

MATLAB[®]

The Language of Technical Computing

Computation

Visualization

Programming

Installation Guide for UNIX

Release 13 (MATLAB 6.5 Product Family)



How to Contact The MathWorks:



www.mathworks.com Web
comp.soft-sys.matlab Newsgroup



support@mathworks.com Technical support
suggest@mathworks.com Product enhancement suggestions
bugs@mathworks.com Bug reports
doc@mathworks.com Documentation error reports
service@mathworks.com Order status, license renewals, passcodes
info@mathworks.com Sales, pricing, and general information



508-647-7000 Phone



508-647-7001 Fax



The MathWorks, Inc. Mail
3 Apple Hill Drive
Natick, MA 01760-2098

For contact information about worldwide offices, see the MathWorks Web site.

Installation Guide for UNIX

© COPYRIGHT 1996 - 2002 by The MathWorks, Inc.

The software described in this document is furnished under a license agreement. The software may be used or copied only under the terms of the license agreement. No part of this manual may be photocopied or reproduced in any form without prior written consent from The MathWorks, Inc.

FEDERAL ACQUISITION: This provision applies to all acquisitions of the Program and Documentation by or for the federal government of the United States. By accepting delivery of the Program, the government hereby agrees that this software qualifies as "commercial" computer software within the meaning of FAR Part 12.212, DFARS Part 227.7202-1, DFARS Part 227.7202-3, DFARS Part 252.227-7013, and DFARS Part 252.227-7014. The terms and conditions of The MathWorks, Inc. Software License Agreement shall pertain to the government's use and disclosure of the Program and Documentation, and shall supersede any conflicting contractual terms or conditions. If this license fails to meet the government's minimum needs or is inconsistent in any respect with federal procurement law, the government agrees to return the Program and Documentation, unused, to MathWorks.

MATLAB, Simulink, Stateflow, Handle Graphics, and Real-Time Workshop are registered trademarks, and TargetBox is a trademark of The MathWorks, Inc.

Other product or brand names are trademarks or registered trademarks of their respective holders.

Printing History:	December 1996	First printing	New for MATLAB 5
	May 1997	Second printing	Revised for MATLAB 5.1
	January 1999	Third printing	Revised for MATLAB 5.3 (Release 11)
	November 2000	Fourth printing	Revised for MATLAB 6.0 (Release 12)
	June 2001	Fifth printing	Revised for MATLAB 6.1 (Release 12.1)
	July 2002	Sixth printing	Revised for MATLAB 6.5 (Release 13)

Installing Release 13 on UNIX Workstations

1

Product Licensing	1-2
License File Overview	1-2
Creating a License File	1-3
Obtaining or Changing Your License File	1-3
System Requirements	1-5
Installing MATLAB	1-8
Distribution	1-8
Before You Install	1-8
Installation Procedure	1-8
Installing MATLAB on a Client System	1-17
After You Install	1-19
Setting Up Network Named User Licensing	1-19
Starting the License Manager	1-21
Starting MATLAB	1-25
Specifying Print Options	1-25
Specify Documentation Viewing Options	1-25
Specifying MATLAB Startup Options	1-26
Configuring MATLAB Products	1-27
Installing Additional Products	1-28
Saving Your MATLAB Environment	1-29
Removing a MATLAB Installation	1-30
Mounting Your CD-ROM Drive	1-31
Mounting a CD-ROM Drive Locally	1-31
Mounting a CD-ROM Drive Remotely	1-32

License Management

2

Licensing Components	2-2
License Manager Daemon	2-2
Vendor Daemon	2-3
Applications	2-3
License File	2-3
License Manager Tools	2-7
Performing Common License Management Tasks	2-8
Running MATLAB on a Heterogeneous Network	2-8
Running Multiple Versions of MATLAB	2-8
Running MATLAB with Other FLEXlm Applications	2-9
Determining Your Host ID	2-10
Configuring Redundant License Servers	2-12

Troubleshooting

3

Problems During the Installation	3-2
Solving File Permission Problems	3-2
Solving CD-ROM Drive Problems	3-3
Problems Starting MATLAB	3-4
Checking the License Manager Daemons	3-5
Viewing the License Manager Log File	3-5
Viewing the Installer Log File	3-6
Checking the Network Connection	3-6
Resolving Other MATLAB Startup Problems	3-6
Overriding the Default Choice of BLAS Library	3-7
License Manager Error Messages	3-12

MATLAB Directories and Files	4-2
\$MATLAB/bin	4-3
\$MATLAB/etc	4-3
\$MATLAB/toolbox	4-4
\$MATLAB/extern	4-5

Installing Release 13 on UNIX Workstations

This section contains instructions for installing Release 13 of the MATLAB family of products and FLEXlm, the licensing software used by MATLAB. (FLEXlm is a product of GLOBEtrout Software, Inc.) Topics covered include

Product Licensing (p. 1-2)	Describes the licensing information you need to install MathWorks products
System Requirements (p. 1-5)	Details the system requirements to run MATLAB
Installing MATLAB (p. 1-8)	Describes how to install MATLAB and the license manager on a server
Installing MATLAB on a Client System (p. 1-17)	Describes the installation procedure on client systems
After You Install (p. 1-19)	Describes post-installation tasks
Installing Additional Products (p. 1-28)	Describes how to run the installation procedure to install additional products
Removing a MATLAB Installation (p. 1-30)	Describes how to remove a MATLAB installation
Mounting a CD-ROM Drive Remotely (p. 1-32)	Provides the commands required to mount a CD-ROM drive on supported platforms

Product Licensing

When you purchase products, The MathWorks sends you licensing information by e-mail or fax. This section

- Describes this licensing information
- Explains how to create a License File from this information
- Describes how to contact The MathWorks to obtain your licensing information or to make changes to existing licenses

License File Overview

The license information you received from The MathWorks contains a set of license passcodes. These license passcodes

- Identify the products you are licensed to install and use.
- Specify the number of users that may use each product (also known as the *keys* associated with a license).
- Specify the expiration date of each license.
- Specify whether it's a Named User license

The following is a sample set of license passcodes sent by The MathWorks. Lines that begin with a pound sign (#) are comments. The INCREMENT lines identify products you are licensed to run. The INCREMENT line containing TMW_Archive specifies all the products you are licensed to install. In this example, the USER_BASED keyword in the INCREMENT lines indicate it is a Named User license.

```
# BEGIN-----cut here-----CUT HERE-----BEGIN
# MATLAB license passcode file for use with FLEXlm.
# LicenseNo: 12345          HostID: ID=12345
INCREMENT TMW_Archive MLM 13 01-jan-0000 0 9CC470AGGCCB4A810 \
  VENDOR_STRING="f" HOSTID=DEMO SN=12345
INCREMENT MATLAB MLM 13 01-jan-0000 1 BCECD70AD686BGG7E9917 \
  USER_BASED DUP_GROUP=UH SN=12345
INCREMENT SIMULINK MLM 13 01-jan-0000 1 2C5C2G75GF38BGGEAD8FD \
  USER_BASED DUP_GROUP=UH SN=12345
INCREMENT Control_Toolbox MLM 13 01-jan-0000 1 \
  7CACA7GA23GG5C5E38C1 USER_BASED DUP_GROUP=UH SN=12345
INCREMENT Identification_Toolbox MLM 13 01-jan-0000 1 \
```



```
EC5C175AGG025G2AD73A USER_BASED DUP_GROUP=UH SN=12345
# END-----cut here-----CUT HERE-----END
```

Creating a License File

When you receive your license e-mail message from The Mathworks, open a text file, using a text editor, and copy the section of the message marked by the BEGIN and END lines into a text file. Name the file `license.dat` and store it temporarily in any convenient directory. Before you run the installer, you must move the License File to the top-level MATLAB installation directory. For more detailed information about License Files and licensing, see Chapter 2, “License Management.”

When creating a License File, note the following:

- Make sure you remove any line breaks that may have been inserted between the start and end of an INCREMENT line by your e-mail program. If you need to continue an INCREMENT line onto more than one line, use the `\` (backslash) character, as in the following:

```
INCREMENT Identification_Toolbox MLM 13 01-jan-0000 1 \
    EC5C175AGG025G2AD73A USER_BASED DUP_GROUP=UH SN=12345
```

- Leave a space between each field in the INCREMENT line.
- Do not use tabs to separate the fields in an INCREMENT line.

If you received your license passcodes in a fax, create the License File in the same way, typing in the license passcode information exactly as it appears in the fax. Note that License Files are case sensitive.

Obtaining or Changing Your License File

If you need to

- Obtain a License File
- Transfer a license to another CPU
- Combine licenses
- Move toolboxes from one license to another
- Change a license registration
- Update your contact information

go to the MathWorks Web site at www.mathworks.com, click on **Contact Us**. Under **Support and Service**, find the **Customer Service Request** listing and click on the Web icon.

If you do not have Web access, you can contact The MathWorks via

- E-mail at service@mathworks.com.
- Telephone at 508-647-7000, ask for Customer Service. To find the phone number of one of our international offices, go to the MathWorks Web site at www.mathworks.com and click **Contact Us** at the top of the page.
- Fax at 508-647-7001.

Depending on what you want to do, please have ready, or include in your e-mail or fax, the following items:

- Your e-mail address (if you have one).
- Your MATLAB Access number. MATLAB Access membership is free of charge and available to all customers. The primary contact on each license is automatically enrolled in MATLAB Access. The contacts receive their Access number via e-mail.
- Your License Number:
 - If you have not previously installed MATLAB at your site, you can find your License Number on the upper right corner of the packing slip. Customers outside North America may obtain this information from their local MathWorks representative.
 - If you are updating an existing MATLAB installation and MATLAB is running, type `license` or `ver` at the MATLAB prompt, or look in your existing `license.dat` file.
- The host ID for the server on which you plan to run FLEXlm, the licensing software used by the MathWorks products. On Sun workstations, you can obtain the host ID by logging in to the server and executing the UNIX command `hostid`. For other UNIX systems, log in to your server and follow the instructions in the section “Determining Your Host ID” on page 2-10.

Note Be sure to provide the host ID of the system on which you plan to run FLEXlm, not the host ID of a client workstation.

System Requirements

Note For the most up-to-date information about system requirements, see the support area at the MathWorks Web site, www.mathworks.com.

This section describes hardware and software requirements for running the MATLAB software and the FLEXlm license manager. Minimum system resources are

- Operating system vendors' most current recommended patch set for the hardware and operating system
- 90 MB free disk space for MATLAB only (215 MB to include MATLAB online help files)
- 128 MB RAM, 256 MB RAM recommended
- 128 MB swap space (recommended)

Minimum system hardware and software requirements are

- CD-ROM drive (for installation)
- Netscape Navigator 4.0 and above or Microsoft Internet Explorer 4.0 and above is required.
- Adobe Acrobat Reader 3.0 is required to view and print the MATLAB online documentation in PDF format.
- TCP/IP is required on all platforms when using a license server.
- FLEXlm 8.0d, installed by the MATLAB installer
- For Linux, MATLAB 6.5 will only run in a glibc (libc6) environment. The libc5 environment is no longer supported.
- X Windows (X11R5)

The following system configurations are supported.

Vendor	Hardware	Operating System	Version
Sun	SPARC, ULTRA	Solaris	2.6, 2.7, 2.8
HP	PA-RISC 1.1	HP-UX (See notes below)	10.20
HP	PA-RISC 2.0	HP-UX	11.0
SGI	R5000, R8000, R10000, R12000	IRIX, IRIX 64	6.5.8 through 6.5.12
IBM	RS/6000	AIX	4.3.3, 5.1
Compaq	Alpha	Tru64 UNIX (See notes below)	4.0f, 5.0, 5.1
Linux	Pentium, Pentium Pro, II, III, IV, Intel Xeon, AMD Athlon and Athlon XP	ix86 - Linux (See notes below) X Windows (X11R6)	2.2.x, 2.4.x kernel

Additional System Requirement Notes

- You must choose the UNIX platform on which you intend to run MATLAB from the **Product List** dialog box. This dialog box offers two choices for HP systems: **HP-700** and **HP-UX**. Your choice of HP platform depends on the combination of hardware and operating system that you are running. This table is a matrix of the supported HP operating system and hardware combinations with their platform designation.

	PA-RISC 1.1	PA-RISC 2.0
HP-UX 10.20	HP-700	HP-700
HP-UX 11.0	n/a	HP-UX

- For Alpha Tru64 UNIX, you must install the Fortran run-time shared libraries, which are on a separate disk provided by the vendor, named the

“Associated Products CD.” The C++ shared libraries are installed as part of the base Tru64 package.

