

# TotalView Installation and Licensing Guide

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# Introduction

The TotalView debugger can be installed and run on a number of hardware platforms. (See the [TotalView Platform Guide](#) on the TotalView website for specifics.)

TotalView is licensed through Flexera's FlexNet Publisher and/or FlexNet Embedded software, depending on the platform on which it is installed.

This guide is organized to lead a new customer from an evaluation of TotalView through the installation of the final, fully-licensed product. It also includes the procedure to renew or update a license, install a license server, and other license-related tasks.

**NOTE:** With TotalView 2021.2, this guide has been completely reorganized and rewritten.

# Installation Overview

## TotalView Distribution

TotalView is available as a download, usually via a provided link. The download includes these files:

1. The TotalView distribution (such as a tar file)
2. The TotalView documentation distribution (also a tar file)
3. The Release Notes for that particular release
4. An md5sum file, containing the md5sums of the distribution files for verification that they have been transferred without error.

Once the distribution has been unpacked, run the installer, which will confirm which files are to be installed as it executes.

**NOTE:** The TotalView Student product has a graphical installer that guides users through the above process, including generating and installing a license. See [TotalView Student](#).

## TotalView Installation and Directory Hierarchy

TotalView can be installed either locally to an individual user's system, or on a shared file system for access by multiple users.

The first step is to unpack the files from the distribution. For example, on linux-x86-64, the distribution is typically a tar file, which should be untarred into any location, such as a scratch area. From there, install the distribution by running the `./Install` script, which will guide you through the process.

Determine the installation directory (typically `/opt` or `/usr`, but a local install might be in a user's home directory). At that point, the installer script creates the installation directory, with a top level of **toolworks**.

**Table 1: Initial installation directory hierarchy**

**<installdir>**

**toolworks/**

**FNE\_license/**

---

**Table 1: Initial installation directory hierarchy**

<b>FNP_license/</b>
<b>totalview.&lt;version&gt;/</b>
<b>bin/ toolworks_hostid</b>
<b>memoryscale.&lt;version&gt;/ (optional)</b>

**Note:**

- More than one version of TotalView can be installed in the **toolworks** directory. For multiple installations, you may not want to create the links when prompted by the install script, but instead, develop a simple script that allows your own links to each version.
- Regardless of the type of license you will have, both **FNE\_license** and **FNP\_license** directories are created. These are empty until you install a license.
- The directory **memoryscale.<version>** is installed only if you choose to install it when prompted.

## TotalView Licensing

A license is necessary to run TotalView.

### *Evaluation licenses*

When evaluating TotalView, you are provided a demo license, which you will copy into either the **FNE\_license** directory or the **FNP\_license** directory, depending on the license type.

### *Permanent or subscription licenses*

To receive any license other than an evaluation license, provide a host ID for the machine on which TotalView will run, which will be either the host ID for a local system or for the machine hosting a license server. To find the host ID, run the provided script **toolworks\_hostid** on the system which will host the generated license. Provide the output of the script to the licensing department so that you can receive a permanent or subscription license. This license will contain the host ID information in an encrypted form and will work only on the system for which it was created.

### *License server software*

A license server is required only for TotalView for HPC. To set up a license server, install the appropriate licensing software distribution.

**NOTE:** A license server is **not** required for an evaluation distribution or for TotalView Developer / Developer for HPC.

Like TotalView, licensing software is installed under the **toolworks** directory. You will have received either a FlexNet Publisher (FNP) or FlexNet Embedded (FNE) style license, depending on your platform and preference.

For FNP, the installed files include license server software for multiple platforms:

**Table 2: FNP license directory hierarchy**

**<installdir>**

<b>toolworks/</b>
<b>flexlm-&lt;version&gt;/</b>
<b>bin/</b>
<b>doc/</b>
<b>i386-darwin/</b>
<b>i386-linux/</b>
<b>rs6000/</b>
<b>sun5/</b>
<b>x86-64-linux/</b>
license.opt.src
README.TXT
VERSION

The **bin** directory contains multiple scripts to facilitate license configuration and installation.

**Table 3: FNE license directory hierarchy**

**<installdir>**

<b>toolworks/</b>
<b>flexnetls-&lt;version&gt;/</b>
<b>bin/</b>
<b>doc/</b>
<b>linux-x86-64/</b>
producer-settings-BK.xml.template
producer-settings.xml.template



**Table 3: FNE license directory hierarchy**

README.TXT
README-CLIENT.TXT

# Evaluation Installations

A TotalView evaluation includes all the features of a fully-licensed version of TotalView, but with a time-limited “demo” license.

Installing an evaluation version entails:

- Unpacking the tar file and installing TotalView
- Verifying your license type by running the **toolworks\_licensetype** utility  
Depending on your platform, you will have received a FlexNet Publisher (FNP) style demo license or a FlexNet Embedded (FNE) style demo license. FNP licenses are typically named **license.demo** and FNE licenses are **license\_demo.bin**. FNE licenses are required for Linux PowerLE and ARM64.
- Installing the evaluation license
- Testing TotalView

---

# Installing TotalView

## Unpack the Tar Ball

Download the tar file version for your platform and use the **tar** command to extract TotalView. For example:

```
tar xvf totalview_<version_platform>.tar
tar xvf totalview_<version>-doc.tar
```

Before you can debug a program with TotalView, you must obtain a license. You can obtain one by filling in the form located at <https://totalview.io/free-trial>.

## Install TotalView

### 1. (Optional) Become the root user

Go to the system on which you are installing TotalView and become the root user:

```
su root
```

In some circumstances, you'll want to use the **sudo** command instead of **su**. If you use the **sudo** command, you'll be typing `sudo ./Install` instead of `./Install` in step 2.

Installing TotalView as the **root** user prevents users from modifying the software. However, you should not run TotalView as **root**.

### 2. Start the Install program

Go to the directory containing the files extracted from the downloaded tar file, then start the **Install** program by entering:

```
./Install
```

This runs the installer script in interactive mode in which you are prompted with options or to provide information. For detail on using this command, type `./Install -help`. If you use any of the options described by the help, the installation procedure is no longer interactive.

### 3. Accept the license terms

To view the license terms, select **?**. You must accept the license terms to continue the installation.

### 4. Choose an installation directory

The **Install** program asks that you name an installation directory. The directory must already exist; if not, the program requests a new location.

If you do not enter a name, the installation directory will either be `/usr/` or `/opt/`, depending on the system.

This manual refers to the installation directory's pathname as `<installdir>`.

## 5. Choose the components to install

If you are installing TotalView for multiple platforms in a common NFS directory, install the common components only once.

