

MATRIX_x[®]

7.0

SYSTEM ADMINISTRATOR'S GUIDE

WINDOWS



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1

Installation Overview and Platform Requirements

This manual tells how to install MATRIX_X[®] Product Family release 7.X. If you plan to install RealSim[™], complete the installation described in this manual, and then proceed to the *RealSim PC Controller Installation Guide (Windows Version)* or the *RealSim AC-1000 Controller Installation Guide (Windows NT Version)*.

1.1 Manual Organization

This manual includes the following:

- Chapter 1 (this chapter) defines the MATRIX_X 7.X installation and platform requirements.
- [Chapter 2, Software Structure](#), describes the MATRIX_X Product Family directory structure and planning options.
- [Chapter 3, Licensing and Terminology](#), describes licensing-related terminology and tasks.
- [Chapter 4, Installation and Related Tasks](#), gives a detailed explanation of the MATRIX_X 7.X installation procedure and related tasks.

- [Chapter 5, FLEXlm Licensing Tools](#), discusses the MATRIX_X 7.X license manager utilities, license manager debugging, and daemon log file.

This guide also has an [Index](#).

1.2 Installation Overview

MATRIX_X 7.X includes installation software that performs a complete installation for the product. This includes three setup types as described in [Table 1-1](#).

Table 1-1 **Setup Types**

Type	Description
Client	Installs client software only.
Server	Installs the product software on a network server (Windows NT only).
Standard	Installs the product software on a local PC.



NOTE: The Server and Standard installation processes require approximately 100 MB of disk space during the installation process. The product software requires approximately 64 to 96 MB of RAM.

The installation software includes the Flexible License Manager (FLEXlm[®]). RealSim is available as an option.



NOTE: MATRIX_X can be installed on a file server using a shared license manager.

1.3 Platform Requirements

Wind River supports the MATRIX_X 7.X software in the hardware and software environments described in the following sections.

1.3.1 Hardware Requirements

The following requirements apply to all computers that will run MATRIX_X on Windows NT[®], Windows 2000, Windows ME, Windows 98, or Windows 95:

- IBM compatible 486 with a math coprocessor, or a Pentium processor.
- Minimum 64 MB RAM, 96 MB recommended.
- Approximately 230 MBs of disk space to complete a full MATRIX_X installation. See [Table 1-3](#), p.4 for details.
- A video card that supports a minimum of 256 colors at 800 x 600 resolution; 65,536 colors at 1024 x 768 resolution is recommended; True Color setting (16 million) is supported.
- A CD-ROM drive for software installation or use of online books.
- A 2-button Microsoft compatible mouse, with a 3-button Logitech mouse or equivalent preferred.



NOTE: You can change the number of colors for your display through Start→Settings→Control Panel→Display→Settings.

1.3.2 Software Requirements

The following requirements apply to all computers that will run MATRIX_X on Windows NT, Windows 2000, Windows ME, Windows 98, or Windows 95:

- The MATRIX_X software requires Windows NT version 4.0.
- Supported installations include English, Japanese, and German.
- If you want to link your own C code to Xmath or SystemBuild, you must purchase and install a copy of Microsoft Visual C++ 6.0 (Service Pack 3). For FORTRAN you must install a copy of DIGITAL Visual Fortran 6.0 for Windows NT.



NOTE: DIGITAL Visual Fortran 5.0 for Windows NT (releases 408 through 333E) requires a patch for the linker before it will work properly. Contact Digital at www.digital.com/fortran to acquire the patch.

- Floating licenses require properly functioning TCP/IP networking which includes Winsock 1.1 or later.

- Netscape 3.01 or later is required for MATRIX_X Help. A version of Netscape is provided in the MATRIX_X CD-ROM media.

1.3.3 Compatible Compilers and Operating System Versions

The MATRIX_X software was developed and tested with the operating system and compiler versions listed in [Table 1-2](#). These configurations are recommended for optimal compatibility.

Other operating system and compiler versions may be compatible with the MATRIX_X software. For the latest information, check the Wind River Support page at www.windriver.com or contact Technical Support at 1-800-958-8885.

Table 1-2 **Verified Compilers**

Compiler	Windows NT 4.0, Windows 2000, Windows ME, Windows 98, or Windows 95
C or C++	Microsoft Visual C / C++ version 6.0, Service Pack 3
FORTTRAN	DIGITAL Visual Fortran version 6.0



WARNING: Other compilers may work in some cases, but are not supported. Wind River recommends against using unsupported compilers.

1.3.4 Minimum Disk Space Requirements

The minimum space requirements for the MATRIX_X software on a Windows host are shown in [Table 1-3](#). A complete installation requires approximately 230 MB of disk space during the MATRIX_X installation process. This may be significantly larger for large disk partitions that use a FAT format.

Table 1-3 **Minimum Disk Space Requirements**

Product	Space Required
MATRIX _X	135 MB
License Manager	3 MB
Netscape Navigator Stand-Alone (International)	17 MB
Altia Design Animation (optional)	40 MB
Altia FacePlate (optional)	35 MB
Full installation	~230 MB

1.3.5 Requirements for Configuration Management Operation

The MATRIX_X configuration management (CM) feature provides integration between SystemBuild™ and various configuration management tools. A user can store catalog items in files, and perform common version management operations from within the SystemBuild environment. Wind River currently supports the following CM tools:

- ClearCase™ using both dynamic and snapshot views (version 3.2.1)
- Merant PVCS™ (version 6.6)
- Microsoft Visual SourceSafe™ (version 6.0)

Each of these tools has its own native working environment that must be installed and functioning before the tool can be used with SystemBuild.

1.3.6 Related Publications

Wind River provides a library of publications to support its products. Of special interest to the users of this publication are the installation guides, summarized as follows:

- *System Administrator's Guide (Windows Version)*
- *RealSim PC Controller Installation Guide (Windows Version)*
- *RealSim AC-1000 Controller Installation Guide (Windows NT Version)*
- *FLEXIm End User Manual* (from GLOBEtrotter Software, Inc.)

All of the above and other MATRIX_X documents are on the online documentation CD. For additional documentation, see the MATRIX_X Help or the Wind River home page at <http://www.windriver.com>.

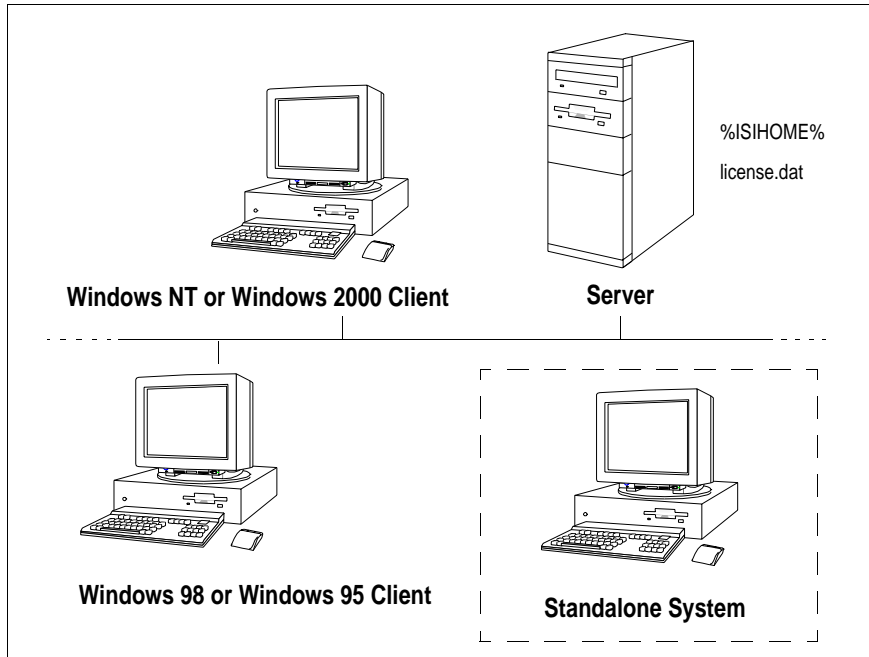
1.4 Installation Configurations

MATRIX_X supports three installation types on Windows hosts: standard, server, and client. A PC can only support one of these installation types at a time for a given version of MATRIX_X. If you want to change installation types for a version, you should uninstall and then reinstall that version. Multiple different versions of

MATRIX_X software can be installed at one time on the same machine, possibly for different installation types.

Figure 1-1 shows a typical client-server configuration.

Figure 1-1 **Typical Client-Server Configuration**



1.4.1 Standard Installation

A standard installation installs the full set of MATRIX_X software on the local Windows system. Typically, this type of installation is not visible to other machines on the network because it uses a local installation path not accessible to other systems.

If you perform a standard install specifying the installation directory with a valid pathname in Uniform Naming Convention (UNC) format, for example:

```
\\computername\sharename\wind
```

then the installation will be visible to other users similar to a server installation.

1.4.2 Server Installation

A server installation, which can only be run on Windows NT, installs the full set of MATRIX_X software on the local Windows system similar to a standard installation. However, a server installation will, if necessary, automatically create a directory share with a user specified name for the local install directory, thus ensuring that the software is visible to other client systems on a network. A server installation can also accept a valid UNC format pathname for the installation directory path.

1.4.3 Client Installation

A client installation (requiring only 5 KB of disk space) creates shortcuts to an existing server installation of MATRIX_X and updates any Windows shared system files on the client required to run the MATRIX_X software. It does not place any other software on the client system. During a client installation of MATRIX_X, you will be asked to specify the network pathname of an existing MATRIX_X server installation.

All client machines that will use MATRIX_X software must be able to access the %**SIHOME**% root directory on the server machine.

1.5 Licensing

MATRIX_X uses FLEXlm[®] licensing utilities. For licensing information, see [Licensing and Terminology](#) on p.13, [FLEXlm Licensing Tools](#) on p.49, or the GLOBEtrotter[®] *FLEXlm End User Manual* on the MATRIX_X documentation CD.

1.6 Troubleshooting Resources

For troubleshooting tips, see [Troubleshooting Your Installation](#), p.43. For troubleshooting assistance check the Wind River Support page at www.windriver.com, send email to Support@WindRiver.com, or contact Technical Support at 1-800-958-8885 or 1-800-872-4977.

