TotalView

Installation Guide

ETNUS

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Chapter 1

Installing and Configuring TotalView

This document provides information about installing the TotalView® multiprocess debugger.

See the *TotalView Release Notes* for complete information about supported operating systems.

Reporting Problems

Please contact us if you have problems installing TotalView, questions that are not answered in the product documentation or on our Web site, or suggestions for new features or improvements.

support@etnus.com
1-800-856-3766 in the United States
(+1) 508-875-3030 worldwide

The TotalView Release Notes has instructions on how to report problems.

Step 1: Unbundling Downloaded Files

Use the **uncompress** and **tar** commands to extract the TotalView files that you downloaded from our web site. For example:

```
tar xvf totalview-version-platform.tar
tar xvf totalview-version-doc-pdf.tar
```

Step 2: Running the Install Program

NOTE   Before you can run TotalView, you will need to obtain a demo licence. You can obtain one by filling in the form located at www.etnus.com.

This section describes how you install a new version of TotalView. Before starting, you should read the TOTALVIEW RELEASE NOTES and the README.TXT file that came with the software that you downloaded. These files contain information that you may need to use for your version of TotalView. In addition, TOTALVIEW PLATFORMS describes operating system patches that are required for some operating system versions.

Here is the procedure for installing TotalView:

1 (Optional) Become the root user on the system where you will install TotalView:

su root

We recommend that you become the **root** user when installing TotalView as this prevents users from modifying the software after you install it. However, you should not run TotalView as **root**.

2 From the directory containing the unbundled files, start the **Install** program:

./Install

NOTE   For information on using this command, type "Install -help". If you use any of the options described in this displayed information, TotalView is non-interactively installed.

The **Install** program asks that you name an installation directory. If the directory you specify does not exist, the **Install** program creates it. **Install** then creates two subdirectories:

totalview.*version*/*platform*
flexlm-6.1

The first is where **Install** places TotalView and the second is for the license manager. Type a period "." if you want **Install** to place TotalView in the current directory.

If you do not enter a name, the installation directory will either be **/usr/toolworks** or **/opt/toolworks**—this is system-dependent.

This manual refers to the installation directory's pathname as *installdir*.

3 You are then asked six questions asking which components you wish to install. The first two relate to the TotalView executable; the middle two relate to the license manager; and the final two relate to the documentation.

If you have not yet installed Release 5 on your system, you should answer **yes** to the first four. While you do not have to install the documentation named by the last two questions, you should install it.

If you are adding to an existing license, you can skip portions of this installation to save space. For example, one TotalView component and one license manager component contain *common* components. If you are reinstalling TotalView on an existing system, you can ignore these components. For example, if you have previously installed the documentation, you do not have to reinstall it.

4 The Install program asks if it should create a symbolic link (named **totalview**) to your installation directory.

NOTE If you are not the root user, *Install* cannot create the link, so you should answer "n" (no). If *Install* can not create the link, you can ignore its complaints and continue installing TotalView by pressing Enter.

5 After Install concludes, become non-**root**:

`exit`

6 Test the installation by starting TotalView:

installdir/`totalview`.*version*/*platform*/`bin/totalview`

TotalView prints information that includes a version number and a message indicating that a license file was not installed. If you see a diagnostic message instead of this information, refer to "Troubleshooting" on page 6.

Step 3: Installing a Demo License

Before you can use TotalView, you must place the demo license into the **flexlm-6.1** directory. This license file was attached to the email message confirming your download request and was named **license.demo**.

1 If you installed TotalView as the **root** user, become the **root** user again.

2 Copy the license file to the **flexlm-6.1** directory.

`cp license.dat` *installdir*/`flexlm-6.1`

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Step 4: Configuring Your Environment

3 To test that TotalView can use the license file, type:

installdir/totalview.*version*/*platform*/bin/totalview

TotalView responds by displaying its Root window.

NOTE   After you purchase TotalView, we will send you a permanent license that you will copy into this same directory. The filename of the permanent license file is "license.dat".

Setting the License File Variable

The **totalview** startup script sets the **LM_LICENSE_FILE** environment variable to:

installdir/flexlm-6.1/license.demo

If you do not want to install the **license.demo** file in this directory, you must set the **LM_LICENSE_FILE** environment variable to the full pathname of the directory containing the **license.demo** file. For example:

setenv LM_LICENSE_FILE *nonstandard-dir*/license.demo

NOTE   If you change this directory, you will have to change the name "license.demo" to "license.dat" after you purchase TotalView.