## 6. Create a symbolic link (optional)

You can create a symbolic link (named **totalview**) to this installation directory. If you are not the root user, **Install** may be unable to create the link, so you should respond “n” (no) to the prompt. If **Install** cannot create the link, you can ignore its complaints and continue installing TotalView by pressing **Enter**.

At this point, the **Install** program has created a **toolworks** directory with these subdirectories:

- **totalview.<version>**. This is where **Install** places TotalView.
- **FPN\_license** (created for all platforms)  
(Created for all platforms by the installer but not used for an FNE-style license). TotalView automatically searches this directory (along with a **flexlm-<version>** directory if it already exists) for an FNP license file.
- **FNE\_license** (created for all platforms)  
(Created for all platforms by the installer but not used for an FNP-style license). This directory is created unless it already exists from a previous installation. It is the default location for an FNE buffer-style license file or a **tv\_license\_file** pointer file that is found and automatically used by TotalView (in the absence of an explicit **TV\_LICENSE\_FILE** environment variable setting).

## 7. Exit from root (optional)

If you became root using **su**, exit from root after **Install** concludes by typing:

```
exit
```

## 8. Test the installation

Test if TotalView was successfully installed by entering:

```
<installdir>/toolworks/totalview.<version>/bin/totalview
```

TotalView prints information that includes a version number to the console, and the user interface launches.

TotalView requires a valid license to debug a program. To install your demo license, see either:

- [FlexNet Publisher \(FNP\) Demo License Installation](#) on page 9, or
- [FlexNet Embedded \(FNE\) Demo License Installation](#) on page 11.

---

# FlexNet Publisher (FNP) Demo License Installation

FlexNet Publisher (FNP) style licensing uses text license files that are typically named **license.demo** or **license.dat**.

Before starting the license file installation, first verify that your license file is a FlexNet Publisher style license by running the **toolworks\_licensetype** utility:

```
<installdir>/toolworks/totalview.<version>/bin/toolworks_licensetype <licensefile>
```

The utility should report "FlexNet Publisher (FNP)". If it reports "FlexNet Embedded (FNE)" see [FlexNet Embedded \(FNE\) Demo License Installation](#).

## *Install Option 1: Install license file in the default location in your TotalView installation.*

Before you can use TotalView, place the demo license file into the **FNP\_license** directory of your TotalView installation. This license file was attached to the email message confirming your download request. If your email system did not retain the name **license.demo**, rename it after you save it to disk.

1. **Become root user (optional).**

If you installed TotalView as the **root** user, become the **root** user again. If you used **sudo** to install TotalView, use **sudo** in the following step.

2. **Copy the license file.**

Copy the license file to the **FNP\_license** directory.

```
cp <licensefile> <installdir>/toolworks/FNP_license
```

where **<installdir>** is the top-level directory where you performed the TotalView installation.

## *Install Option 2: Install license file in a custom location*

If you do not want to install the license file in the **<installdir>/toolworks/FNP\_license** directory, set your **LM\_LICENSE\_FILE** environment variable to the file's full pathname. The following example shows the bash shell style syntax for setting **LM\_LICENSE\_FILE**.

```
export LM_LICENSE_FILE=<nonstandard-dir>/<licensefile>
```

If a **LM\_LICENSE\_FILE** environment variable already exists, add the pathname for the license file to this variable's declaration. Notice that the **LM\_LICENSE\_FILE** variable contains a colon-separated list of license file pathnames. For example:

```
export LM_LICENSE_FILE=<nonstandard-dir>/<licensefile>:${LM_LICENSE_FILE}
```

*Test that TotalView can use the license file*

Enter:

```
<installdir>/toolworks/totalview.<version>/bin/totalview \  
<installdir>/toolworks/totalview.<version>/<platform>/examples/wave
```

TotalView should come up without any license error dialogs.

---

# FlexNet Embedded (FNE) Demo License Installation

FlexNet Embedded (FNE) style licensing uses binary license files typically named **license\_demo.bin** or **license.bin**.

Before starting the license file installation, first verify that your license file is a FlexNet Embedded style license by running the **toolworks\_licensetype** utility:

```
<installdir>/toolworks/totalview.<version>/bin/toolworks_licensetype <licensefile>
```

The utility should report "FlexNet Embedded (FNE)". If it reports "FlexNet Publisher (FNP)," see [FlexNet Publisher \(FNP\) Demo License Installation](#) on page 9.

## *Install Option 1: Install license file in the default location within your TotalView installation.*

Before you can use TotalView, place the demo license file, **license\_demo.bin** into the `<installdir>/toolworks/FNE_license` directory of your TotalView installation. This license file was attached to the email message confirming your download request. If your email system did not retain this name, rename it after you save it to disk.

1. **Become root user (optional).**

If you installed TotalView as the **root** user, become the **root** user again. If you used **sudo** to install TotalView, use **sudo** in the following step.

2. **Copy the license file.**

Copy the license file to the `FNE_license` directory.

```
cp license_demo.bin <installdir>/toolworks/FNE_license
```

where `<installdir>` is the top-level directory where you performed the TotalView installation

## *Install Option 2: Install license file in a custom location*

If you do not want to install the **license\_demo.bin** file in the `<installdir>/toolworks/FNE_license` directory, set your **TV\_LICENSE\_FILE** environment variable to the file's full pathname. The following example shows the bash shell style syntax for setting **TV\_LICENSE\_FILE**.

```
export TV_LICENSE_FILE=<nonstandard-dir>/license_demo.bin
```

## *Test that TotalView can use the license file*

Enter:

```
<installdir>/toolworks/totalview.<version>/bin/totalview \
```

```
<installdir>/toolworks/totalview.<version>/<platform>/examples/wave
```

TotalView should come up without any license error dialogs.



# Transitioning to a Licensed Install

The procedure for transitioning from a demo license to a licensed TotalView product differs depending on the TotalView product and the type of license you will receive:

**NOTE:** To get a permanent/subscription license, TotalView needs to be installed. If you have completed an evaluation, you may already have it installed; if not, see [Installing TotalView](#).

## *Summary of the licensing process*

- Determine the host ID for your machine and provide it to the licensing team to receive a permanent or subscription license.  
**Note:** For TotalView Developer and Developer for HPC, the individual machine's host ID is used; for TotalView for HPC, this host ID will be for the license server.
- Confirm your license type by running the utility **toolworks\_licensetype**, which reports either an FNE-style license or an FNP type, as well as the TotalView product that you have.
- Install the license, either on an individual machine or set up a license server, if your product requires one. (Only TotalView for HPC requires a license server.)

