Telelogic Tau 3.5

Installation Guide

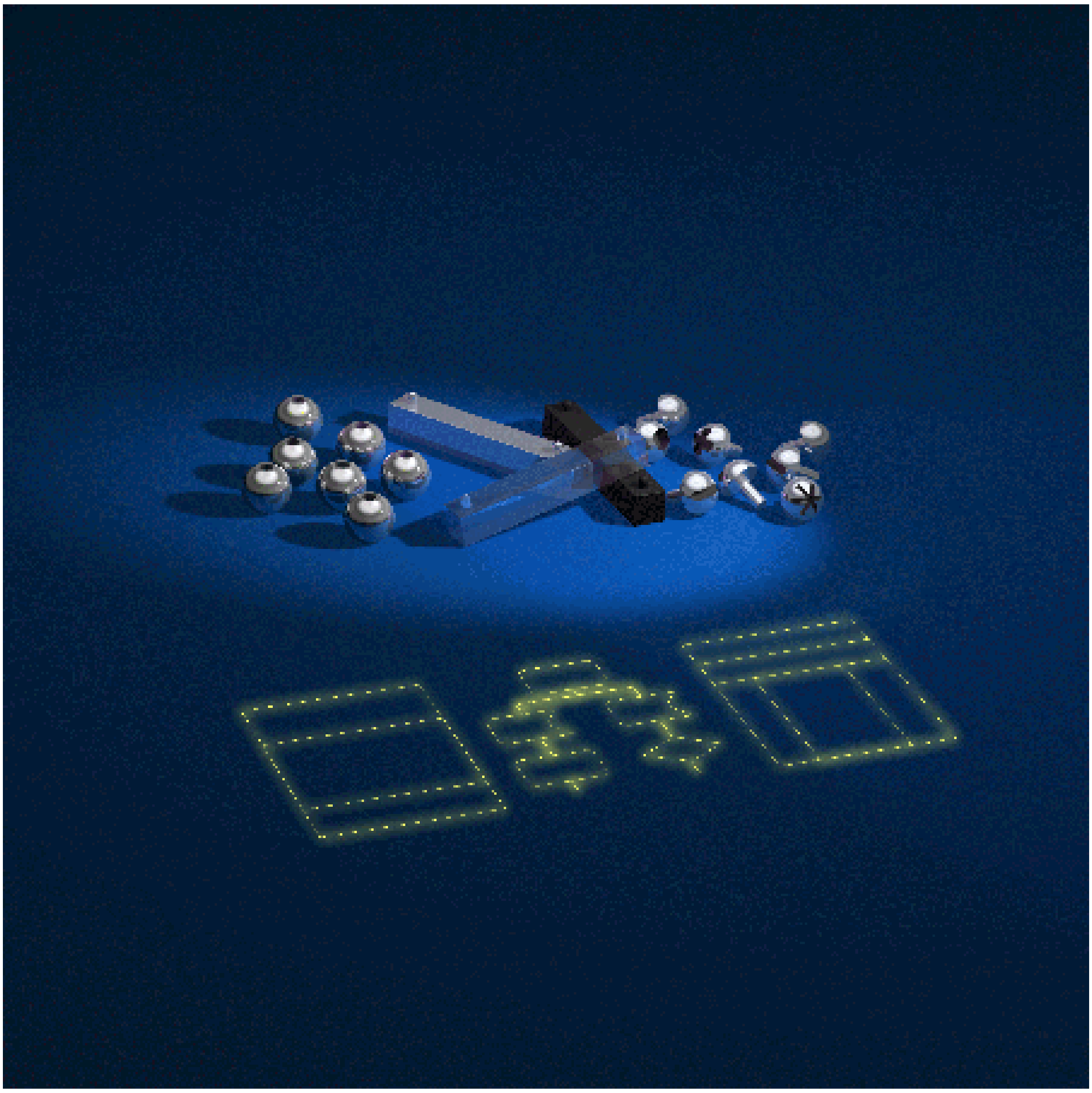

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Table of Contents

Introduction

About this Manual

This volume, *Installation Guide*, contains all the information that is needed to install the Telelogic Tau software and license on your computer system. This includes information on system prerequisites before you start the installation, and how to setup your system for using Telelogic Tau. There is also a primer on licensing with trouble-shooting advice and a list of licensing management procedures.

Please note that there is a "quick reference" to the installation process printed as a separate card, which you can use to get an overview of the process, or if you are already familiar with installing Telelogic Tau.

Documentation Overview

A general description of the Telelogic Tau documentation can be found in "Telelogic Tau Documentation" on page *viii* in the Release Guide.

Typographic Conventions

The typographic conventions that are used in the Telelogic Tau documentation are described in "Typographic Conventions" on page *x* in the Release Guide.

How to Contact Customer Support

Detailed contact information for Telelogic Customer Support can be found in "How to Contact Customer Support" on page *v* in the Release Guide.

Chapter

1

System Prerequisites

This chapter lists the hardware and software prerequisites that must be fulfilled for a successful installation of the Telelogic Tau products ORCA[1], SDT and ITEX.

---

1. ORCA is part of the Telelogic Tau product suite and stands for Object oriented Requirement Capture and Analysis.

Hardware

This section describes the hardware requirements for Telelogic Tau 3.5.

Supported Architectures

- Sun SPARCstation
- HP 9000/700-800 series (PA-RISC)
- PC's running Microsoft Windows 95 or Windows NT 4.0

UNIX Installation Prerequisites

Telelogic Tau 3.5 on UNIX includes binaries for several different computer architectures, examples and on-line help files. During the installation, you may choose what parts to install. The tables below show the amount of disk space the different components will require.

Binaries	Disk Space
Common Telelogic Tau[a]	8 MB
Common SunOS 5	40
Common HP 700-800 (PA-RISC)	28
Common ORCA and SDT[b]	5
ORCA and SDT SunOS 5	68
ORCA and SDT HP 700-800 (PA-RISC)	65
Common ITEX[c]	1
ITEX SunOS 5	36
ITEX HP 700-800 (PA-RISC)	39

a. Add the indicated amount of disk space for the first installed Telelogic Tau product. This space is required for the components that are common to all Telelogic Tau products.

b. Add the indicated amount of disk space for the first installed ORCA and SDT architecture. This space is required for the components that are common to all ORCA and SDT architectures

c. Add the indicated amount of disk space for the first installed ITEX architecture. This space is required for the components that are common to all ITEX architectures, which includes the ITEX example files.

Optional Components	Disk Space
ORCA and SDT Example files[a]	12
HELP files in HTML format	151

a. These files are necessary for the examples and tutorials described in the documentation. For ITEX, the corresponding files are included in the "Common ITEX" component.

If you install ORCA and SDT for the first time on SunOS 5, add *Common Telelogic Tau*, *Common SunOS 5*, *Common ORCA and SDT*, and *ORCA and SDT SunOS 5*. That is (in MB): 8 + 40 + 5 + 68 = 121 MB.

If you add software for HP 700-800, consider *Common HP 700-800 (PA-RISC)* and *ORCA and SDT HP 700-800 (PA-RISC)*: 28 + 65 = 93 MB.

Windows Installation Prerequisites

Telelogic Tau 3.5 for Windows includes binaries for two different computer architectures (Windows 95 and Windows NT), examples and online help files. During the installation, you may choose what parts to install. The tables below show the disk space required.

The Telelogic Tau files can be installed once on a network server for all users, or locally on each user's PC.

Binaries	Disk Space
ORCA and SDT PC	73 MB
ITEX PC	13

Optional Components	Disk Space
Example files	7 MB
HELP files in HTML format	145[a]

a. To limit the required disk space in local PC installations, the Help files can be installed once on a network server. They do not have to be installed locally on each PC where the Telelogic Tau binaries are installed.

Run-time Prerequisites

To run the Telelogic Tau 3.5 tools properly you need a certain amount of main memory and swap size; see “Operating System” on page 4.

Pointing Device

A pointing device is required in order to run Telelogic Tau.

Software

This section describes the software requirements for Telelogic Tau 3.5.

Operating System

Architecture	**OS Version**	**Minimum Main Memory**	**Virtual Memory (swap) Size**
Sun SPARC	SunOS 5.5.1	64MB	128MB
Sun SPARC	SunOS 5.6	64	128
HP 9000/700-800	HP-UX 10.20 up to 11.00	64	128
PC	Windows NT 4.0	64[a]	128[b]
PC	Windows 95	32[c]	Set by Windows

a. Although the exact memory needs for a high-performance ORCA and SDT installation (meaning execution with little swap page faults) on a given PC are impossible to tell, the following memory requirements could be expected:
- 32 Mb for the Windows NT system
- 20 Mb for the SDT graphical applications + 1 kB / line of SDL-PR input to the Analyzer.
- Add approx. 30 Mb for the Borland or Microsoft C compiler environment (if C code is to be generated from the SDL system).
- Add memory requirements for other applications that you want to run in the ORCA and SDT session (Microsoft Word, Netscape, etc.)

b. To double the main memory size is a good starting point.

c. Similar to a. The Windows 95 system requires only 16 Mb, though.

UNIX Graphical Environment

On UNIX, Telelogic Tau is a X Window System application to be executed under the Motif Window Manager (Mwm).

Telelogic Tau 3.5 require the X Window System, version R5 or later. The X Window System is provided by your workstation supplier.

Recommended HTML Viewers

The Telelogic Tau 3.5 on-line help requires an HTML viewer. Telelogic Tau 3.5 supports this by a simple built-in HTML viewer. It is also possible to use Internet Explorer version 4, and any version of Netscape.

ORCA and SDT Compiler Environment

A C compiler is required for the TTCN Link, SDT Simulation and Validation features, and for Cadvanced code generation for host and target environments.

For information regarding installation, see the compiler documentation.

The libraries included in the distribution of the TTCN Link, SDT Simulation and Validation features were built using the following C compilers. **You are advised to install and use the same compilers**, or closely compatible ones. It may be possible to use other compilers, but this is not tested or supported by Telelogic.

Architecture/OS	C Compiler
Sun SPARC SunOS 5.5.1	cc SUNWspro (ANSI-C) compiler. gcc 2.8.1 (ANSI mode)
HP PA-RISC HP-UX 10.20	c89 (ANSI-C) compiler, gcc 2.8.1 (ANSI mode)
PC (Win32)	bcc32 version 5.2 (Borland C++ 5.02), cl (Microsoft Visual C++ 5.0)[a]

a. Libraries are tested with bcc32 version 5.3 (Borland C++ Builder 3) and cl (Microsoft Visual C++ 6.0).

ITEX Compiler Environment

An ANSI-C compiler is required for the ITEX Simulation feature and for C code generation for host and target environments. A C++ compiler is required for building ITEX Access applications **(UNIX only)**.

For information regarding installation, see the compiler documentation.

The binaries included in the distribution of the ITEX Simulator were built using the C compilers listed below, and the ITEX Access libraries were built using the C++ compilers listed below. **You are advised to install and use the same compilers**, or closely compatible ones. It may be possible to use other compilers, but this is not tested or supported by Telelogic.

Architecture/OS	C Compiler for ITEX Simulation
Sun SPARC SunOS 5.5.1	cc SUNWspro (ANSI-C) compiler
HP PA-RISC HP-UX 10.20	HP unbundled (ANSI-C) compiler
PC (Win32)	bcc32 version 5.2 (Borland C++ 5.02), cl (Microsoft Visual C++ 5.0)[a]

a. Libraries are tested with bcc32 version 5.3 (Borland C++ Builder 3) and cl (Microsoft Visual C++ 6.0).