To participate in an unmoderated online forum with other MATRIX_X customers, you can subscribe to the MATRIX_X list server. Once you subscribe to the `matrixx` email list, you will automatically receive all messages sent to the list. To join the list server discussion group, send a message similar to the following:

```
To: listserv@windriver.com  
Subject: Subscription
```

```
subscribe matrixx Your_Name
```

where *Your_Name* is a string for your name in any format (for example, MatrixX.User).

To leave the discussion group, send the same message with **unsubscribe** replacing **subscribe**. (The list server records and responds to the sending email address.)

2

Software Structure

This chapter describes installation planning options and MATRIX_X 7.X directory structure.

2.1 Planning Options

Before starting the installation, you should make decisions about how and where you want to install MATRIX_X tools. These issues must be addressed *before* you start the installation procedure detailed in [Chapter 4](#).

MATRIX_X 7.X must be installed in a different installation directory if you plan to keep versions prior to 7.X. The MATRIX_X 7.X installation will not affect an older release of MATRIX_X software as long as you do not use the same parent directory. You do not have to do any extra work to keep the older version of MATRIX_X, which will still use its own license manager.

You can install a copy of MATRIX_X on a local node using either floating or node-locked licensing, or, you can use a file server (a shareable disk) and a shared license manager to install the MATRIX_X software on a network server. The directory structure detailed here is of interest in both situations, as it handles multiple versions and multiple platforms.

2.2 Directory Structure

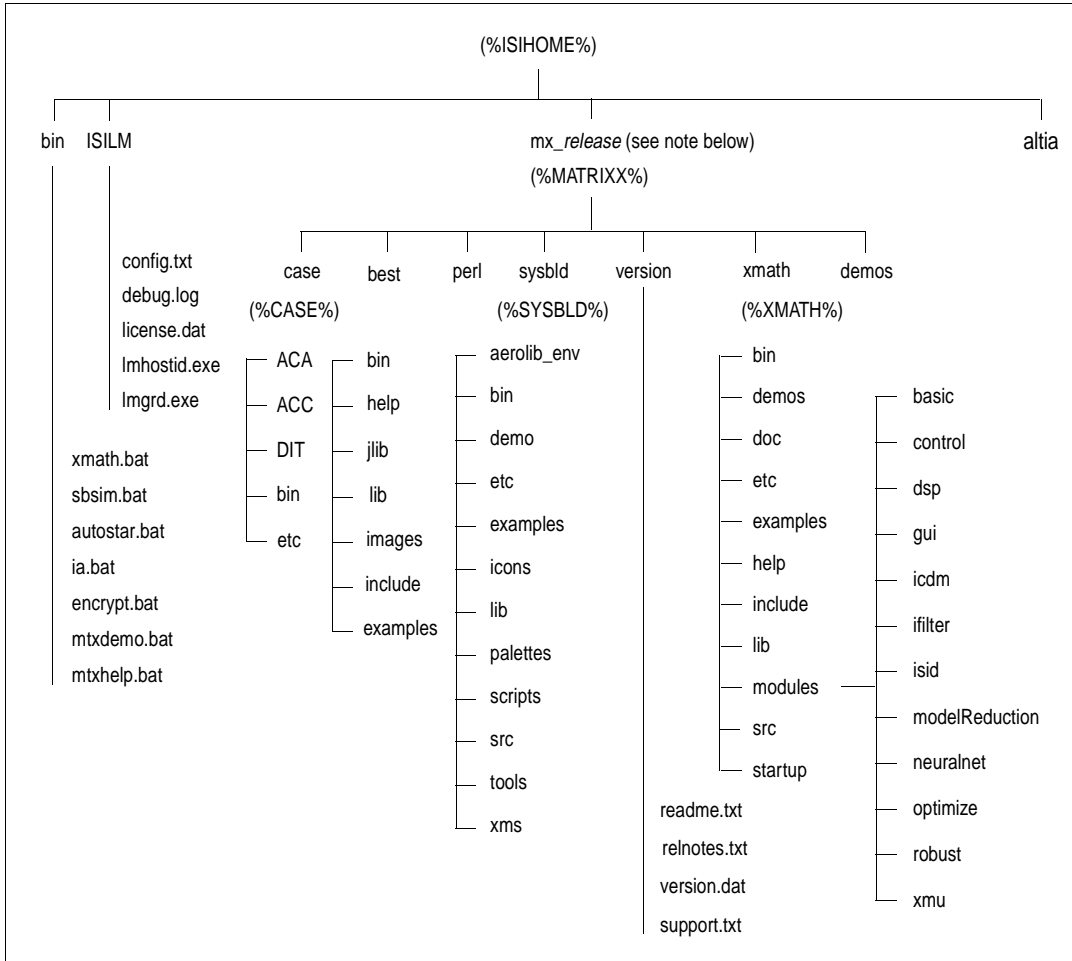
The directory structure shown in [Figure 2-1](#), p. 11 shows the MATRIX_X product structure, which enables you to manage the software in a central location in a network environment. This structure reduces the system administration issues of multiple installations for a given platform, because installation can be completed solely on a file server using a common license manager. Then a simple client installation on a networked node will let you access the file server installation. You can safely install multiple versions of MATRIX_X 7.X into a common root installation directory (%**SIHOME**%).



NOTE: All machines that will use MATRIX_X software must be able to access the %**SIHOME**% root directory. %**SIHOME**% and *installation_directory* (referred to elsewhere in this document) are equivalent.

The commands used to invoke the MATRIX_X suite of products can be found in the directory %**SIHOME**%\bin.

Figure 2-1 **MATRIX_x Product Family Sample File Structure**



NOTE: release has the form 7X.x

3

Licensing and Terminology

This chapter provides an overview of licensing and describes licensing-related terminology and tasks. MATRIX_χ 7.X includes a license daemon, **lmgrd.exe** which controls all Wind River product licenses. **lmgrd.exe** resides in the directory **ISILM** and must be running on your license server (or on all three if you have a redundant license server configuration). It does not have to be on the node where you install MATRIX_χ 7.X.

3.1 Licensing Overview

MATRIX_χ licensing includes the following features:

- Floating and node-locked licenses
- Redundant license servers (optional)
- Flexible license checkout

3.1.1 Floating and Node-Locked Licenses

License configurations for counted floating licenses, node-locked licenses, and evaluation licenses are available on Windows NT, Windows 2000, Windows ME, Windows 98, and Windows 95 systems. To check out a floating license or counted node-locked licenses, a client system must be connected to the network and have

properly functioning TCP/IP software with Winsock support. Evaluation and uncounted node-locked licenses do not require that you have a running license server or network support.

Windows NT systems can function as network license servers for floating licenses; however, Windows ME, Windows 98, and Windows 95 systems are not supported as network license servers. Windows NT, Windows 2000, Windows ME, Windows 98, and Windows 95 systems can check out floating licenses from either a Windows NT or UNIX license server. To check out licenses from a network license server, a Windows system must reference a copy of the same **license.dat** file used by the network server, or it must reference a proxy license file (see 3.5, p.20).

3.1.2 Redundant License Servers

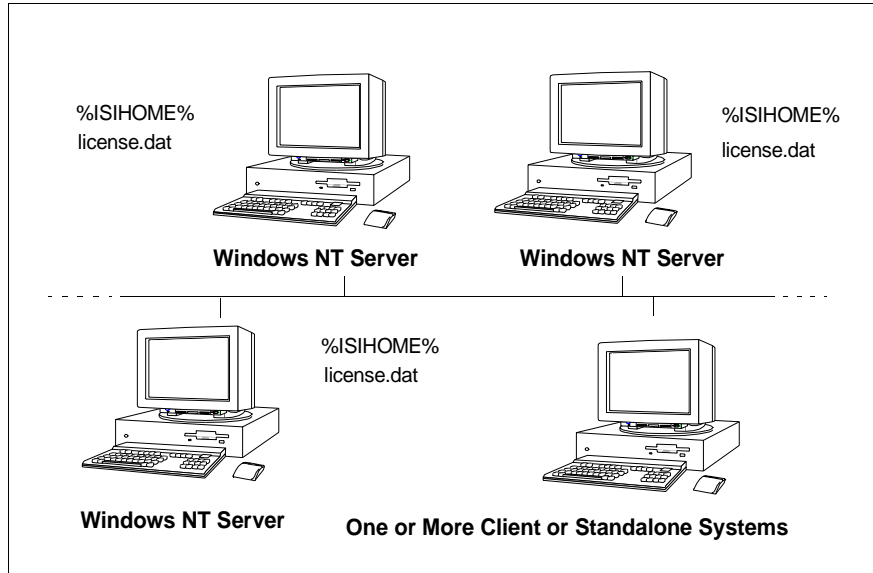
Redundant license servers are a set of three nodes designated to serve the same license file. If any node fails, the other two nodes will still be available to serve the licenses for MATRIX_x.

To support the redundant license server scheme, Wind River License Administration requires information for three Windows NT servers. This information includes the **computername** and **hostid** (that is, an Ethernet address) for each server.

Wind River issues redundant license server keys once you provide the hostid of the three servers. At a minimum, you need to run the standalone license server installation program and start the license server on each machine. Follow the instructions described in [Installing Redundant License Servers](#) on p.34.

[Figure 3-1](#) shows a typical redundant license-server configuration.

Figure 3-1 **Typical Redundant License Server Configuration**



3.1.3 Flexible License Checkout

With MATRIX_X 7.X licensing, a feature (product component) is checked out as you use it. A feature stays checked out until you exit that product component. For example, Xmath and SystemBuild modules are checked out when first used and stay checked out until you exit Xmath or SystemBuild. SystemBuild is checked out when you launch the Catalog Browser (by starting SystemBuild) and stays checked out until you exit SystemBuild. The flexible license checkout feature is also known as on-demand checkout.

3.2 Xmath Licensing Commands

Xmath has the following license-related commands:

- **LICENSECHECKOUT** for checking out features for future use

- **LICENSEUSER** for displaying assigned licenses for any feature names specified
- **LICENSEINFO** for displaying a license report for your site
- **LICENSEFILE** for displaying the current license file search path
- **ISIREFNUM** for identifying your Wind River reference number

All of these commands must be run from the Xmath Commands window.