- These library versions or newer are required for Linux:
 - glibc 2.1.x or 2.2 (2.2.x preferred, recommend at least 2.1.3)
 - gcc 2.95.x (gcc, g++, g77) (If you are building your own MEX files)
 - xFree86 3.3.x (recommend 3.3.6 or better, including 4.x)
 - Linux 2.2.x or 2.4.x (if 2.4, recommend 2.4.10 or better)
- Systems running Linux on a Power PC or a Compaq Alpha are not supported.

Installing MATLAB

These instructions describe how to install the MathWorks Release 13 products on a single system in either a stand-alone workstation or file server environment, for any license option. The software is ordinarily installed on a single file system. This can be an individual user's computer in the case of a stand-alone workstation, or a central file server for networked installations.

Note These instructions assume that you have a basic working knowledge of UNIX. If you are not familiar with the UNIX environment, please seek the assistance of your local system administrator.

Distribution

The MathWorks products and documentation are distributed on a set of CDs or over the Internet. Depending on your license option, you may also receive additional CDs containing the Windows version of the software.

Before You Install

Before you run the MathWorks Product Installer program:

- Make sure you have the licensing information that you received from The MathWorks via e-mail when you purchased your software. See “Product Licensing” on page 1-2 for more information.
- Make sure your system satisfies the requirements of the software you intend to install. For more information, see “System Requirements” on page 1-5.

Installation Procedure

This section details the step-by-step procedure you use to install the MathWorks products and documentation on your UNIX workstation. Table 1-1, Summary of Installation Procedure lists each step.

Depending on which products you purchased, you may need to repeat this procedure with the other CDs in the set. When you repeat this procedure, you can start at Step 5. (On some systems, you may need to mount each CD.) If you

encounter any problems during the installation process, refer to Chapter 3, “Troubleshooting.”

Table 1-1: Summary of Installation Procedure

Perform the pre-installation tasks described in “Before You Install” on page 1-8
Step 1: Log in to your system
Step 2: Mount your CD-ROM drive
Step 3: Create the installation directory
Step 4: Put your License File in the installation directory
Step 5: Run the installation script
Step 6: Review the license agreement
Step 7: Verify the installation directory name
Step 8: Verify your License File
Step 9: Specify the products and documentation to install
Step 10: Specify location of symbolic links
Step 11: Begin the installation
Step 12: Exit the installer
Perform the post-installation tasks described in “After You Install” on page 1-19

Step 1: Log In to Your System

Superuser status is required to install the symbolic links that add MATLAB to your users’ paths and to edit the system boot script to start the MATLAB license manager automatically at system boot time. If you do not have superuser status, you can still install MATLAB, but MATLAB programs must be invoked using absolute pathnames. You can also set up these links after the installation is complete.

Note If you have superuser status and you are performing an installation for another user, you will need to update the license options file after the installation is complete. See “Setting Up Network Named User Licensing” on page 1-19 for information about updating the installation options file.

Step 2: Mount Your CD-ROM Drive

Mount the CD-ROM drive you intend to use to install MATLAB, following these instructions. (If your system does not require mounting the CD-ROM drive or if you have downloaded your products from the MathWorks Web site, skip ahead to Step 3.)

- 1** Create a directory to be the mount point for the CD-ROM drive. For example:

```
mkdir /cdrom
```

- 2** Put one of the MathWorks CDs in the CD-ROM drive with the label face up. If your CD-ROM drive requires placing the CD in a caddy before inserting it into the drive, make sure the arrow on the caddy is pointing towards the CD-ROM drive.
- 3** Execute the command to mount the CD-ROM drive on your system. You can install the software from either a locally mounted CD-ROM drive or from a remotely mounted CD-ROM drive. For more information about these options, see “Mounting a CD-ROM Drive Remotely” on page 1-32.

On HP systems, if you display a list of all the files on the CD after you mount it, the filenames appear in all capital letters.

Step 3: Create the Installation Directory

Create the installation directory and move to it, using the `cd` command. For example, to install into the location `/usr/local/matlab6p5`, use these commands.

```
cd /usr/local
mkdir matlab6p5 (needed for first time installation only)
cd matlab6p5
```


You can specify any name for the installation directory. However, do not specify a directory name that contains spaces, an at (@) sign, or a dollar (\$) sign. Also, do not include a directory named `private` as part of the installation path. Subsequent instructions in this book refer to this directory as `$MATLAB`.

Note Do not install MATLAB 6.5 over any previous released version of MATLAB.

Step 4: Put Your License File in the Installation Directory

Move your License File, named `license.dat`, into the `$MATLAB` directory. For more information about license files, see “Creating a License File” on page 1-3.

The installer looks for the License File in the `$MATLAB` directory and, after processing it, moves the License File to `$MATLAB/etc` during installation.

Upgrade Installations. If you are upgrading an existing MATLAB installation, rename the License File in `$MATLAB/etc`. The installer will not process the new license file if it finds an existing license file in `$MATLAB/etc`.

Step 5: Run the Installation Script

Run the installation script appropriate for your platform.

```
/cdrom/install* & (Sun, Alpha, IBM, SGI, and Linux platforms)
```

```
/cdrom/INSTALL* & (HP platform)
```

The installation script displays the following welcome screen.

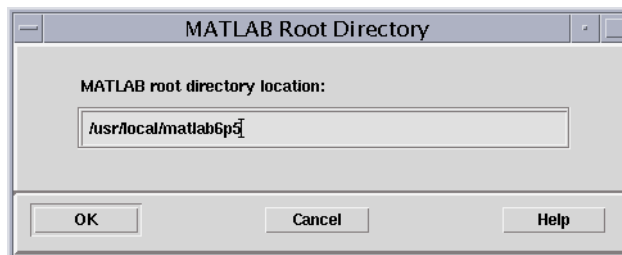


Step 6: Review the License Agreement

Accept or reject the software licensing agreement displayed. If you accept the terms of the agreement, you may proceed with the installation.

Step 7: Verify the Installation Directory Name

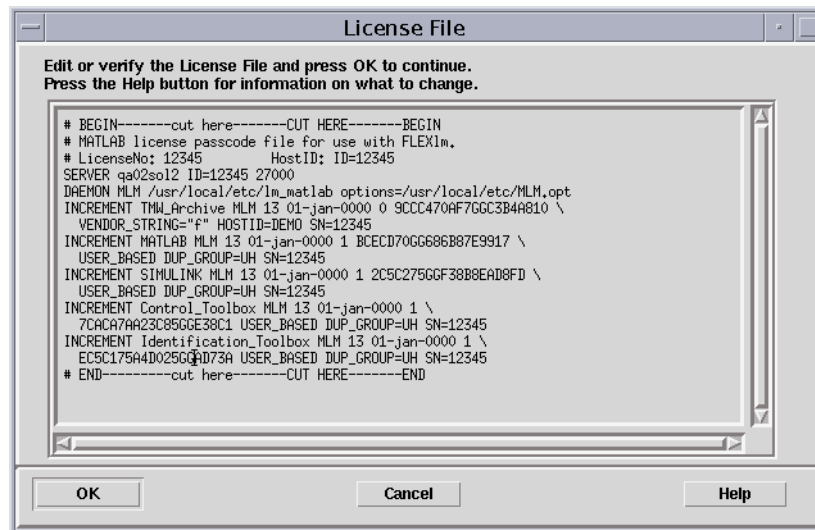
Verify the name of the installation directory in the **MATLAB Root Directory** dialog box and then click **OK** to continue. If you specify a directory that does not exist, the installer creates it.



Step 8: Verify Your License File

Verify your License File in the **License File** dialog box and click **OK**.

Note If you didn't put a copy of your License File in your \$MATLAB directory, the installer displays a License File template. You can modify this template to create a valid License File.



When verifying your License File:

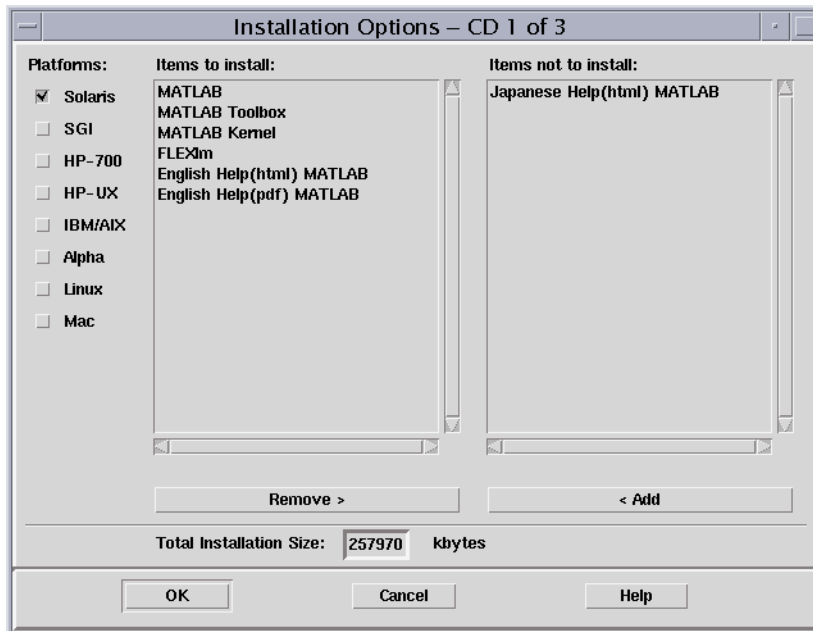
- Make sure that the expiration date, number of keys, and passcode fields in each INCREMENT line match the license information you received from The MathWorks.
- Delete INCREMENT lines for products with expired licenses. (This avoids the warning messages that appear in your log file when you start MATLAB.)
- Make sure that your e-mail program did not cause INCREMENT lines to wrap. You must use the continuation character (\) if INCREMENT lines get too long to fit on one line. Do not use tabs to separate the fields in an INCREMENT line.

You can edit the License File in the text window displayed. If you want to use another text editor, click **Cancel**. Make sure you edit the processed version of the License File, \$MATLAB/etc/license.dat, not the version of the License File you placed in the top-level installation directory in Step 4.

Step 9: Specify the Products and Documentation to Install

Specify the products and documentation you want to install in the **Installation Options** dialog box and then click **OK** to continue.

Note The installer may display a message box stating that one or more of your licensed products are not available on this CD. These products are either on one of the other CDs in the set or available at the MathWorks Web site, www.mathworks.com. In either case, dismiss this message box and continue with the installation. When the installation completes, repeat the installation procedure with the other CDs until you have installed all of your licensed products. To obtain products that have been released since this set of installation CDs was produced, visit the MathWorks Web site, www.mathworks.com, and download them.



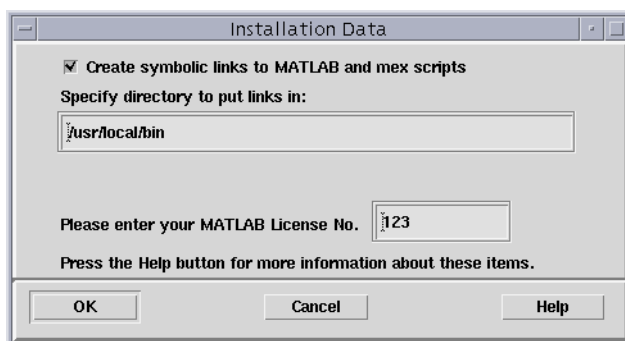
This dialog box lists all the products and documentation available on the CD that you are licensed to install. If you do not want to install an item in this list,

select it and click the **Remove** button. (A MATLAB installation includes MATLAB, the MATLAB Toolbox, and the MATLAB Kernel.)

Select any additional platforms needed at your site from the column of check boxes. For information about which HP platform option to choose, **HP-700** or **HP-UX**, see “Additional System Requirement Notes” on page 1-6.

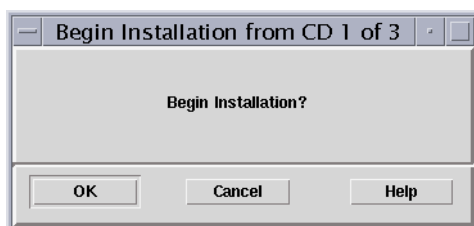
Step 10: Specify Location of Symbolic Links

Specify where you want to put symbolic links to the `matlab` and `mex` scripts in the **Installation Data** dialog box. Choose a directory such as `/usr/local/bin` that is common to all your users’ paths. The installer fills in the License Number automatically. Click **OK** to continue with the installation.



Step 11: Begin the Installation

The installer displays the **Begin Installation** dialog box. Click **OK** to begin the installation.