For detail, see:

- [Developer / Developer for HPC Licensing](#)  
The equivalent of the previous product TotalView Individual
- [TotalView for HPC Licensing](#)  
The equivalent of the previous products TotalView Team or Team Plus
- [TotalView Student](#)

**NOTE:** Installations for Cray and macOS may require different or additional procedures. See the [Appendix](#) for more detail.

# Installing TotalView

**NOTE:** If you are installing TotalView to use with a demo license, see [Evaluation Installations](#). To get a demo license, see <https://totalview.io/free-trial>. For TotalView Student, see [TotalView Student](#) on page 40.

TotalView is usually installed via a tar ball.

If you already have installed TotalView, skip this chapter, and move on to licensing:

- For TotalView for Developer, see [Developer / Developer for HPC Licensing](#) on page 36.
- For TotalView for HPC, see [TotalView for HPC Licensing](#) on page 18.

## Install TotalView

**NOTE:** This discussion describes how to install a new version of TotalView. Before starting, read the *Release Notes* on the [TotalView documentation](#) web page. For more information, see the [TotalView Platforms Guide](#) guide in the product distribution or on the web at [TotalView Platforms Guide](#).

### *Unpack the Tar Ball*

Download the tar file version of the installation and use the **tar** command to extract TotalView. For example:

```
tar xvf totalview_<version_platform>.tar
tar xvf totalview_<version>-doc.tar
```

### *Install TotalView*

1. (Optional) **Become the root user**

Go to the system on which you are installing TotalView and become the root user:

```
su root
```

In some circumstances, you'll want to use the **sudo** command instead of **su**. If you use the **sudo** command, you'll be typing `sudo ./Install` instead of `./Install` in step 2.

Installing TotalView as the **root** user prevents users from modifying the software. However, you should not run TotalView as **root**.

## 2. Start the Install program

Go to the directory containing the files extracted from the downloaded tar file, then start the **Install** program by entering:

```
./Install
```

This runs the installer script in interactive mode in which you are prompted with options or to provide information. For detail on using this command, type `./Install -help`. If you use any of the options described by the help, the installation procedure is no longer interactive.

## 3. Accept the license terms

To view the license terms, select **?**. You must accept the license terms to continue the installation.

## 4. Choose an installation directory

The **Install** program asks that you name an installation directory. The directory must already exist; if not, the program requests a new location.

If you do not enter a name, the installation directory defaults to either `/usr/` or `/opt/`, depending on the system.

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

## 5. Choose the components to install

If you are installing TotalView for multiple platforms in a common NFS directory, install the common components only once.

## 6. Create a symbolic link (optional)

You can create a symbolic link (named **totalview**) to this installation directory. If you are not the root user, **Install** may be unable to create the link, so you should respond "**n**" (no) to the prompt. If **Install** cannot create the link, you can ignore its complaints and continue installing TotalView by pressing **Enter**.

At this point, the **Install** program has created a **toolworks** directory with these subdirectories:

- **totalview.<version>**. This is where **Install** places TotalView.
- **FNE\_license**

(Created for all platforms by the installer but not used for an FNP-style license.)

This directory is created unless it already exists from a previous installation. It is the default location for an FNE buffer-style license file or a **tv\_license\_file** pointer file that is found and automatically used by TotalView (in the absence of an explicit `TV_LICENSE_FILE` environment variable setting).

- **FNP\_license**

(Created for all platforms by the installer but not used for an FNE-style license.)

TotalView automatically searches this directory (along with a `flexlm-<version>` directory if it already exists) for an FNP license file.

**NOTE:** For TotalView for HPC, these **FNE\_license** and **FNP\_license** directories are generated to contain licenses for client machines only, i.e., those machines that will point to the license server for their license information. If you are installing TotalView on the machine that will host the license server, these directories will remain empty; instead, the license server software will create an additional, different directory for the license server itself.

7. **Exit from root (optional)**

If you became root using **su**, exit from root after **Install** concludes by typing:

```
exit
```

8. **Test the installation**

Test if TotalView was successfully installed by entering:

```
<installdir>/toolworks/totalview.<version>/bin/totalview
```

TotalView prints information that includes a version number to the console, and the user interface launches.

If you try to debug a target program and TotalView cannot find a valid license file or cannot contact the license server, it displays a "No license file found" message. If this occurs, confirm that you installed the license.

### *Next Steps*

After installation, license your product:

- For TotalView for Developer, see [Developer / Developer for HPC Licensing](#) on page 36.
- For TotalView for HPC, see [TotalView for HPC Licensing](#) on page 18.

# TotalView for HPC Licensing

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## Overview

**NOTE:** If you have not yet installed TotalView or wish to reinstall, see [Installing TotalView](#) on page 15. To renew or update an existing license, see [Updating or Renewing a License](#).

TotalView for HPC installations require a license server. You may have installed TotalView on the machine that will host the license server, or on a client machine that will point to the license server:

- **For the machine hosting the license server:**
  - The license server will be installed and configured in an additional directory created by the license server software installation, not by the TotalView installation.
  - The license will be either a FlexNet Publisher (FNP) or a FlexNet Embedded (FNE) style license  
See [Install a TotalView for HPC License Server](#).
- **For a client machine pointing to the license server** for its licensing information, either install a license server pointer file in the **FNP\_license** or **FNE\_license** directory created by the TotalView installer, or set an environment variable to point to the license, either **LM\_LICENSE\_FILE** for an FNP style license, or **TV\_LICENSE\_FILE** for FNE.

You do not need to install a license server; instead, whomever administers the license server will need to provide you with a license:

- **For an FNP style license**, see [Point TotalView Client Installations to the FNP License Server](#).
- **For an FNE style license**, see [Point TotalView Client Installations to the FNE License Server](#).

---

# Install a TotalView for HPC License Server

A license server is required for TotalView for HPC. Depending on your platform, you will either download and install the FNP or the FNE licensing server bundle:

- **FNP: most platforms.** All platforms except Linux ARM64 and Linux PowerLE. See [Installing a FlexNet Publisher \(FNP\) License Server](#).
- **FNE: Linux ARM64 and Linux PowerLE.** These platforms *require* FNE licenses. See [Installing a FlexNet Embedded \(FNE\) License Server](#).

To understand the considerations when choosing a license server, see [Choosing a License Server](#).

## Choosing a License Server

You will need to install the FlexNet license server the first time you install a permanent/subscription license. In some cases, the license server and TotalView reside on the same system. However, you can install them on different systems, as long as that system is a platform that TotalView supports. (For *FNE only*, the license server must reside on a Linux x86-64 system, however).

The license server should reside on a machine that is reliable, always running, and a permanent part of your local network. And, most importantly, it must be accessible. For example, do not place it on the other side of your firewall.