If the **LM_LICENSE_FILE** environment variable is already set, add the pathname for **license.demo** to the list. The **LM_LICENSE_FILE** variable contains a colon-separated list of license file pathnames. For example:

setenv LM_LICENSE_FILE \
        nonstandard-dir/license.demo:${LM_LICENSE_FILE}

Step 4: Configuring Your Environment

Before you can begin using TotalView, you must add directories to your system's environment variables. On some systems, you will also need to mount the **/proc** directory.

Setting Environment Variables

The pathnames listed in the following table assume that:

- You installed the software as the **root** user.
- **/opt/toolworks** is the default installation directory.
- The **Install** program created the a symbolic link to this directory (refer to "Step 2: Running the Install Program" on page 2 for details).

You will need to include the following path names in environment variables:

TABLE 1: TotalView Environment Variable Settings for Root Installation

Environment Variable	Path name
PATH	/opt/totalview/bin
MANPATH	/opt/totalview/man
LD_LIBRARY_PATH (*not on* IBM RS/6000)	/opt/totalview/lib
LM_LICENSE_FILE	*nonstandard-dir*/license.demo

If you did not install TotalView as the **root** user, or if the **Install** program did not create the **/opt/totalview** or **/usr/totalview** links, you must add the following pathnames to your environment variables. In these variables, directories are separated by colon characters (:).

TABLE 2: TotalView Environment Variable Settings for User Installations

Environment Variable	Path name
PATH	*installdir*/**totalview**.*version*/*platform*/**bin**
MANPATH	*installdir*/**totalview**.*version*/*platform*/**man**
LD_LIBRARY_PATH (**not on** IBM RS/6000)	*installdir*/**totalview**.*version*/*platform*/**lib**
LM_LICENSE_FILE	*nonstandard-dir*/**license.dat**

Mounting the /proc Directory

On some systems, you must mount the **/proc** directory if it is not currently mounted. If you use any of the following systems, determine if the **/proc** directory is mounted:

- Compaq UNIX
- SunOS 5.x
- IRIX

You can check if this directory is mounted by typing:

ls /proc

If it is mounted, the **ls** command prints a list of numbers. If you see an error message, or no message at all, the **/proc** directory is probably not mounted. Your system administrator can mount the **/proc** directory.

Troubleshooting

If TotalView prints a diagnostic message instead of its banner, you should perform one of the actions listed in the following table.

Table 3: Start-up Diagnostic Messages

Message	Action
Unable to find installation directory	Edit the **totalview** script. Set **TVROOT** to *installdir*/**totalview**.*version*/*platform*
Platform…is not supported	Log in to a system that is running on a supported platform *before* running **totalview**
A message that includes: …/bin/tvdmain…	Reinstall TotalView. If you still get this message, report this installation problem to us. See "Reporting Problems" on page 1.

Installing or
Changing a Regular License

This chapter describes the procedure for installing or changing a regular license.

- To install TotalView software for the first time with a permanent license, begin with the next section.
- To update an existing license, see "Ordering a Regular License" on page 9.
- To install TotalView software and will use an existing license, see "Accessing a Remote License Server" on page 11. To shutdown and restart the license manager, see "Starting the License Manager Manually" on page 12.

Planning for a Regular License

This section describes what you must do when your demo license expires, or when you need to change your current regular license. TotalView uses the FLEX*lm*® license management software to grant or reject requests to use TotalView.

NOTE   You do *not* need to install FLEX*lm* if you are using a demo license.

Your regular TotalView license is associated with a FLEX*lm* license manager host (the license server) and is for a specific number of floating, concurrent user licenses.

Etnus provides HTML documentation and tools for using FLEX*lm*. Standalone versions of the FLEX*lm* license manager are also available. For more information, see "Choosing a Standalone FLEXlm Version" on page 14.

Choosing a License Server

You do not need to install the FLEX*lm* license server until you install a regular license or change a current, regular license. In most cases, the license manager and TotalView reside on the same system. However, you can install them on different systems.

If you order a single-user license, consider placing the license server on one machine and TotalView on another. This lets you change the system upon which you run TotalView without having to make major changes to the license server.