Architecture/OS	Directory name	C++ Compiler for ITEX Access
Sun SPARC SunOS 5.5.1	CC	SUNWspro 4.0 C++ compiler
Sun SPARC SunOS 5.5.1	g++	GNU C++ 2.8.1
HP PA-RISC HP-UX 10.20	CC	HP C++ compiler
HP PA-RISC HP-UX 10.20	g++	GNU C++ 2.8.1

Chapter

2

Installation Procedure for UNIX

This chapter contains step-wise instructions for installing Telelogic Tau on UNIX systems, including the software licenses.

For instructions on installing Telelogic Tau for Windows, see chapter 3, *Installation Procedure for Windows*.

In case you encounter problems, contact Telelogic Customer Support, see “How to Contact Customer Support” on page *v* in the Release Guide.

Overview

This chapter's installation procedure will help you install Telelogic Tau on your UNIX system. You can do a full installation or customize it to meet your needs.

The process involves installing the actual Telelogic Tau software, as well as installing and activating your licenses.

Before You Start

Before starting your installation, determine which UNIX system(s) your Telelogic Tau installation will run on (HP or Sun).

Have the license materials at hand before starting the installation. Your Telelogic Tau delivery should contain a hardcopy of your FLEXlm license key.

If you have not yet received a FLEXlm license key, see the box marked Important! on page 11.

For general information on licensing, see chapter 6, *A Primer on Licensing*.

Installation Options

When installing the Telelogic Tau software you will be asked what components to install. You can always add components afterwards by running the installation procedure again (see "Adding Telelogic Tau Components to an Existing Installation" on page 22).

The Telelogic Tau components are:

- ORCA[1] and SDT application files, for the following platforms:
  - Sun SPARCstation with SunOS 5.5.1/5.6
  - HP 9000/700 and 800, with HP-UX 10.20 up to 11.00
- ITEX application and example files, for the following platforms:
  - Sun SPARCstation with SunOS 5.5.1/5.6
  - HP 9000/700 and 800, with HP-UX 10.20 up to 11.00

1. ORCA is part of the Telelogic product suite and stands for Object oriented Requirement Capture and Analysis.

- ORCA and SDT example files. With these files, you will be able to follow the ORCA and SDT tutorials and other complete examples described in the documentation.
- Telelogic Tau on-line help files in HTML format (for ORCA, SDT and ITEX). These files have the same contents as the printed documentation, but they have a different layout and appearance. You need the HTML files to be able to perform a global text search in the on-line help documentation from within the Telelogic Tau tools. A simple HTML viewer is included in the Telelogic Tau installation.

Note: PostScript documentation

The complete Telelogic Tau documentation is also available in PostScript format in the directory `pscript/<paper format>` on the CD-ROM, but is not a component in the installation. The supported paper formats are `A4`, `A5` and `USLETTER`. If you wish to "install" this, manually copy the needed files from the CD-ROM to a directory on a hard disk.

Installation Procedure

The flowchart below shows the basic steps of the installation procedure.

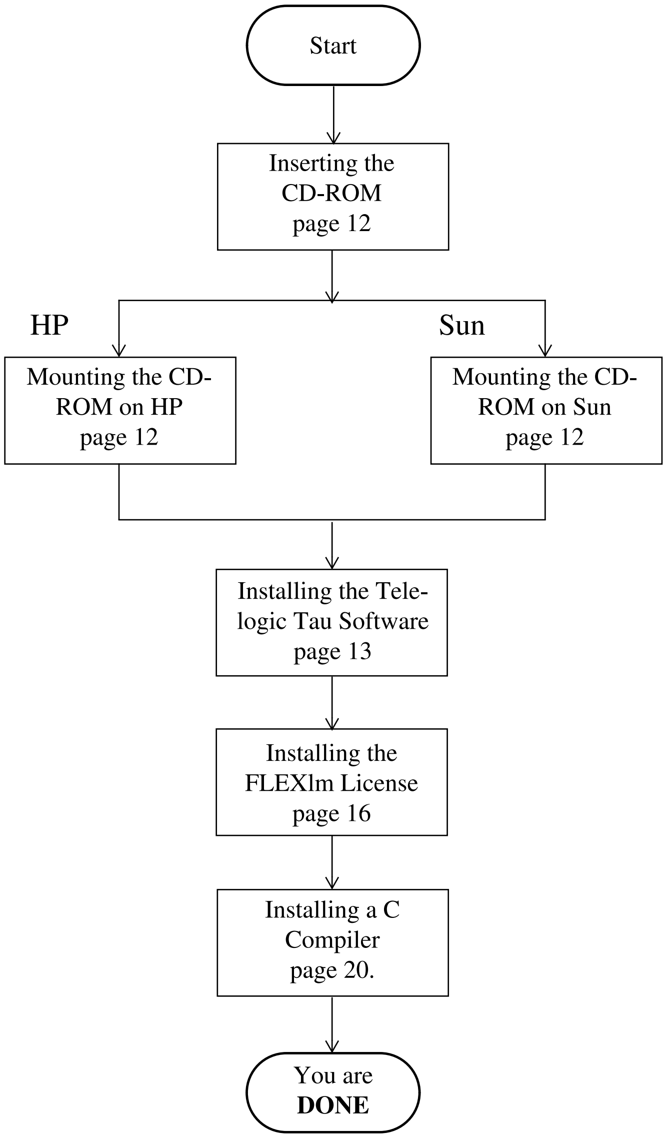

Figure 1: Flowchart for installation

Important!

If you have not received a FLEXlm license key, you will not be able to install Telelogic Tau.

To obtain a license key you have to provide Telelogic Customer Support with the **hostname** and **hostID** of the machine on which the license server will run. To obtain this information:

1. Log in on the license server machine.
2. Insert the Telelogic Tau CD-ROM.
3. Mount the CD-ROM.
4. Change directory to the top level of the CD-ROM, and execute the script called `lmhostid.unx` (`LMHOSTID.UNX;1` on HP). You will now get information about your hostname and hostID.
5. **EMAIL** or **FAX** this information, and if possible the name of the directory where Telelogic Tau will be installed, to Telelogic Customer Support (see “How to Contact Customer Support” on page *v* in the Release Guide).

Alternatively, if you wish to first install the software from the CD-ROM, you can do the following:

1. Perform all steps in the installation procedure up until you reach “Installing the FLEXlm License” on page 16.
2. If you do not want the license server to be the same machine as the one you have used for installing, now log in on the license server machine.
3. Run the script `$telelogic/bin/gethostinfo` (where `$telelogic` is the installation directory).
4. **EMAIL** or **FAX** the information to Telelogic Customer Support (see “How to Contact Customer Support” on page *v* in the Release Guide).

When you have obtained the license key, you can complete the entire installation and run Telelogic Tau.

Inserting the CD-ROM

- Insert the Telelogic Tau 3.5 CD into the CD-ROM drive.

Mounting the CD-ROM on HP

1. If necessary, create a directory to be the mount point for the CD. The examples below use the directory `/cdrom`.
2. To mount the CD-ROM on HP systems, type:

   `/etc/mount -F cdfs -r /dev/dsk/c0t2d0 /cdrom`

   If any of the device names are unknown on your system, consult your system manager.
3. To check if this worked, type **`ls /cdrom`**. You should see, among other things, `TARFILES/` and `TAUINST.CD;1`.

Mounting the CD-ROM on Sun

1. If necessary, create a directory to be the mount point for the CD. The examples below use the directory `/cdrom`.
2. To mount the CD-ROM on Sun systems, there are two possibilities:
   – If you are using the Sun `vold` feature (Volume Management daemon), it will automatically mount the CD-ROM at the location `/cdrom/Tau35`
   – Do manual mounting by typing:

     `mount -r -f hsfs /dev/sr0 /cdrom`

     If the device name is unknown on your system, consult your system manager.
3. To check if this worked, type **`ls /cdrom`**. You should see, among other things, `tarfiles/` and `tauinst.cd`.

Installing the Telelogic Tau Software

Before starting the installation script, you should find a location in your file system where to store the Telelogic Tau 3.5 installation. This directory is called the *installation directory*.

Therefore, if you already have ITEX 3.5 installed, you should use the same installation directory when installing ORCA and SDT 3.5, and vice versa. The installation procedure will create a subdirectory to this directory, called `sdt` or `itex`, depending on the chosen product.

`/appl/telelogic` will be used as an **example installation directory** for this Telelogic Tau installation.

The `$telelogic` variable is used to refer to the Telelogic Tau installation directory throughout this chapter. You may want to add this setting to your shell startup file.

> **Note:**
>
> **Telelogic Tau 3.5 cannot be installed in the same directory as an older version of Telelogic Tau.**
>
> When you receive the `license.dat` file for 3.5, this license file can be used to run both Telelogic Tau 3.5 and a prior version (e.g. 3.4, 3.3, 3.2, 3.11, 3.1 or 3.02).

Installation Steps

Perform **all** the 11 steps below:

1. Decide upon an installation directory. Also, check the amount of available disk space and verify it against the required space (see “UNIX Installation Prerequisites” on page 2 in chapter 1, *System Prerequisites*).
2. Set the environment variable `$telelogic` to your installation directory:

If you run	Type
C shell-compatible shell (e.g. csh or tcsh)	**`setenv telelogic /appl/telelogic`**
Bourne shell-compatible shell (e.g. sh, ksh, zsh or bash)	**`telelogic=/appl/telelogic`** **`export telelogic`**

3. Start the installation script, which will guide you through the installation. The script will also print some information during the installation procedure.

If you run	Type
SunOS with `vold` (Volume Management daemon)	**`cd /cdrom/Tau35`** **`./tauinst.cd`**
SunOS without `vold`	**`cd /cdrom`** **`./tauinst.cd`**
HP-UX	**`cd /cdrom`** **`./TAUINST.CD\;1`**

4. Specify the installation directory:

```
      Specify the root-directory for your Telelogic products?
>>        Enter path-name: [x]: /appl/telelogic
```

   – If you want to add components to an existing Telelogic Tau 3.5 installation, specify the same directory as you did the first time. See “Adding Telelogic Tau Components to an Existing Installation” on page 22.

5. Specify which products you want to install:

```
>>        Which product would you like to install ?
>>        (ORCA and SDT, ITEX or BOTH)      [ORCA and SDT]:
```

   – Enter **`ORCA and SDT`** (the default if you press `<Return>`), **`ITEX`** or **`BOTH`**. If you enter **`BOTH`**, you will install all of the Telelogic Tau products (ORCA, SDT, ITEX).

6. Choose the platform(s) to install:

```
>>      Choose platform(s) to install.
>>      If you choose more than one platform, please
>>      write a list with the platforms separated with space.
>>      Ex: Choose HP and SUN. Write:
>>            HP SUN
>>      SUN, HP  [SUN]:
```

   – Specify the selected architectures by entering a space-separated list of the chosen architectures and pressing `<Return>`.

7. Choose which components to install. The default answer for each component is *Yes* to install it. See “Installation Options” on page 8 for more information.

8. A list of the currently selected components and the required amount of disk space is displayed:

```
>>      The following components will be installed.
         SDT_SUNOS4  SDT_SUNOS5  SDT_HP700  SDT_DEMO
         ITEX_SUNOS4  ITEX_SUNOS5  ITEX_HP700  HELP_HTML

!!     This installation will require:  xxx MB
!!     of disk space at file system:    /appl/telelogic

>>     Are you satisfied with the following setup? (y/n) [y]:
```

   – Enter **y** or press `<Return>` if the selection is correct.
   – To change the selection, enter **n** and you will be prompted again to answer the questions.

9. After the message “No further questions will be asked”, information is displayed regarding the progress of the installation procedure.