The installer displays a dialog box indicating the progress of the installation.

Step 12: Exit the Installer

After the installation is complete, the installer displays the **Installation Complete** dialog box, assuming your installation is successful. This dialog box informs you of some optional post-installation setup and configuration steps you may want to perform. See “After You Install” on page 1-19 for more information. Click **Exit** to dismiss the installer.

Note Depending upon which products you are licensed to install, you may need to repeat the installation procedure with the other CDs in the set.

Installing MATLAB on a Client System

You can set up a MATLAB network installation in several ways. Typically, you install MATLAB and the license manager on a server and users access MATLAB over the network. You can, however, also install MATLAB locally on user's systems. In this configuration, the local installs, or *clients*, need to access the server only to check out a license key when MATLAB starts.

The procedure to install MATLAB on a client system is almost identical to the procedure you use to install MATLAB and the license manager on a server, described in “Installing MATLAB” on page 1-8.

Table 1-2, Client System Installation Procedure lists all the steps in the installation procedure and notes where they are different on client systems. For a more detailed information about any of the steps, see the description of each step.

Table 1-2: Client System Installation Procedure

Installation Procedure	Client Installation Notes
Perform the preinstallation tasks described in “Before You Install” on page 1-8	Same on client, except you do not have to stop the license manager
1. Log in to the system.	Same on client
2. Mount the CD-ROM drive, if necessary.	Same on client
3. Create the MATLAB installation directory.	Same on client
4. Copy your license file into your top-level MATLAB installation directory.	You must use the <i>processed</i> License File, created during the license manager installation. File name and location on your license server: \$MATLAB/etc/license.dat
5. Run the install script.	Same on client
6. Accept the license agreement.	Same on client
7. Verify the name of the installation directory.	Same on client

Table 1-2: Client System Installation Procedure (Continued)

Installation Procedure	Client Installation Notes
8. Verify your License File.	On a client, make sure the License File contains the SERVER and DAEMON lines, added by the installer during the license manager installation.
9. Select the products and documentation you want to install.	Do not install the license manager (FLEXlm). By default, it is listed in the Items to install list. You must move it to the Items not to install list.
10. Specify the location for symbolic links. Product installation only; not part of documentation installation.	Same on client
11. Click OK to begin the installation.	Same on client
12. Complete the installation and perform optional post-installation tasks, described in “After You Install” on page 1-19.	Same on client

After You Install

This section describes tasks you can perform after a successful installation. Depending on your type of installation, some of these tasks are required and some are optional. Table 1-3, Post-Installation Tasks lists the various license options and installation types and tasks associated with each one.

Table 1-3: Post-Installation Tasks

License Option and Installation Type	Post-Installation Tasks
Individual, Group or Enterprise Suite	<ul style="list-style-type: none"> • “Setting Up Network Named User Licensing” on page 1-19 • “Starting the License Manager” on page 1-21 • “Starting MATLAB” on page 1-25
Concurrent license	<ul style="list-style-type: none"> • “Starting the License Manager” on page 1-21 • “Starting MATLAB” on page 1-25
Any type of installation	<p>Note: These are optional tasks.</p> <ul style="list-style-type: none"> • “Specifying Print Options” on page 1-25 • “Specify Documentation Viewing Options” on page 1-25 • “Specifying MATLAB Startup Options” on page 1-26 • “Configuring MATLAB Products” on page 1-27

Setting Up Network Named User Licensing

If you have a network Named User license, you may need to

- Check the FLEXlm license options file to make sure all licensed users are included.
- Check that the DAEMON line in your License File includes the options file specification, options=\$MATLAB/etc/MLM.opt, where \$MATLAB is your MATLAB installation directory.

Note Do not confuse your License File with your options file. The License File contains the encrypted passcodes for each product you are licensed to install and run. The options file is a text file that contains license manager options statements, such as INCLUDE, EXCLUDE and GROUP lines.

Checking the Options File

The installer creates the options file, \$MATLAB/etc/MLM.opt, as part of the installation process. The installer puts in the options file an INCLUDE line for each product you are licensed to run. By default, the installer puts the username of the person who performed the install in these INCLUDE lines. If you performed your own installation, the options file may not need editing. However, if you performed the installation for another user, or if you had root privileges when you performed the installation, you will need to edit this options file.

For example, if your username is sysadmin, the options file would look like this:

```
INCLUDE MATLAB USER sysadmin
INCLUDE Signal_Toolbox USER sysadmin
INCLUDE Optimization_Toolbox USER sysadmin
```

You must replace sysadmin in these INCLUDE statements with the usernames of the licensed users. If multiple users are licensed for the same product, you must create a separate INCLUDE line for each user or use the FLEXlm GROUP syntax. The number of users must not exceed the number of license keys available for that product. This example shows both methods. (Make certain that there are no extra space characters at the end of a line.)

```
GROUP matlab_users tom judy mike jean brad
GROUP signal_users tom mike brad
INCLUDE MATLAB GROUP matlab_users
INCLUDE Signal_Toolbox GROUP signal_users
INCLUDE Optimization_Toolbox USER mike
INCLUDE Optimization_Toolbox USER jean
```

Starting the License Manager

The license manager must be running to start MATLAB. If the license manager daemons are not running, you can start them using either of these methods:

- Executing the `lmstart` script (located in the `$MATLAB/etc` directory).
- Rebooting your system, if you edited the system boot script. See “Starting the License Manager Automatically” for more information.

The `lmstart` script stops any currently running daemons and starts new ones.

Note The `lmstart` script should be run by a user other than root.

Starting the License Manager Automatically

If you want to start the license manager daemons automatically at boot time, you must edit the UNIX boot script on your system, adding the Bourne shell commands required to start the license manager on your system.

Note You must have superuser status to edit boot scripts.

MATLAB provides the commands required for each UNIX system in a set of files included in the `$MATLAB/etc` directory. Each file has the name `rc.lm.system`, where `system` identifies the system type.

For example, the file `rc.lm.solaris` contains the boot script commands required to start the license manager on Solaris systems:

```
#
# MATLAB FLEXlm Network License Manager Daemon
#
# start and stop for Solaris 2.X
#
case "$1" in
  'start')
    if [ -f /etc/lmboot_TMW ]; then
      /etc/lmboot_TMW -u username && echo 'MATLAB_lmgrd'
    fi
```

```

        ;;

'stop')
if [ -f /etc/lmdown_TMW ]; then
    /etc/lmdown_TMW > /dev/null 2>&1
fi
    ;;

*)
    echo "usage: $0 {start|stop}"
    ;;
esac

```

Table 1-4, Editing UNIX Boot Scripts describes how to insert these Bourne shell code fragments for all supported platforms.

Note When you add these commands to a boot script, you must replace username with an actual username. Do not specify the name associated with superuser. For security reasons the license manager daemons cannot be owned by superuser.

Table 1-4: Editing UNIX Boot Scripts

Platform	Procedure
Compaq Alpha (Tru64 UNIX)	<p>Make a copy of the boot script file:</p> <pre>cd \$MATLAB/etc cp rc.lm.alpha /sbin/init.d/flexlm chmod 555 /sbin/init.d/flexlm</pre> <p>Edit /sbin/init.d/flexlm, replacing username in the code with an actual user name, other than root.</p> <p>Create a link to the boot script:</p> <pre>cd /sbin/rc3.d ln -s /sbin/init.d/flexlm S56flexlm</pre>

Table 1-4: Editing UNIX Boot Scripts (Continued)

Platform	Procedure
HP 9000 (HP-UX)	<p>Make a copy of the boot script file:</p> <pre>cd \$MATLAB/etc cp rc.lm.hp /sbin/init.d/flexlm chmod 555 /sbin/init.d/flexlm</pre> <p>Edit /sbin/init.d/flexlm, replacing username in the code with an actual user name, other than root.</p> <p>Create the file /etc/rc.config.d/flexlm containing the line FLEXlm_MATLAB=1 and then create the links:</p> <pre>cd /sbin/rc3.d ln -s /sbin/init.d/flexlm S900flexlm cd /sbin/rc2.d ln -s /sbin/init.d/flexlm K100flexlm</pre>
IBM RS/6000 (AIX)	<p>Copy the code from \$MATLAB/etc/rc.lm.ibm_rs and paste it at the end of /etc/rc.nfs.</p> <p>Replace username in the code fragment with an actual username, other than root.</p>

Table 1-4: Editing UNIX Boot Scripts (Continued)

Platform	Procedure
Linux	<p>Create the following links, if they do not already exist:</p> <pre>ln -s \$MATLAB/etc/lmboot /etc/lmboot_TMW12 ln -s \$MATLAB/etc/lmdown /etc/lmdown_TMW12</pre> <p>Create a copy of the boot script file.</p> <p>On Debian systems:</p> <pre>cp \$MATLAB/etc/rc.lm.glnx86 /etc/init.d/flexlm</pre> <p>On Red Hat systems:</p> <pre>cp \$MATLAB/etc/rc.lm.glnx86 /etc/rc.d/init.d/flexlm</pre> <p>Replace the username in the code fragment with an actual username, other than root.</p> <p>Look in /etc/inittab for the default run level. Create a link in the rc directory associated with that run level. For example if the run level is 5, then execute these commands.</p> <p>On Debian systems:</p> <pre>cd /etc/rc5.d; ln -s ../init.d/flexlm S90Flexlm</pre> <p>On Red Hat systems:</p> <pre>cd /etc/rc.d/rc5.d; ln -s ../init.d/flexlm S90Flexlm</pre>
SGI (IRIX/IRIX64)	<p>Make a copy of the boot script file:</p> <pre>cd \$MATLAB/etc cp rc.lm.sgi /etc/init.d/lm chmod 555 /etc/init.d/lm</pre> <p>Edit /etc/init.d/lm, replacing username in the code with an actual user name, other than root.</p> <p>Create a link to the boot script:</p> <pre>cd /etc/rc2.d ln -s /etc/init.d/lm S45lm</pre>

Table 1-4: Editing UNIX Boot Scripts (Continued)

Platform	Procedure
Sun (Solaris 2.x)	<p>Copy the code from <code>\$MATLAB/etc/rc.lm.sol2</code> and paste it at the beginning of <code>/etc/init.d/lmgrd</code>. Create this file if it doesn't already exist.</p> <p>Edit <code>/etc/init.d/lmgrd</code>, replacing <code>username</code> in the code fragment with an actual username, other than <code>root</code>.</p> <p>If file (link) <code>/etc/rc3.d/S17lmgrd</code> does not exist, create it, using this code:</p> <pre>cd /etc/rc3.d ln -s ../init.d/lmgrd S17lmgrd</pre>

Starting MATLAB

Start MATLAB by entering the `matlab` command at the command prompt.

If you did not set up symbolic links in step 10 of the installation procedure, you must enter the full pathname, `$MATLAB/bin/matlab`, where `$MATLAB` is the name of your MATLAB installation directory.

If you have trouble starting MATLAB, see “Problems Starting MATLAB” on page 3-4 for more information.

Specifying Print Options

MATLAB includes default settings for the various options to the `print` command. If you want to change the site-wide default settings for printing device type and location, you can edit the M-file `printopt.m`, located in the directory `$MATLAB/toolbox/local`. This file contains the options for the `print` command that MATLAB uses.

Specify Documentation Viewing Options

Using MATLAB preferences or the `docopt.m` option file, you can specify either of these two documentation viewing options:

- The browser used to view the MATLAB online documentation
- The location of the documentation

If MATLAB supports its Java-based desktop on your UNIX system, you can use the MATLAB desktop preferences mechanism to specify the values of these options. (By default, MATLAB uses the desktop's Help browser to display HTML documentation.) To modify these documentation viewing options, choose the **Preferences** option on the MATLAB **File** menu and select the **Help** option. (See the Release Notes documentation for information about platform support for Java.)

If MATLAB does not support the desktop on your UNIX system, you can specify values for these options by editing the `docopt.m` M-file, located in the `$MATLAB/toolbox/local` directory. Use this options file to specify an alternative Web browser, additional initial browser options, or a different initial path to the viewable documentation.

Viewing Documentation

The documentation commands available at the MATLAB command prompt are

<code>doc</code>	Starts the MATLAB Help browser
<code>help function</code>	Displays M-file help for function
<code>helpwin</code>	Displays a list of MATLAB help topics in the Help browser
<code>helpbrowser</code>	Starts the MATLAB Help browser, which provides access to the full documentation set, including HTML and PDF formatted documents

Viewing the PDF files requires the Adobe Acrobat Reader. Additional information about Acrobat Reader is available at www.adobe.com.