The license manager should reside on a machine that is reliable, always running, and a permanent part of your local network.

NOTE   If you already have a FLEX*lm* license manager in your network, we recommend that you do not include your TotalView software with the other software managed by that license manager. Instead, use the steps outlined in this chapter to configure a dedicated FLEX*lm* license manager for TotalView.

Supporting Redundancy

The FLEX*lm* license manager supports two configurations that increase server availability. You can have up to three license servers serving a redundant-server license. If one server goes down, users can obtain TotalView licenses from another.

If you support several sites interconnected on a TCP/IP network, each site can have its own server and license file. Users can configure their **LM_LICENSE_FILE** environment variable to include license files that refer to servers at the other sites so that a license service is always available.

If you will have redundant servers, you must set up each server as described in "Installing a Regular License" on page 9. In addition, when you order a regular license, you must include the output from the **toolworks_hostid** script for each server.

Ordering a Regular License

To set up or change a regular installation, contact Etnus at 1-800-856-3766 in the United States or (+1) 508-875-3030 worldwide, or, you can email us at **info@etnus.com**. Please be ready to provide the following information:

- The platforms and operating systems upon which you will run TotalView.
- For each platform, the maximum number of processors that will potentially run target processes of a single TotalView debugging session.
- The maximum number of concurrent users.
- The **toolworks_hostid** output from your FLEX*lm* license server. (See "Finding a License Server Host ID" for an example.)

FLEX*lm* uses a host ID to identify the computer running the license server.

Finding a License Server Host ID

When you install TotalView, the files for the FLEX*lm* license manager are automatically installed in *installdir*/**flexlm-6.1**.

To obtain host information, run the **toolworks_hostid** script, as follows:

> *installdir*/flexlm-6.1/bin/toolworks_hostid

NOTE   Do not use the UNIX hostid command.

This script writes the host name and the FLEX*lm* host ID value to standard output; for example:

```
The host name for this machine is: fast-server
The host ID for this machine is:   08122b2cf32d
```

After sending this information to us, we will respond by sending you a permanent license file.

Installing a Regular License

For best security, you should become super-user (**root**) on the license server before installing the license. Begin installing your permanent license by using an ASCII text editor to copy the license file received from Etnus into the *installdir*/**flexlm-6.1/license.src** file. You may copy the entire message or

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only the portion beginning with **## BEGIN LICENSE** and ending with
END LICENSE.

```
## BEGIN LICENSE
SERVER happy-sp2 1386310 <port-number>
DAEMON toolworks <daemon-path> <options-file>
INCREMENT TV/Base                         toolworks 5.000 12-jan-2000 16 \
        ACE2E64242992DE2EC36 ISSUED=12-Jul-2001 ck=189
INCREMENT TV/PPC-AIX                      toolworks 5.000 12-jan-2000 16 \
        BC6206D2A3A83DF53D15 ISSUED=12-Jul-2001 ck=84
INCREMENT TV/PPC-AIX/MP/32                toolworks 5.000 12-jan-2000 16 \
        0CA2B6B2A204947B9892 ISSUED=12-Jul-2001 ck=236
INCREMENT TV/PPC-AIX/PE                   toolworks 5.000 12-jan-2000 16 \
        CCD27662DEAB91FEC655 ISSUED=12-Jul-2001 ck=1
INCREMENT TV/PPC-AIX/PGIHPF               toolworks 5.000 12-jan-2000 16 \
        DA26602D3A8A3FD3515D ISSUED=12-Jul-2001 ck=42
## END LICENSE
```

❶ Hostname
❷ FLEX*lm* host ID
❸ Concurrent users
❹ Licensed platform
❺ Processor maximum for each user

