid` found in the key delivered from Telelogic Customer Support. This is not the case. The encryption codes for each FEATURE line are actually generated based on a hostID value of “hostid”, so inserting your actual hostID will invalidate the key.
- If the FLEXlm manager cannot find your dongle ID, check that the sentinel drivers are installed. They are located in D:\Flex\Win32\FLEXID8 on the Telelogic Tau CD.

Additional Information

For direct-from-the-maker information on FLEXlm, including a FAQ (Frequently Asked Questions) document and the FLEXlm *End User Manual*, we suggest the following World Wide Web addresses at Globetrotter Software:

```
http://www.globetrotter.com/flxlmfaq/TOC.htm
http://www.globetrotter.com/manual.htm
```