10. The message “Completed...” is displayed when the installation script has finished executing.

11. To check if this worked, do a **ls $telelogic** (where `$telelogic` is your installation directory). You should at least see:

```
bin/ bitmaps/ flex/ fontinfo/ include/ lib/
license.dat X11/
```

There can be other files and directories visible, depending on the chosen installation (for example an `sdt/` or `itex/` directory).

Installing the FLEXlm License

Follow the directions below to install your textual FLEXlm license file. The license file contains the license key you have received from Telelogic Customer Support.

If you have not yet received a FLEXlm license key, contact Telelogic Customer Support (see "How to Contact Customer Support" on page *v* in the Release Guide).

> **Caution!**
>
> All information in the `license.dat` file is **case significant**, so be careful not to accidentally invalidate any of the encryption codes. Otherwise you will not be able to start the Telelogic Tau tools.

You have two options in installing your FLEXlm license:

- In a **shared license file**, which is shared with other FLEXlm licensed software, see "Using a Shared License File" on page 16. You may consider this option if you have other software products that make use of FLEXlm licensing.
- As a **Telelogic specific license**, which only handles licenses for Telelogic Tau, see "Using a Telelogic Specific License File" on page 18. This is the default option if you only will use FLEXlm for the Telelogic Tau licenses.

Using a Shared License File

If you have other products that make use of FLEXlm you may wish to install your Telelogic Tau license features into the existing FLEXlm `license.dat` file. To install the license key:

1. Copy the following lines from the license key you received from Telelogic Customer Support into the existing `license.dat` file:
   - the DAEMON line; **make sure to change the path** to the `/flex/{arch}flex` subdirectory in your Telelogic Tau installation directory (where `{arch}` is the architecture of your server, i.e. "sunos5" or "hppa")
   - the FEATURE line(s)

You must do this since your existing license server's "lmgrd" daemon is not in the same directory as the "telelogic" daemon (for information, see "FLEXlm Licensing Pitfalls to Avoid" on page 74 in chapter 6, *A Primer on Licensing*).

2. Set the environment variable `LM_LICENSE_FILE` to point to the location of the existing `license.dat` file.

   It can also be a `<port>@<hostname>` setting, where `<port>` and `<hostname>` are the port number and hostname from the SERVER line in the license file, e.g. `7598@server`.

If you run	Type
C shell-compatible shell (e.g. csh or tcsh)	**`setenv LM_LICENSE_FILE /your/directory/license.dat`** or **`setenv LM_LICENSE_FILE <port>@<hostname>`**
Bourne shell-compatible shell (e.g. sh, ksh, zsh or bash)	**`LM_LICENSE_FILE=/your/directory/license.dat`** **`export LM_LICENSE_FILE`** or **`LM_LICENSE_FILE=<port>@<hostname>`** **`export LM_LICENSE_FILE`**

3. There must not be a `license.dat` file in the top level of the Telelogic Tau installation. If there is, remove or rename the file `$telelogic/license.dat`

4. When you have changed any information in the `license.dat` file, you **must** update the license server to let it know about the changes. To do this, run the following script:

   `$telelogic/bin/updatelicd`

The license installation is finished. Continue with "Installing a C Compiler" on page 20.

Using a Telelogic Specific License File

If you will only use FLEXlm for Telelogic Tau licenses, or wish to run a separate FLEXlm license server for Telelogic Tau, do the following:

1. Log in on the computer where the license server is to run.
2. Save or copy the FLEXlm license key you received from Telelogic Customer Support into a text file called `license.dat`, and store the file in the default location, which is the Telelogic Tau installation directory (`$telelogic/license.dat`).
3. If you wish to place this file in another location, you must set the environment variable `LM_LICENSE_FILE` to point to this location.

   It can also be a `<port>@<hostname>` setting, where `<port>` and `<hostname>` are the port number and hostname from the SERVER line in the license file, e.g. `7598@server`.

If you run	Type
C shell-compatible shell (e.g. csh or tcsh)	**`setenv LM_LICENSE_FILE /your/directory/license.dat`** or **`setenv LM_LICENSE_FILE <port>@<hostname>`**
Bourne shell-compatible shell (e.g. sh, ksh, zsh or bash)	**`LM_LICENSE_FILE=/your/directory/license.dat`** **`export LM_LICENSE_FILE`** or **`LM_LICENSE_FILE=<port>@<hostname>`** **`export LM_LICENSE_FILE`**

   After the file has been placed in the new directory, make sure to remove or rename the file `$telelogic/license.dat`.

4. Make sure that the information in the `license.dat` file is correct according to your server and installation:
   - The SERVER line must have the correct hostname and hostID.
   - The DAEMON line must have the correct path to the “telelogic” daemon. This daemon is located in the `/flex/{arch}flex` subdirectory in your Telelogic Tau installation directory (where `{arch}` is the architecture of your server, i.e. “sunos5” or “hppa”)

Starting the License Server

You will now start the FLEXlm license server:

> **Note:**
>
> If you are using an evaluation license, or if the word "DEMO" ends each FEATURE line in your `license.dat` file, **you do not need to start the license server**.

1. Make sure no license servers for the Telelogic Tau tools are currently running. Search for the license daemons `lmgrd` and `telelogic` in the current process list, for instance by using the command `ps -ae | egrep '(lmgrd|telelog)'`. If you have any license daemons running, terminate them using the `kill` command and the PID number(s).

2. Change to your Telelogic Tau installation directory:

   `cd $telelogic`

3. Start the license server:

   `./bin/startlicd`

4. Check that the license server has been started correctly with the following command:

   `./bin/stat -a`

   The license server statistics is displayed containing the server, the vendor daemon `telelogic` and the features available in your `license.dat` file.

5. If the startup has failed, check the `license.dat` file for errors and omissions; see "FLEXlm Licensing Pitfalls to Avoid" on page 74 in chapter 6, *A Primer on Licensing*. Double-check your file with the original sent from Telelogic Customer Support. Especially check the "company name" information in the quote-field of the first FEATURE line in the file.

   There is also a `license.log` file in the Telelogic Tau installation directory, where all actions concerning the license server are logged. The events to be logged includes:

   – Startup and shutdown of the license server
   – Checking licenses in and out
   – Denying licenses

Each event involving a license also specifies:

- The Telelogic Tau tool (license controlled tools only)
- The user
- The node
- The date and time
- The usage time (for check-in log entries)

Note:

The log file will grow as users run Telelogic Tau. You may consider deleting the head of the file from time to time to save disk space.

6. The license server has to be restarted every time the server computer is rebooted. To do this automatically, see “Automatic Server Startup (UNIX)” on page 52 in chapter 5, *Licensing Management*.

The license installation is now finished.

Installing a C Compiler

You must also install a C compiler to be able to use certain features of the Telelogic Tau tools, such as Simulation and code generation. How to install a C compiler is described in the compiler documentation.

For information on which C compiler you need, see “ORCA and SDT Compiler Environment” on page 5 and “ITEX Compiler Environment” on page 6 in chapter 1, *System Prerequisites*.

Starting Up the Telelogic Tau Tools

We recommend you to add the Telelogic Tau 3.5 binary directory to your existing `PATH` variable.

Note:

The X Windows System and Motif Window Manger have to be started before you start Telelogic Tau.

In the case the computers on which you run the X Windows server and the client (the Telelogic Tau tools) coincide, make sure the environment variable `DISPLAY` is set to `unix:0.0` before starting Telelogic Tau. **Do not** use the notation `hostname:0.0`

- Below the Telelogic Tau 3.5 installation directory, you will find a subdirectory called `bin`. This directory should be added to the user's path, e.g.

  ```
  set path = ( $path $telelogic/bin )
  ```

- Start SDT, ITEX and Telelogic Tau with the respective command:

  ```
  sdt
  itex
  tau
  ```

  – You can also start SDT, ITEX and Telelogic Tau with:

  ```
  $telelogic/bin/sdt
  $telelogic/bin/itex
  $telelogic/bin/tau
  ```

Adding Telelogic Tau Components to an Existing Installation

If you want to add components to your installation, follow the instructions below. For more information on available components, see “Installation Options” on page 8.

1. Insert and mount the CD-ROM, as described in “Installation Procedure” on page 10.
2. Follow all steps described in “Installing the Telelogic Tau Software” on page 13.
   – Enter the same installation directory as you did when you installed Telelogic Tau for the first time.
   – You will be asked the following question:

```
     This directory already contains a sub-directory:
sdt/(itex/)
>>   Do you like to update your existing SDT-3.5(itex-3.5)
installation? [y]:
```

   Answer **`y`** or press `<Return>`.

   – If you answer “No”, the script will back up your old directory by renaming it to `sdt.old` (or `itex.old`) and then install the product. If you install a component that is already installed, the existing component will be overwritten.
3. If you have received a new Telelogic Tau Product License Key, perform the actions described in “Installing the FLEXlm License” on page 16.

Chapter
3

Installation Procedure for Windows

This chapter contains step-wise instructions for installing Telelogic Tau on either Windows NT 4.0 or Windows 95, including the software licenses.

For instructions on installing Telelogic Tau on UNIX systems, see chapter 2, *Installation Procedure for UNIX*.

In case you encounter problems, contact Telelogic Customer Support, see “How to Contact Customer Support” on page *v* in the Release Guide.

Overview

This chapter's installation procedure will help you install Telelogic Tau on your Windows NT 4.0 or Windows 95 system. You can do a full installation or customize it to meet your needs.

The process involves installing the actual Telelogic Tau software, as well as installing and activating your licenses.

Before You Start

Most likely, you have determined which licensing system you will use (FLEXlm™ or CopyControl) **before** starting this installation, so that you already have received your license materials. If you do not yet know what kind of licensing system to use, read chapter 6, *A Primer on Licensing* before continuing.

Have the license materials at hand before starting the installation:

- For FLEXlm users, your Telelogic Tau delivery should contain a hardcopy of your FLEXlm license key.
- For CopyControl users, your Telelogic Tau delivery should contain one or two license software disk(s), one for ORCA[1] and SDT, and one for ITEX.

If you have not yet received a FLEXlm license key or the CopyControl software, see the box marked Important! on page 27.

Installation Options

When installing the Telelogic Tau software you can choose what components to include. You can always add components afterwards by running the installation procedure again (see "Adding Telelogic Tau Components to an Existing Installation" on page 39).

The Telelogic Tau components are:

- ORCA and SDT program files (binary executables).
- ITEX program files (binary executables).

1. ORCA is part of the Telelogic product suite and stands for Object oriented Requirement Capture and Analysis.

- Example files. With these files, you will be able to follow the tutorials and other complete examples described in the documentation.
- Telelogic Tau on-line help files in HTML format (for ORCA, SDT and ITEX). These files have the same contents as the printed documentation, but they have a different layout and appearance. You need the HTML files to be able to perform a global text search in the on-line help documentation from within the Telelogic Tau tools. A simple HTML viewer is included in the Telelogic Tau installation.
- ORCA and SDT application files necessary to run the tools.
- ITEX application files necessary to run the tools.

Note: Limiting disk space

To limit local disk space usage in a multi-user environment, you may optionally put the on-line help files on a network server, if you are not performing a network installation of Telelogic Tau. See “Configuring the Help Environment” on page 248 in chapter 4, *Managing Preferences*, in the User’s Manual.

Note: PostScript documentation

The complete Telelogic Tau documentation is also available in PostScript format in the directory `\PSCRIPT\<paper format>` on the CD-ROM, but is not a component in the installation. The supported paper formats are `A4`, `A5` and `USLETTER`. If you wish to “install” this, manually copy the needed files from the CD-ROM to a directory on a hard disk.

Installation Procedure

The flowchart below shows the basic steps of the installation procedure.