❻ FLEX*lm* license version
❼ Expiration date: an
    expiration date of 0000
    indicates a permanent
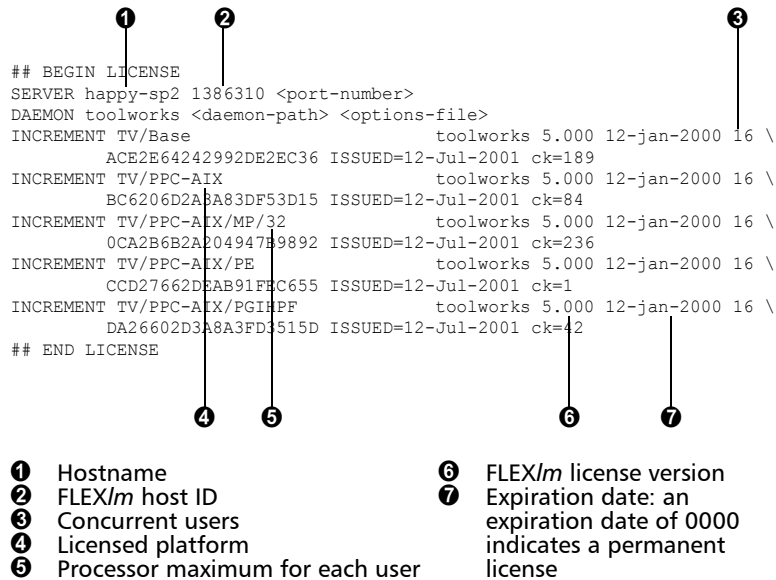   license

Figure 1: Regular License for TotalView

Creating a FLEX*lm* User Account

For best security, run the FLEX*lm* license manager as a unique non-privileged
(that is, non-**root**) user. Do this by creating a non-privileged user account
reserved for FLEX*lm*'s use

The steps for creating a new user account vary with operating systems and
site configurations. You may need to refer to your operating system's docu-
mentation or your site's operating procedures. Here is an example of a
passwd file record that supports the FLEX*lm* user.

flexlm:*:2000:250:FLEXlm License Manager:/nonexistent:/bin/sh

Note that this account must have the following properties:

■ The password is set to '*' because interactive access is not required.
■ There is a unique user ID.

- There is a unique group ID.
- The login shell is **/bin/sh**.

NOTE   The user name does not have to be flexlm. Any unique name will do. Also, the values used here are also examples.

Configuring the License Server

After placing a new or updated regular license in the **license.src** file, you can configure the license server to:

- Activate a regular license for the first time.
- Change a regular license in order to add users to your license, use Total-View on a new platform, add or upgrade TotalView features, or move the license to a new system.

The license configuration script creates the **license.dat**, **license.opt**, **license.client**, and **license.log** files in the **flexlm-6.1** directory. It also places the **toolworks_init** script in the **flexlm-6.1/bin** directory.

After using the **su** shell command to become the root user, run the **Configure_License** script:

```
cd /usr/local/toolworks/flexlm-6.1
./bin/Configure_License
```

Accessing a Remote License Server

When you start TotalView, it must be able to find the **license.dat** file in the **flexlm-6.1** directory. If TotalView and the active license manager are all installed on the same host and you have already created the **license.dat** file in the correct location, you can skip to "Starting the License Manager Manually" on page 12.

If TotalView and the license server are installed on different machines, you will need to have a **license.dat** file for each TotalView installation. You should copy the **license.client** file from the license server to **flexlm-6.1/license.dat** in each TotalView installation. If you will be using an existing license server, this is the only thing you need to do.

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Starting the License Manager Manually

The format for this type of **license.dat** file (the **license.client** file) is:

```
SERVER host-name host-id port-number
USE_SERVER
```

For example:

```
SERVER fast-server 08122b2cf32d 7127
USE_SERVER
```

FLEX*lm* ignores all lines after **USE_SERVER**.

Starting the License Manager Manually

You can start or stop the license manager by using the **toolworks_init** script. If the license manager software is installed in **/usr/local/toolworks**, the following commands start the license manager. Before entering these commands, use the **su** shell command to become the **root** user.

```
cd /usr/local/toolworks/flexlm-6.1
./bin/toolworks_init start
```

NOTE   Before running this program, make sure that you have write permission to this directory.

Although the start-up script should be run as super-user (**root**), the license manager is started using the FLEX*lm* user ID.

If the license manager starts successfully, the UNIX **ps** command shows that **lmgrd**, the primary license manager daemon, is running. Depending on how many shared licenses are currently in use, the **ps** command may show one or more instances of the **toolworks** license daemon.