3.2.1 LICENSECHECKOUT

LICENSECHECKOUT is an intrinsic command that checks out a license for the listed feature or features. Run **LICENSEINFO** to see a list of feature names. Features are specified as strings, and the name must be exactly as displayed by **LICENSEINFO**.

Although features are normally checked out on-demand, you can use **LICENSECHECKOUT** to reserve features for future use (for example, for a scheduled demo or presentation). They are checked in when you exit Xmath.

This command can be placed in a global or local **startup.ms** file to check out required features at startup. The syntax is as follows:

```
LICENSECHECKOUT feature1,feature2,...featureN
```

For example:

```
LICENSECHECKOUT "Xmath","Control","Sysid","Sysid2","sysbld","case"
```

3.2.2 LICENSEUSER

The **LICENSEUSER** utility displays assigned licenses for any feature names specified. The default feature is Xmath if no argument is specified. **LICENSEUSER** accepts feature names in string form. To see a list of the feature names for products you have purchased (for example, **aca** indicates AutoCode Ada), issue the **LICENSEINFO** command. The syntax for **LICENSEUSER** is as follows:

```
LICENSEUSER feature1,feature2,...featureN
```

Typical output is shown in [Example 3-1](#).

Example 3-1 **LICENSEUSER** Output

```
licenseuser "xmath","aca"
```

Users of Xmath:

```
Number of licenses purchased : 10
Number of unused licenses   : 4
```

User	Node Name	Starting Time
muemura	sampras	Thu May 29 19:33:44 1999
lynch	tribble	Thu May 29 19:34:36 1999
sanjay	castaway	Sat May 31 19:01:04 1999
rpizzi	castor	Mon Jun 2 15:21:54 1999
dawn	venus	Wed Jun 4 11:05:06 1999
uma	sampras	Mon Jun 9 13:45:47 1999

Users of aca:

```
Number of licenses purchased : 4
Number of unused licenses   : 2
```

User	Node Name	Starting Time
muemura	sampras	Thu May 29 19:56:44 1999
uma	sampras	Mon Jun 9 13:51:47 1999

3.2.3 LICENSEINFO

LICENSEINFO displays a license report for your site as shown in [Example 3-2](#).

Example 3-2 **LICENSEINFO License Report**

licenseinfo

```
License File: C:\isi\isilm\license.dat
=====
License Server Name: hardrock
License Server ID: 18000000
=====
Module Name      Feature Name  Expiration Date  Type      Seats  Licensed Node
Xmath            Xmath        31-jan-2002     Floating  10
Control Design  Control      31-jan-2002     Floating  10
SystemBuild     sysbld       31-jan-2002     Floating  10
AutoCode C Single Processor  acc          31-jan-2002     Node-Locked 4      80379b46
Model Reduction Modred        31-jan-2002     Floating  10
Interactive Animation Module Icdm         31-jan-2002     Floating  10
Robust Control Module Robust        31-jan-2002     Floating  10
RT/Fuzzy Module blk_fuz       31-jan-2002     Floating  10
AutoCode Ada Single Processor aca          31-jan-2002     Floating  10
DocumentIt      docit        31-jan-2002     Node-Locked 4      80379b46
```

3.2.4 LICENSEFILE

The **LICENSEFILE** command displays the current license file search path. The syntax and example output are as follows:

LICENSEFILE

License files searched by MATRIXx are as follows:

```
\\AGGIES\mx7x\isilm\license.dat  
\\AGGIES\mx7x\isilm\tplic.dat
```

3.2.5 ISIREFNUM

The **ISIREFNUM** command displays the Wind River reference number (also known as your customer identification number). You should have this number ready if you plan to call Wind River customer support.

The syntax and example output are as follows:

ISIREFNUM

```
Your Wind River Reference Number is :  
CUSTOMID99
```

3.3 Using Licensing

With concurrent licensing, you can have a different number of licenses for each module or application. An application or module is either available on a first-come, first served basis, or node-locked to a given CPU. Some common uses of licensing are as follows:

- To see all the features your site has purchased or to view the license expiration date, use the command **LICENSEINFO**.
- To see who is using a given feature, or to see if a feature is available, use the **LICENSEUSER** command and specify the desired feature.
- To see the current license file search path, use the command **LICENSEFILE**.
- To reserve features for future use (for example, for a scheduled demo or presentation), use the **LICENSECHECKOUT** feature.

The initial distribution of licenses is determined at the time of the installation; to change licensing, your system administrator must get a new key from Wind River License Administration. To generate a new license file from this key, run the standalone license installation as described in [4.5 Updating a License File](#), p.39.

Wind River uses the FLEXlm license manager, a product of GLOBETrotter Software, Inc. If you have license manager questions beyond the scope of this document, please see the *FLEXlm End User Manual* on the MATRIX_X online documentation CD. For additional information about FLEXlm, see the GLOBETrotter FAQ at www.globetrotter.com/flmfaq.htm.

3.4 License Files

The set of licensed features available for checkout by a MATRIX_X user are contained in one or more license files, each containing encrypted feature lines.

The following default license files are used by the MATRIX_X products:

- **%SIHOME%\ISILM\license.dat** — This primary license file contains feature lines for built-in MATRIX_X features. The **license.dat** file is generated from Wind River provided authorization keys during the MATRIX_X or standalone license manager installation procedures.
- **%SIHOME%\ISILM\tplic.dat** — This optional file contains license feature lines for third-party MATRIX_X components. The encrypted feature lines in this file and the instructions for using the file will typically be provided by your third-party supplier. Multiple features from different third-party suppliers can be placed in this file. Typically, this file will also contain the same SERVER and DAEMON lines as **license.dat**. This file is not modified during a MATRIX_X or license manager installation, nor is it deleted by uninstall procedures.

The search paths used to locate these license files are set in the environment variable **%LM_LICENSE_FILE%** by the MATRIX_X product launching scripts. The above Wind River license file paths are prepended to any existing definition of **%LM_LICENSE_FILE%**, thus allowing access to other MATRIX_X or non-MATRIX_X products also licensed by a FLEXlm license manager.

Normally, the only things you can change in a license file are:

- The hostname (not the hostid).

- The port number on the SERVER line. If this port number is already in use, the license daemon (**lmgrd**) will report **Address In Use**. The default port number used in MATRIX_X 7.X license files is 27000, whereas for prior releases it was 5200. A valid number is any unused port number between 1025 and 64000. The port number can be removed and the FLEXlm license manager will serve on any available FLEXlm reserved port in the range 27000-27009. For redundant license servers, however, you must use a fixed port number.
- The path to the vendor daemon executable on the DAEMON line. (The vendor daemon is named **mtxldm**.)
- **name=value** pairs on a FEATURE line can be changed if **name** is lowercase.

Redundant license server files contain three SERVER lines. The first SERVER line defines the primary license server. The second and third lines define the secondary license servers.

3.5 Proxy License Files

If you are using a floating-license server, each licensing client needs a copy of the same license file used by the server. Alternatively, to avoid copying the license server file to each installation of MATRIX_X, you can create a proxy license file in the ISILM directory of each MATRIX_X installation. This approach can be used for both single and redundant license server configurations. The proxy license file (**license.dat**) can be constructed by taking the **SERVER** line or lines from the license server file and then adding a line containing **USE_SERVER**. For example, a proxy license file for a single server configuration would be as follows:

```
SERVER host1 17003456 27000
USE_SERVER
```

A proxy license file for a redundant server configuration, for example, would be:

```
SERVER host1 17003456 27002
SERVER host2 17004355 27002
SERVER host3 17007ea8 27002
USE_SERVER
```

Unless your server nodes are changed, you will not have to update the license file for each individual MATRIX_X installation when the server license file is updated.

Although a proxy license file is the preferred way to reference the actual license file used by a remote license server, you can also use a **port@host** definition for either of the environment variables **LM_LICENSE_FILE** or **MTXLMD_LICENSE_FILE**. **port** is the license file port number and **host** is the hostname, and both are taken from the **SERVER** line of the actual license file. **MTXLMD_LICENSE_FILE** is similar in use to **LM_LICENSE_FILE**, except that it is specific to the **MATRIX_x** license manager daemon and overrides any concurrent definition of **LM_LICENSE_FILE**.

3.6 Compatibility

The **MATRIX_x** 7.X license manager uses the vendor daemon **mtxlm** (versus **silmd** in releases prior to 6.X) and the default port number 27000 (versus 5200 in releases prior to 6.X). The **MATRIX_x** 7.X license manager is compatible with the release 6.X software and can supersede the earlier version.



NOTE: Because of the addition of new features and new license manager functionality, license keys issued prior to **MATRIX_x** 6.X cannot be used to regenerate a license file for release 7.X.

3.7 Licensing Requirements

If you are a new user, your software is shipped with an evaluation key. Note that the key clearly states the expiration date. You can install the evaluation license, and then later regenerate the license file for a standard installation (as described in [Updating a License File](#), p.39). In order to obtain a standard license, you must provide the **computername** and **hostid** for each license server machine.

3.7.1 Finding the Host ID

FLEXlm uses different machine identifications for different machine architectures. An Ethernet address is the preferred “host ID” for a Windows platform. An Ethernet address is a 6-byte quantity, with each byte specified as two hexadecimal digits. Specify all 12 hex digits when using an Ethernet address as a host ID.

The program `%ISIHOME%\ISILM\lmhostid` will print the Ethernet host ID that FLEXlm expects to use on any given machine. For floating licenses, you must provide an Ethernet address. For node-locked licenses, an Ethernet address is preferred, but a disk volume serial number for drive C: can be used. A disk volume serial number is an 8-character string with the dash omitted. [Table 3-1](#) lists alternate methods to obtain the required host ID.

Table 3-1 **Obtaining the Host ID on Different Platforms**

Platform	Host ID	DOS Shell Command	Example
Windows NT	Ethernet address	<code>ipconfig /all</code> (Physical address)	08002be5a721
Windows ME/98	Ethernet address	<code>winipcfg /all</code> (Adapter address)	08002be5a722
Windows NT/ ME/98	Disk volume serial number for C: drive	<code>c:\vol</code>	1F68-5D8A (disregard dash)

3.7.2 Finding the Computer Name

The Computer Name is defined at the time Windows is installed. To see the Computer Name, select Start→Settings→Control Panel→Network. The Identification tab appears; the first entry is the Computer Name.