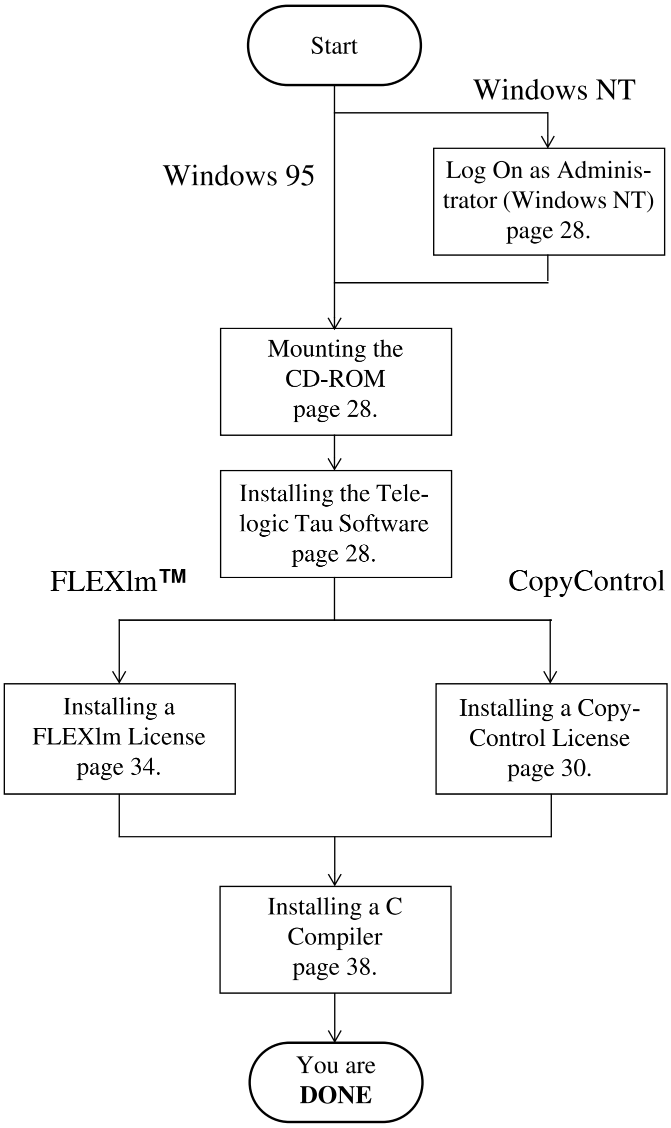

Figure 2: Flowchart for installation

Important!

If you have not received a FLEXlm license key or the CopyControl software you will not be able to install Telelogic Tau.

FLEXlm users: To obtain a license key you have to provide Telelogic Customer Support with the **hostname** and **hostID** of the machine on which the license server will run. To obtain this information:

1. Log in on the license server machine.
2. Insert the Telelogic Tau CD-ROM.
3. Change directory to the top level of the CD-ROM, and execute the batch file called `lmhostid.bat`.
4. A utility called `lmtools` will start; press the **hostid** button.The second line in the text area will contain your hostname (example: “`HOSTNAME=grail`”) and the sixth line (below the line starting with “`INTERNET=`”) will contain the hostID as a 12 character (hex) code (example: “`00abcde12345`”).
5. **EMAIL** or **FAX** this information to Telelogic Customer Support.

CopyControl users: Contact Telelogic Customer Support for help.

For contact information, see “How to Contact Customer Support” on page *v* in the Release Guide.

When you have obtained either a FLEXlm license key or the CopyControl disk(s), you can complete the entire installation and run Telelogic Tau.

Caution!

At some points in the installation you must supply directory names where Telelogic Tau or license components will reside. Telelogic Tau does not support file or directory names that contain space characters, so do not to use such names. **If you use a CopyControl license**, names must also follow the old DOS 8+3 character limits and convention.

Log On as Administrator (Windows NT)

To install Telelogic Tau on Windows NT, you do not need to be logged on as the Administrator, but your login ID **must** be a member of the local or domain Windows NT Administrators group.

- Log on as Administrator, or make sure you have administrative privileges. To grant administrative privileges, use the Windows NT User Manager feature (see *Windows NT System Guide).*

Mounting the CD-ROM

- Insert the Telelogic Tau 3.5 CD into the CD-ROM drive or mount it if it resides on a network drive.

  In the rest of this chapter, we assume that the CD-ROM drive is mounted on drive `D:\`

Installing the Telelogic Tau Software

An installation utility, `SETUP.EXE`, is enclosed in the Telelogic Tau distribution.

The Telelogic Tau files are compressed and require the installation utility to be run. **You will only be able to install Telelogic Tau if you run `SETUP.EXE`.**

Installation Steps

Perform **all** the 11 steps below:

1. Start your Windows environment. If you are using Windows NT, follow the directions in “Log On as Administrator (Windows NT)” on page 28.
2. Exit all running Windows programs.
3. From the Windows *Start* menu, select *Run*.
4. In the dialog that appears, specify:

   `D:\WIN32\DISK1\SETUP.EXE`

   and press `<Return>`. A welcome screen is opened.
5. Click *Next* to continue the setup.

6. Select the installation directory. The default installation directory is:

   `C:\tau35`

   where ‘C’ is the local hard drive on which Windows is installed. You may also change to a network drive to perform a single network installation for all users on your network.

7. Click on *Next* to select the *Setup Type*:

   – **Full** installation will install all Telelogic Tau files.

   – **Compact** installation will not install example files or on-line help files.

   – **Custom** installation enables you to choose components to install.

   If you want to add components to an existing Telelogic Tau 3.5 installation, use the *Custom* installation. See “Adding Telelogic Tau Components to an Existing Installation” on page 39.

8. Select an option and click *Next*. The disk space requirements and which files to install before proceeding are determined. If you have chosen the Custom installation, select which components to install (see “Installation Options” on page 24 for more information).

9. Specify the program folder where the Telelogic Tau shortcuts are to be placed.

10. Click *Next*. Setup will now install the Telelogic Tau files, create shortcuts and update the registry.

11. Check the box if you want to read the `README` file and then click *Finish*.

FLEXlm Licenses and CopyControl Licenses in the Same Installation

If you intend to have some users’ licenses served with the FLEXlm system and some with CopyControl, you must make **two** separate installations of Telelogic Tau: One for the CopyControl users (in which you should place the DLL files, see “Installation Steps” on page 30) and one for the FLEXlm users. Telelogic Tau checks for the presence of the DLL files to decide whether to use CopyControl or FLEXlm.

Installing a CopyControl License

The CopyControl node-locked license and accompanying software is delivered on one floppy disk for ORCA and SDT (labelled "SDT 3.5 for Windows License Key") and one for ITEX (labelled "ITEX 3.5 for Windows License Key"). The license is installed in an inactive state from the floppy disk(s) to your hard drive, and in the process, a unique serial number is produced and reported to you automatically. The license is then activated by a code produced by Telelogic Customer Support when you provide the unique serial number.

You must perform the installation procedure below **once for each disk** you have received.

If you have not yet received a CopyControl license floppy disk, contact Telelogic Customer Support (see "How to Contact Customer Support" on page *v* in the Release Guide).

When the Telelogic Tau software is installed on a network drive (i.e. remotely), a CopyControl license must still be installed **locally on each computer** on which you want to run Telelogic Tau.

Overview of the CopyControl Installation

1. Install an inactive copy of the license by running CCMOVE.
2. Send the product code, product serial number and version number of the inactive license copy to Telelogic Customer Support, and get an activation code in return.
3. Activate the inactive license with the activation code by running CCCHANGE.

Installation Steps

1. Start a Command Prompt.
2. Insert one of the CopyControl floppy disks into your system's floppy drive, assumed here as drive `A:`
3. Copy the license server's DLL files from the floppy to the subdirectory `\bin\wini386` where Telelogic Tau is installed. Example:

   ```
   C:> COPY A:\*.DLL C:\tau35\bin\wini386
   ```

4. Turn off any non-standard disk caching utility option. If necessary, restart the computer.

5. Decide where you want to install the CopyControl license. **You must install the license on a local hard drive on each computer.**

If Telelogic Tau is installed on	Install license
Local hard disk	In a subdirectory to the Telelogic Tau installation
Network drive	Create a dedicated local license directory, e.g.: `C:>` **`MKDIR C:\TAU35LIC`**

6. Set the default drive to the floppy drive:

   `C:>` **`A:`**

7. Run CCMOVE with the "/M" option to transfer the License Key. The License Key **cannot be copied** from the floppy; you **must** move it by using the `CCMOVE` utility as described below.

If Telelogic Tau is installed on	Transfer license key to
Local hard disk	The subdirectory `\bin\wini386` where Telelogic Tau is installed, e.g.: `A:>` **`CCMOVE A: C:\tau35\bin\wini386 /M`**
Network drive	The dedicated local license directory you created in step 5., e.g.: `A:>` **`CCMOVE A: C:\TAU35LIC /M`**

   The `/M` option will report something like:

```
Transferring protection from a CCC master disk
Serial number of the installed product is NNNNN
```

   "CCC" is the Telelogic Tau product code, and "NNNNN" is the unique five-digit CopyControl product serial number.

   You now have an installed **inactive** License Key.

8. Make a note of the reported **product code**, **product serial number**, and **version number** (the version number is printed on the Copy-Control floppy disk label).

9. Send these data to Telelogic Customer Support, and you will receive an **activation code** in return (see "How to Contact Customer Support" on page *v* in the Release Guide).

10. After receiving your activation code, run CCCHANGE to activate your license:

If Telelogic Tau is installed on	Run CCCHANGE with the parameter
Local hard disk	The subdirectory `\bin\wini386` to the Telelogic Tau installation directory, e.g.: `A:>` **`CCCHANGE C:\tau35\bin\wini386`**
Network drive	The dedicated local license directory, e.g.: `A:>` **`CCCHANGE C:\TAU35LIC`**

11. Enter the **activation code**. See “Example of a CopyControl Installation Session” on page 33 for a complete example of a CopyControl license installation and activation session.

    The license is now activated.

12. If you have installed Telelogic Tau on a network drive, and thus have a dedicated local license directory, or **if the license key is in a directory different from where Telelogic Tau is installed**, you have to set the environment variable `CC_PATH_<product code>` to point to that directory so that Telelogic Tau can find the license files.

    The label `<product code>` refers to the code you received when you installed the inactive license in step 7. above. So, for example, your environment variable might be called `CC_PATH_TAU`.

If you run	Set the environment variable
Windows NT	Click *Start* button, *Settings > Control Panel* and then *System > Environment*. Set *User Variables* to **`CC_PATH_<product code>`** and *Value* to the directory where you have installed the licenses, e.g. `C:\TAU35LIC` Set the *System Variables* if you have administrator rights.
Windows 95	Insert a command in the file `AUTOEXEC.BAT`, e.g. **`SET CC_PATH_<product code>=C:\TAU35LIC`** Restart your computer.

End of Installation

If you have received two license floppy disks, you must now repeat **all** of the steps above with the second floppy disk.

The license installation is finished. Continue with “Installing a C Compiler” on page 38.