Specifying MATLAB Startup Options

You can specify startup welcome messages, default definitions, or any MATLAB expressions that you want to run for all users. To do this, edit the M-file `matlabrc.m` in `$MATLAB/toolbox/local`, which is invoked automatically each time a user starts MATLAB.

If you do not have write access to `matlabrc.m`, you can include these same commands in a file called `startup.m` and store it in the top-level MATLAB directory.

Configuring MATLAB Products

Certain products in the MATLAB family of products may require configuration after installing. The documentation for each product describes additional configuration, if it is required.

For example, if you installed the MATLAB Runtime Server, you must run the `rtsetup` command to provide your copy of MATLAB with a password of your choosing.

Installing Additional Products

After initial installation, you can purchase optional products that extend MATLAB and provide additional application-specific capabilities. To install these additional products:

- 1 Exit MATLAB.
- 2 Stop the license manager. You can use the `lmdown` command to stop the license manager. See “License Manager Tools” on page 2-7 for information about the `lmdown` command and other license manager commands.
- 3 Edit your existing License File or create a new License File.

To edit your existing License File, open the `$MATLAB/etc/license.dat` file in a text editor. Remove the old INCREMENT lines from the License File and copy *all* the new INCREMENT lines from the license e-mail you received from The MathWorks into the License File. The new License File information includes both the new products you purchased as well as all the existing products for which you have licenses.

Note Avoid editing the individual INCREMENT lines; any changes you make may invalidate your License File. Do not delete the SERVER and DAEMON lines in your license file.

If you decide to create a new License File from the license e-mail you received from The MathWorks, place it in your MATLAB installation directory (`$MATLAB`). For more information about creating a License File, see “Creating a License File” on page 1-3.

Note If you create a new License File, you must rename the license file in `$MATLAB/etc`, created by the installer during the original installation. If the installer finds a file named `license.dat` already exists in this directory, it will not process your new License File.

- 4 Perform the installation procedure, following the instructions given on each screen. However, when the installer presents the **Installation Options** screen, remove all the products listed in the **Items to Install** list box except the new products you want to install.
- 5 Restart the license manager with the `lmstart` command.

Consult the documentation that comes with your new products for any additional configuration requirements.

Saving Your MATLAB Environment

When you install a new product, the installer regenerates your path file, `pathdef.m`, and your printing and documentation preference files, `printopt.m` and `docopt.m`, respectively. If you've modified these files, the installer does not delete them. Instead it puts them in the `$MATLAB/toolbox/local/old` directory and renames them. The installer appends the date and a version number to the file name. For example, the saved version of `pathdef.m` could be `pathdef.m.4july2002.1`.

To reuse your previous path file or preferences file, swap the newly created files with these saved versions, restoring the saved version of the file to its original name.

Note When reusing an old `pathdef.m` file, you may need to add new products that you just installed.

Removing a **MATLAB** Installation

To remove a MATLAB installation, enter this command

```
rm -rf $MATLAB
```

where \$MATLAB represents the name of your top-level MATLAB installation directory. Make sure to exit MATLAB and stop the license manager before removing a MATLAB installation.

Mounting Your CD-ROM Drive

On many UNIX systems, you must mount the CD-ROM drive on your system before you can install MATLAB. This section describes

- “Mounting a CD-ROM Drive Locally”
- “Mounting a CD-ROM Drive Remotely” on page 1-32

Mounting a CD-ROM Drive Locally

If the CD-ROM drive is located on your system, use the appropriate mount commands listed in Table 1-5, Mount Commands for Local CD-ROM Drives to mount the CD-ROM drive. In the example commands, the word <extension> represents a part of the actual device name that is site specific. For example, the full device name can include the SCSI port to which your CD-ROM drive is attached. You must supply the full device name when you use these commands.

Table 1-5: Mount Commands for Local CD-ROM Drives

Platform	Mount Command
Alpha (Tru64 UNIX)	<code>mount -t cdfs -r -o noversion /dev/rz<extension> /cdrom</code>
HP 9000 (HP-UX)	<code>mount -F cdfs -r /dev/dsk/c0t<extension> /cdrom</code>
IBM RS/6000 (AIX)	<code>mount -v cdrfs -r /dev/cd<extension> /cdrom</code>
Linux	<code>mount -t iso9660 /dev/cdrom /cdrom</code> On Linux systems, you may have to change the CD-ROM drive configuration from read-only to execute. By default, on Linux systems, CD-ROM drives have read-only permission.
SGI (IRIX/IRIX64)	<code>mount -t iso9660 -o setx /dev/scsi/sc<extension> /cdrom</code>
Sun (Solaris 2.x)	<code>mount -F hsfs -o ro /dev/dsk/c0t<extension> /cdrom</code> On Sun Solaris systems, the CD-ROM drive will mount automatically if the volume manager is running.

Mounting a CD-ROM Drive Remotely

If the CD-ROM drive is located on a remote system, follow these instructions to mount the drive on your system.

Note You must be logged in as superuser to perform these steps. The examples assume `/cdrom` is the default mount point; replace this with the name of your local mount point.

- 1 On the remote system, where the CD-ROM drive is connected, mount it locally using the appropriate mount command from the table in “Mounting a CD-ROM Drive Locally” on page 1-31.
- 2 On the remote system, configure the CD-ROM drive so that it is available for mounting on your local system (i.e., exporting). Choose the appropriate export instructions for your platform from Table 1-6, Export Commands for Supported Platforms.

Table 1-6: Export Commands for Supported Platforms

Platform	Export Instructions
Alpha (Tru64 UNIX)	Add the line to the exports file, <code>/etc/exports</code> <code>/cdrom -ro</code>
HP 9000 (HP-UX)	Add the line to the exports file, <code>/etc/exports</code> <code>/cdrom -ro</code> Export this information by executing <code>exportfs -av</code>
IBM RS/6000 (AIX)	Add the line to the exports file, <code>/etc/exports</code> <code>/cdrom -ro</code> Export this information by executing <code>exportfs -av</code>

Table 1-6: Export Commands for Supported Platforms (Continued)

Platform	Export Instructions
Linux	<p>Add the line to the exports file, /etc/exports /cdrom -ro</p> <p>Export this information by executing kill -s SIGHUP pid_of_rpc.mountd pid_of_rpc.nfsd</p> <p>The process ids (pid) are taken from the output of the command ps -agx</p>
SGI (IRIX)	<p>Add the line to the exports file, /etc/exports /cdrom -ro</p> <p>Export this information by executing exportfs -av</p>
Sun (Solaris 2.x)	<p>Execute share -F nfs -o ro -d <cd-rom device> /cdrom</p> <p>Note that the -d <cd-rom device> is for information purposes only. It can be ignored.</p>

- 3 On your local system, mount the remote CD-ROM drive using the appropriate mount instructions listed in Table 1-7, Mount Commands for Remote CD-ROM Drives. Replace `cdrom_host` with the actual hostname of the remote system to which the CD-ROM drive is connected. Your site may require additional options that are not listed here. Contact your system administrator for information about site-specific options.

Table 1-7: Mount Commands for Remote CD-ROM Drives

Platform	Mount Instructions
Alpha (Tru64 UNIX)	<pre>mkdir /cdrom mount -r -t nfs cdrom_host:/cdrom /cdrom</pre>
HP 9000 (HP-UX)	<pre>mkdir /cdrom mount -r cdrom_host:/cdrom /cdrom</pre>

Table 1-7: Mount Commands for Remote CD-ROM Drives

Platform	Mount Instructions
IBM RS/6000 (AIX)	<code>mkdir /cdrom</code> <code>mount -r cdrom_host:/cdrom /cdrom</code>
Linux	<code>mkdir /cdrom</code> <code>mount -r cdrom_host:/cdrom /cdrom</code>
SGI (IRIX/IRIX64)	<code>mkdir /cdrom</code> <code>mount -r cdrom_host:/cdrom /cdrom</code>
Sun (Solaris 2.x)	<code>mkdir /cdrom</code> <code>mount -F nfs -r cdrom_host:/cdrom /cdrom</code>

License Management

Using the MathWorks Installer, you can set up a network installation with little knowledge of license management by following the instructions in Chapter 1, “Installing Release 13 on UNIX Workstations.” However, if you want to integrate MATLAB into an existing license management scheme, you may need a more thorough understanding of using the FLEXlm license manager. This section provides an overview of the MathWorks product licensing. Topics covered include

Licensing Components (p. 2-2)

Describes the primary components of license management and how they work together

License Manager Tools (p. 2-7)

Lists the license management tools included in the MATLAB distribution

Performing Common License Management Tasks (p. 2-8)

Describes how to perform some common license management tasks

Licensing Components

The MathWorks uses a license manager program, called FLEXlm (a product of GLOBEtrouter Software, Inc.), to control access to the software.

FLEXlm consists of these main components:

- “License Manager Daemon”
- “Vendor Daemon” on page 2-3
- “Applications” on page 2-3
- “License File” on page 2-3

Throughout this section, references to the \$MATLAB directory refer to the directory in which the contents of the MATLAB distribution are installed.

Note For more detailed information about FLEXlm and license management, see the *FLEXlm End User Manual*, available in PDF form in \$MATLAB/etc/enduser.pdf, where \$MATLAB represents the name of your installation directory.

License Manager Daemon

The FLEXlm license manager daemon (lmgrd) runs as a background process on a network node. This daemon is responsible for managing the initial communication between client applications, such as MATLAB, and vendor daemons. Client applications contact the license manager daemon to request permission to run licensed software. The license manager daemon forwards the request to the vendor daemon, which grants or denies access to the software, depending on the availability of license keys. The license manager daemon is also responsible for starting and stopping the vendor daemons.

By default, The MathWorks installs the license manager daemon in a subdirectory of the MATLAB installation directory,

```
$MATLAB/etc/$ARCH
```

where \$ARCH is a platform-specific name. For example, on a Sun system the directory name is \$MATLAB/etc/sol2.

This eases the installation task and prevents conflict with other applications that use FLEXlm license management. You can run several license manager daemons on the same system.

Vendor Daemon

Every vendor that uses FLEXlm to manage the licensing of its products must supply a vendor daemon. The vendor daemon is responsible for keeping track of how many license keys are checked out for each product it controls.

By default, The MathWorks installs its vendor daemon (`lm_matlab`) in
`$MATLAB/etc`

Applications

When a user invokes MATLAB anywhere on the network, MATLAB communicates with the license manager daemon on the license server. The license manager forwards the request to the vendor daemon. The vendor daemon checks out a license key for the product. This license key checkout is transparent to MATLAB users.

The license manager program reads a license file to determine the numbers of keys you have purchased for each product.

License File

A License File is an ASCII text file, named `license.dat`, that contains a set of valid license passcodes. When you purchase MATLAB or other products, The MathWorks sends you license information in an e-mail or fax. You must create a License File containing this license information. (For more information, see “Creating a License File” on page 1-3.)

The following is an example of a user-created `license.dat` file:

```
# BEGIN-----cut here-----CUT HERE-----BEGIN
# MATLAB license passcode file for use with FLEXlm.
# LicenseNo: 12345          HostID: ID=12345
INCREMENT TMW_Archive MLM 13 01-jan-0000 0 9CC470AG7GCCB4A810 \
  VENDOR_STRING="f" HOSTID=DEMO SN=12345
INCREMENT MATLAB MLM 13 01-jan-0000 1 BCECD70AD686BGG7E9917 \
  USER_BASED DUP_GROUP=UH SN=12345
INCREMENT SIMULINK MLM 13 01-jan-0000 1 2C5C2G75GF38B8EAD8FD \
```

```
USER_BASED DUP_GROUP=UH SN=12345
INCREMENT Control_Toolbox MLM 13 01-jan-0000 1 \
7CACA7GA23CG5C5E38C1 USER_BASED DUP_GROUP=UH SN=12345
INCREMENT Identification_Toolbox MLM 13 01-jan-0000 1 \
EC5C175AGD025G2AD73A USER_BASED DUP_GROUP=UH SN=12345
# END-----cut here-----CUT HERE-----END
```

Each INCREMENT line can include any of these elements:

```
INCREMENT product daemon release exp-date users passcode options
```

The options may vary, depending on license type. For example, INCREMENT lines for Named User licenses include the keyword `USER_BASED`.

The INCREMENT line containing the `TMW_Archive` identifies the products you are licensed to install.

Note In previous releases, The MathWorks used `FEATURE` lines to encode license passcode information in License Files. `INCREMENT` lines perform the same function as `FEATURE` lines.