Stopping the License Manager

The procedure for manually stopping the license manager is similar to the process for starting it. If the license manager software is installed in **/usr/local/toolworks**, the following commands stop the license manager. Before entering these commands, use the **su** shell command to become the **root** user.

```
cd /usr/local/toolworks/flexlm-6.1
./bin/toolworks_init stop
```

Testing the License Manager

To verify that you installed the license manager correctly, you should manually start the license manager and then run TotalView as *non*-**root**. After the license manager starts, set the license file variable and test the license installation by typing:

installdir/totalview.*version*/*platform*/bin/totalview

TotalView should respond by displaying its Root window. If you experience problems, you may be able to determine the problem by looking at:

- The **flexlm-6.1/license.log** log file contains status and error messages from the **lmgrd** license server.
- The **flexlm-6.1/***platform***/bin/lmstat** command lists license manager activity. For example, to list the number of licenses that are currently checked out on a **sun5** platform, type:

```
cd /usr/local/toolworks/flexlm-6.1
./sun5/bin/lmstat -a -c ./license.dat
```

Starting the License Manager when the System Boots

If you want the license manager to start automatically when the license server boots, add the **toolworks_init** command (see "Starting the License Manager Manually" on page 12) to the appropriate system start-up file. On most systems, you also should automatically stop the license manager when the system shuts down to single-user mode.

You can edit your startup files by running the **Configure_Autostart** shell script. **Configure_Autostart** must be run as **root**. For example, if the license manager software is in the **/usr/local/toolworks** directory, run **Configure_Autostart** using the following commands. (Before entering these commands, use the **su** shell command to become the root user.)

```
cd /usr/local/toolworks/flexlm-6.1
./bin/Configure_Autostart
```

Configure_Autostart prompts you with some configuration questions and then makes its changes.

Managing Your Licenses

You should not combine Etnus licenses with those of other third-party software managed by FLEX*lm*. If you must combine your working Etnus license manager with another, see the FLEX*lm* documentation for information.

NOTE   The TCP/IP port number used for the Etnus license manager daemon must be unique and not in use elsewhere. Find port numbers used by other FLEX*lm* license managers in their license.dat files.

Choosing a Standalone FLEX*lm* Version

Etnus supplies a stand-alone version of the version 6.1 FLEX*lm* license manager. The following table indicates the supported platforms and the **tar** file associated with each.

TABLE 4: Stand-Alone FLEX*lm* License Manager Distribution Files

Distribution Name	File Size	FLEX*lm* license manager for …
flexlm-6.1-alpha.tar.Z	1.0 MB	Compaq Tru64 UNIX 4.0B
flexlm-6.1-hp800.tar.Z	0.8 MB	HP-UX
flexlm-6.1-mips64-irix6.tar.Z	0.9 MB	IRIX 6.2
flexlm-6.1-rs6000.tar.Z	0.7 MB	RS/6000 AIX 4.2.1
flexlm-6.1-sun5.tar.Z	0.9 MB	SPARC SunOS 5.5.1
flexlm-6.1-i386-linux.tar.Z	0.7 MB	RedHat Linux 5.2
flexlm-6.1-alpha-linux.tar.z	0.9 MB	Compaq Alpha Linux

Unpacking FLEX*lm*

Unpack the FLEX*lm* tar files using the **uncompress** and **tar** commands. For best security, you should unpack the archive as super-user (**root**).

By default, the **tar** command creates a **toolworks** directory and copies the FLEX*lm* files into it. For example, use the following commands install the FLEX*lm* files for the SPARC SunOS 5 into the **/usr/local/toolworks** directory. (Before entering these commands, the **su** shell command to become the root user.)

```
cd /usr/local
uncompress < /home/bob/flexlm-6.1-sun5.tar.Z | tar xpf -
```

These commands create the **/usr/local/toolworks** directory and copy the SunOS 5 FLEX*lm* license manager files into the **flexlm-6.1** subdirectory,. The files are identical to those supplied with TotalView.

These instructions provide only basic information on installing the FLEX*lm* license manager. For more information, see:

man Pages
: The **man** pages for the FLEX*lm* license manager and its support utilities are installed in **flexlm-6.1/man**.

User Guide
: An HTML version of the FLEXlm E*nd-Us*er M*anual* is installed in **flexlm-6.1/doc/flexuser**.

GLOBEtrotter Web Site
: FLEX*lm* is a product of GLOBEtrotter Software Incorporated. Their Web site at **www.globetrotter.com** contains additional information about FLEX*lm* as well as utilities that can help you manager your license server.