Example of a CopyControl Installation Session

This example assumes that Telelogic Tau is installed in the default location, `C:\TAU35`. The product code “TAU” is used as an example.

```
C:> COPY A:\*.DLL C:\TAU35\bin\Wini386
A:\SCADVANC.DLL
A:\SCBASIC.DLL
A:\SCMICRO.DLL
A:\SCMICROB.DLL
A:\SCMICROT.DLL
A:\SOME.DLL
A:\SPERFLIB.DLL
A:\SSIMULAT.DLL
A:\STELELOG.DLL
A:\SVALIDAT.DLL
A:\SDLACCESS.DLL
       11 file(s) copied.

C:> A:
A:> CCMOVE A: C:\TAU35\bin\Wini386 /M

Transferring protection from a TAU master disk (A:)
Serial number of the installed product is 51590
Protection successfully transferred.
```

Contact with Telelogic Customer Support gives the activation code:

```
A:> CCCHANGE C:\TAU35\bin\Wini386

Copy protection parameter changing.
Version: 1.71, Product code: TAU, Serial no.: 51590,
Update number 1.
Enter code given to you by your supplier:
60 34 45 f1 0c
Confirmation Code : 0/47196
Update number 1 completed successfully.
```

Installing a FLEXlm License

Follow the directions below to install your textual FLEXlm license file. The license file contains the license key you have received from Telelogic Customer Support.

If you have not yet received a FLEXlm license key, contact Telelogic Customer Support (see "How to Contact Customer Support" on page *v* in the Release Guide).

> **Caution!**
>
> All information in the `license.dat` file is **case significant**, so be careful not to accidentally invalidate any of the encryption codes. Otherwise you will not be able to start the Telelogic Tau tools.

You have two options in installing your FLEXlm license:

- In a **shared license file**, which is shared with other FLEXlm licensed software, see "Using a Shared License File" on page 34. You may consider this option if you have other software products that make use of FLEXlm licensing.
- As a **Telelogic specific license**, which only handles licenses for Telelogic Tau, see "Using a Telelogic Specific License File" on page 36. This is the default option if you only will use FLEXlm for the Telelogic Tau licenses.

Using a Shared License File

If you have other products that make use of FLEXlm you may wish to install your Telelogic Tau license features into the existing FLEXlm `license.dat` file. To install the license key:

1. Copy the following lines from the license key you received from Telelogic Customer Support into the existing `license.dat` file:
   – the DAEMON line; **make sure to change the path** to the `\flex` subdirectory in your Telelogic Tau installation directory
   – the FEATURE line(s)

   You must do this since your existing license server's "lmgrd" daemon is not in the same directory as the "telelogic" daemon (for information, see "FLEXlm Licensing Pitfalls to Avoid" on page 74 in chapter 6, *A Primer on Licensing*).

2. Set the environment variable `LM_LICENSE_FILE` to point to the location of the existing `license.dat` file.

   It can also be a `<port>@<hostname>` setting, where `<port>` and `<hostname>` are the port number and hostname from the SERVER line in the license file, e.g. `7598@server`.

If you run	Set the environment variable
Windows NT	Click *Start* button, *Settings > Control Panel* and then *System > Environment*. Set *User Variables* to **`LM_LICENSE_FILE`** and *Value* to the complete path to the `license.dat` file, e.g. **`N:\flexlm\license.dat`**, or to a port number and server, e.g. **`7598@server`**. Set the *System Variables* if you have administrator rights.
Windows 95	Insert a command in the file `AUTOEXEC.BAT`, e.g. **`SET LM_LICENSE_FILE=7598@server`** or **`SET LM_LICENSE_FILE=N:\flexlm\license.dat`** Restart your computer.

3. When you have changed any information in the `license.dat` file, you **must** update the license server to let it know about the changes. To do this, start the FLEXlm utility in:

   ```
   <Tau installation directory>\flex\lmtools.exe
   ```
   and select *Reread*.

The license installation is finished. Continue with “Installing a C Compiler” on page 38.

Using a Telelogic Specific License File

If you will only use FLEXlm for Telelogic Tau licenses, or wish to run a separate FLEXlm license server for Telelogic Tau, do the following:

1. Save or copy the FLEXlm license key you received from Telelogic Customer Support into a text file called `license.dat` and store the file, for instance in the directory where Telelogic Tau is installed.
2. Set the environment variable `LM_LICENSE_FILE` to point to the location of your `license.dat` file.

   It can also be a `<port>@<hostname>` setting, where `<port>` and `<hostname>` are the port number and hostname from the SERVER line in the license file, e.g. `7598@server`.

If you run	Set the environment variable
Windows NT	Click *Start* button, *Settings*>*Control Panel* and then *System*>*Environment*. Set *User Variables* to **`LM_LICENSE_FILE`** and *Value* to the complete path to the `license.dat` file, e.g. **`C:\tau35\license.dat`**, or to a port number and server, e.g. **`7598@server`**. Set the *System Variables* if you have administrator rights.
Windows 95	In `AUTOEXEC.BAT,` e.g. **`SET LM_LICENSE_FILE=7598@server`** or **`SET LM_LICENSE_FILE=C:\tau35\license.dat`** Restart your computer.

Starting the License Server

You will now start the FLEXlm license server:

> **Note:**
>
> If you are using an evaluation license, or if the word “DEMO” ends each FEATURE line in your `license.dat` file, **you do not need to start the license server**.

1. Log in on the computer where the license server is to run.
2. Make sure no license servers for the Telelogic Tau tools are currently running. Search for the license daemons `lmgrd.exe` and `telelogic.exe` in the Processes list in the Windows Task Manager (see “Automatic Server Startup (Windows)” on page 53 in chapter 5, *Licensing Management*).
3. Start a Command Prompt.
4. Change to the FLEXlm directory in the Telelogic Tau installation, e.g.:

   `cd c:\tau35\flex`

5. Start the license server:

   `c:\tau35\flex>` **`lmgrd -app`**

6. Check that the license server has been started correctly. Execute `c:\tau35\flex>` **`lmtools.exe`** and select *Status*.

   The license server statistics is displayed containing the server, the vendor daemon `telelogic` and the features available in your `license.dat` file.

7. If the startup has failed, check the `license.dat` file for errors and omissions; see “FLEXlm Licensing Pitfalls to Avoid” on page 74 in chapter 6, *A Primer on Licensing*. Double-check your file with the original sent from Telelogic Customer Support. Especially check the “company name” information in the quote-field of the first FEATURE line in the file.

   As an additional debugging help, the log for the license server will be displayed from where the license server was started. Unfortunately, when the server is started manually this way, there is no way to “close” this console window. It can be “minimized” at best.

8. For Windows NT users, we suggest installing the license server as a service; Windows 95 users should use the Startup folder. See “Automatic Server Startup (Windows)” on page 53 in chapter 5, *Licensing Management* for more information.

The license installation is now finished.

Installing a C Compiler

You must also install a C compiler to be able to use certain features of the Telelogic Tau tools, such as Simulation and code generation. How to install a C compiler is described in the compiler documentation.

For information on which C compiler you need, see "ORCA and SDT Compiler Environment" on page 5 and "ITEX Compiler Environment" on page 6 in chapter 1, *System Prerequisites*.

Starting Up the Telelogic Tau Tools

Telelogic Tau can be started from an icon in *Start* menu > *Programs*. An alternative way is to double-click an `.sdt` file.

Post Installation

Updating Preferences Files

Note:

This subsection is only applicable if you are upgrading from a previous version of Telelogic Tau.

Telelogic Tau 3.5 has some new preference parameters. Update these parameters by using the Preference Manager. See chapter 4, *Managing Preferences*, in the User's Manual.

Limiting On-Line Help Disk Space

If you have installed Telelogic Tau locally on several PC's, you may wish to limit the disk space usage in a multi-user environment. Instead of storing the Telelogic Tau on-line help files locally on every PC where you have installed Telelogic Tau, you may put a single copy of the on-line help files on a network server. This is further described in "Configuring the Help Environment" on page 248 in chapter 4, *Managing Preferences*, in the User's Manual.

Adding Telelogic Tau Components to an Existing Installation

If you want to add components to your installation, follow the instructions below. For more information on available components, see “Installation Options” on page 24.

1. Mount the CD, as described in “Mounting the CD-ROM” on page 28.
2. Follow all steps described in “Installing the Telelogic Tau Software” on page 28.
   – In the *Destination Location* dialog, enter the same installation directory as you did when you installed Telelogic Tau the first time.
   – Choose *Custom* installation in the *Setup Type* dialog.
   – Deselect the components you do not want to install in the *Select Components* dialog. If you install a component that is already installed, the existing component will be overwritten.

Chapter 4

System Setup

In this chapter, you will find information about what UNIX command-line tools and what OS environment variables Telelogic Tau takes advantage of.

Also, you can find information about factors in X Windows, OSF/Motif and Microsoft Windows that may affect the behavior of Telelogic Tau.

For UNIX, some of the setup information in this chapter is applicable on a user level and may thereby be required to be performed by each Telelogic Tau user on UNIX.

UNIX Command-Line Tools

All the Telelogic Tau tools that are possible to start from the UNIX prompt are invoked via commands in the `$telelogic/bin` directory (`$telelogic` is the Telelogic Tau installation directory). By adding this directory to the `PATH` variable, the user will be able to conveniently start all the Telelogic Tau tools with exception for stand-alone generated Simulators and Validators; see "Source Files" on page 43.

The start script `$telelogic/bin/.tlwrapper` is a common start script for Telelogic products that make use of ORCA's[1], SDT's and ITEX's integration mechanism, the PostMaster. It also sets up all the environment variables needed to run the Telelogic products.

Caution!

The `.tlwrapper` script should never be invoked manually; it is only supposed to be executed via the Telelogic Tau commands.

The following table lists the most important command-line tools to use for controlling licensing and starting Telelogic Tau.

Command	Description
`gethostinfo`	Obtain useful system information for FLEXlm licensing. See the box Important! on page 11 in chapter 2, *Installation Procedure for UNIX* for more information.
`startlicd`	Start license server. See "Manually Starting the FLEXlm Server (UNIX)" on page 54 in chapter 5, *Licensing Management* for more information.
`updatelicd`	Reread the `license.dat` file, useful after the license file has been edited. See "Updating the FLEXlm Server (UNIX)" on page 52 in chapter 5, *Licensing Management* for more information.

1. ORCA is part of the Telelogic product suite and stands for Object oriented Requirement Capture and Analysis.

Command	Description
`stat`	Show statistics about the license server; useful optional parameters [`-a | -A | -f 'feature'`]. See step 4. on page 19 in chapter 2, *Installation Procedure for UNIX* for an example.
`tau`	Start the Telelogic Tau Organizer.
`sdt`	Start the Telelogic Tau Organizer.
`itex`	Start the Telelogic Tau Organizer.

UNIX User Setup

For each Telelogic Tau user **on UNIX**, the following setups should be made.

Source Files

The Telelogic Tau installation provides a file which is suitable to be "sourced" at login, when the user's `.cshrc` or `.profile` file is executed. This source file will make the following environment variables visible in the terminal shell:

```
telelogic
telelogicbin
sdtrelease
sdtdir
sdtbin
itexrelease
itexlib
itexaccess
itexaccessroot
itexaccesscompiler
```

These environment variables are useful for the Telelogic Tau users. They can easily be used as pointers into the Telelogic Tau installation, without knowing were the installation is placed in the file system.

Note:

You do not need to set these variables to be able to run ORCA, SDT or ITEX, except if you want to run a generated SDT Simulator or SDT Validator stand-alone, that is, run from the UNIX prompt without the graphical user interface.

To read the source file (`/appl/telelogic` is assumed to be the installation directory for Telelogic Tau):

If you run	Type
C shell-compatible shell (e.g. csh or tcsh)	**`source /appl/telelogic/bin/telelogic.sou`**
Bourne shell-compatible shell (e.g. sh, ksh, zsh or bash)	**`. /appl/telelogic/bin/telelogic.profile`**

Path and Display Variables

For each user, the Telelogic Tau `bin` directory should be contained in the list of directories defined by the `PATH` environment variable:

```
set path = ( $path $telelogic/bin )
```

This should be done in the shell startup files, as described above.