License File Processing

During installation, the installer processes the License File, adding two lines to the file: the `SERVER` line and the `DAEMON` line. These lines add information about the name, location, and port number of the license manager daemon. The installer moves the processed License File into the `$MATLAB/etc` directory. The following is a sample of a processed License File. Note the addition of the `SERVER` and `DAEMON` lines:

```
# BEGIN-----cut here-----CUT HERE-----BEGIN
# MATLAB license passcode file for use with FLEXlm.
# LicenseNo: 12345          HostID: ID=12345
SERVER your_server ID=12345 27000
DAEMON MLM /usr/local/matlab6p5/etc/lm_matlab \
options=/usr/local/matlab6p5/etc/MLM.opt
INCREMENT TMW_Archive MLM 13 01-jan-0000 0 9CC470AG7GCCB4A810 \
VENDOR_STRING="f" HOSTID=DEMO SN=12345
INCREMENT MATLAB MLM 13 01-jan-0000 1 BCECD70AD686BGG7E9917 \
USER_BASED DUP_GROUP=UH SN=12345
```

```

INCREMENT SIMULINK MLM 13 01-jan-0000 1 2C5C2G75GF38B8EAD8FD \
  USER_BASED DUP_GROUP=UH SN=12345
INCREMENT Control_Toolbox MLM 13 01-jan-0000 1 \
  7CACA7GA23CG5C5E38C1 USER_BASED DUP_GROUP=UH SN=12345
INCREMENT Identification_Toolbox MLM 13 01-jan-0000 1 \
  EC5C175AGD025G2AD73A USER_BASED DUP_GROUP=UH SN=12345
# END-----cut here-----CUT HERE-----END

```

SERVER Line. The SERVER line has the form

```
SERVER hostname hostid TCP_PortNumber
```

where `hostname` identifies the system on which the license manager is running and `hostid` can either be the host ID of the server or the string `ID=xxxx`, where `xxxx` identifies the license number. The host ID in the comment portion of the License File must match the host ID in the SERVER line.

`TCP_PortNumber` specifies the TCP/IP port number used to connect to the license manager daemon. If the port number assigned to the server conflicts with a port number used by other software, you can edit the SERVER line to change the number. You can use any port number; however, to run the daemons from a nonroot account. The port number must be greater than 1024. Globetrotter Software, Inc., the maker of FLEXlm, recommends using a port number in the range 27000 to 27009.

DAEMON Line. The DAEMON line identifies the name and location of the vendor daemon (MLM):

```
DAEMON MLM /usr/local/matlab6p5/etc/lm_matlab
```

In Named User licenses, the DAEMON line also contains the path of the license options file, as the fourth parameter. For example, if your server is named `thunderball` and its host ID is `170a3472`, the SERVER and DAEMON lines in your License File would look like this:

```

SERVER thunderball 170a3472 27000
DAEMON MLM /usr/local/matlab6p5/etc/lm_matlab \
          | options=/usr/local/matlab6p5/etc/MLM.opt
DAEMON line                                     Options file

```

Specifying the Location of the License File

The environment variable `LM_LICENSE_FILE` defines where the license manager looks for the License File. By default, The MathWorks appends the value `$MATLAB/etc/license.dat` to this variable. If you want this environment variable to point to some other location, you must edit the `.matlab6rc.sh` script, which resides in `$MATLAB/bin`.

If you change the definition of `LM_LICENSE_FILE` in `.matlab6rc.sh`, you need to edit the license manager options file `$MATLAB/etc/lmopts.sh` to change the `LM_FILE` variable assignment. For example, if you change the location of the License File to `/usr/licenses/license.dat`, use the assignment

```
LM_FILE=/usr/licenses/license.dat
```

in the license manager options file.

License Manager Tools

The MATLAB distribution includes a set of license administration tools, available in the \$MATLAB/etc directory. This table lists these tools with a brief description of their purpose.

Tool	Description
lmboot	Start license daemons at boot time.
lmdebug	Generate diagnostic report, and optionally e-mail it to The MathWorks, for troubleshooting license manager problems.
lmdiag	Diagnose problems when a license cannot be checked out.
lmdown	Shut down all license daemons.
lmhostid	Display the host ID of the computer on which you are running.
lmstart	Start license daemons.
lmstat	Show status of all network licensing activities. See the script for a complete set of options.
lmver	Display version number of license manager.

Performing Common License Management Tasks

This section describes how to perform some common license management tasks, including

- “Running MATLAB on a Heterogeneous Network”
- “Running Multiple Versions of MATLAB”
- “Running MATLAB with Other FLEXlm Applications” on page 2-9
- “Determining Your Host ID” on page 2-10
- “Configuring Redundant License Servers” on page 2-12

Running MATLAB on a Heterogeneous Network

You can run MATLAB and other MathWorks products on a heterogeneous network. Any supported platform can act as a license server and serve clients on any supported platform.

For example, if you have a network with two SPARC workstations, an Alpha workstation, and an HP 9000, you can select any of your computers as the license server for all four computers. UNIX servers can serve PC clients.

To implement a heterogeneous licensing configuration, perform this procedure:

- 1** Select one of the systems to be the license server.
- 2** Request a License File from The MathWorks, specifying the license server’s host ID.
- 3** Create a License File from the license e-mail sent to you by The MathWorks. (For more information, see “Creating a License File” on page 1-3.)
- 4** Put the License File in your MATLAB root directory and make sure the MATLAB root directory is available (mounted) on all workstations.
- 5** Start the license manager on the license server.

Running Multiple Versions of MATLAB

If you want to continue running a previously installed version of MATLAB after you install MATLAB 6.5, note the following:

- The previously installed version of MATLAB must be 5.2.x or higher.
- Both versions of MATLAB must use the latest version of the license manager (FLEXlm). MATLAB 6.5 requires FLEXlm 8.0d.
- Replace the processed License File that your previous MATLAB installation uses with the processed License File created during the installation of MATLAB 6.5.

To set up this configuration, follow these instructions:

- 1 Shut down your previously installed version of MATLAB.
- 2 Stop the license manager. (See “Starting the License Manager” on page 1-21.)
- 3 Install MATLAB 6.5. (See “Installing MATLAB on a Client System” on page 1-17 if you are installing MATLAB on a client system.)
- 4 Replace the License File used by your existing MATLAB installation with the License File created by the installer during the new installation.
- 5 Start the new license manager.

After completing this procedure, you can start either version of MATLAB that you have installed on your system.

Running MATLAB with Other FLEXlm Applications

If you have another application that uses the FLEXlm license manager, you can share a single license manager, or run separate license managers on the same or different hosts.

Sharing a License Server

To share a license manager with another application, combine the DAEMON and INCREMENT lines from both License Files into a single License File, keeping a single SERVER line that identifies the license server host. If the other applications are using a different version of the FLEXlm software than the MathWorks products, run the newest version of the license manager.

If you share a license manager and you centralize the license information in a License File other than `$MATLAB/etc/license.dat`, you must indicate to

MATLAB where the file is located. You can define the file location to MATLAB by performing one of the following:

- Create `$MATLAB/etc/license.dat` as a symbolic link to the central License File.
- Redefine the `LM_LICENSE_FILE` environment variable. If you're running FLEXlm version 6 or later, you can also use the `MLM_LICENSE_FILE` environment variable, where `MLM` represents the MathWorks vendor daemon. See "Specifying the Location of the License File" on page 2-6 for more information.

Running Separate License Managers

To run separate license managers, use separate License Files. If you are running them on the same host, be sure to use a different TCP port number on the `SERVER` line in each License File.

Determining Your Host ID

If MATLAB is already installed, there are two ways to determine your server host ID:

- Log in to the computer where you run the license manager and run the script `lmhostid` in the `$MATLAB/etc` directory.
- Start MATLAB and enter the `hostid` command at the MATLAB prompt.

If MATLAB is *not* installed, use a native operating system command to find the host ID.

The following table lists the operating system commands you can use to determine your host ID for each supported system. Some hardware platforms, such as Sun, have a unique host ID, while others do not. For this reason, the Ethernet address is used on some platforms as the unique host ID.

Hardware Platform	Host ID Description	How to Obtain the Host ID	Sample Host ID
Sun SPARC	32-bit host ID	Enter the <code>hostid</code> command.	170a3472
HP 9000	32-bit host ID	<code>echo `uname -i` 16o p dc</code>	778DA4550

Hardware Platform	Host ID Description	How to Obtain the Host ID	Sample Host ID
Alpha	Ethernet address	<pre>/usr/sbin/netstat i</pre> <p>In the output from this command, look in the Address column for a colon-separated, hexadecimal number, such as 8:0:2b:e6:87:59.</p> <p>Note: To use this address as a host ID you must remove all colons (:) and prefix any single-digit parts of the address with a zero (0). For example, the host ID for the address above would be 08002be68759.</p>	08002be68759
SGI	32-bit host ID	<pre>echo '/etc/sysinfo s' 16o p dc</pre> <p>On systems with multiple CPUs, use the first host ID.</p>	90D40225
IBM RS/6000	32-bit host ID	<p>Enter the <code>uname -m</code> command. Remove the last two digits and use the lowest eight digits, ignoring any high level zeros.</p>	00249477
Linux	Ethernet address	<pre>/sbin/ifconfig eth0</pre> <p>Use the colon-separated, hexadecimal number to the right of HWaddr, such as 8:0:2b:e6:87:59.</p> <p>Note: To use this address as a host ID you must remove all colons (:) and prefix any single-digit parts of the address with a zero (0). For example, the host ID for the address above would be 08002be68759.</p>	08002be68759

Hardware Platform	Host ID Description	How to Obtain the Host ID	Sample Host ID
Mac OS X	Ethernet address	<p>Open the Apple System Profiler application in /Applications/Utilities. Look in the Network overview of the System Profile.</p> <p>You can also use the command:</p> <pre>netstat -I en0</pre> <p>assuming en0 is the Ethernet interface. Use the period-separated, hexadecimal number, such as 8.0.2b.e6.87.59.</p> <p>Note: To use this address as a host ID you must remove the periods (.) and prefix any single-digit parts of the address with a zero (0). For example, the host ID for the address above would be 08002be68759.</p>	08002be68759

Configuring Redundant License Servers

If a large number of licenses are governed by a single license server, failure of the server becomes a major event. To prevent problems, you may want to set up redundant servers so that, if one server goes down, the license manager can still function.

In the redundant server configuration, three machines are designated to be license servers. All three machines must be running at the time the license manager is started. However, once the license manager is running, only two machines need to be running at any time; this is called a *quorum*. As long as a quorum exists, the license manager can continue to run.

Selecting Servers

The first step in configuring the license manager is choosing the servers. The servers should be chosen with the following criteria in mind:

- The servers should be able to handle the network traffic associated with license management. A primary server must be chosen. This is the machine to which clients connect first and which receives the majority of the network traffic. The primary server is the first server listed in the License File. If this machine fails, the next server listed in the License File becomes primary.
- The servers should be running supported versions of their operating systems.

License Files in Redundant Configurations

Once you have chosen the servers, determine the host IDs of each server and provide them to the MathWorks when you request your License File. The MathWorks will generate an appropriate License File. For more information about these topics, see “Determining Your Host ID” on page 2-10 and “Obtaining or Changing Your License File” on page 1-3.

The following example shows a License File that supports redundant servers. Note that the License File has three SERVER lines that identify each of the three redundant servers:

```
# MATLAB license passcode file for use with FLEXlm
# LicenseNo: 12345           HostID: 7260d091
#                           HostID: 7275caa1
#                           HostID: 72701448
SERVER pooh 7260d091 27000
SERVER piglet 7275caa1 27000
SERVER rabbit 72701448 27000
DAEMON MLM /usr/local/matlab6p5/etc/lm_matlab
INCREMENT TMW_Archive MLM 13 01-jan-0000 0 BC7CC831F0F7B7C8D488 \
  VENDOR_STRING="b" HOSTID=DEMO SN=12345
INCREMENT MATLAB MLM 13 01-jan-0000 1 2C0CF621EF8554F42D11 \
  DUP_GROUP=UH SN=12345
INCREMENT SIMULINK MLM 13 01-jan-0000 1 7C2CD651802358GAB571 \
  DUP_GROUP=UH SN=12345
INCREMENT Identification_Toolbox MLM 13 01-jan-0000 1 \
  9CDC162D90C0FF7C7C30 DUP_GROUP=UH SN=12345
```

Note After you perform the first installation on one of the systems in the redundant configuration, you must edit the processed License File, `$MATLAB/etc/license.dat`, created during the installation. The installer only adds the first SERVER line to the License File during the installation. You must add the additional SERVER lines. Make sure to include the names and host IDs of the other systems in the redundant configuration and the port number of the license manager in these additional SERVER lines, as shown in the example. Put a copy of this edited License File in the `$MATLAB/etc` directory on all of the systems in the redundant configuration.