3.7.3 Contacting Wind River License Administration

Contact License Administration in one of the following ways:

- Complete a Key Request Form (included with your software) and fax it to 408-542-1953.
- Send email with the information asked for in the Key Request Form to license@windriver.com.

- Call 1-800-545-0463 (options 8 and 5) between 9 a.m. and 5 p.m. Pacific Time, Monday through Friday, and follow the voice mail directions which route you to the License Key Request administrator.

Wind River supplies the authorization key(s) and checksum(s) used to generate the license file, which enables you to use the packages and modules you purchased. An authorization key or checksum is an alphanumeric string that does *not* contain the numbers 0, 1 or 5 to avoid confusion with the uppercase letters O, I, and S.

4

Installation and Related Tasks

This chapter describes how to install MATRIX_x software, including any optional components such as Altia Design animation, and perform related tasks.

4.1 MATRIX_x 7.X Installation

This section provides a detailed description of how to install MATRIX_x 7.X software on a client, server, or standalone PC.

Requirements

- Your system must meet the hardware and software requirements for your platform specified in [Chapter 1, Installation Overview and Platform Requirements](#).
- A server installation must be on a Windows 2000 or Windows NT 4.0 system.
- Floating licenses require properly functioning TCP/IP networking which includes Winsock version 1.1 or later.

Privileges

For a Windows NT installation, you must have Administrator privileges.

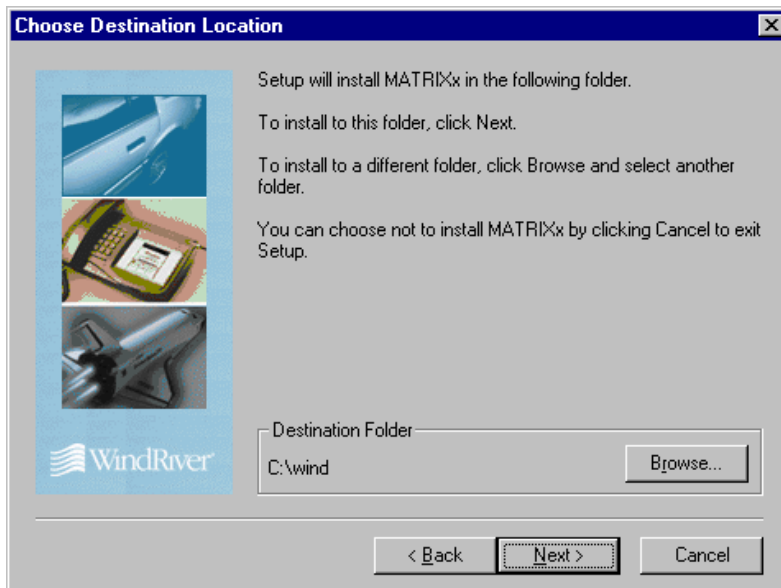
Installation Procedure

Before running the installation program, you will need the Wind River reference number, authorization key, and checksum.



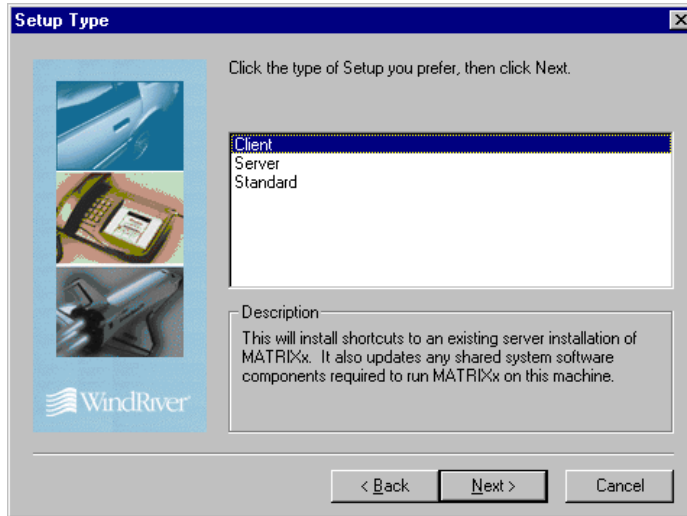
NOTE: Before beginning the installation make sure you exit from any other software and stop all virus scan software.

1. Place the MATRIX_x 7.X CD in the CD-ROM drive.
2. Use the Windows Explorer to find the **setup.exe** file in the **MATRIXx** directory and launch it.
3. After the Welcome and End-User License Agreement screens (not shown), the following dialog prompts you for the location of your installation directory.

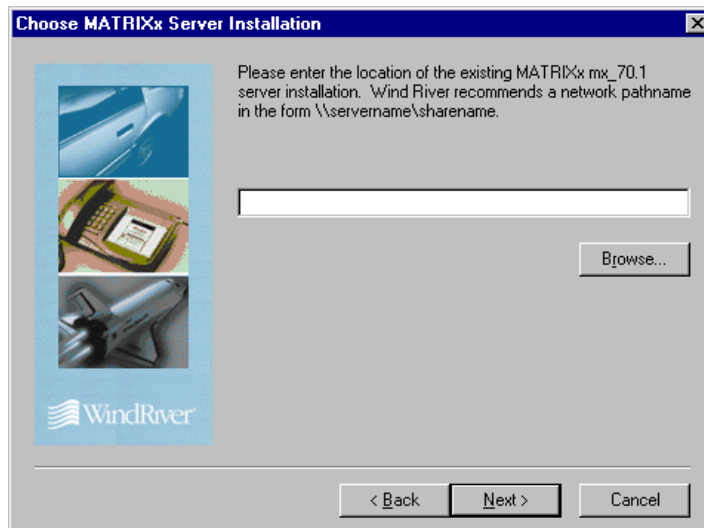


4. Setup defaults to **c:\wind** but you can use the **Browse** button to select any other local (or server) location.

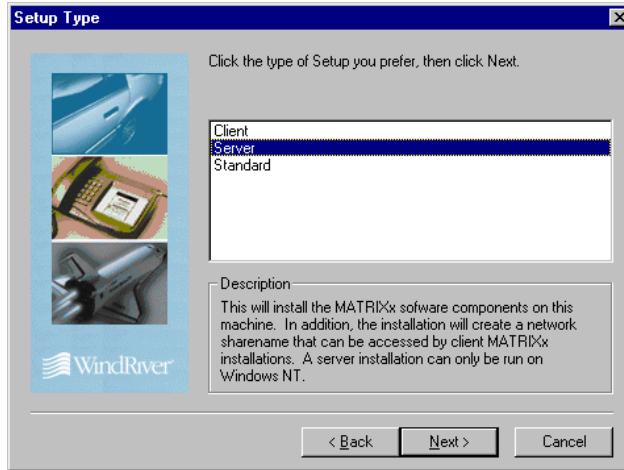
5. After you click Next, the Setup Type dialog prompts you to select Client, Server, or Standard (the default). Select the appropriate type as described in 1.4, p.5.



- a. If you select Client, you will be prompted for the path to an existing MATRIX_x server installation:



- b. If you select Server, you will be prompted for the Sharename for the installation directory unless you entered a universal naming convention (UNC) pathname as the install location:



6. Setup copies the MATRIX_x product files and updates any shared components. The TradeWinds service installation is launched automatically at the completion of the MATRIX_x product installation. If you see the following message:

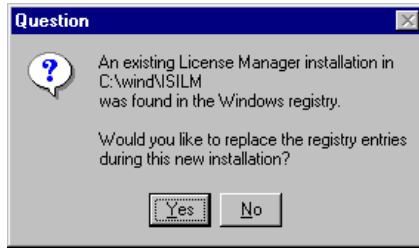
Unable to locate TradeWinds InstallShield Setup file. Please check your distribution.

see [4.2.6 Installing the TradeWinds Service](#) for instructions.

The license manager installation is automatically launched.

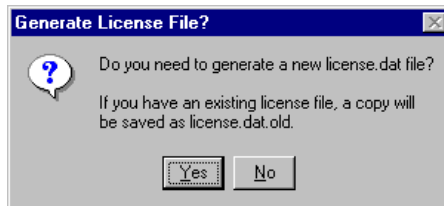
License Installation

7. If Setup finds an existing License Manager (ISILM) installation in the Windows registry, you see the following prompt about your registry entries:



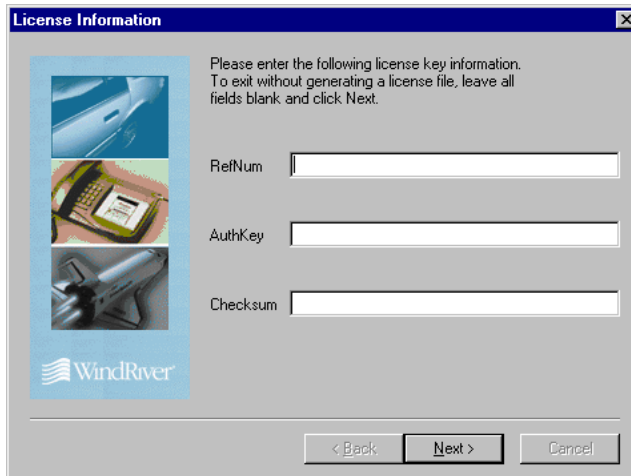
If you click Yes, the new license file generated during this installation procedure supersedes the one currently registered in the registry. If you click No, the new license file generated during this procedure will only be used by the products installed as part of this current installation.

8. The Wind River License Manager (ISILM) installation asks you whether you want to generate a new license file (**license.dat**):



NOTE: If you don't already have a MATRIX_X 7.X license file, click Yes to generate one. If you intend to access a floating license provided by another host, click No to avoid generating a new license. Then when the installation is complete, use a text editor to create a proxy license file named **license.dat** in the *installation_directory\ISILM* folder as described in [3.5 Proxy License Files](#), p.20, [Proxy License Files](#).

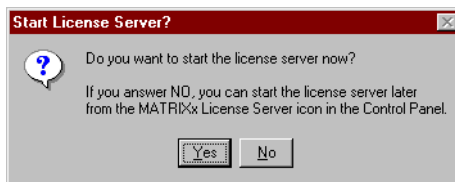
- a. If you click No, go to [Step 9](#), p.31.
- b. If you click Yes, the installation prompts you for your reference number, authorization key, and checksum:



The MATRIX_X 7.X software has an option for running backup license servers called *redundant servers*. If you have purchased the redundant server option, you will also be prompted to enter the hostnames of the additional license servers.