**NOTE:** The license server must be installed on a supported platform. In particular, because TotalView doesn't run on Windows, a license server cannot be on a Windows system. See the [TotalView Platform Guide](#) for specifics.

If you already have a FlexNet license server in your network, you should not include your TotalView license with the other licenses managed by that license server. If you must combine license servers, consult the FlexNet documentation:

- **FNP:** See the *FlexNet Publisher License Administration Guide* PDF included in the distribution under `<installdir>/toolworks/flexlm-<version>/doc.`
- **FNE:** See "Requirements for the Local License Server" in the *FlexNet Embedded License Server Administration Guide* PDF in the distribution under `<installdir>/toolworks/flexnetls-<version>/doc.`

## Failover Protection

Both the FlexNet Publisher and FlexNet Embedded license management systems optionally provide failover protection to ensure that users are not interrupted in the event of a license server failure. For FNP, this is provided through a 3-server triad, while FNE permits the designation of a failover server.

- **FNP:** See [FNP License Three-Server Redundant Triad](#) on page 25
- **FNE:** See [Installing an FNE Failover Server](#) on page 34



## Installing a FlexNet Publisher (FNP) License Server

A TotalView FNP license server must be hosted on a platform that TotalView supports. (For platform support specifics, see the *FlexNet Publisher License Administration Guide* PDF included in the distribution under `<installdir>/toolworks/flexlm-<version>/doc.`).

### Installation Procedure

1. Install the FNP Software
2. Generate a Host ID for the FNP License Server
3. Verify Your FNP License Type and Product
4. Configure the FNP License Server
5. Point TotalView Client Installations to the FNP License Server

### FNP License Server Prerequisites

To install an FNP license server:

1. The license server must be installed on a platform supported by TotalView.
2. A dedicated unprivileged user account is recommended on the system that hosts the license server.

### Installing the FNP License Server

#### 1. Install the FNP Software

The FlexNet Publisher license server tar bundle **flexlm-<version>.tar** is available for download on the TotalView website at <https://totalview.io/support/updates>.

**NOTE:** For served license renewal, skip this section and see [FNP License Renewal](#) on page 42.

#### 1. **Unpack your TotalView FlexNet Publisher distribution on the license server system**

To install the FNP license server software, unpack the FlexNet Publisher tar bundle onto the machine that will host the license server, then run the Install script from the resulting directory:

```
tar xvf flexlm-<version>.tar -C ~
cd ~/flexlm-<version>
```

## 2. Run the Install script using sudo (optional but recommended)

```
sudo ./Install
```

This runs Install in interactive mode in which you are prompted with options or to provide information.

- Choose an installation directory, e.g., `/opt`.
- At the prompt, select the components to install.  
Choose to install the license common files and the relevant license platform files for your license server. (The tar ball includes license server software for multiple platforms.)

Once the Install script completes, you should have a `flexlm-<version>` directory under `<installdir>/toolworks`.

## 2. Generate a Host ID for the FNP License Server

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

```
<installdir>/toolworks/flexlm-<version>/bin/toolworks_hostid
```

**NOTE:** Do *not* use the UNIX `hostid` command, as it will not return the proper host ID for FNP.

This script writes the host name and one or more FlexNet Publisher host ID values to standard output, for example:

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

Be aware that a host ID is returned for just FNP when invoking `toolworks_hostid` from the `flexlm-<version>` directory. Running `toolworks_hostid` under the `<installdir>/toolworks/totalview.<version>` directory generates a host ID for both FNP and FNE on platforms running FNP.

If `toolworks_hostid` returns multiple FlexNet host IDs, select a *persistent* host ID, i.e., one for a device that is always part of the system when the license server software is running. The license server host ID is derived from the physical MAC address of a network interface card, and the host ID chosen must be a persistent address.

Send the host ID to the TotalView license team, [license@perforce.com](mailto:license@perforce.com), who will then send you a permanent/subscription license.

### 3. Verify Your FNP License Type and Product

After receiving your license, you can verify your license type and product by running the utility `toolworks_licensetype` and provide as input the license file:

```
<installdir>/toolworks/totalview.<version>/bin/toolworks_licensetype <licensefile>
```

The script returns the license type (either FNP or FNE), the product, and whether a license server is required. For example:

```
FlexNet Publisher (FNP) TotalView for HPC license(s) detected
These licenses are counted. A license server is required.
For license setup help refer to TotalView for HPC > FlexNet Publisher (FNP)
in the TotalView Installation Guide.
```

### 4. Configure the FNP License Server

#### 1. Create a file named `license.src` in your `<installdir>/toolworks/flexlm-<version>` directory

- Change to the `flexlm-<version>` directory on the license server  
`cd <installdir>/toolworks/flexlm-<version>`
- Copy and paste the new license keys — this is the information that you received through email — into a file named `license.src` in the `<installdir>/toolworks/flexlm-<version>` directory.

The text in your `license.src` file is derived from your host information, number of license keys, and license configurations.

#### 2. Create a dedicated unprivileged user account

**NOTE:** Skip this step if you already created the user as a prerequisite to installing and running the license server as discussed in [FNP License Server Prerequisites](#) on page 21.

While not required, it's recommended to have a dedicated, *unprivileged* user account to run the license server. Note that the login shell should be `/bin/sh`.

#### 3. Run the `<installdir>/toolworks/flexlm-<version>/bin/Configure_License` script on the license server, to create the following files:

- `<installdir>/toolworks/flexlm-<version>/license.dat`
- `<installdir>/toolworks/flexlm-<version>/license.opt`

**NOTE:** If you already have a `license.opt` file, the script prompts whether you want to overwrite it. Answer “n” to preserve your existing file. If you answer “y”, a new file is created, but your existing file is saved as `license.opt.old`.

- `<installdir>/toolworks/flexlm-<version>/license.client`
- `<installdir>/toolworks/flexlm-<version>/license.log`
- `<installdir>/toolworks/flexlm-<version>/bin/toolworks_init`

## 5. Point TotalView Client Installations to the FNP License Server

Each client machine that will run TotalView needs access to a license. If you are running TotalView and the license server in the installation directory on the same machine, you can skip this step.

If TotalView and the license server are not running on the same machine, you will need to place a `license.dat` file on each additional installation. Copy the `<installdir>/toolworks/flexlm-<version>/license.client` file from the license server into the `<installdir>/toolworks/FNP_license` directory on each client machine and rename that file `license.dat`.

As an alternative, you can specify the full path to the `license.dat` file in your `LM_LICENSE_FILE` environment variable, using the format `<port>@<host>`.