In the case the computers on which you run the X Windows server and the client (the Telelogic Tau tools) coincide, the environment variable `DISPLAY` should be set to `unix:0.0` before starting Telelogic Tau. **Do not** use the notation `hostname:0.0`

Environment Variables

Environment variables common to UNIX and Windows:

- `HOME` is used by ORCA and SDT applications to find preference files. **On UNIX**, it is also used to find validator/simulator command and button files and other files.
- `TMPDIR` is used by Telelogic Tau applications when temporary files are created.

> **Note:**
>
> An ending slash ('/') or backslash ('\') is **mandatory**. Example:
>
> **On UNIX:** `setenv TMPDIR /usr/tmp/`
>
> **In Windows:** `set TMPDIR=c:\tmp\`

- `SDT_STORAGE_FORMAT` is used by ORCA and SDT applications to decide what format to use when storing diagrams. The value `ASCII` means to use only printable ASCII characters in stored diagrams. Otherwise, the diagrams are binary files.
- `LM_LICENSE_FILE` is used by the FLEXlm license mechanism in the Telelogic Tau tools.

  If this variable is set, the Telelogic Tau tools will append the search path to the license file in `LM_LICENSE_FILE`. If it is not set, the Telelogic Tau tools start-up command sets the variable.

UNIX-specific environment variables, in addition to the ones listed in "Source Files" on page 43:

- `TeleLOGIC_USEEXTVAR` is used to make it possible to use already existing settings for the environment variables `LM_LICENSE_FILE`, `sdtrelease` and `itexrelease`. If the variable is set (it may be set to any value), the Telelogic Tau tools start-up script will not overwrite these variables.
- `XFILESEARCHPATH` is used by X applications in the Telelogic Tau tools to find X resources. If it is set (before starting Telelogic Tau) the Telelogic Tau tools will append the search path to the Telelogic Tau tools resource files in `XFILESEARCHPATH`. If it is not set, the Telelogic Tau tools start up command sets the variable.

- `SDTTMPMNT` is used by Telelogic Tau applications to strip the prefix which is added to directory names by some auto-mounters. When this variable is not set `/tmp_mnt` is stripped from directory names. Setting `SDTTMPMNT` to, for example `/my_prefix`, will strip `/my_prefix` from directory names.
- `SDLENOGRAPHICS` is used by the SDL Editor's Signal Dictionary window to turn off the use of SDL icons and to use textual notation instead. This variable should be used when running SDT on terminals with limited graphical capabilities.

Windows-specific environment variables:

- CC_PATH_<product_code> is used by the CopyControl license mechanism in the Telelogic Tau tools to find out the location of the license files if they are not placed in the Telelogic Tau installation directory.

Preferences

You may specify the default behavior of the ORCA and SDT tools, and also for the Telelogic Tau common tools (such as the Organizer), by using the Telelogic Tau *Preference Manager*. You may define preferences in such way that they apply to an entire company, a specific project that uses Telelogic Tau, or to an individual user only. See chapter 4, *Managing Preferences*, in the User's Manual for how to customize Telelogic Tau.

Microsoft Windows System Factors

ORCA and SDT for Windows requires a display resolution of at least 640 * 480 pixels (VGA resolution).

ORCA and SDT for Windows can use any of the TrueType fonts that are installed in Microsoft Windows. For more information, see “Font Preference (Windows only)” on page 188 in chapter 3, *The Preference Manager*, in the User's Manual.

Bindings between Microsoft Windows Explorer file types and SDT for Windows files is performed through SDT system files (with the `.sdt` extension).

X Window System Factors (UNIX only)

Display Resolution

ORCA and SDT relies on the display resolution reported by the X Server for mapping between screen (pixel) coordinates and diagram unit coordinates. If the X Server has erroneous resolution information, the screen image of an SDT document will have the wrong scale.

If required, the X Server must be adjusted to report the correct display resolution. See the documentation from the computer / software vendor for how to do this.

Installed Fonts

The Telelogic Tau tools assumes that the fonts included in the MIT distribution of X11R5 are available.

Font Scaling

Note:
Font scaling is used by ORCA and SDT only – not ITEX.

To achieve WYSIWYG between screen and printout, SDT can use scalable fonts in conjunction with AFM (Adobe Font Metrics) files. Not all fonts scale well without the use of an X11R5 font server. Therefore, it is possible to turn off font scaling (at the price of the WYSIWYG capabilities), in which case ORCA and SDT will try to use only pre-scaled X fonts.

To turn on font scaling, edit the X resource file `$telelogic/X11/app-defaults/SDT` and change the line:

```
SDT*sdtUseScalableFonts: false
```

into:

```
SDT*sdtUseScalableFonts: true
```

X Server Version

The Telelogic Tau tools have been tested with the MIT X11R5 server. No interoperability with earlier or later versions of X11 is guaranteed.

Window Manager

The Telelogic Tau tools are tested with Mwm, the Motif window manager, version 1.2. It is the recommended window manager to use with the Telelogic Tau tools.

Color Allocation

In the case of another X application having allocated all available color cells, the Telelogic Tau tools might fail to allocate colors for its windows and icons. The Telelogic Tau tools will try to allocate colors as close as possible to the ideal in the case of icons, but window colors cannot be guaranteed. To avoid this problem, a user might consider closing color-intensive applications that are not necessary to run in conjunction with the Telelogic Tau tools.

Changing the Color Settings

The color settings for ORCA and SDT are specified in the file `$telelogic/X11/app-defaults/SDT` and the color settings for ITEX are specified in the file `$telelogic/X11/app-defaults/Itex`. You can change the colors by modifying the color resources settings; the color settings are found at the end of this file. When changing the colors, you may find some help about usable color names in the file `$telelogic/X11/rgb.txt`

How to modify resources is described in “Work Order for Modifying the Telelogic Tau Tools Resources” on page 49.

OSF/Motif Factors (UNIX only)

Event Translations

The X resource files `SDT` and `Itex` uses both OSF/Motif virtual bindings and ordinary X event specifications in translation tables. Refer to the OSF/Motif documentation for a discussion of virtual bindings.

Work Order for Modifying the Telelogic Tau Tools Resources

Modification of the Telelogic Tau tools resources is only recommended for users who have good knowledge about the X Window System.

1. Exit the Telelogic Tau tools.
2. Copy the resources you wish to modify from the default resource file(s) `$telelogic/X11/app-defaults/SDT` and/or `$telelogic/X11/app-defaults/Itex` and paste them into the file `$HOME/.Xdefaults`, or into local files `$HOME/SDT` and/or `$HOME/Itex`, by using a text editor.
3. Restart the Telelogic Tau tools by typing either of the following:
   `tau`
   `sdt`
   `itex`

The X-resources will now be taken from the default `SDT` and/or `Itex` files. The modified resource values in `.Xdefaults`, `SDT` or `Itex` will then override the values from the default resource file(s).[1]

The system.mwmrc File

The `/usr/lib/X11/system.mwmrc` file is the default Motif Window Manager startup file. In this file, which contains definitions of the button bindings and the root menu, your system manager may, for instance, add a menu choice for starting the Telelogic Tau tools.

Any user can override the settings in this file by creating his own `.mwmrc` file in his login directory.

1. It is also possible to use the `XAPPLRESDIR` and `XUSERFILESEARCHPATH` to control X resources. Please refer to the X11 manuals for more information.

Note:

On Sun workstations you will find the `system.mwmrc` file in the Telelogic Tau distribution. This file is placed in `$telelogic/X11` and is only used if you run the X Window and Motif software provided by the Telelogic Tau tools.

The app-defaults/Mwm File

The `/usr/lib/X11/app-defaults/Mwm` file contains the default resource specifications for Motif Window Manager. This file contains the names of the button bindings which are defined in the `system.mwmrc` file, mentioned above.

If you want to add resources to Mwm, you can create your own `.Xdefaults` in your home directory, containing your personal resource definitions.

Example 1: Changing pointer focus policy

For example, to indicate the current window by pointing to it with the cursor, instead of clicking in the window, add the following line to `.Xdefaults`

```
Mwm*keyboardFocusPolicy:      pointer
```

Note:

On Sun workstations you will find the `Mwm` file in the Telelogic Tau distribution. This file is located in `$telelogic/X11/app-defaults` and is only used if you run the X Window and Motif software provided by the Telelogic Tau tools.

Chapter

5

Licensing Management

This chapter gives you more information about the procedures for managing the licenses that are used in Telelogic Tau.

The following topics are discussed:

- **How to update and start the FLEXlm license server**
- **What will happen if the FLEXlm license goes down**
- **Where you will find FLEXlm log information**
- **How to transfer, find, inspect and activate CopyControl licenses**

FLEXlm Management Procedures

Updating the FLEXlm Server (UNIX)

Every time you edit your `license.dat` file to add features, replace expired FEATURE lines, etc, you must advise the “lmgrd” daemon of the changes. To do this, use the `updatelicd` utility:

```
$telelogic/bin/updatelicd
```

(where `$telelogic` is the Telelogic Tau installation directory)

Updating the FLEXlm Server (Windows)

Every time you edit your `license.dat` file to add features, replace expired FEATURE lines, etc, you must advise the “lmgrd” daemon of the changes. To do this, use the FLEXlm utility:

```
<Tau Installation Directory>\flex\lmtools.exe
```

and select *Reread* to update your running license server with the new information.

Automatic Server Startup (UNIX)

In order to start up the Telelogic Tau tool License Server automatically at boot time, the following should be performed:

SunOS 5

1. Copy the file `$telelogic/flex/sunos5flex/sdtlmgrd` to `/etc/init.d/sdtlmgrd`. (Where `$telelogic` is the Telelogic Tau installation directory.)
2. Change the file permissions with the following commands:

```
chmod 744 /sbin/init.d/sdtlmgrd
chown root /sbin/init.d/sdtlmgrd
chgrp sys /sbin/init.d/sdtlmgrd
```

3. Set up the following links:

```
ln -s /etc/init.d/sdtlmgrd /etc/rc3.d/S17sdtlmgrd
ln -s /etc/init.d/sdtlmgrd /etc/rc3.d/K17sdtlmgrd
```

HP

1. Copy the file `$telelogic/flex/hppaflex/sdtlmgrd` to `/sbin/init.d/sdtlmgrd`. (Where `$telelogic` is the Telelogic Tau installation directory.)

2. Change the file permissions with the following commands:

```
chmod 744 /sbin/init.d/sdtlmgrd
chown bin /sbin/init.d/sdtlmgrd
chgrp bin /sbin/init.d/sdtlmgrd
```

3. Set up the following links:

```
ln -s /sbin/init.d/sdtlmgrd /sbin/rc3.d/S17sdtlmgrd
ln -s /sbin/init.d/sdtlmgrd /sbin/rc3.d/K17sdtlmgrd
```

Automatic Server Startup (Windows)

The FLEXlm master daemon, “lmgrd”, can be installed as a service on a Windows system so that it can be managed from the Control Panel. To install `lmgrd` as a service, use the `Flexlm.cpl` control panel extension provided by FLEXlm; see Figure 3.