After you enter valid data, the License File dialog (not shown) displays the generated license file.

- c. On Windows NT systems, you are prompted to start the license server, unless you have an Evaluation license:



NOTE: The license server is not required for an Evaluation license. For other licenses, the license server can always be started later from the MATRIX_X License Server icon in the Control Panel.



9. Upon completion, you can select to display the **README** file (an ASCII version of the release notes that are also available in the MATRIX_X Help) or exit the installation.



NOTE: In most cases rebooting is not necessary, but Setup prompts you to reboot if required. If you have just completed a server installation, be sure to set your desired access permissions for the **ISIHOM**E directory share.

10. If you are installing redundant license servers, complete the procedure described in [Installing Redundant License Servers](#) on p.34.
11. To start Xmath 7.X, select Start→Programs→MATRIXX→Xmath, or enter either of the following from the Command Prompt:

```
installation_directory\bin\xmath
```

-or-

```
installation_directory\bin\xmath -v version
```

where *version* is the installation version that you just installed, or one of the versions in *installation_directory*\bin.

12. (Optional) Once you have verified that Xmath starts successfully, go to [Installing Other Components](#) on p.32, if you plan to use Altia Design or Altia FacePlate.
13. If you do not already have Netscape installed, use the Windows Explorer to select the Netscape setup file (**setup.exe**) from the **Netscape** directory on the CD. Netscape 3.01 or later is required to support MATRIX_X Help. After installing Netscape, to ensure that it is configured properly, invoke it and answer any dialog prompts before using it with MATRIX_X.

4.2 Installing Other Components

This section describes the installation procedures for installing optional MATRIX_X components.

4.2.1 Installing Altia Design Animation

Since the Altia Design software uses the Wind River license manager, you must have either MATRIX_X or the standalone license manager installed.

To install Altia Design animation software, follow these steps:

1. Verify that the MATRIX_X CD is in your CD-ROM drive.
2. Use the Windows Explorer to find the **setup.exe** file in the **Altia\Design** directory, and launch it.
3. When the installation dialog prompts you for the installation directory, specify **SIHOME** where **SIHOME** is your existing MATRIX_X installation directory.



NOTE: If you choose not to install within your current **SIHOME** directory, you must edit the Altia code words file after installation is complete to identify the path of the Wind River license manager file (**license.dat**). Select Start→Programs→Altia Design→Codeword File and specify the path to the Wind River license file.

4.2.2 Installing Altia FacePlate

Since the Altia FacePlate software uses the Wind River license manager, you must have either MATRIX_X or the standalone license manager installed.

To install Altia FacePlate software, follow these steps:

1. Verify that the MATRIX_X CD is in your CD-ROM drive.
2. Use the Windows Explorer to find the **setup.exe** file in the **Altia\Face** directory, and launch it.
3. When the installation dialog prompts you for the installation directory, specify **SIHOME** where **SIHOME** is your existing MATRIX_X installation directory.



NOTE: If you choose not to install within your current **ISIHOM**E directory, you must edit the Altia code words file after installation is complete to identify the path of the Wind River license manager file (**license.dat**). Select Start→Programs→Altia FacePlate→Codeword File and specify the path to the Wind River license file.

4.2.3 Installing RealSim

To install RealSim, see the *RealSim PC Controller Installation Guide (Windows Version)* or the *RealSim AC-1000 Controller Installation Guide (Windows NT Version)*. Both of these installation guides are available in printed form and are on the online documentation CD.

4.2.4 Installing the Standalone License Manager

The standalone license manager installation, which populates only the **ISILM** subdirectory tree, is a subset of the full **MATRIX_X** installation. It can be used to provide support for other standalone product installations such as Altia animation or RealSim, which require **MATRIX_X** licensing but may not need the full **MATRIX_X** product set to function. In addition, it can provide the required licensing installation on single or redundant license servers.

Installation Procedure

Before running the installation program, you will need the Wind River reference number, authorization key, and checksum.

1. Place the **MATRIX_X** 7.X CD in the CD-ROM drive.
2. Use the Windows Explorer to find the **setup.exe** file in the **ISILM** directory and launch it.
3. Select the Install License Manager setup type and follow the dialog prompts to complete the installation.
4. Each installation of **MATRIX_X** installed in a separate location can access the license server via the proxy license file described in [3.5 Proxy License Files](#), p.20, [Proxy License Files](#).

4.2.5 Installing Redundant License Servers

At a minimum, installing redundant license servers requires the installation of standalone license manager software and starting the license manager daemon on two other nodes in addition to the primary license server. Special license keys are required for a redundant license server configuration.

To install a typical redundant license server configuration, follow these steps:

1. Perform a standalone license manager installation on the primary license server (see [4.2.4 Installing the Standalone License Manager](#), p.33) or a complete MATRIX_X installation if you want this machine to also serve the MATRIX_X application files (see [4.1 MATRIX_X 7.X Installation](#), p.25). Either procedure requires generating a license file and starting the license daemon.
2. On each of two secondary license servers, run either the standalone license manager installation (see [4.2.4 Installing the Standalone License Manager](#), p.33) or a complete MATRIX_X installation (if you want to replicate all the MATRIX_X files), and then start the license daemon on each machine.



NOTE: Rather than generating the license file on each secondary license server, copy **license.dat** from the **ISILM** directory of the primary server to the **ISILM** directory of each secondary server before starting the license daemons. Edit the **DAEMON** line of each secondary copy of the **license.dat** file to point to the daemon path that contains **mtxld.exe** for that server.

3. Each separate installation of MATRIX_X can access the license server with a proxy license file as described in [3.5 Proxy License Files](#), p.20.

4.2.6 Installing the TradeWinds Service

This section describes how to install the TradeWinds service on Windows NT and Windows 2000, and implement this pseudo-service on Windows ME, Windows 98, and Windows 95. The TradeWinds service combines the following functionalities:

- A CORBA (Common Object Request Broker Architecture) naming service (full implementation)
- A session manager
- A portmapper (local lookup service)

This service (on Windows NT and Windows 2000) or pseudo-service (on Windows ME, Windows 98, and Windows 95) is installed by a separate

InstallShield **setup.exe** file which is called from the MATRIX_X InstallShield setup program. This separate TradeWinds setup is launched, assuming the distribution media structure at the root of the CD-ROM is maintained. If this is not done (for example, if you only copy files in the MATRIX_X installation folder to a separate location and invoke the setup program from there), the following warning message during the MATRIX_X installation appears (at the end of the MATRIX_X installation and just prior to the installation of the license manager):

```
Unable to locate Tradewinds Installshield setup file. Please check your
distribution.
```

If this message appears, just click OK button to proceed with the License Manager installation and install the TradeWinds service/pseudo-service separately as described below.

1. Locate the **setup.exe** file in the TradeWinds directory of your installation media.
2. Double click on the **setup.exe** program to launch the setup.

No other information is required.

This service is configured so that it is automatically started on system startup. The files associated with this service reside in the **C:\Program Files\windriver\tradewinds** directory. The port numbers used by the service are contained in the **tw.cfg** file.

Setting the computername

In order for the TradeWinds daemon to run, you must set the **computername** by adding the following line to your **c:\autoexec.bat** file on Windows ME, Windows 498, or Windows 95:

```
set COMPUTERTNAME=your_computer_name
```

where *your_computer_name* is the computer name specified in your network configuration properties dialog in the Control Panel.

Changing port numbers

The following procedure describes the method for changing the port numbers used by the TradeWinds service:

On Windows NT or Windows 2000:

- To stop the service, from Settings→Control Panel→Services scroll down to the TradeWinds service, select TradeWinds and click Stop.
- Once the service has been stopped, edit the **tw.cfg** file in the **C:\Program Files\windriver\tradewinds** directory changing the **traderservice.port** entry as necessary.
- To start the service, from Settings→Control Panel→Services scroll down to the TradeWinds service, select TradeWinds, and click Start.

On Windows ME, Windows 98, or Windows 95:

- To stop the service, press Ctrl-Alt-Delete to bring up the Task Manager.
- Select the **TradeWind.exe** process and click End Task.
 - Once the service has been stopped, edit the **tw.cfg** file in the **C:\Program Files\windriver\tradewinds** directory changing the **traderservice.port** entry as necessary.
 - Log out. Once you log in again the **TradeWind.exe** process starts automatically.

4.3 Using Online Documentation

MATRIX_x online documentation is provided in PDF format on a separate CD. The documents can be accessed from the MATRIX_x online documentation CD or copied to any location on your local system.

Viewing and Searching PDF Files

To view MATRIX_x online documentation, launch Adobe Acrobat Reader with Search (version 3.01 or higher), and then open the **welcome.pdf** file. The **welcome.pdf** file is a table of contents for PDF documentation on the CD. Click any document title to open that document.

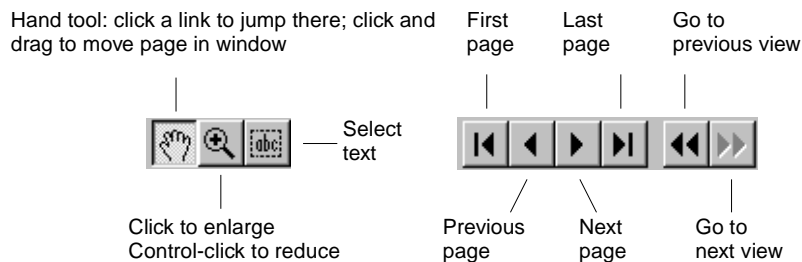
If you do not have Acrobat on your system, see [Installing Acrobat Reader with Search](#).

Using Acrobat Reader

Each document has a “bookmarks” pane displayed on the left.

All bookmarks and blue text are hypertext links. To follow a link, be sure the hand tool is selected; then click the bookmark or blue text.

Use the following Acrobat toolbar buttons for browsing and navigation:



Select Help → Reader Guide for a detailed description of all Acrobat capabilities.