Starting License Manager Daemons in Redundant Configurations

To run the three license managers for this example interactively, log in to each machine with any valid username, but not as superuser. To maintain program security, you cannot start a license manager if you are logged in as superuser. Run the `lmstart` script.

For example, if the MATLAB root directory is `/usr/local/matlab6p5`, use this procedure:

1 Log in to pooh:

```
cd /usr/local/matlab6p5/etc
lmstart
```

2 Log in to piglet:

```
cd /usr/local/matlab6p5/etc
lmstart
```

3 Log in to rabbit:

```
cd /usr/local/matlab6p5/etc
lmstart
```

If you change the definition of `LM_LICENSE_FILE` in `.matlab6rc.sh`, you need to edit the license manager options file `$MATLAB/etc/lmopts.sh` to change the `LM_FILE` variable assignment. For example, if you change the location of the License File to `/usr/licenses/license.dat`, use the assignment

```
LM_FILE=/usr/licenses/license.dat
```

in the license manager options file.

Wait for the license manager daemons on the three machines to synchronize with each other. This may take a few minutes. If, for some reason, the license manager daemons do not connect, take the daemons down on each machine, and rerun the procedure. Network traffic may affect the synchronization, so it may require several attempts to establish a proper connection. Again, all three machines must connect for the license manager to begin serving keys. Once the daemons are up and connected on all three machines, only two machines are needed for a quorum; the loss of any one machine will not cause any licenses to be revoked.

Starting the License Manager at Boot Time

If you want the license manager to start automatically when rebooting the machine, place a Bourne shell code fragment into the appropriate boot script by following the directions in Table 1-4, Editing UNIX Boot Scripts, on page 1-22. You must supply a valid user name (not superuser) when configuring the boot script.

Note that, on each server, a link must exist between `/etc/lmboot_TMW` and `$MATLAB/etc/lmboot`. This link is normally created during the installation process. However, when running multiple license servers, some or all of the systems may not have MATLAB installed. To create this link on a given server, first log in to the server as root, and then enter the following UNIX commands:

```
cd /etc
ln s $MATLAB/etc/lmboot lmboot_TMW
```


Troubleshooting

This section describes some common installation problems you may encounter and provides possible solutions. Topics covered include

Problems During the Installation
(p. 3-2)

Describes how to resolve two common problems that can occur during installation

Problems Starting MATLAB (p. 3-4)

Describes how to resolve common problems that can occur after the installation is complete

License Manager Error Messages
(p. 3-12)

Lists common license manager errors you may encounter with possible solutions

Problems During the Installation

Problems that prevent successful installation typically involve two areas:

- File permission problems
- CD-ROM drive problems

Note If you can't find an answer to your problem here, check the Installation Wizard for general help or search the Tech Support Knowledge Base for help with a specific license manager error number. Both are available on the Support page at the MathWorks Web site, www.mathworks.com.

Solving File Permission Problems

During installation, certain files are checked for world (or other) access permissions. If any of the permissions are incorrect, you should exit from the installation procedure, set the user mask (umask) correctly, and then reinstall MATLAB.

During installation, the installer checks the value of the user mask. If the value of the user mask is outside of the correct range, you are prompted for an alternative. This value determines the permissions of any files created during the installation. For MATLAB, the suggested file permissions are

Scripts and directories	chmod 755
Executable images	chmod 755
All other files	chmod 644

Problems Opening the Display

If, after starting OpenWindows or Motif, the installation program outputs the Can't open display error message, enter the following command at the UNIX prompt:

```
xhost +x
```

Then run the installation procedure for your platform:

```
install* (Sun, Compaq, IBM, SGI, and Linux platforms)
INSTALL* (HP platform)
```

Solving CD-ROM Drive Problems

The MATLAB installation program expects that the CD-ROM drive is connected or properly mounted on the server. To diagnose a problem with a CD-ROM drive:

- Verify that the device is mounted correctly. See “Mounting Your CD-ROM Drive” on page 1-31 for more information.
- Verify that the CD-ROM device file has the correct read and execute permissions using the UNIX command

```
ls -l device
```

where device is the device name for your CD-ROM drive. To change permissions, log in as superuser and run the UNIX command

```
chmod 555 device
```

- To display additional diagnostic messages, rerun the installation procedure for your platform specifying the -debug flag:

```
install* -debug > debug.out (Sun, Compaq, IBM, SGI, and Linux
platforms)
INSTALL* -debug > debug.out (HP platform)
```

Problems Starting MATLAB

After a successful installation, you may encounter problems starting MATLAB. Many of these problems involve the license manager used by the MathWorks products, FLEXlm. (If MATLAB starts but appears to hang, see “Overriding the Default Choice of BLAS Library” on page 3-7 for a possible solution.)

To resolve this type of problem, follow these suggestions, in the order specified:

- 1** Take note of the error message that is displayed. The error message text can often provide information that can resolve the problem. (See “License Manager Error Messages” on page 3-12 for a list of common license manager errors with suggested resolutions.)
- 2** Check the license manager log file for error messages and take appropriate corrective action. See “Viewing the License Manager Log File” on page 3-5 for more information. You can also view the log file created by the installer during an installation. See “Viewing the Installer Log File” on page 3-6 for more information.
- 3** Make sure that the license manager daemons are running. See “Checking the License Manager Daemons” on page 3-5 for more information.
- 4** Verify that your client workstation can connect to the license manager over the network. See “Checking the Network Connection” on page 3-6 for more information.
- 5** Check the other common startup problems listed in “Resolving Other MATLAB Startup Problems” on page 3-6.

If these troubleshooting steps do not resolve the problem you are experiencing, execute the script `lmdebug` in the `$MATLAB/etc` directory and send its diagnostic results to the MathWorks Technical Support department. If you do not have e-mail access, fax the results to the MathWorks at the number listed below. For fax reports, it is also helpful to include

- The exact error message(s) received
- A copy of your License File

To reach the MathWorks Technical Support by phone or e-mail:

E-mail: support@mathworks.com

Phone: 508-647-7000

Fax: 508-647-7201

Checking the License Manager Daemons

The license manager must be running before you can start MATLAB. To determine whether the license manager daemons are operating, run the `lmstat` command on the license server:

```
cd $MATLAB/etc
lmstat a
```

On computers running System V UNIX, enter

```
ps ef | grep lm
```

Check the output of these commands to determine if both the license manager daemon (`lmgrd` or `lm_TMW.ld`) and the vendor daemon (MLM) are running. There can be multiple license manager daemons running if you are running multiple license managers but only one MLM daemon. Remove all duplicate daemons manually. To stop processes, you must be logged in as superuser; then execute the command

```
kill pid_of_daemon
```

where `pid_of_daemon` is the process ID of the daemon. If either the license manager or vendor daemon is not running, restart the daemons by running `lmstart`, located in the `$MATLAB/etc` directory.

Viewing the License Manager Log File

The file `/var/tmp/lm_TMW.log` contains a log of all license activity. The license manager appends a new entry to the log each time a license transaction occurs. To save file space, occasionally delete information from the file.

You can view the file with the command `lmstart -e`, or use the UNIX `cat` command. (You can also use the `lmstart` command to change the default directory where the log file is stored.) For help interpreting error messages and suggested remedies to common errors, refer to the section “License Manager Error Messages” on page 3-12.

Viewing the Installer Log File

The installer creates a log file each time it is run. It puts the log file in the top-level installation directory, \$MATLAB. The name of the log file includes a number that identifies which CD in the set was used for the installation.

For example, if you installed products from CD 1 in the set, the log file is named `install_matlab1.out`.

Checking the Network Connection

Verify that your client workstation can connect to the license manager daemons by executing the following commands on your client workstation (not the server):

```
cd $MATLAB/etc
lmstat -a
```

If either the license server daemon or vendor daemon is not running on your local computer, but is running correctly on the license server, the problem is usually caused by network software. The network software is either not running correctly or is not configured correctly. Look for the error message in “License Manager Error Messages” on page 3-12. A suggested action accompanies each message. In addition, you may need to contact your system administrator or system vendor to resolve the problem.

Resolving Other MATLAB Startup Problems

The following lists some other MATLAB start up problems with possible solutions.

Changes to License File Unread by License Manager

If you change the License File, you must restart the license manager using `$MATLAB/etc/lmstart`.

The `lmstart` script calls the `lmdown` script to shut down the license manager daemon. Sometimes the `lmdown` script does not succeed at its task. An effective way to shut down the license manager daemons is to use the UNIX `ps` command to check for running processes and terminate them manually using the UNIX `kill` command. See “Checking the License Manager Daemons” on page 3-5 for more information.

MATLAB Can't Find LM_LICENSE_FILE

If MATLAB is installed on a file server in `/usr/local/matlab6p5`, the install script defines `$MATLAB` as `/usr/local/matlab6p5` in the file `.matlab6rc.sh`. If MATLAB is automounted on other workstations in directories other than `/usr/local/matlab6p5`, MATLAB will fail at startup because it cannot find `LM_LICENSE_FILE`. The `LM_LICENSE_FILE` is determined by `$MATLAB`.

Edit `$MATLAB/bin/.matlab6rc.sh` and comment out the line that defines the variable `MATLAB`. If this line is not found in `.matlab6rc.sh`, `$MATLAB` is determined automatically when MATLAB is started.

License Key Unusable on Crashed Node

When the node on which MATLAB is running crashes, the license key should be released after about 2 hours. If the key is never released, use `$MATLAB/etc/lmremove` to release it manually. This script allows you to remove a single user's license for a specified feature and return the license to the pool of available licenses without having to restart the license manager.

Overriding the Default Choice of BLAS Library

On Alpha, HP, IBM RS6000, and SGI systems, if MATLAB hangs at startup, it can indicate that MATLAB is using a BLAS library that is optimized for a different processor than the one in your system.

Basic Linear Algebra Subroutines (BLAS) libraries speed up matrix multiplication and LAPACK functions. In its distribution, MATLAB includes multiple versions of these BLAS libraries that are optimized for specific processors.

On Linux and Sun systems, MATLAB determines the processor at startup and automatically selects the most appropriate BLAS library. On Alpha, HP, IBM RS6000 and SGI systems, however, MATLAB uses a default BLAS library. If MATLAB appears to hang at startup on these systems, make sure that the BLAS library MATLAB is using is optimized for the processor on your system.

To do this, perform these steps:

- 1 Identify which processor your system is running.
- 2 Determine which BLAS library MATLAB uses on your platform and view the other BLAS libraries available for your platform.

3 Override the default BLAS library, if required.

Identifying Your System Processor

This table describes how to determine what type of processor your computer is running.

Table 3-1: Commands to Identify Processors on UNIX Systems

Platform	Command
Alpha	<pre>/usr/sbin/psrinfo -v</pre> <p>This command returns</p> <pre>Status of processor 0 as of:05/03/01 17:16:55 Processor has been on-line since 04/20/2001 14:09:31 The alpha EV4.5 (21064) processor operates at 233 MHz, and has an alpha internal floating point processor.</pre> <p>The number in parentheses on the third line, in above example (21064), identifies the processor.</p>
glnx86	<pre>cat /proc/cpuinfo</pre> <p>Look for the following fields in the output (values may vary from the example below)</p> <pre>vendor_id :GenuineIntel cpu family :6 model :8 model name :Pentium III (Coppermine) stepping :1</pre> <p>Match this information with the table in \$MATLAB\bin\glnx86\blas.spec.</p> <p>Note: Some versions of glibc 2.1.x have problems querying environment variables from within shared library init functions. To take advantage of the BLAS_VERSION feature, you may need to upgrade your machine to glibc 2.2.</p>

Table 3-1: Commands to Identify Processors on UNIX Systems (Continued)

Platform	Command
HP700	<p>Start the System Administration Manager (SAM) and navigate to the Processor tab, as shown below:</p> <p style="text-align: center;">System Administrator Manager (SAM) -> Performance monitors -> System properties -> Processor tab</p> <p>This provides information about the type of processor.</p>
HP-UX	MATLAB only supports HP-UX running on PA-RISC2.0.
IBM RS	Contact IBM Technical Support and request the document entitled “Determining CPU Speed in AIX.” This is a table of machine types, processor types, and processor speeds.
SGI	<p><code>sysinfo -a</code></p> <p>In the first few lines of the data returned, look for information similar to</p> <p style="text-align: center;">CPU Type is mips R4400 5.0</p> <p>The information starting with R identifies the processor. MATLAB supports the R5000, R8000, R10000, and R12000 (default).</p>
Solaris	<p><code>uname -m</code></p> <p>which returns either sun4u for UltraSPARC or sun4m for the older, non-Ultra machines (e.g., Hyper and SuperSPARCs).</p>

Determining the Default BLAS Library

To determine which BLAS library MATLAB uses on your system and identify the other libraries available for your platform, look in your `<MATLAB>/bin/$ARCH` directory, where `$ARCH` represents the name of your platform. The BLAS libraries filenames begin with the string `atlas_` and include the processor type, for example, `atlas_21264.so`. The optimized BLAS libraries were built using Automatically Tuned Linear Algebra Software (ATLAS).