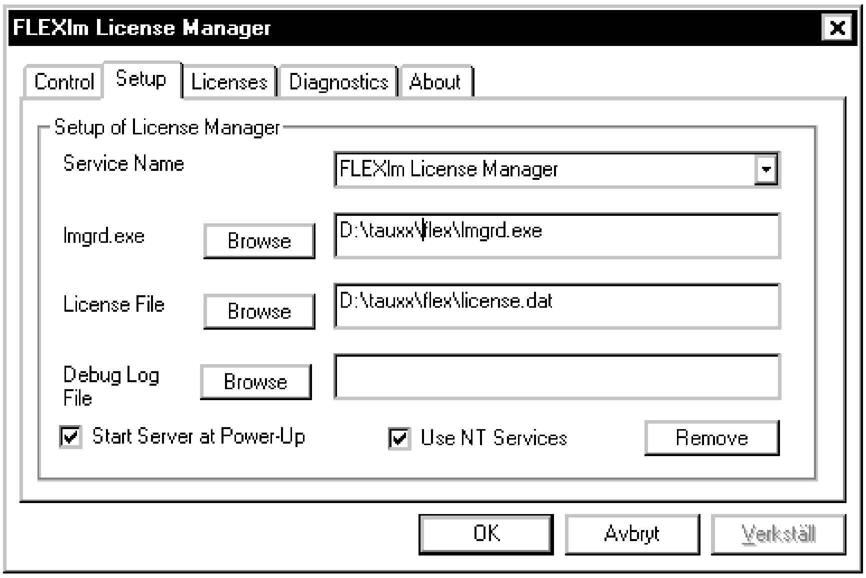

Figure 3: Setup dialog for Windows NT

You should replace “tauxx” in the dialog with your actual installation directory.

Note:

Make sure that the full path name (including drive letter) for your vendor daemon is specified correctly in your license file, `license.dat`.

After clicking *Start* under *Control*, `lmgrd` is installed as a Windows service and will be started automatically each time your system is booted. The account must have the privilege to log on as a service or otherwise the operation will fail.

Note:

Beware that when running “lmgrd” as a service it is possible for the user to inadvertently shut down the license server by pressing the *Shutdown* button when running `lmtools.exe` from a client machine.

Manually Starting the FLEXlm Server (UNIX)

If the license server goes down for some reason (but the computer does not need to be restarted), you will have to restart the license server manually.

You can start the license server from command line. Proceed as follows:

1. Log in on the computer where the license server is to run.
2. Type:

   `$telelogic/bin/startlicd`

   (where `$telelogic` is the Telelogic Tau installation directory)

Manually Starting the FLEXlm Server (Windows)

If you have not installed `lmgrd` as a service on Windows NT, or in a Windows 95 batch file, or if the license server goes down for some reason (but the computer does not need to be restarted), you will have to restart the license server manually.

You can start the license server as an application from the Windows console with the `-app` option. Proceed as follows:

1. Log in on the computer where the license server is to run.
2. Type:

```
cd c:\tau35\flex
c:\tau35\flex> lmgrd -app > license.log
```

Adding FEATUREs to an Existing Server

If your system is already using FLEXlm for general license management, it is sufficient to add any DAEMON and FEATURE lines you receive in a license file from Telelogic Customer Support to your existing `license.dat` file.

If the FLEXlm Server Goes Down

In some cases, the Telelogic Tau tools may lose contact with the license server. This could happen, for instance, if there is a communication failure in your network, or if the license control processes terminate for some reason. A recovery mechanism is provided – currently running sessions of the Telelogic Tau tools will only have to wait for the license server to come up again. (They will not have to perform any special operations.)

Losing Contact with the License Server

From a Telelogic Tau user's point of view, the following will happen if the license server goes down:

- Telelogic Tau tool disables the Organizer's menu commands. Some other functionality which is managed by the Organizer is disabled as well. It is however possible to finish the current session (saving and printing diagrams for instance).
- The license failure is reported in the Organizer Log window.

Regaining Contact with the License Server

When the license server comes back up, the Telelogic Tau tools can be used again. Users are notified by a message in the Organizer Log window and the Telelogic Tau tools resume normal functionality.

FLEXlm Event Logging

On UNIX, all events that the lmgrd administrates are logged in a file named `license.log`, available in the `$telelogic` directory. (Where `$telelogic` is the Telelogic Tau installation directory.)

In Windows: When the license server has been installed as a service on Windows NT (see "Updating the FLEXlm Server (Windows)" on page 52) all events that it administrates are logged in a file named `lmgrd.log`, available in the `system32` directory. For Windows 95, you can specify the directory and file name for the log file, by using the '>' sign (see "Automatic Server Startup (Windows)" on page 53). Our default location is **`c:\tau35\flex\license.log`**

The events logged include:

- Startup and shutdown of the license server
- Checking in and checking out licenses
- Denying licenses

Each event involving a license also specifies:

- The corresponding Telelogic Tau tool (license controlled tools only)
- The user
- The node
- The date and time
- The usage time (for check-in log entries)

Note:

The log file will grow as users run Telelogic Tau. You may consider deleting the head of the file from time to time to save disk space.

CopyControl Utilities and Procedures

Three DOS utilities are provided, both on your CopyControl license floppy disk and in the Telelogic Tau installation (in `<Tau Installation Directory>\COPYCTRL\`), that allow you to inspect and transfer the License Keys between disks. The utilities are:

- `CCMOVE.EXE`, a utility for transferring a License Key from the floppy disk to the hard disk.
- `CCLOOK.EXE`, a utility for finding a License Key on a disk and displaying the license information.
- `CCCHANGE.EXE`, a utility for activating CopyControl license keys. It needs an activation code to be able to do this. **CCCHANGE is also used for moving licenses between hard disks.**

CCMOVE

CCMOVE creates an inactive license in a directory. Telelogic Tau CopyControl licenses are “CCROM” licenses. Thus, they **must** be transferred to a local hard drive.

> **Note:**
>
> **You cannot transfer licenses from the hard disk to another hard disk with CCMOVE.**

> **Note:**
>
> CCROM license floppies can be used as many times as needed to install **inactive** licenses. Each installation will yield a unique product serial number. So, if something goes wrong in your license activation process, you can reuse your license floppy and start again.

To execute CCMOVE, start a DOS prompt, insert a License Key disk in your floppy drive, and change the current directory to the root of your floppy drive. The command is used in the following way:

```
C:> A:
A:> CCMOVE <from> <to> [<options>]
```

where *<from>* is the source path and *<to>* is the destination path of the License Key transfer. The from path must contain a Telelogic Tau License Key disk. You must have read/write/create access to both paths.

The *<options>* are:

- `/E`
  Display error messages.
- `/M`
  Display other messages (recommended). Among other things the serial number of the installed product is displayed. This is used for activating the license. The serial number may also be obtained by running CCLOOK on an installed license.
- `/Q`
  Display no messages at all.
- `/O`
  Overwrite existing License Key in the destination path without confirmation. Normally, you are asked to confirm overwriting the existing copy.

Note:

The /O option is not recommended, since it may lead to the loss of License Keys.

Example 2

To move the license from the floppy to your hard disk (using the default installation directory):

```
A:> CCMOVE A: C:\TAU35\bin\Wini386 /M
```

This will create an inactive license in `C:\TAU35\bin\Wini386`. To activate the license you must note the reported product serial number, contact Telelogic Customer Support to obtain an activation code, and then activate the license by running `CCCHANGE`.

CCLOOK

The CCLOOK utility is used for finding a License Key on a disk and for displaying the license information contained in the License Key.

To execute CCLOOK, start a DOS prompt and change directory to the root directory of the floppy disk. The command is used in either of two ways:

1. `CCLOOK [`*<path>*`]`

   where <path> is the only path to look in for License Keys. If no *path* is included, the current directory is used.

2. `CCLOOK [`*<drive:>*`] [/S]`

   where *<drive:>* is the drive to look in, and `/S` specifies to search the entire drive for License Keys. If no *drive* is specified, the current drive is used. If `/S` is not used, only the current directory is searched.

The normal way to use CCLOOK is:

```
C:> A:
A:> CCLOOK C: /S
```

If any License Key is found, the license information is displayed, including the path to the License Key.

> **Note:**
> CCLOOK will find and report any License Keys or copy protections for other software packages that also use CopyControl, not just the Telelogic Tau protections.

> **Note:**
> CCLOOK should report the expiration date of the activated CCROM license. Even though the key is, for example, a “30 day” key when installed, when the key is activated it is set to expire on an absolute date.

CCCHANGE

The CCCHANGE utility is used to activate the code for CopyControl licenses.

To execute CCCHANGE, start a DOS prompt and change directory to the root directory of the floppy disk. The command is used in the following way:

```
C:> A:
A:> CCCHANGE [<path>] [<code>] [<options>]
```

where *<path>* is the destination path of the License Key to be changed/activated. If the *<path>* is omitted you will be prompted for it. The *<code>* is the activation/update code that Telelogic Customer Support has provided. If the *<code>* is omitted you will be prompted for it. **If you do not have an activation code at this point, you should press enter and no changes will be performed.** You must have read/write/create access to the path.

The *<options>* are:

- `/I`

  Displays information needed by Telelogic Customer Support to provide you with an activation code (version, product code, serial number and update number).

- `/P<product_code>`

  Restricts changes to the specified product code. If changing a CopyControl installation, you must use the `/P` option in case there is more than one product in the specified directory (Telelogic recommends that you only have one product per directory).

- `/S<serial_number>`

  Uninstalls an installed license copy and produces an activation code for `<serial number>`. The serial number is obtained either when running CCMOVE with the /M option or running CCCHANGE with the /I option on an inactive license.

Caution!

Do not use the `/S` option unless you actually have a valid serial number for an inactive installed copy, since otherwise your licenses will be invalidated.

- `/U`

  Uninstalls an installed license copy and produces an confirmation code.

> **Caution!**
>
> **Do not use `/U` option unless specifically instructed by Telelogic Customer Support, since this option will invalidate your license.**

Moving a CopyControl License

Moving a node-locked license is done with the help of codes and the provided software tools. The required codes are obtained by running CCMOVE and CCCHANGE. In short these steps needs to be carried out:

- Create a new installed license key the usual way on the new directory or hard disk. Make a note of the product serial number of the newly installed inactive key. **Remember to copy the license DLL files to the new directory**.
- Run CCCHANGE on the old installed, active key specifying the /S option together with the product serial number of the new inactive key. CCCHANGE will remove the old key and provide an activation code for the new key.
- Activate the new key by running CCCHANGE on it and enter the activation code.

Example 3

This example assumes that a license is to be transferred from one computer to another. The original license on Computer A resides in directory `C:\MACHINEA\TAU35\bin\Wini386` and should be moved to Computer B's directory `C:\MACHINEB\TAU35\bin\Wini386`. So, again we assume the default Telelogic Tau installation directory, `\TAU35`, on each machine.

1. Install an inactive license copy on Computer B. Insert the license floppy in the A drive and type:

   ```
   C:> A:
   A:> CCMOVE A: C:\MACHINEB\TAU35\bin\Wini386 /M
   ```

   CopyControl will print out the serial number, e.g:

   ```
   Serial number of the installed product is nnnnn
   ```

   Make a note of this number.

2. Obtain an activation code for the inactive license copy on computer B by deactivating the license copy on Computer A. Insert the license floppy in the A drive and type:

   ```
   C:> A:
   A:> CCCHANGE C:\MACHINEA\TAU35\bin\wini386 /Snnnnn
   ```

   where "nnnnn" after the `/S` option should be replaced with the number from the previous step.

   CopyControl will print out the activation code for the serial number supplied to the `/S` option. e.g:

   ```
   CopyControl parameter changing.
   New activation code for serial number nnnnn = 22 63
   76 c4 17
   ```

   The license on Computer A will be completely removed.