For example (bash):

```
LM_LICENSE_FILE=7137@licserver
export LM_LICENSE_FILE
```

## Starting and Stopping an FNP License Server

### Starting the FNP License Server

Run the following command to start the license server.

```
<installdir>/toolworks/flexlm-<version>/bin/toolworks_init start
```

**NOTE:** Note that `toolworks_init` was generated by the `Configure_License` script in 4. [Configure the FNP License Server](#).

You can check that the license server started by viewing its log:

```
<installdir>/toolworks/flexlm-<version>/license.log
```

As an alternative, you can run the commands within this section as an argument to the `sudo` command.

If you configured your license server to run as a non-privileged user, the initialization script ensures that the license management daemons are started and run under the non-privileged user even if you run the script as **root**.

### Stopping the FNP License Server

To stop the license server:

```
<installdir>/toolworks/flexlm-<version>/bin/toolworks_init stop
```

### Autostarting the License Server

If you would like the license server to automatically start when the system is booted, run the following script as **root**:

```
<installdir>/toolworks/flexlm-<version>/bin/Configure_Autostart
```

`Configure_Autostart` prompts you for some configuration questions and then makes changes to the specified startup files.

## FNP License Three-Server Redundant Triad

If you require FNP license failover support, you can set it up in one of two ways: one method implements a three-server redundant setup; the other requires two or more license servers or uncounted licenses to be available in a search list. For detail, see the "Ensuring License Availability" chapter in the *FlexNet Publisher License Administration Guide* located in the directory `<installdir>/toolworks/flexlm-<version>/doc`.

**NOTE:** In most (if not all) cases, the three-server redundant setup is recommended over the search list because using the search list requires that your purchased license tokens be split between the servers in the list, limiting the number of processes you can run on a given server.

### *Three-Server redundant configuration*

A three-server redundant setup includes three servers: one acts as the master, which serves the licenses. If it fails, one of the two secondary servers takes over as master. At any given time, two of the three machines (a quorum) must be up and available.

When creating this configuration, send the output of **toolworks\_hostid** for each of the three servers to the licensing department. Licensing will create and send you a key that encrypts the **hostids** of all three servers in the triad. Add these three server lines to your **license.dat** file, then install the **license.dat** file on each of the three license servers.

## Installing a FlexNet Embedded (FNE) License Server

### *FNE License Server Types*

The TotalView FNE license server is hosted on a single Linux x86 64-bit host machine. (For platform support specifics, see “Requirements for the Local License Server” in the *FNE License Server Administration Guide* PDF included in the distribution).

However, there is a provision for failover protection using a backup host, which ensures that users are not interrupted in the event of server failure. (See [Installing an FNE Failover Server](#).) The procedure for installing either type is basically the same.

### *Installation Procedure*

1. Install the FNE License Server
2. Generate a Host ID for Each FNE License Server
3. Verify Your FNE License Type and Product
4. Configure the FNE License Server
5. Point TotalView Client Installations to the FNE License Server

---

## FNE License Server Prerequisites

To install an FNE license server:

1. The user/administrator must have **sudo** or root privileges
2. The license server must be installed on a Linux-x86-64 system. (For platform support specifics, see “Requirements for the Local License Server” in the *FNE License Server Administration Guide* PDF included in the distribution).

The host running TotalView will use TCP/IP to contact and check out licenses from the FNE license server running as a Linux service on the chosen x86 64-bit machine.

3. Java requirements:

- Oracle JRE 1.8 or OpenJDK 1.8
- The **JAVA\_HOME** (or **JRE\_HOME**) environment variable on your system set to the path for your default JDK (or JRE) installation. Ensure that this path does not include a trailing character, such as a slash or space.

Be sure to set this variable *two levels up* from the `java` executable, i.e., just above the `bin` directory. For example, for a `java` executable in `/path/to/bin/java`, set **JAVA\_HOME** or **JRE\_HOME** to the directory `/path/to`.

4. A dedicated unprivileged user account is recommended for the Linux-x86-64 system that hosts the license server. See **Create a dedicated unprivileged user account** on page 30.



## Installing an FNE License Server

### 1. Install the FNE License Server

The FlexNet Embedded server is available as a separate installation tar bundle, available for download on the TotalView website at <https://totalview.io/support/updates>.

**NOTE:** For served license renewal, skip this section and see [FNE License Renewal](#) on page 44.

#### 1. Unpack your TotalView FlexNet Embedded distribution on the Linux license server system

To install the FNE license server software, unpack the FlexNet Embedded tar bundle onto the Linux x86 64-bit machine that will host the license server, then run the Install script from the resulting directory:

```
tar xvf flexnetls-<version>.tar -C ~
cd ~/flexnetls-<version>
```

#### 2. Run the Install script using sudo (required)

```
sudo ./Install
```

- Choose an installation directory, e.g., `/opt`.
- At the prompt, select the components to install: just the FNE server files (**flexnetls-server.tar.Z**).

Once the Install script completes, you should have a `flexnetls-<version>` directory under `<installdir>/toolworks`.

### 2. Generate a Host ID for Each FNE License Server

Generate a host ID for the license server and failover server, if relevant.

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

```
<installdir>/toolworks/flexnetls-<version>/bin/toolworks_hostid
```

**NOTE:** Do *not* use the UNIX `hostid` command, as it will not return the proper host ID for FNE.

This script writes the host name and one or more FlexNet Embedded host ID values to standard output, for example:

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

Generate host IDs for each server. If `toolworks_hostid` returns multiple FlexNet host IDs, select a *persistent* host ID, i.e., one for a device that is always part of the system when the license server software is running. The license server host ID is derived from the physical MAC address of a network interface card, and the host ID chosen must be a persistent address.

Send the host ID to the TotalView license team, [license@perforce.com](mailto:license@perforce.com), who will then send you a permanent/subscription license to use when configuring each host

### 3. Verify Your FNE License Type and Product

After receiving your license, you can verify your license type and product by running the utility `toolworks_licensetype` and provide as input the license file:

```
<installdir>/toolworks/totalview.<version>/bin/toolworks_licensetype <licensefile>
```

The script returns the license type (either FNP or FNE), the product, and whether a license server is required. For example:

```
FlexNet Embedded (FNE) TotalView for HPC license(s) detected
These licenses are counted.  A license server is required.
For license setup help refer to TotalView for HPC > FlexNet Embedded (FNE)
in the TotalView Installation Guide.
```

### 4. Configure the FNE License Server

#### 1. Install the license file on the license server system

Place your Perforce-provided FNE license file, `license.bin`, into the `flexnetls-<version>` directory.