Bookmarks can contain the following links:

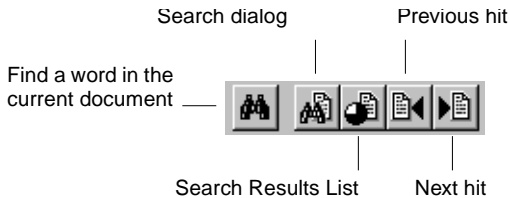
- Welcome: Link to the Welcome screen.
- Document Title: Link to the cover of the current document.
- Contents: Link to the Table of Contents for the current document.

- Chapter and Section Bookmarks: Links to chapters and sections in the document.
- A right-pointing triangle in front of a bookmark means there are sub-bookmarks; click the triangle to expand to lower-level bookmarks.
- Index: Link to the Index of the current document if one exists.

Pasting Text into Other Applications

To copy examples or text from a PDF document into an application, first click Tools → Select Text, or click the abc button. Select the text, and then use the usual technique on your platform to copy and paste the text into the target application.

Find and Search in PDF



The Acrobat Reader Find feature locates words or word phrases in the current PDF document.

To use Find, click the plain binoculars on the toolbar, or select Tools → Find.

To make a full-text search over all documents on the CD, use the Search tool. Click the binoculars overlaid on a document on the toolbar, or select Tools → Search. In the Search dialog, enter the word or phrase you want to find, select options as desired, and then click Search. Search displays a Search Results List dialog of documents containing the term. Click any document in the list to open it. All instances of the term on the first page where it occurs are highlighted.

To find the next or previous occurrence, click the Next or Previous hit buttons on the Acrobat toolbar. To return to the Search Results List dialog, click the Search Results List button.

The Search command includes powerful features for expanding a search using automatic word-stemming, a thesaurus to find synonyms, and a “sounds like”

feature. You can also use wild cards in terms, control case matching, and include Boolean connectives.

For further details on Search, select Help → Plug-In Help → Using Acrobat Search to read the online guide.

4.4 Installing Acrobat Reader with Search

If you have an old version of Acrobat Reader, uninstall it before installing the new version.

To install from the Windows Explorer, find the `Acroread\Win\Rdr_srch\32bit\Setup.exe` file on the CD and launch it.

To install from a Windows Command Prompt, type the following command, substituting your drive letter for d.

```
d:\Acroread\Win\Rdr_srch\32bit\Setup.exe
```

The online books can be read directly from the CD or copied to your local system.



NOTE: If Acrobat is installed, don't copy the `Acroread` folder from the CD to your local system, or you may overwrite your installation.

4.5 Updating a License File

To update a license file, run the standalone license manager installation as described in 4.2.4, p.33 and select the Update License File setup type.

4.6 Using MATRIX_X Help

MATRIX_X 7.X provides a hypertext markup language (HTML) help system. MATRIX_X Help is a self-contained system with multiple hypertext links from one component to another. This help system, augmented by online and printed manuals, covers most MATRIX_X topics except for installation.

MATRIX_X Help runs with Netscape 4.03 or greater. The MATRIX_X CD includes a self-extracting executable of the latest supported version.

Printing Files

To print a Help topic, go to the Topics Hierarchy, and select a topic (for example, Dynamic Systems→Control Design) and then right click and hold. A Netscape window displays with one of the options saying Open Frame in New Window. Once the Help topic is in the new window, select Print (or any other standard Netscape capability).

Additional Netscape Information

For more information on Netscape products, see Netscape's home page at: <http://home.netscape.com>.

4.7 Installation-Related Tasks

Table 4-1 lists installation-related tasks with corresponding page references.

Table 4-1 Installation Tasks

To learn about...	Go to...
Setting Up a User Environment for Printing	p.41
Running Multiple MATRIX_X Releases	p.41
Recording Your Wind River Reference Number	p.41

Table 4-1 **Installation Tasks** (Continued)

To learn about...	Go to...
Moving the ISIHOMEDirectory Tree to Another Directory	p.42
Configuration Management Installation Tasks	p.42
Troubleshooting Your Installation	p.43

4.7.1 Setting Up a User Environment for Printing

The environment variable %XMATH_PRINT% defines the printer for MATRIX_X. The following are sample definitions for %XMATH_PRINT%, where \\pluto\hp4 should be replaced by your printer.

Windows 2000 or NT: Set the following using the Control Panel system applet:

```
set XMATH_PRINT=%MATRIXX%\xmath\bin\xmprint
\\pluto\hp4
```

Windows ME, 98, or 95: Set the following in your AUTOEXEC.BAT file:

```
set XMATH_PRINT=%MATRIXX%\xmath\bin\xmprint
\\pluto\hp4
```

4.7.2 Running Multiple MATRIX_X Releases

You can install multiple releases of MATRIX_X 7.X or later under a common directory. If you have multiple releases installed, the following command lets you run a selected version:

```
installation_directory\bin\command_name -v version
```

where **command_name** is *xmath*, *sbsim*, *autostar*, *ia*, *encrypt*, *mtxdemo*, or *mtxhelp*, and **version** is one of the versions in *installation_directory\bin*. The version string appears as a suffix on the launching scripts.

4.7.3 Recording Your Wind River Reference Number

To help us provide rapid support when you call Wind River, the installation procedure prompts you for the 10-character reference number while installing MATRIX_X 7.X or the license manager. Your reference number is stored in the file

`%SIHOME%\SILM\config.txt`. If you do not have a reference number, you can obtain one from Wind River License Administration when you request your Authorization Key and enter it into the first line of the `config.txt` file as follows:

```
REFERENCE NUMBER: 10_character_string
```

You can use the Xmath `SIREFNUM` command to display the reference number.

4.7.4 Moving the *SIHOME* Directory Tree to Another Directory

If you want to move the `SIHOME` directory tree to another directory after installing MATRIX_X 7.X, the preferred method is as follows:

1. Save the `license.dat` file (if required).
2. Uninstall the MATRIX_X software after stopping the license daemon.
3. Reinstall MATRIX_X in the new directory location.
4. Copy the `license.dat` file to the new directory location.
5. Restart the license daemon.

4.7.5 Configuration Management Installation Tasks

The MATRIX_X configuration management (CM) utility provides integration between SystemBuild and the ClearCase, Merant PVCS, and Microsoft Visual SourceSafe CM tools. Before using this utility, you must install the CM license key. For information about obtaining and installing license features, see [Chapter 3, Licensing and Terminology](#).

The ClearCase, Merant PVCS, and Microsoft Visual SourceSafe CM tools all have their own native working environment that must be installed and functioning before the CM tool can be used with SystemBuild. SystemBuild uses the Microsoft Common Source Code Control interface to connect with these tools. When one of these CM tools is installed, entries are written to the Windows registry. These registry entries allow SystemBuild to connect to the CM tool.

When you connect to CM, you must set your working directory to the working directory for the selected project. The CM tool supports working with one project at a time (there is a 1:1 relationship between the working directory and a project).

4.7.6 Troubleshooting Your Installation

The following sections provide some troubleshooting tips.

Virus Scanners and Utility Software

It is important that virus scanner software be disabled before installing MATRIX_X. Virus scanners and some utility software can interfere with the ability of the InstallShield program to run external programs during installation. External programs are used during install to set the installation path in MATRIX_X launching scripts and to generate the license file. Symptoms of external program failure are that the MATRIX_X launching scripts do not have the correct installation path set in environment variables such as %**SIHOME**%, thus causing Xmath and other programs to fail to launch. If license file generation fails during an install, Xmath may report a license file error when trying to run.

It is possible to run the external programs from the Command Prompt after an install to fix these problems without performing a complete reinstall. You can invoke each of the two programs listed below without providing parameters to get a usage message that describes the required Command Prompt arguments.

- To generate a new license file from the Command Prompt window, change directory to %**SIHOME**%\ISILM and run the license file generator **engine.exe**. You should use the **-nolog** parameter when generating the license from the Command Prompt. This program replaces the **license.dat** file in the %**SIHOME**%\ISILM directory.
- To reset the installation path in the MATRIX_X launching scripts, run the Perl program **moveinstall.pl**. You can invoke this program as follows to get its usage description:

```
%MATRIXX%\perl\perl.exe %MATRIXX%\version\moveinstall.pl
```

where %**MATRIXX**% is the MATRIX_X product subdirectory as shown in [Figure 2-1](#), p.11.

Temp Directory Usage During Install

InstallShield uses the Windows **TEMP** folder during installations. It is therefore important that sufficient disk space exist on the disk drive containing **TEMP** (which may be different from the drive where you are installing MATRIX_X). An installation can fail when there is insufficient disk space on the **TEMP** drive. On

rare occasions, an InstallShield install can fail due to remnants in the **TEMP** folder of a previously aborted install. You can avoid this problem by clearing the contents of the **TEMP** folder.

Product Icons (Windows NT and Windows 98)

If you are upgrading to MATRIX_X 7.X from from MATRIX_X 5.X or earlier, you may see the old shortcut icons appearing in the Start→Programs→MATRIX_X 7X.X menu after product installation. This is due to a Microsoft identified operating system problem in Windows NT 4.0 and Windows 98 (Microsoft knowledge base article ID: Q133733). This problem is caused by the operating system failing to update the **ShellIconCache** file in the Windows folder. To resolve this problem on Windows NT or Windows 98, Microsoft recommends the following steps to force a refresh of the **ShellIconCache** file:

1. In Control Panel, double-click Display.
2. Click the Appearance tab.
3. In the Item box, click Icon.
4. Increase the icon size by one unit.
5. Click Apply.
6. Decrease the icon size by one unit, and then click OK.

Windows NT License Servers

On Windows NT, the license server must be started unless you are using an Evaluation license or are using another network node as a floating license server. When the license server is properly started, the **lmgrd** and **mtxlm** processes should appear in the process list of the Windows NT task manager. You can use the MATRIX_X License Server applet in the Windows NT Control Panel to start or stop the license server or to check its status. You can also check the contents of the license server diagnostic log file, *installation_directory\ISILM\debug.log*, to see if the license server is running correctly. If the license server is running and you wish to use a different copy of the **license.dat** file, you should stop the license server first, copy the new **license.dat** file and then restart the license server.

If you try to perform one of the following licensing tasks and receive an error message, you may be able to correct it by identifying the cause as described in [Table 4-2](#).