3. Activate the license copy on Computer B. Insert the license floppy in the A drive and type:

   ```
   C:> A:
   A:> CCCHANGE C:\MACHINEB\TAU35\bin\wini386
   ```

CopyControl will prompt you for the activation code:

```
Version 1.71. Product code TAU, Serial no.: nnnnn,
Update number 1.
Enter code given to you by your supplier:
22 63 76 c4 17
Confirmation code 0/2085

Update number 1 completed successfully
```

Chapter

6

A Primer on Licensing

This chapter introduces the licensing systems 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 two types of licensing systems used (FLEXlm™ and CopyControl)**
- **Details about the FLEXlm system, including types of licenses, usage options and possibilities, structure of a license key and pitfalls to avoid.**
- **Details about the CopyControl system, including types of licenses, usage options and possibilities, structure of a license key and pitfalls to avoid.**

Telelogic Tau Licensing – A General Overview

Two Types of Licensing Systems

With Telelogic Tau there are two third-party-provided licensing systems, and which you will use depends on your networking situation:

- **FLEXlm:**
  This is a network-based "floating" license system made by Globetrotter Software. 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.
- **CopyControl:**
  This is a "node-locked" license system from Microcosm Ltd. This system is available for the Windows version of Telelogic Tau only. It allows the software to run only on one specific machine, and should only be used when the machine is not connected to a network, e.g. a laptop computer or a stand-alone desktop workstation. It is possible to manually move the license to another machine if needed.

Each 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 *v* in the Release Guide).

Expirations and Renewals

Both types of licensing systems use 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 SDT’s Simulator or ITEX’s C Code Generator.

A license key specifies the number of “seats” (simultaneously available licenses) for each feature of the tool set listed in the license key. The way the number of seats is controlled varies slightly between the two licensing systems. FLEXlm (floating) licenses allow the number of licenses available to be specified on a feature-by-feature basis. CopyControl licenses, since they are node-locked to a single-user machine, allow only one license for each feature listed. For reasons of technical differences between FLEXlm and CopyControl, they do not have the exact same featuring scheme.

FLEXlm Licensing Details

General Information About FLEXlm

FLEXlm is 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 managing possibly 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. **For your information, the version included on the Telelogic Tau CD-ROM is 6.1c.**

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:

For compatibility reasons between version 3.1 and version 3.5 of the Telelogic Tau products **for Windows**, 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 95 and NT**, it is `C:\tau35\license.dat`.

FLEXlm License Key – First Example

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

Example 4: “Real” license key

```
SERVER test 12345678 7598
DAEMON telelogic /usr/appl/telelogic/flex/archflex
FEATURE Telelogic telelogic 3.400 15-aug-98 2 1B5890E1960AFE22A57B "Telelogic"
FEATURE SDT-Base telelogic 3.400 15-aug-98 1 0B58E0922F3034C3C29F ""
FEATURE SDT-MSCE telelogic 2.200 15-aug-97 1 AB58C08192E26573643B ""
FEATURE SDT-OME telelogic 1.100 15-aug-97 1 DBC8C061034073C86AD4 ""
FEATURE SDT-Cbasic telelogic 2.200 15-aug-97 3 DBC322E12E1F4E6A7DC9 ""
FEATURE SDT-Simulator telelogic 2.200 15-aug-97 1 5BA830E2597AAED4E6DF ""
FEATURE SDT-Validator telelogic 2.200 15-aug-97 1 5BB3F0A11CDD96D4C1FF ""
FEATURE SDT-TTCN-Link telelogic 1.200 15-aug-97 1 DBB87061BDA40AF3D222 ""
FEATURE ITEX-Base telelogic 3.300 15-aug-97 1 FBF53071C228F9AF0CA7 ""
```

Here are detailed explanations for this license key example:

- **SERVER line**: This line has 4 fields; the `SERVER` label, the hostname 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.
- **DAEMON line**: This line has 3 fields; the `DAEMON` 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 74 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 5: DEMO license key

```
SERVER hostname hostid 7598
DAEMON telelogic /usr/appl/telelogic/flex/archflex
FEATURE Telelogic telelogic 3.400 15-aug-98 0 4BF862B1049767F837DE "Telelogic" DEMO
FEATURE SDT-Base telelogic 3.400 15-aug-98 0 0B98B051C0144041B74C "" DEMO
FEATURE SDT-MSCE telelogic 2.200 15-aug-97 0 EB98B0F1BF88E260FE2A "" DEMO
FEATURE SDT-OME telelogic 1.100 15-aug-97 0 7B58E0C15A7D37B767B4 "" DEMO
FEATURE SDT-Cbasic telelogic 2.200 15-aug-97 0 3BAB8081FEC65F761608 "" DEMO
FEATURE SDT-Simulator telelogic 2.200 15-aug-97 0 8B28405166A00320F584 "" DEMO
FEATURE SDT-Validator telelogic 2.200 15-aug-97 0 0B9810F1EB7103F3EA94 "" DEMO
FEATURE SDT-TTCN-Link telelogic 1.200 15-aug-97 0 FB5820C123607B34A759 "" DEMO
FEATURE ITEX-Base telelogic 3.300 15-aug-97 0 EBB8F0B71216A0C373E6 "" DEMO
```

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.
- **DAEMON line:** This line has 3 fields; the `DAEMON` 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 ITEX-Base, there should be one Telelogic feature (which is the Telelogic Organizer). So, for example, a customer who has 3 each of the SDT Simulator, Validator, and TTCN-Link should have 9 seats of Cbasic. A customer with 3 SDT Base licenses and 2 ITEX Base licenses should have 5 Telelogic 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 DAEMON 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 installation (`\flex`), the “lmgrd” master daemon can find the “telelogic” vendor daemon to start it up even when the path is unspecified:

```
DAEMON telelogic telelogic.exe
```

This is how the DAEMON 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 `\tau35` on the `C:` drive as the installation directory) is:

```
DAEMON telelogic C:\tau35\flex\telelogic.exe
```

If for any reason you move the “telelogic” daemon from its normal place (`\tau35\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.

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
```

CopyControl Licensing Details

General Information About CopyControl

CopyControl is a node-locked licensing system from Microcosm, Ltd. That is, an application that uses CopyControl can run only on one specific machine at a time, and the license cannot move dynamically (i.e. across a network) from one machine to another. The license key is "stuck" on the hard drive it is installed on. It is possible, however, to move the license protection manually with some provided software tools.

CopyControl licensing consists of the application(s) to be licensed, some feature-by-feature DLL files which are used by the application(s) to recognize the license for each feature, some software tools for license management, and the actual license itself. The license is encrypted in such a way that it must be handled (installed, activated, moved between machines, etc.) by the provided software tools. All of these components are delivered to the customer on one or two floppy disk(s) with the Telelogic Tau delivery, although they can also be sent via email as a ZIP file. If the latter is the case, the ZIP file must be unpacked onto a floppy disk in order to use the license and software; if it is unpacked to a directory on your hard drive, it will not work. The tools for managing the license can be run from the floppy, but they are provided in the Telelogic Tau installation as well for convenience.

The license installation consists of moving the DLL files to the correct place, then transferring the actual license with one of the provided tools. During the license transfer, a five-digit unique serial number is generated and reported to the customer. Telelogic Customer Support takes this number and in return gives an activation code which the customer uses (via another of the software tools) to activate the license.

The CopyControl keys used in Telelogic Tau are known as CCROM keys. Once a key is installed on a hard drive, it can never actually be moved. However, it is possible to move the license protection from one drive to another. Complete details on how to do this are given in "Moving a CopyControl License" on page 61 in chapter 5, *Licensing Management*.

Types of CopyControl Keys

CopyControl licenses can be either evaluation licenses or post-purchase licenses. They are technically equivalent but differ in their durations, and also (most likely) by activated Telelogic Tau features, as an evaluating customer who decides to purchase may of course opt to buy more or less of Telelogic Tau than he or she evaluated!

Installation and Network Possibilities

It is possible to install Telelogic Tau either locally or on a network drive, and the CopyControl license software DLL files must be placed in a specified location within the Telelogic Tau installation directory structure. The actual CopyControl license must be installed on the local hard drive of each machine which is to run Telelogic Tau, in its own directory (chosen by the user).

In situations where there is a need to use both floating (FLEXlm) and node-locked (CopyControl) licenses, two installations of Telelogic Tau are required. This is because when Telelogic Tau starts up it checks for the presence of the CopyControl DLL files in the specified location within the Telelogic Tau installation directory structure. If those files are not present, then Telelogic Tau assumes that FLEXlm is to be used and tries to initiate communication with the FLEXlm license daemons.

One thing to note about CopyControl CCROM licenses: even though they are set for a “duration” (e.g. 30 days) on the floppy disk, when installed they are actually set to expire on an absolute date, determined by the duration (e.g. 30 days from today, whatever day that happens to be). This date will be preserved when a license is manually transferred to another machine or hard drive.

Structure of a CopyControl License Key

The license key floppy disk(s) (or emailed ZIP file) you will receive from Telelogic will contain several DLL files, some hidden license files, and three executables, called CCLOOK, CCMOVE, and CCCHANGE. These executables are what you will use to install (CCMOVE), activate (CCCHANGE) and check the status of (CCLOOK) your license. These utilities are also included within the Telelogic Tau delivery for convenience. CCCHANGE can also be used to manually move a license from one hard drive to another (note that you cannot copy a license; it must be installed initially with CCMOVE and transferred between hard drives with CCCHANGE).

Each DLL file handles one or more features of the Telelogic Tau tool set. All the DLL files will be present regardless of which actual features are included in your particular license key. The actual included features of your key are reported by the CCLOOK utility. For example, if you have a standard 30-day CopyControl evaluation license for the Telelogic Organizer, SDT Base, SDT Simulator, and SDT Validator, you will not be able to tell that you have access to these features from the DLL files. You will have DLL files for all the rest of the Telelogic Tau features, too. When you install and activate your license, you can use CCLOOK, which will report which license features are included and their expiration dates. In this example, you would have a license for the Cbasic feature as well, since this is required for the SDT Simulator and SDT Validator. Of course, the features included in the license key will be marked on the label of the floppy disk, or indicated in the email message accompanying the ZIP file.

An important piece of information (besides your product serial number given by CCMOVE) that you will need when getting an activation code from Telelogic Customer Support is the "product code" reported by CCLOOK. It identifies the combination of included features in your key. Examples are "TAU", "TAUD", and "TAU151".

CopyControl Licensing Pitfalls to Avoid

When installing a new CopyControl license key from Telelogic there are a few "pitfalls" to watch out for:

- As previously mentioned, there is the possibility of accidentally rendering FLEXlm Telelogic Tau licensing inoperative if the CopyControl DLL files are placed in their proper location in the Telelogic Tau installation directory structure. If you want to use both FLEXlm and CopyControl, you must make two distinct installations of Telelogic Tau.
- When you install your CopyControl license key, you must set an environment variable telling Telelogic Tau where to find your license. The variable is called `CC_PATH_<product code>`, where the "product code" is one item in a report by CCLOOK and mentioned above. It is often easy to forget this detail and to just call the environment variable `CC_PATH_TAU`.

- Do not forget to get your product code from CCLOOK in addition to the product serial number generated and reported when you use CCMOVE to install the license. Telelogic Customer Support needs both pieces of information to generate an activation code for you.
- Once you have installed your CopyControl license in the special license directory of your choice, you cannot rename that directory, as this will render inoperative the licensing. If you encounter mysterious problems with starting Telelogic Tau, and you have CopyControl, check that no one has renamed your license directory! Changing the name back to the original should fix the problem.
- There are various potential hazards with some options and parameters to the CCLOOK, CCMOVE, and CCCHANGE utilities. These are detailed in "CopyControl Utilities and Procedures" on page 57 in chapter 5, *Licensing Management*. Make sure to be aware of exactly what you are doing when using these utilities.

Additional Information

If you have questions about CopyControl licensing, contact Telelogic Customer Support (see "How to Contact Customer Support" on page *v* in the Release Guide).