#### 2. Create a dedicated unprivileged user account

**NOTE:** Skip this step if you already created the user as a prerequisite to installing and running the license server as discussed in [FNE License Server Prerequisites](#) on page 28.

While not required, it's recommended to have a dedicated, *unprivileged* user account to run the license server.

#### 3. Run the `Configure_License` script using `sudo`

```
cd /opt/toolworks/flexnetls-<version>
sudo bin/Configure_License
```

This script is interactive and prompts you while it runs. These are the possible options:

- Create/provide a username, created as a prerequisite in [FNE License Server Prerequisites](#) or during [Step 2](#). Note that this script will create a user account if you don't already have one.
- *(Optional)* Define a program files directory where the license server service will be installed.
- *(Optional)* Define a data files directory for trusted storage and log files.
- Identify an available listening port (e.g., 7137).
- *(Optional)* Customize FNE server policy settings.
- *(Optional)* View the automatic license server startup script.

## 5. Point TotalView Client Installations to the FNE License Server

Each client machine that will run TotalView needs access to a license.

- On each client machine, set the environment variable `TV_LICENSE_FILE` to point to the FNE license server using the format `<port>@<host>`.

For example:

```
TV_LICENSE_FILE=7137@licserver
export TV_LICENSE_FILE
```

- Alternatively, to avoid having to set up the `TV_LICENSE_FILE` environment variable for each user, place the `<port>@<host>` string in a file in the `FNE_license` directory.

To do this, create a file `tv_license_file` that contains just the `<port>@<host>` string, such as `7137@lic-server`. Place this file in `<installdir>/toolworks/FNE_license/`.

## Autostarting the FNE License Server

### *Autostarting the FNE License Server*

If you would like the license server to automatically start when the system is booted, run the following script as **root**:

```
<installdir>/toolworks/flexnetls-<version>/bin/Configure_Autostart
```

## Managing FNE License Access with Model Definitions

The license models feature available with the FlexNet Embedded license server supports defining allow and block lists based on a host ID, using a *model definition*.

Model definitions use the EBNF syntax (Extended Backus–Naur form). For detail, see the *FlexNet Embedded License Server Administration Guide* located in the installation directory at `<installdir>toolworks/flexnetls-<version>/doc/`.

### Creating and Managing FNE License Model Definitions

You can create either an allow list, which defines host IDs allowed to receive a license, or a block list, which blocks specific host IDs, and allows all others.

**NOTE:** For TotalView, provide usernames for the host ID field, rather than machine identifiers, because TotalView grants licenses based on the username sent as a secondary host ID. For example, `bjones`, rather than `0050569b0d74`.

#### 1. Create a model definition file

The following example creates a simple allow list with three engineering team members:

```
model "engTeam" {
  on hostid("bjones",
            "schang",
            "msingh") {
    use "default"
    accept
  }
  on any() {
    deny
  }
}
```

#### Fields:

- **model:** The model definition name, as a string.
- **hostid:** The individual's user ID
- **use "default":** Uses the default license partition. Note that only one partition, the default, is supported in TotalView.
- **accept:** Accepts all identified hostids.

- **on any () deny:** Denies a license request for any requests that do not match the defined hostids.

To create a block list, switch the `deny` and `accept` keywords and move `use "default"` under `on any()`:

```
model "engTeam" {
  on hostid("bjones",
           "schang",
           "msingh") {
    deny
  }
  on any() {
    use "default"
    accept
  }
}
```

## 2. Load the file into the license server

- Change to the flexnetls directory:

```
cd <installdir>/toolworks/flexnetls-<version>/linux-x86-64/bin/
```

- Load the file:

```
sudo ./flexnetlsadmin.sh -server http://<SERVER>:<PORT>/api/1.0/instances/~
-model -load model_allow.model
```

where `model_allow.model` is the model definitions filename. Note that the prefix `".model"` is not required; it can be anything you choose.

Once model definitions are loaded into the server, you can check on or delete them:

- To see the active model definition:

```
./flexnetlsadmin.sh -server http://<SERVER>:<PORT>/api/1.0/instances/~ -model
```

- To delete the active model definition:

```
./flexnetlsadmin.sh -server http://<SERVER>:<PORT>/api/1.0/instances/~ -model -
delete
```

## Installing an FNE Failover Server

TotalView's FNE license technology supports a failover license server configuration to provide a robust license server availability solution. This creates a primary/failover FNE license server pair for a complete FNE failover setup/configuration.

The procedure to install a failover license server is the same as installing a regular license server, with a few small differences:

### 1. Install the FNE License Server

For [Step 3](#), the provided configure script is **Configure\_Backup\_Server** rather than **Configure\_License**:

```
cd /opt/toolworks/flexnetls-<version>  
sudo bin/Configure_Backup_Server
```

**NOTE:** The primary and failover servers *must* have the same assigned port.

### 2. Generate a Host ID for Each FNE License Server

For a proper failover setup, you must generate a host ID for both the primary *and* failover license servers.

### 3. Configure Hosts to Use the FNE failover setup.

In the case of a failover setup, the **TV\_LICENSE\_FILE** environment variable points to the failover host *pair* using the format `<port>@<primarylicserver>:<backuplicserver>`, for example:

```
TV_LICENSE_FILE=7137@licserver:failoverserver  
export TV_LICENSE_FILE
```

---

## Uninstalling an FNE License Server

TotalView provides a script to remove an FNE license server, **fneuninstall**, located in `<installdir>/toolworks/flexnetls-<version>/bin`. The script first stops and disables the license server, if it is running.

As the root user (or using **sudo**), run the script as below, assuming the FNE server is installed in its default location under `/usr`:

```
cd /usr/toolworks/flexnetls-<version>
./fneuninstall /usr
```

The script **fneuninstall** assumes that you have installed FNE using the default location, including the FNE program and data files. If you chose an alternate location when running **Configure\_License**, you'll need to remove these files manually after running this script.

If you have installed FNE on a backup, or failover, server, run this script on that server as well.

# Developer / Developer for HPC Licensing

TotalView Developer and Developer for HPC installations:

- Do not need a license server
- May have either a FlexNet Publisher (FNP) or a FlexNet Embedded (FNE) style license

**NOTE:** If you have not yet installed TotalView or wish to reinstall, see [Installing TotalView](#) on page 15.

The licensing process includes:

1. Identifying the license host ID and provide it to the licensing team to receive your license
2. Verifying your license type by running the script **toolworks\_licensetype**.
3. Copying the license to the appropriate location, depending on whether it is an FNP or FNE license type, or use a custom location.

To renew or update an existing license, see [Updating or Renewing a License](#) on page 41.