Table 4-2 **Error Message Definitions**

Command	Error Message or Problem	Cause or Remedy
lmdiag	lmdiag reports that the hostid is correct, but the license daemon has not been started.	Kill all lmgrd processes started for the license.dat file (they are trying to use the same TCP/IP port) and start a new lmgrd process.
lmreread -c license_file	You cannot use lmreread to change server node names or port numbers.	You have changed the server name or port number. Kill the old daemon, then restart the license daemon.

Environment Space on Windows 98

On Windows 98, if you try to launch Xmath and it does not come up, this usually means that you are out of environment space. This can happen if you have other software installed that uses up most of your default environment space. To confirm this, you can right-click on the Xmath shortcut and uncheck the Close on exit option under the Program tab. The Xmath shortcut is usually located in the file:

`Windows\Start Menu\Programs\MATRIXx 7X.X\Xmath`

If you then see the message:

Out of environment space

in the remaining Command Prompt window after trying to launch Xmath, you will have to increase the environment size. You can increase the environment size by setting the Initial environment to 4096 under the Memory tab of the above Xmath shortcut.

If you must have an even larger environment space or if you need to increase your environment space globally, you will have to add a SHELL line to your **config.sys** file. For an environment space of 8192 bytes, this SHELL line is as follows:

`SHELL=c:\windows\command.com /p /e:8192`

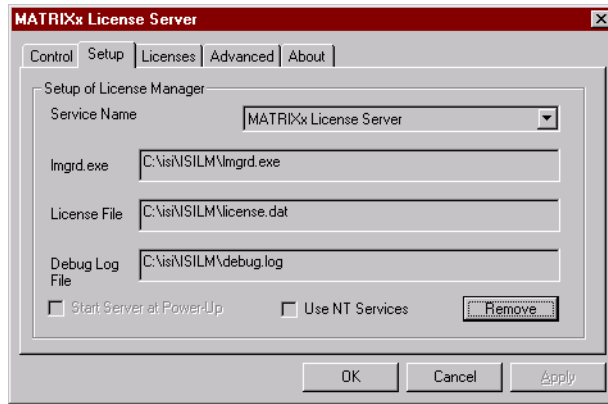
4.8 Uninstalling MATRIX_X 7.X

The following summarizes the items to consider when performing a complete uninstall of MATRIX_X software:

- All MATRIX_X and Altia software should be removed by using the Add/Remove Programs icon in the Control Panel.
- If you want to uninstall the optional Altia Design animation software and it is installed under the MATRIX_X installation directory, then Wind River recommends that you uninstall it before removing MATRIX_X.
- On Windows 2000/NT only, if you want to uninstall the MATRIX_X License Server, then Wind River recommends that you uninstall it before removing MATRIX_X.
- On Windows 2000/NT only, if you want to uninstall a server installation of the MATRIX_X 7.X software, you should first remove any file shares associated with the MATRIX_X installation directory.

Since Windows 2000/NT platforms support the MATRIX_X license server, you will need to take the following steps to remove the license server and the MATRIX_X software:

1. Stop and remove the MATRIX_X License Server service from your machine by taking *one* of the following steps:
 - Select Control Panel→MATRIX_X License Server. On the Control tab dialog, click Stop (if a failure is reported, the server may already be stopped). On the Setup tab click Remove.



- Alternatively, invoke %SIHOME%\ISILM\stopsrv.exe from a Command Prompt window to shut down the license server and remove it from Windows NT.
2. Remove the MATRIX_x License Server and MATRIX_x version 7.X software by taking these steps:
 - a. Use Control Panel→Add/Remove Programs to remove the MATRIX_x License Server.
 - b. Use Control Panel→Add/Remove Programs to remove the MATRIX_x 7.X software.
 3. Close the Control Panel, and then remove the MATRIX_x License Server icon from the Control Panel by deleting the **mtxlm.cpl** file from the Windows NT **system32** directory. This file must be removed manually because Windows NT will not let you remove it during the uninstall process.
 4. (Windows NT or Windows 2000 only) Remove the TradeWinds service as follows:



CAUTION: Be certain that no other Wind River products using TradeWinds service are installed before removing it.

- a. From Control Panel→Services, select TradeWinds from the Services dialog and click Stop.
- b. From Control Panel→Add/Remove Programs, select TradeWinds from the Add/Remove Programs Properties dialog and click Add/Remove.

5

FLEXlm Licensing Tools

This chapter describes the FLEXlm utilities. This includes explaining how to troubleshoot common license manager problems and describes messages from the daemon log file. For additional licensing documentation, see the *FLEXlm End User Manual* from GLOBEtrotter Software, Inc. on the MATRIX_X documentation CD.

5.1 FLEXlm Utilities

MATRIX_X 7.X uses FLEXlm for its license server. FLEXlm provides the following OS utilities to help manage the licensing activities on the network:

lmstat	Helps you monitor the status of all network licensing activities.
lmdiag	Lets you diagnose problems when you cannot check out a license.
lmgrd	Starts the license daemon.
lmhostid	Reports the host ID of a system.
lmreread	Causes the license daemon to reread the license file and start any new vendor daemons.
lmver	Reports the FLEXlm version of a library or a binary.

5.1.1 *lmgrd*

lmgrd is the main daemon program for FLEXlm. When you invoke **lmgrd**, it looks for the license file. The license file contains information about vendors and features.

Syntax is:

```
lmgrd [ -c license_file ] [ -t timeout ][ -s interval ] [ -b ]  
      [-l logfile ]
```

where:

<i>-app</i>	Is required for Windows NT systems.
<i>-c license_file</i>	Uses the specified license file.
<i>-t timeout</i>	Sets a timeout interval, in seconds, during which redundant daemons must complete their connections to each other. The default value is 10 seconds. A larger value may be desirable if the daemons are being run on busy systems or a heavily loaded network.
<i>-s interval</i>	Specifies the logfile timestamp interval, in minutes. The default is 360 minutes.
<i>-l logfile</i>	Specifies the pathname to the log file. If this option is not specified, the log will be sent to standard output.
<i>-v</i>	Prints the lmgrd version number.

5.1.2 *lmstat*

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

- Which daemons are running
- Users of individual features
- Users of features served by a specific daemon

Syntax is:

```
lmstat [-a] [-S [DAEMON]] [-f [feature]] [-s [server_name]]  
      [-t value] [-c license_file][-A] [-l [regular expression]]
```

where:

-a	Displays everything.
-A	Lists all active licenses.
-c <i>license_file</i>	Uses <i>license_file</i> .
-S [<i>DAEMON</i>]	Lists all users of the specified daemon's features.
-f [<i>feature_name</i>]	Lists users of the specified feature(s).
-l [<i>regular expression</i>]	Lists users of matching license(s).
-s [<i>server_name</i>]	Displays status of server node(s).
-t <i>value</i>	Sets lmstat time-out to <i>value</i> .

5.1.3 *lmreread*

The **lmreread** utility causes the license daemon to reread the license file and start any new vendor daemons that have been added. Additionally, all pre-existing daemons will be signaled to reread the license file for changes in feature licensing information. Syntax is:

```
lmreread [-c license_file]
```



NOTE: If you use the **-c** option, the license file specified will be read by **lmreread**, not by **lmgrd**; **lmgrd** rereads the file it read originally. Also, **lmreread** cannot be used to change server node names or port numbers. Vendor daemons will not reread their option files as a result of **lmreread**.

5.1.4 *lmhostid*

The **lmhostid** utility reports the host ID of a system. Syntax is:

```
lmhostid [ether | long]
```

The output of this command appears as follows:

```
lmhostid - Copyright (C) 1989-2000, Globetrotter Software, Inc. The FLEXlm
host ID of this machine is "69021c89"
```

The **ether** option causes **lmhostid** to print the Ethernet address on Hewlett-Packard (HP) systems. On HP systems the **long** option prints the value of

the HP ID module. These options are only available in FLEXlm v2.21 or later. The default is **long** for FLEXlm v2.21 or earlier, and **ether** for FLEXlm v2.4 or later.

5.1.5 *lmdiag*

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

Usage is:

```
lmdiag [-c license_file] [-n] [feature]
```

where **-c** *license_file* path to file to diagnose. **-n** run in noninteractive mode; **lmdiag** will not prompt for any input in this mode. In this mode, extended connection diagnostics are not available. **feature** diagnose this feature only.

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

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

5.1.6 *lmver*

lmver reports the FLEXlm version of a library in binary. Usage is:

```
lmver [filename]
```

where *filename* can be **mtxlmld.exe** or **lmgrd.exe**.

5.2 Resolving Problems

This section offers some general debugging tips, and discusses information you should gather before contacting support. 5.3, p.54 lists common license manager problems users have encountered before.

5.2.1 General Debugging Tips

The following are tips for debugging:

- Examine the `%ISIHOME%\ISILM\debug.log` file.
- If you cannot check out a feature, run:

```
%ISIHOME%\ISILM\lmdiag -c %ISIHOME%\ISILM\license.dat
```

- If the license daemon appears to have started correctly (which you should be able to determine from the `isi.log` file), try running `lmstat` to see if that program has the same problem as your application.

```
lmstat -a -c %ISIHOME%\ISILM\license.dat
```

5.2.2 Support Issues

When you make a support call, please be prepared to answer the following questions:

- What kind of machine is your license daemon running on? What version of the operating system is the application running on?
- What version of FLEXlm does the program use? Use the following command on your `mtxlm` vendor daemon and application:

```
%ISIHOME%\ISILM\lmver %ISIHOME%\ISILM\mtxlm.exe
```

- What error or warning messages appear in the log file? Did the daemon start correctly? Look for a message such as:

```
server xyz started for: feature1 feature2.
```

- What is the output from running `lmstat -a`?
- Are you running other products which are also licensed by FLEXlm? Wind River does not support combined license files.

5.3 Troubleshooting License Manager Problems

This section lists areas of FLEXlm administration that have given customers difficulty in the past. Categories are [Host ID Problems](#), [Connection Problems](#) on p.54, and [Other Client Problems](#) on p.55.