This table lists the default BLAS libraries used on these UNIX systems and identifies other BLAS libraries that are available.

Platform	BLAS Libraries Available
Alpha	atlas_21264.so (Default) atlas_21164.so
HP700	atlas_PA-RISC1.1.sl
HP-UX	atlas_PA-RISC2.0.sl
IBM RS	atlas_Power3.a (Default) atlas_Power2.a atlas_common.a
SGI	atlas_R12000.so (Default) atlas_R10000.so atlas_R5000.so

Using the Fortran BLAS Libraries. MATLAB also includes unoptimized Fortran reference BLAS libraries on all platforms, named `libmwfrefblas.ext`, where `ext` is the shared library filename extension on that platform. These libraries can be useful for benchmarking the optimized libraries and debugging, when you think the problem is in the optimized libraries.

Using Other BLAS Libraries. You may also use a BLAS library from other sources than the ones shipped with MATLAB, provided they are in the correct format. This format is a shared library (as opposed to a static library) that exports all the double-precision (starting with `d`) and double-precision complex (starting with `z`) BLAS routines from `dasum` to `zupmtr`. On HP and IBM_RS, the symbols must be exported without trailing underscores, while for Alpha, `glnx86`, SGI, and SOL2, the symbols must be exported with trailing underscores (e.g., `dgemm_`).

If the shared library you provide also includes LAPACK symbols like `dgefa` or `dgefa_`, then they will override the MATLAB default implementation, which is based on the Fortran LAPACK from Netlib at <http://netlib.org>.

Overriding the Default BLAS

To specify which BLAS library MATLAB uses, set the `BLAS_VERSION` environment variable before starting MATLAB.

For example, if you use the C shell (`csh`), use these commands:

```
setenv BLAS_VERSION atlas_21164.so
setenv LAPACK_VERBOSITY 1
matlab
```

If you use the Bourne shell (`sh`), use these commands:

```
export BLAS_VERSION=atlas_21164.so
export LAPACK_VERBOSITY=1
matlab
```

The environment variable `LAPACK_VERBOSITY` causes MATLAB to display messages that identify the BLAS library being used.

To switch back to the default BLAS library, use either of these commands, depending on your shell.

For C shell (`csh`)

```
unsetenv BLAS_VERSION
```

For Bourne shell (`sh`)

```
unset BLAS_VERSION
```

License Manager Error Messages

This section provides information about some of the more common license manager errors, listed in this table by error number.

License Manager Error
“License Manager Error -2: Invalid License File Syntax” on page 3-13
“License Manager Error -3: Cannot Connect to a License Server.” on page 3-14
“License Manager Error -5: License Checkout Failed. No Such Feature Exists.” on page 3-14
“License Manager Error -8: Encryption Code in License File Is Inconsistent” on page 3-15
“License Manager Error -9: Invalid Host” on page 3-16
“License Manager Error -10: Feature Has Expired” on page 3-16
“License Manager Error -11: Invalid Date Format in License File” on page 3-16
“License Manager Error -12: Invalid Returned Data from License Server” on page 3-17
“License Manager Error -13: No SERVER Line in License File” on page 3-17
“License Manager Error -14: Cannot find SERVER Hostname in Network Database” on page 3-17
“License Manager Error -15: Cannot Connect to License Server” on page 3-18
“License Manager Error -16: Cannot Read Data from License Server” on page 3-18
“License Manager Error -18: License Server Does Not Support This Feature” on page 3-18

License Manager Error

“License Manager Error -21: License File Does Not Support This Version” on page 3-19

“License Manager Error -25: License Server Does Not Support This Version of This Feature” on page 3-19

“License Manager Error -31: Feature Not Yet Available” on page 3-19

“License Manager Error -39: No License for Feature” on page 3-20

“License Manager Error -83: FLEXlm Version of Client Newer Than Server” on page 3-20

“License Manager Error -84: Missing Options File” on page 3-20

“License Manager Error -88: License Checkout Failed” on page 3-21

“License Manager Error -96: Server Node is Down or Not Responding” on page 3-21

“License Manager Error -97: License Checkout Failed” on page 3-21

To get more information about a FLEXlm license manager problem, see the *FLEXlm End User Manual*, available in PDF format in \$MATLAB/etc/enduser.pdf or go to the GLOBETrotter Software, Inc. Web site, www.globetrotter.com. You can also go to the support page on the MathWorks Web site, www.mathworks.com, and find additional information about a particular license manager error.

License Manager Error -2: Invalid License File Syntax

This error typically indicates that there is a problem in your License File.

Possible resolutions:

On client systems, make sure your License File has the following format.

```
SERVER host hostid port_num  
USE_SERVER
```

Note that there should be a carriage return immediately following the USE_SERVER line.

License Manager Error -3: Cannot Connect to a License Server.

This error can occur if the SERVER line in your License File is incorrect or missing.

Possible resolutions:

- Make sure that the SERVER line in your License File matches the SERVER line in the License File on your license server. On Windows systems, the license.dat file on the client can be found in \$MATLAB\bin\win32. On UNIX systems, it is located in \$MATLAB/etc on UNIX/Linux machines.

Note You must restart the license manager after making any changes to the License File on the license server.

- Make sure the TCP port number at the end of the SERVER line in your License File is not already being used by another application. Change the port number on the SERVER line to a port that is not being used. FLEXlm has reserved ports in the range 27000 to 27009. Restart the license manager after making this change.
- Make sure that you do not have multiple MathWorks vendor daemons (mlm) running. Check your FLEXlm log file for the error “Multiple MLM Servers Running.”

License Manager Error -5: License Checkout Failed. No Such Feature Exists.

This error usually indicates that you are trying to use a product for which you are not licensed.

Possible resolutions:

- Check your License File to see if you are licensed to use this product.
- Make sure that your License File does not contain extra carriage returns or tabs. To avoid this, make sure that each line begins with either #, SERVER, DAEMON, or INCREMENT and replace any tab characters in INCREMENT lines with spaces.

Note You must restart the license manager after making any changes to the License File on the license server.

- Make sure that your system date is correct. If your system date is set before the date that your license was made, you will get this error.

License Manager Error -6: No TCP “License” Server Exists

This error can occur if a SERVER line does not specify a TCP port number, and the TCP license service does not exist in `/etc/services`.

Possible resolutions:

- Make sure that the SERVER line in your License File contains a TCP port number, typically 27000.
- Make sure your `/etc/services` file is configured correctly.
- Ensure that the TCP/IP network software is running on your computer. The license manager requires TCP/IP even for stand-alone computers. Use the UNIX `telnet hostname` command where `hostname` is the name of the computer running the license server. If the `telnet` command does not connect to the specified `hostname` computer, there is a problem with your network configuration. You must resolve this problem before you can run MATLAB.

License Manager Error -8: Encryption Code in License File Is Inconsistent

The passcode in an INCREMENT line does not match the other data in the license file. The log file, usually named `/var/tmp/lm_TMW.log`, should indicate the specific INCREMENT line where it found bad codes in your License File, `$MATLAB/etc/license.dat`.

Possible resolutions:

- Check the license passcode closely for typographical errors. Make sure that zeros are not the letter O. Make sure that Bs are not 8s, and so on.
- Check the date format in your License File may be incorrect; e.g., `01 mar 99` instead of `01 mar 2002`. The date format should always match the passcodes that were sent by e-mail or faxed to you.

License Manager Error -9: Invalid Host

The host ID specified in the License File does not match the node on which the software is running.

Possible resolutions:

- Make sure the host ID in the license e-mail or fax you received from The MathWorks matches the host ID on the SERVER line in your License File.
- Make sure that the host ID given to The MathWorks is correct. Execute the `$MATLAB/etc/lmhostid` command on the node. If the host ID returned is different from the host ID in the License File, contact The MathWorks for new passcodes. See “Obtaining or Changing Your License File” on page 1-3 for more information.

License Manager Error -10: Feature Has Expired

This error indicates that one or more of your license keys has expired.

Possible resolutions:

- Check the expiration date on each of the INCREMENT lines in your License File. If the dates in the license file have already passed, contact the Customer Service department at The MathWorks (through the Web or through e-mail at service@mathworks.com). When contacting The Mathworks, include your License Number and the host ID of your license server.
- If none of your product licenses has expired, check that your system date and time are correct.

License Manager Error -11: Invalid Date Format in License File

This error indicates that the start date or the expiration date in the License File is invalid. This can happen if the expiration dates in the License File have been changed.

You can also get this error if the space character between the number of users field and the 20 digit encryption code in the INCREMENT line is missing.

Compare the INCREMENT lines in your license file with the INCREMENT lines in your original license e-mail. They must be exactly the same.

This error can also occur if the SERVER and DAEMON lines are missing from the license.dat file. The installer adds these lines to the License File as part of the installation process.

License Manager Error -12: Invalid Returned Data from License Server

This error occurs when incompatible daemons are running. Most often this error is caused by doing an upgrade installation of MATLAB in the same directory as the previous version where the daemons were not shut down before the update was installed. If the daemons are not shut down, then an update of MATLAB will not replace the daemon files.

Possible resolutions:

- Execute `$MATLAB/etc/lmstart` to start the license manager and vendor daemons corresponding to the current version of MATLAB.
- Shut down the currently running daemons and reinstall the license manager files.

License Manager Error -13: No SERVER Line in License File

This indicates that there is no SERVER line in the License File. This line should be added by the installer during the installation process.

To remedy this problem, run the installer again or manually edit the License File, `$MATLAB\flexlm\license.dat`, adding the SERVER line. See “License File” on page 2-3 for information about the format and contents of the SERVER line.

License Manager Error -14: Cannot find SERVER Hostname in Network Database

The `gethostbyname()` system call failed for the SERVER name in the License File. The license server and the client running MATLAB are in different domains. The local hostname listed in the License File cannot be resolved on the remote domain.

To fix this problem, perform this procedure:

- 1 Place an alias in the license server’s local host table for the fully qualified name, since all domains (including the license server) must be able to resolve the fully qualified name for the license server through the host table, DNS, or Yellow Pages.
- 2 Verify that the server name can be resolved by using `telnet` to log in remotely to the server computer (using the fully qualified name) from itself and from a client. If the `telnet` connection succeeds, then the fully qualified name is resolvable.

- 3 Insert the fully qualified name for the server on the SERVER line of the License File.
- 4 Invoke `$MATLAB/etc/lmstart` to force the license manager to reread the License File.

License Manager Error -15: Cannot Connect to License Server

The license manager could not connect to the vendor daemon on the SERVER node. This error is displayed when starting MATLAB.

Possible resolutions:

- Make sure the license manager daemons are running on the license server by running `$MATLAB/etc/lmstat` on the license server. If the license daemons are not running, execute `$MATLAB/etc/lmstart`. If the license manager does not start, check the log file, usually `/var/tmp/lm_TMW.log`, for diagnostic messages.
- If the license manager is running on the license server, make sure that the TCP/IP network software is running on the computer. Even for stand-alone computers, the license manager requires TCP/IP. Enter the UNIX `telnet hostname` command where `hostname` is the name of the license server. If `telnet` does not return a successful session on `hostname`, there is a problem with your network configuration. You must resolve this problem before you can run MATLAB. Contact your local system administrator for help

License Manager Error -16: Cannot Read Data from License Server

This error indicates that the path to the MATLAB vendor daemon, `mlm.exe`, is incorrect in your License File DAEMON line. See “License File” on page 2-3 for an example of a DAEMON line.

License Manager Error -18: License Server Does Not Support This Feature

The feature has expired (on the server), has not yet started, or the version is greater than the highest supported version.

Possible resolution:

- Make sure that the INCREMENT line in your License File exactly matches the INCREMENT line in the license information you received from The MathWorks. Check for typographical errors.

- Check that the license manager was restarted after making changes to your License File.