## Find the Host ID

When you installed TotalView, the installer places the **toolworks\_hostid** script in `<installdir>/toolworks/totalview.<version>/bin`.

To obtain host information, run the **toolworks\_hostid** script, as follows:

```
<installdir>/toolworks/totalview.<version>/bin/toolworks_hostid
```

**NOTE:** Do *not* use the UNIX **hostid** command.



This script writes the host name and one or more FlexNet host ID values to standard output; for example:

```
The host name for this machine is: fast-server
The FlexNet Publisher host ID for this machine is: 0050569b1835
The FlexNet Embedded host ID for this machine is: 0050569b1835
```

To receive a license, copy and paste this information and email it to [license@perforce.com](mailto:license@perforce.com) along with the purchase order number.

## Verify Your License Type and Product

After receiving your license, you can verify your license type and product by running the utility **toolworks\_licensetype** and provide as input the license file:

```
<installdir>/toolworks/totalview.<version>/bin/toolworks_licensetype <licensefile>
```

The script returns the license type (either FNP or FNE), the product, and whether a license server is required. For example:

```
FlexNet Publisher (FNP) TotalView Developer / Developer for HPC license detected
These licenses are uncounted. A license server is NOT required.
For license setup help refer to TotalView Developer / Developer for HPC > FlexNet
Publisher (FNP)
in the TotalView Installation Guide.
```

- For an FNP style license, see [FNP: Install a New Developer / Developer for HPC License](#).
- For an FNE style license, see [FNE: Install a New Developer / Developer for HPC License](#).

## Install a New Developer / Developer for HPC License

If you installed TotalView as the **root** user, become the **root** user again to install the license file. If you used **sudo** to install TotalView, use **sudo** here.

Installing the license file consists of simply copying the provided license to the directory where TotalView expects to find it, depending on whether the license is FNP or FNE. To use a custom directory, additional configuration is required.

After installing the license, you can test that the license file is working:

1. Launch TotalView:

```
<installdir>/toolworks/totalview.<version>/bin/totalview
```

2. Test a program, for example:

```
<installdir>/toolworks/totalview.<version>/<platform>/examples/wave
```

TotalView should come up with no licensing dialogs.

## FNP: Install a New Developer / Developer for HPC License

The FNP license you have received is typically named **license.dat**. Install this in either the default location or a custom location.

### *Install Option 1: Install FNP license file in the default location*

Place the license file into the `toolworks/FNP_license` directory of your TotalView installation.

```
cp <licensefile> <installdir>/toolworks/FNP_license
```

where *<installdir>* is the top-level directory where you performed the TotalView installation.

### *Install Option 2: Install FNP license file in a custom location*

To use a custom licensing directory:

1. Set the **LM\_LICENSE\_FILE** environment variable to the file's full pathname. The following example shows the bash shell style syntax for setting **LM\_LICENSE\_FILE**.

```
export LM_LICENSE_FILE=<nonstandard-dir>/<licensefile>
```

If a **LM\_LICENSE\_FILE** environment variable already exists, add the pathname for the license file to this variable's declaration. Notice that the **LM\_LICENSE\_FILE** variable contains a colon-separated list of license file pathnames. For example:

```
export LM_LICENSE_FILE=<nonstandard-dir>/<licensefile>:${LM_LICENSE_FILE}
```

2. Copy the license file into the custom directory.

```
cp <licensefile> <path-to-custom-dir>
```

## FNE: Install a New Developer / Developer for HPC License

### *Install Option 1: Install FNE license file in the default location in your TotalView installation*

Place the license file into the `FNE_license` directory of your TotalView installation.

```
cp <licensefile> <installdir>/toolworks/FNE_license
```

where `<installdir>` is the top-level directory where you performed the TotalView installation.

### *Install Option 2: Install FNE license file in a custom location*

1. Set the variable `TV_LICENSE_FILE`, by either:
  - Setting your `TV_LICENSE_FILE` environment variable to the file's full pathname. For example:

```
$ TV_LICENSE_FILE=/home/jdoe/license.bin  
$ export TV_LICENSE_FILE
```

**or**

- Creating a file, which avoids having to set up the `TV_LICENSE_FILE` environment variable for each user. Name this file `tv_license_file` and place it in the `FNE_license` directory. This file should contain the full path to the node-locked license file, which will be used if `TV_LICENSE_FILE` is not set. For example, this file:

```
installdir/toolworks/FNE_license/tv_license_file
```

could contain:

```
/usr/local/licenses/totalview/license.bin.
```

2. Copy the license file to the custom location.

```
cp license.bin <path-to-custom-location>
```

# TotalView Student

TotalView Student is installed via an installation script downloaded from the Rogue Wave FTP site.

You will receive an entitlement code via email which you will use during the installation process.

1. Download the installation files using standard FTP commands at <https://totalview.io/free-trial>.  
The download will include four files: documentation, release notes, an installation script, and a checksum file to verify the download. The installation script is a `.sh` file. On the macOS, a `.dmg` file is also included. Note that macOS can run either file.
2. Run the installation script which will guide you through getting a license, and installing TotalView:  
Provide the entitlement code when prompted. The install program automatically determines your machine's host ID, verifies the entitlement code, generates a Student Express license file, and installs it on your machine.

When TotalView loads a debug target program, it finds and automatically uses the node-locked license file placed on your machine by the installer.

# Updating or Renewing a License

Updating or renewing a license generally entails just overwriting an existing license with a new license file, although updating a served license requires running a script.

- [FNP License Renewal](#) on page 42
- [FNE License Renewal](#) on page 44

# FNP License Renewal

## TotalView Developer / Developer for HPC FNP License Renewal

You will have received a new `license.dat` file via email. Place this file in the same location as your existing `license.dat` file, allowing it to overwrite the older file.

## TotalView for HPC FNP License Renewal

For served licenses used by TotalView for HPC, license renewal includes running the script `toolworks_lmread` to reload the `license.dat` file.

If you are currently using TotalView, you need to update your existing the `<installdir>/toolworks/flexlm-<version>/license.dat` file after you receive a new one. You do not need to create a new `<installdir>/toolworks/flexlm-<version>/license.src` file, nor do you need to rerun the `Configure_License` script (used by TotalView for HPC only) unless you have deleted or changed the location of the `flexlm-<version>` directory.

To update your `license.dat` file:

1. Back up your existing `<installdir>/toolworks/flexlm-<version>/license.dat` file. For example,

```
cp <installdir>/toolworks/flexlm-<version>/license.dat <installdir>/toolworks/flexlm-<version>/license.dat.bak
```

2. Using a text editor, edit the `license.dat` file and append the new TotalView license keys you have received to the end of the `license.dat` file.
3. Direct the license server to reread your `license.dat` file:

```
<installdir>/toolworks/flexlm-<version>/bin/toolworks_lmread
```

## Deleting Older FNP License Keys

If you received new license keys because you moved your server or traded in existing license keys, the older license keys are no longer valid and must be removed in order for you to be in compliance with the Perforce Permanent License Agreement.