5.3.1 Host ID Problems

SYMPTOM	<code>When I run the license manager on my machine, it tells me it is the wrong host ID.</code>
CAUSE	<p>The vendor daemon checks the host ID listed on the server line in the license file; if it does not match the host ID of the machine it is running on, this message will be printed.</p> <p>Possible causes include:</p> <ol style="list-style-type: none">1. You are trying to run the license daemon on a different machine from the machine the file was made for.2. The host ID of the machine you are running on changed (for example, the HP ID module was moved, or the CPU board was replaced).3. The host ID in the license file was modified.
SOLUTION	<p>Verify that the host ID of the machine where the vendor daemon (or node-locked client program) is being run matches the host ID specified in the license file (on the server line for the vendor, or on the feature line for a node-locked client). You can run the lmhostid program to see what FLEXlm thinks the host ID is. You cannot modify the host ID in the license file. If the host ID of your server machine changes, you will have to get a new license file from your software vendor.</p>

5.3.2 Connection Problems

SYMPTOM	<code>The application program (or lmstat) can't connect to the server to check out a license.</code>
CAUSE	<p>The FLEXlm routines in the application are unable to make a TCP connection to the server and port specified in the license file. Possible reasons for this are:</p> <ol style="list-style-type: none">1. The wrong license file is being referenced by the application program.2. The server machine specified in the license file is down.3. The vendor daemon specified in the license file is not running.

4. The **hostname** in the license file is not recognized by the system.
5. The network between the client machine and the server machine is down.
6. TCP is not running on your machine.

SOLUTION Verify that the application is using the proper license file. Verify that the specified server machine is up and reachable by executing another command that uses TCP, such as **rsh** or **rlogin**, from the client to the server. Verify that the vendor daemon is running (you can use the **ps** command on the server to look for it). Examine the license log file to see if any problems are reported, particularly messages indicating that the vendor daemon has quit. Run **lmstat -a** from the server machine to verify that the vendor daemon is alive. Run **lmstat -a** from the client machine to verify the connection from client to vendor daemon across the network. Try using **telnet hostname portnum** where **hostname** and **portnum** are the same as on the **server** line in your license file.

5.3.3 Other Client Problems

SYMPTOM When I run my application program (or vendor daemon), I get the error **bad code**.

CAUSE Possible causes for this are:

1. The license file was modified (either the host ID on a **server** line or anything on the **feature** line was changed).
2. The vendor used the wrong version of his license creation program to generate your license file (or there is a bug in that process).

SOLUTION You cannot modify the license file. If you need to change something in your license file, you must get a new license from Wind River.

SYMPTOM When the second user tries to check out a license, the vendor daemon prints an error concerning **Parameter mismatch** in the log file and refuses the license.

CAUSE The most likely cause of this problem is that you are simultaneously trying to run two different versions of the application program, and the software vendor has not specifically set up the new version for this kind of compatibility. Check the license server log file for a **comm version mismatch** warning message; this indicates that someone is running a V1.5 client with a V2.1 or later license server.

SOLUTION Run only the new version (or old version) of the application.

5.3.4 Other Server Problems

SYMPTOM **When I start lmgrd, it says Retrying socket bind (address in use: port xxxx).**

CAUSE The license server listens on the port *xxxx* that has already been used by another server program. 99.44% of the time, if it's in use, it's because **lmgrd** from Wind River or another vendor is already running on the port - or was recently killed, and the port isn't freed yet.

SOLUTION The **license.dat** file has 27000 at the end of the SERVER line as the port number. You can remove it to let **lmgrd** scan for a free port from 27000 to 27009. You can also specify a port number selected by yourself for other concerns such as farewell.



WARNING: The portscan feature of **lmgrd** is only available for FLEXlm v6+ licenses. You cannot drop the port numbers when configuring redundant servers.

SYMPTOM **When I start up lmgrd, it says execl failed on my vendor daemon.**

CAUSE **lmgrd** uses **execl** to start each vendor daemon running. If there is a problem starting the vendor daemon, this message is output to the log file. This error is typically caused by one of the following:

1. There is no executable at the location referred to by the license file (and printed out in the log file).
2. The executable does not have the proper protection to be run (the file does not have the x bit set, or one of the directories in the path is not readable).
3. There was an error building the executable, and it cannot be run.
4. The executable is for a different machine architecture.

SOLUTION Verify that the path to the vendor daemon is absolute, and that it points to the executable program itself, not the containing directory (for FLEXlm v1.5). Ensure that the file exists by doing an **ls -l** of the vendor daemon **filename(s)** specified in the log file. Make sure you do this as the same user that started **lmgrd**. Verify that the file is executable. Run the vendor daemon directly from the command line. If the vendor daemon is properly linked, it will tell you that it must be run from **lmgrd**; if it crashes or fails to execute, then it is not properly linked.

SYMPTOM **The license server keeps reporting lost lock errors in the log file and exiting.**

CAUSE The lockfile is being removed by someone else. There could be another daemon running, or the system administrator (or a script) could have deleted the file.

SOLUTION Check to see if there is more than one copy of the daemon running. Check for more than one **lmgrd** running as well, since it will restart your vendor daemon when it is killed. If more than one **lmgrd** is running, kill them all, then kill any remaining vendor daemons and start one fresh copy of **lmgrd**. Check to see whether a shell script is running that cleans out **tmp**. If so, try modifying it so that it does not delete zero length files.

5.4 Daemon Log File

Daemons generate log files with **DAEMON NAME messages** where:

DAEMON NAME	Either license daemon or the string from the DAEMON line that describes your daemon. In the case where a single copy of the daemon cannot handle all of the requested licenses, an optional underscore followed by a number indicates that this message comes from a forked daemon.
message	The text of the message.

The log file, available as `%ISIHOME%\ISILM\debug.log`, can be used to:

- Inform users when they need to purchase additional application software licenses.
- Diagnose configuration problems.
- Diagnose daemon software errors.

5.4.1 Informational Messages

These messages are only informational and do not necessarily indicate an error or a problem.

Connected to node.	This daemon is connected to its peer on node <i>node</i> .
CONNECTED, master is name.	The license daemons log this message when a quorum is up and everyone has selected a master.

DENIED: <i>N feature to user</i> (<i>N licenses</i>)	<i>user</i> was denied access to <i>N</i> licenses of <i>feature</i> .
EXITING DUE TO SIGNAL <i>nnn</i>. EXITING with code <i>nnn</i>.	All daemons list the reason that the daemon has exited.
EXPIRED: <i>feature</i>.	<i>feature</i> has passed its expiration date.
IN: <i>feature</i> by <i>user</i> (<i>N licenses</i>).	<i>user</i> has checked back in <i>N</i> licenses of <i>feature</i> .
License Manager server started.	The license daemon was started.
Lost connection to <i>host</i>.	A daemon can no longer communicate with its peer on node <i>host</i> , which can cause the clients to have to reconnect, or cause the number of daemons to go below the minimum number, in which case clients may start exiting. If the license daemons lose the connection to the master, they will kill all the vendor daemons; vendor daemons will shut themselves down.
Lost quorum.	The daemon lost quorum, so it will only process connection requests from other daemons.
MULTIPLE <i>xxx</i> servers running. Please kill, and restart license daemon.	The license daemon has detected that multiple copies of vendor daemon <i>xxx</i> are running. The user should kill all <i>xxx</i> daemon processes and restart the license daemon.
OUT: <i>feature</i> by <i>user</i> (<i>N licenses</i>).	<i>user</i> has checked out <i>N</i> licenses of <i>feature</i>
RESERVE <i>feature</i> for HOST <i>name</i>. RESERVE <i>feature</i> for USER <i>name</i>.	A license of <i>feature</i> is reserved for either user <i>name</i> or host <i>name</i> .
REStarted <i>xxx</i> (internet port <i>nnn</i>)	Vendor daemon <i>xxx</i> was restarted at internet port <i>nnn</i> .
Retrying socket bind (address in use).	The license servers try to bind their sockets for approximately 6 minutes if they detect "address in use" errors.
Selected (EXISTING) master node.	This license daemon has selected an existing master (node) as the master.
SERVER shutdown requested.	A daemon was requested to shut down via a user-generated kill command.

[NEW] Server started for: <i>feature-list</i>	A (possibly new) server was started for the features listed.
Shutting down <i>xxx</i> .	The license daemon is shutting down the vendor daemon <i>xxx</i> .
SIGCHLD received. Killing child servers.	A vendor daemon logs this message when a shutdown was requested by the license daemon.
Started <i>name</i> .	The license daemon logs this message whenever it starts a new vendor daemon.
Trying connection to <i>node</i> .	The daemon is attempting a connection to <i>node</i> .

5.4.2 Configuration Problem Messages

hostname: Not a valid server host, exiting	This daemon was run on an invalid hostname.
hostname: Wrong hostid, exiting	The host ID is wrong for hostname .
BAD CODE for <i>feature-name</i>	The specified feature name has a bad encryption code.
CANNOT OPEN options file <i>file</i>	The options file specified in the license file could not be opened.
license daemon: lost all connections	This message is logged when all the connections to a daemon are lost, which often indicates a network problem.
lost lock, exiting	Error closing lock file.
Unable to re-open lock <i>file</i>	The vendor daemon has a problem with its lock file, usually because of an attempt to run more than one copy of the daemon on a single node. Locate the other daemon that is running via a ps command, and stop it with kill -9 .
NO DAEMON line for <i>daemon</i>	The license file does not contain a DAEMON line for <i>daemon</i> .
No <i>license</i> service found	The TCP <i>license</i> service did not exist.

No license data for <i>feat</i> , feature unsupported	There is no feature line for <i>feat</i> in the license file.
No features to serve!	A vendor daemon found no features to serve. This could be caused by bad data in the license file.
UNSUPPORTED FEATURE request: <i>feature</i> by user	The <i>user</i> has requested a feature that this vendor daemon does not support. This can happen for a number of reasons: the license file is bad, the feature has expired, or the daemon is accessing the wrong license file.
Unknown host: <i>hostname</i>	The hostname specified on a <i>SERVER</i> line in the license file does not exist in the network database.
NO DAEMON lines, exiting	The license daemon logs this message if there are no DAEMON lines in the license file. Since there are no vendor daemons to start, there is nothing to do.
NO DAEMON line for name	A vendor daemon logs this error if it cannot find its own DAEMON name in the license file.

5.4.3 Daemon Software Error Messages

select: message	An error in a select system call was detected.
Server exiting	The server is exiting. This is normally due to an error.

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