License Manager Error -21: License File Does Not Support This Version

If you are getting this error on your license server, make sure you have installed the version of FLEXlm included with Release 13. Release 13 License Files will not work with the older FLEXlm versions.

If you have updated an existing `license.dat` file with new Release 13 passcodes, you still need to install FLEXlm 8.0d from the MATLAB CD.

If you are getting this error on one of your client systems and not on the server, make sure the License File on the client is in the following format.

```
SERVER host hostname port_num
USE_SERVER
```

The `SERVER` line in the client system License File should be the same as the `SERVER` line found in the License File on the license server.

Also, make sure you are using your Release 13 license and not a license from a previous release.

License Manager Error -25: License Server Does Not Support This Version of This Feature

This error indicates that you are trying to run MATLAB 6.5 with an old license. You must update your `license.dat` file with your new license passcodes.

If you do not have your Release 13 license, contact Customer Service at The MathWorks.

License Manager Error -31: Feature Not Yet Available

The current date is before the feature start date. Check the log file for the name of the feature.

Possible resolutions:

- Make sure that the license passcode of the `INCREMENT` line in your License File exactly matches the passcode in the license information you received from The MathWorks. Check for typographical errors.
- Make sure that the date on your system is correct. To check the date, use the UNIX date command at the UNIX prompt.

License Manager Error -39: No License for Feature

You are not listed as a user in your options file.

Possible resolutions:

- Check your options file and make sure your username is on the INCLUDE line for the product you are trying to use. The installer creates the options file, named `$MATLAB/etc/MLM.opt`.

License Manager Error -83: FLEXlm Version of Client Newer Than Server

This error message usually indicates that the version of the license manager on the client system is newer than the license manager on the server system. When MATLAB starts, the license file is pointing to the wrong version of the license manager.

To correct the problem, change the path of the DAEMON line in your `license.dat` file. For a UNIX server, the DAEMON line for all license files should resemble this sample (the path of your daemon will be different).

```
DAEMON MLM $MATLAB/etc/lm_matlab
```

For a PC server, the DAEMON line for all license files should read

```
DAEMON MLM $MATLAB\flexlm\mlm.exe
```

where `$MATLAB` is your MATLAB installation directory. After changing your License File, be sure to restart the license manager.

License Manager Error -84: Missing Options File

This error typically indicates one of these conditions:

- You do not have an options file
- The DAEMON line in you License File does not include the path to the options file
- You are not listed in the options file as a valid user of this product

Possible resolutions:

- Make sure the installer created an options file during the installation procedure. The full path of the options file is `$MATLAB\flexlm\MLM.opt`, where `$MATLAB` is your MATLAB installation directory.
- Add the full path of your options file to the DAEMON line in your License File.

- Make sure your username appears in the correct INCLUDE lines in your options file.

License Manager Error -88: License Checkout Failed

This error indicates that your system clock has been set incorrectly. Check that your system date and time are correct.

License Manager Error -96: Server Node is Down or Not Responding

This error can occur if you are running DHCP (to obtain a dynamically assigned IP address) on your license server. MATLAB cannot connect with the License Manager because it uses TCP/IP protocols for communication and your IP address is changing.

To fix this problem, follow this procedure.

- 1** Obtain the current IP address for your server. If you are on UNIX or Linux, use the `ifconfig` command. On a PC running Windows, you can use the `ipconfig` command at a DOS prompt.
- 2** Edit your hosts file and change the IP address for your server's entry to be the correct IP address. On UNIX or Linux systems, edit the `/etc/hosts` file. On Windows NT and Windows 2000 systems, edit the `C:\Winnt\system32\drivers\etc\hosts` file.

License Manager Error -97: License Checkout Failed

This error is often caused by trying to run both MATLAB 5.3 and MATLAB 6.5 on the same system with different license managers. If this is the case, run both copies of MATLAB with the same License File. See “Running Multiple Versions of MATLAB” on page 2-8 for more information.

If you are not trying to run MATLAB 5.3 but only want to run MATLAB 6.5, make sure you have installed FLEXlm version 8.0d from the Release 13 CD. MATLAB 6.5 will not run with an older version of the license manager.

MATLAB Directory Structure

MATLAB Directories and Files (p. 4-2) Lists the directories included in a MATLAB installation

MATLAB Directories and Files

The \$MATLAB directory refers to the directory where you installed the MATLAB software. It contains these subdirectories and files.

Note Your installation may not include all the subdirectories listed and may include subdirectories not included in this list.

Directory	Description
/bin	Scripts for executing the MATLAB system and computer-specific subdirectories for the binary images
/etc	All files associated with the license manager, including <code>license.dat</code> and computer-specific subdirectories
/extern	Subdirectory containing subdirectories for source, include files, and libraries for the external interfaces
/help	MATLAB online documentation files
/java	MATLAB Java jar files
/sys	Tools and operating system libraries that MATLAB depends on and that may not be generally available on a user's system
/toolbox	Toolbox subdirectories
/X11	Files containing keyboard mapping and default window parameters for MATLAB, Simulink, and icon bitmaps

\$MATLAB/bin

File	Description
matlab	Script to invoke MATLAB
.matlab6rc.sh	Script used by MATLAB to customize behavior
mex	Script to create C, C++, and Fortran MEX-files
mexopts.sh	Script to customize mex behavior for C and Fortran
cxxopts.sh	Script to customize mex behavior for C++ and Fortran
gccopts.sh	Script to customize mex behavior for GNU C and GNU Fortran

\$MATLAB/etc

File	Description
license.dat	ASCII file with license manager passcode information
license.dat.skel	Template for generating a License File
rc.lm	Code segment to include in a system file to restart the daemons at boot time (platform-specific versions have extensions; for example, rc.lm.hp)
enduser.pdf	<i>FLEXlm End User Manual</i> in PDF format
lmdebug	Script to generate installation diagnostics
lmerror	MATLAB license manager failure script
lmboot	Script to start license manager at boot time
lmstart	Script to start license manager
lmdown	Script to shut down license manager
lmstat	Script to display current status of license manager

File	Description
lmhostid	Script to display unique host identification number used by license manager
lmgrd	Script to invoke license manager daemon
lm_matlab	Script to invoke MATLAB specific license manager daemon
lmver	Script for reporting FLEXlm version
lmcksum	Script for producing License File checksums
lmdiag	Script for diagnosing problems when you cannot check out a license
lmdlog	Script for starting diagnostic log file
lmopts.sh	Script used by license manager to customize behavior
/util	Special utilities required by license manager scripts
/\$ARCH	Directory with license manager binaries, where \$ARCH represents your hardware platform.

\$MATLAB/toolbox

Directory	Description
/matlab	MATLAB M-files
/local	Local environment M-files
/other	Any other toolboxes you may have installed

\$MATLAB/extern

Directory	Description
/include	Include files for C language programs with prototype declarations
/lib	Object libraries with compiled versions of the external interface routines beneath an architecture-specific name.
/src	Source code for example programs that demonstrate the use of routines in the External Interfaces library

Symbols

\$MATLAB/bin directory 4-3
 \$MATLAB/etc directory 4-3
 \$MATLAB/extern directory 4-5
 \$MATLAB/toolbox directory 4-4
 /var/tmp/lm_TMW5.log file 3-5

A

Access members 1-4
 Acrobat reader 1-26
 adding new licences 1-3
 ATLAS
 BLAS library optimization 3-9

B

BLAS
 overriding the default BLAS 3-7
 BLAS libraries
 Fortran reference BLAS 3-10
 boot scripts
 modifying 1-21
 Bourne shell code fragments
 table of 1-22
 Bourne shell code fragments 1-22

C

CD installation procedure 1-8
 problems 3-3
 CD-ROM drive mount commands 1-31
 combining licenses 1-3
 contacting The MathWorks 1-3, 1-4
 converting single-user licenses 1-3

D

DAEMON line
 in License Files 2-5
 daemons
 checking 3-5
 starting 1-21
 directories
 specifying name of installation directory
 standard installations 1-11
 directory structure, MATLAB 4-2
 display
 problems opening 3-2
 documentation
 specifying viewing options 1-26

E

error messages
 common license manager 3-12
 exporting a CD-ROM drive for remote mounting
 1-32

F

FEATURE line
 in License Files 2-4
 file permission problems 3-2
 FLEXlm
 running multiple applications 2-9
 Fortran BLAS libraries 3-10

H

hardware 1-5
 heterogeneous networks
 installing MATLAB 2-8

- host ID
 - determining on UNIX systems 2-10
- hostid command
 - finding host ID on Sun systems 1-4
- hosts file 3-21

- I**
- INCREMENT line
 - in License Files 2-4
- install_matlab1.out file 3-6
- install_matlab2.out file 3-6
- installation directory
 - specifying name of
 - standard installations 1-11
- installation problems 3-2
 - CD 3-3
- installation procedure
 - CD 1-8
 - debugging 3-3
 - installing additional products 1-28
 - installing toolboxes 1-28
 - selecting products 1-14
 - standard 1-8
- installation root directory
 - specifying 1-12

- K**
- keys
 - definition 1-2
 - releasing 3-7

- L**
- license administration
 - tools 2-8
- license agreement 1-12
- License Files
 - checking for errors 3-15
 - checking linebreaks in 1-3
 - combining licenses 1-3
 - creating 1-2
 - determining location 3-7
 - editing 1-13
 - sharing with other applications 2-9
 - understanding 2-3
 - verifying 1-12
 - when to restart license manager 3-6
- license keys 1-2
 - releasing 3-7
- license manager
 - administration (UNIX systems) 2-2
 - checking daemons 3-5
 - error messages 3-12
 - other problems 3-6
 - sharing with other applications 2-9
 - starting automatically at boot time 1-21
 - starting daemons 1-21
 - tools 2-8
 - when to restart 3-6
- License Number 1-4
 - specifying 1-15
- license passcodes 1-2
- license servers
 - redundant 2-12
- license.dat file 2-6
 - creating 1-3
- licenses
 - managing 1-3
 - user-based 1-19
- Linux systems
 - setting the CD-ROM permissions 1-31
- LM_LICENSE_FILE environment variable 2-6

- debugging problems with 3-7
- lm_TMW.log file 3-5
- lmboot 2-7
- lmdebug 2-7
- lmdebug script 3-4
- lmdiag 2-7
- lmdown 2-7
- lmhostid 2-7
- lmstart 2-7
- lmstat 2-7
- lmver 2-7
- log files
 - installation program 3-6
 - license manager 3-5

M

MATLAB

- problems starting (UNIX systems) 3-5
- running multiple versions
 - troubleshooting 3-21
- starting 1-25
- supported platforms 1-5

MATLAB Access 1-4

matlab command

- setting up symbolic link 1-15

MATLAB directory structure 4-2

- \$MATLAB/bin 4-3
- \$MATLAB/etc directory 4-3
- \$MATLAB/extern 4-5
- \$MATLAB/toolbox directory 4-4

MATLAB Kernel 1-15

MATLAB Toolbox 1-15

mex command

- setting up symbolic link 1-15

mount command 1-31

- remote mounting 1-33

- mounting a CD-ROM drive 1-31
 - locally 1-31
 - remotely 1-32

N

- network connections
 - verifying 3-6
- Number
 - License 1-4

O

- online documentation
 - specifying viewing options 1-26

P

- passcodes 1-2
- password, license 1-8
- permissions, file 3-2
- platforms supported 1-5
- print command
 - specifying defaults for 1-25

R

- redundant license servers 2-12
- removing a MATLAB installation
 - UNIX 1-30
- root directory
 - specifying 1-12
- rtsetup command 1-27
- Runtime Server
 - configuration 1-27

S

screens

installation data 1-15

License File 1-12

root directory 1-12

selecting products to be installed 1-14

SERVER line

in License Files 2-5

running separate license servers 2-10

sharing License Files 2-9

troubleshooting 3-17

startup.m file

creating 1-26

superuser status 1-9, 1-22

support, technical 3-4

symbolic links

setting up 1-15

system requirements 1-5, 1-8

system time

setting on Windows 3-21

T

technical support 3-4

time

setting system time on Windows 3-21

TMW_Archive line

in License Files 1-2

toolbox licenses

changing 1-3

toolboxes

installing 1-28

transferring licenses 1-3

troubleshooting

error messages 3-12

file permission problems 3-2

license manager 3-4

license manager problems 3-6

U

uninstalling MATLAB

on UNIX systems 1-30

user-based licensing

setting up 1-19

W

Web browser 1-26

Web site, The MathWorks 1-5

obtaining License Files 1-4

X

xhost command 3-2