The host and license information that you need to remove are included in the email we sent you. For each of these license keys, that email listed:

- The `hostname` of the license server.
- The host ID of the license server.

- The FlexNet **INCREMENT** lines that contain the now invalid license.

Here is how to remove an invalid license:

1. Locate the machine that corresponds with the **host ID** for the invalid license. Since hostnames are dynamic, you can use the `<installdir>/toolworks/flexlm-<version>/bin/toolworks_hostid` script to validate the host ID of the license server.

The FlexNet host ID is unique for each license server regardless of **hostname** and IP address changes.

2. Locate the `<installdir>/toolworks/flexlm-<version>` directory on the license server.

3. If necessary, become the root user.

4. Make a temporary backup of the existing `license.dat` file. For example:

```
cp <installdir>/toolworks/flexlm-<version>/license.dat <installdir>/toolworks/flexlm-<version>/license.dat.bak
```

5. Using a text editor, edit the `<installdir>/toolworks/flexlm-<version>/license.dat` file to delete the `- INCREMENT` line. Save this file.

6. If other license keys still exist in the `license.dat` file, run `toolworks_lmread` so the license server can evaluate the `license.dat` and verify that these licenses still work. If they do, you can delete the `license.dat.bak` temporary backup file.

To reread your `license.dat` file:

```
<installdir>/toolworks/flexlm-<version>/bin/toolworks_lmread
```

If no license keys remain in the `license.dat` file, use the following command to stop the license server:

```
<installdir>/toolworks/flexlm-<version>/bin/toolworks_init stop
```

# FNE License Renewal

## TotalView Developer / Developer for HPC FNE License Renewal

You will have received a new **license.bin**, generally as an attachment to an email. Place this file into your *<install-dir>/toolworks/FNE\_license* directory, overwriting your existing **license.bin** file.

## TotalView for HPC FNE License Renewal

For served license renewals, replace your **license.bin** file and also run the script **toolworks\_reload**.

1. Replace the existing **license.bin** in the `flexnetls-<version>` directory under *<install-dir>/toolworks* on the Linux-x86-64 system with the new TotalView-provided updated **license.bin**.
2. Load the new **license.bin**, like so:

```
<install-dir>/toolworks/flexnetls-<version>/bin/toolworks_reload
```



# Update License Software

**NOTE:** Updating the FlexNet license software is relevant only to TotalView for HPC which uses a served license.

Your TotalView license is implemented by FlexNet which is built into TotalView.

New releases of TotalView may infrequently incorporate updated FlexNet versions. Consult the TotalView release notes to determine if a FlexNet update has been applied.

If your TotalView release does include a newer FlexNet version than that which is currently installed on your system, you'll need to first update FlexNet on your system before either updating your license or installing a new version of TotalView.

- [Updating FlexNet for FNP](#) on page 46
- [Updating FlexNet for FNE](#) on page 47

# Updating FlexNet for FNP

To update FlexNet:

1. Stop the currently running license server:

```
<installdir>/toolworks/flexlm-<oldversion>/bin/toolworks_init stop
```

2. Open `<installdir>/toolworks/flexlm-<oldversion>/license.dat`, and note the license server manager daemon's TCP/IP port number. This is the last field on the SERVER line (for example: "7127").
3. Next, follow the steps to install a new license. When the **Configure\_License** script asks for the license server manager daemon's TCP/IP port number, enter the port number as noted above.

## Updating FlexNet for FNE

To update FlexNet for an FNE style license, stop and then completely uninstall the existing FNE server. Then install the upgraded FNE license server version.

**NOTE:** For FNE, the existing FNE server must be uninstalled and deleted before upgrading FlexNet and installing the new version.

1. Uninstall the existing FNE Server: [Uninstalling an FNE License Server](#) on page 35
2. Install the new FNE license server: [Installing a FlexNet Embedded \(FNE\) License Server](#) on page 27

# Appendix

- [Cray Installations](#) on page 49
- [macOS Installations](#) on page 50

---

# OS-Specific Installation Info

## Cray Installations

Install TotalView where it is visible from your Linux login nodes. Do not install TotalView on your compute nodes. TotalView communicates with these nodes using a library created by Cray.

### Installing

The Cray distribution is an rpm file, and so you need to run **rpm** to install it.

Before installing, if you know you want to install the package as the default version, first set the environment variable `CRAY_INSTALL_DEFAULT` as follows:

```
export CRAY_INSTALL_DEFAULT=1
```

Note that you do not need to make this decision upfront. You can install TotalView first, and if you decide later to make this package the default you can execute the following:

```
/opt/cray/admin-pe/set_default_files/set_default_totalview_<version>  
/opt/cray/admin-pe/set_default_files/set_default_totalview-support_<version>
```

To install TotalView on Cray systems, you should run the **rpm** command as follows:

#### Linux x86\_64

```
rpm -ivh totalview-<version>.x86_64.rpm
```

#### Linux ARM64

```
rpm -ivh totalview-<version>.aarch64.rpm
```

Then Install the license.

### About the Install

In contrast to the standard TotalView installation, the Cray installation doesn't prompt for a location in which to install TotalView, as it knows where to install files.

The **rpm** application places the Cray bulk launching system and other support modules within the installation directory.

TotalView on Cray systems uses **totalview-support** product components to provide essential interface components that allow TotalView to execute in Cray environments. Included within **totalview-support** are the **totalview-mem-debug** module, a configuration file, and a set of bulk launcher executables.

---

## macOS Installations

Installing TotalView on a Mac comes with some prerequisites.

### *Installation Prerequisites*

1. Install [XQuartz](#).

TotalView requires that XQuartz be installed on the machine where TotalView is running.

2. Make sure every user who might need to debug is in the `_developer` group.

3. *Optional:* Enable developer mode:

Enter: `DevToolsSecurity -enable`.

4. *Optional:* Remove the authorization prompt:

Enter: `sudo security authorizationdb write system.privilege.taskport allow`.

Running the install script should not yield any errors. If errors occur, see [Troubleshooting macOS Installations](#) in the *Reference Guide* for information.

### *Running Multiple Displays*

If you are running TotalView on multiple displays, it is recommended to uncheck **Displays have separate Spaces** under the **Mission Control** preference. This avoids potential display problems in which the TotalView UI could appear partially out of the display.

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