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The MATH WORKS Inc.

Installation Guide for UNIX

Release 12 (MATLAB 6 Product Family)

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Installation Guide for UNIX

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Installing Release 12 on UNIX Workstations

Start Here

This section contains instructions for installing Release 12 of the MathWorks MATLAB family of products and FLEXlm, the licensing software used by the MathWorks products. (FLEXlm is a product of GLOBEtrotter Software, Inc.)

In addition, this section provides information about:

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.

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” 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.

Product Licensing

When you purchase products, The MathWorks sends you license information by e-mail or fax. You use this licensing information to create a License File. If you did not receive your license information, see “Obtaining Your License File from The MathWorks” on page 1-4.

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.

The following is a sample set of license passcodes sent by The MathWorks. Each `INCREMENT` line identifies a product you are licensed to run. (The `TMW_Archive INCREMENT` line specifies the products you are licensed to install.) Lines that begin with a pound sign (#) are comments.

```
# BEGIN-------cut here-------CUT HERE-------BEGIN
# MATLAB license passcode file for use with FLEXlm 6.1g
# LicenseNo: 12345         HostID: 00600815a7ac
INCREMENT TMW_Archive MLM 12 01-jul-2002 0 BCE767XEBAM426B8431A \
  VENDOR_STRING=3ffffd76f7ffff HOSTID=00600815a7ac SN=12345
INCREMENT MATLAB MLM 12 01-jul-2002 3 6C585BFC744T1DDCDD1C \
  DUP_GROUP=UH SN=12345
INCREMENT SIMULINK MLM 12 01-jul-2002 2 9C18FBFC51CFF73C2CB4 \
  DUP_GROUP=UH SN=12345
INCREMENT Control_Toolbox MLM 12 01-jul-2002 1 \
  3CE8FB0CA5046F9953EA  DUP_GROUP=UH SN=12345
```

```
INCREMENT Identification_Toolbox MLM 12 01-jul-2002 1 \
  5C18FB4C1123F817E04  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 by your e-mail program between the start and end of an `INCREMENT` line. If you need to continue an `INCREMENT` line onto more than one line, use the \ (backslash) character.

  ```
  INCREMENT SIMULINK MLM 12 01-jul-2002 2 9C18FBFC51CFF73C2CB4 \
    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 Your License File from The MathWorks

If you do not have your License File, you can obtain it by contacting The MathWorks via:

- The Web at `www.mathworks.com/mla`. Log in to MATLAB Access using your last name and 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.
- E-mail at `service@mathworks.com`.
- Telephone at 508-647-7000, ask for Customer Service.

- Fax at 508-647-7001.

Please have ready, or include in your e-mail or fax, the following three items:

- Your License Number:
  - If you have not previously installed MATLAB at your site, you can find your License Number on the upper right-hand corner of the packing slip. Customers outside North America may obtain this information from their local distributor.
  - If you are updating an existing MATLAB installation and MATLAB is running, type `license` or `ver` at the MATLAB prompt.
- The hostid for the *server* on which you will execute the MATLAB license manager. On Sun workstations, you can obtain the hostid 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 Hostid" on page 2-6. Be sure to provide your *server* hostid, not your client workstation hostid.
- Your e-mail address.

System Requirements

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

- 90 MB disk space (215 MB if installation includes MATLAB online documentation)
- 64 MB memory, additional memory strongly recommended
- 64 MB swap space

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

The following system configurations are supported.

Sun SPARC (Solaris 2)

- SPARC, ULTRA workstations
- Solaris 2.6, 2.7, 2.8
- OpenWindows version 3.5 or X Windows (X11R5)

HP 9000

- HP PA-RISC 1.1, 2.0 workstation
- HP-UX 10.20, 11.0
- X Windows (X11R5)

Compaq Alpha

- Alpha workstation
- Tru64 UNIX 5.0
- X Windows (X11R5)

Note For Compaq Tru64 UNIX, you must install the Fortran run-time shared libraries, which are on a separate disk, named the "Associated Products CD." The C++ shared libraries are installed as part of the base package.

IBM RS/6000

- IBM RS/6000 workstation
- AIX 4.3.3
- X Windows (X11R5)

Silicon Graphics (SGI)

- SGI (R5000, R10000, R12000) MIPS-based workstation
- IRIX 6.5.x
- X Windows (X11R5)

Linux

- Pentium, Pentium Pro, II, III PC
- Linux 2.2.x kernel
- X Windows (X11R6)

Installation Instructions

These instructions describe how to install the MathWorks Release 12 products on a single system in either a stand-alone workstation or file server environment. 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.

Distribution

The MathWorks products are distributed on CD or over the Internet. The CD distribution consists of two disks: the product disk, and the documentation disk. Depending on your configuration, you may also receive an additional CD containing the PC version of the software.

You install each disk separately. You can install the products first or the documentation; the order of the installations does not matter.

The product disk contains:

- The MathWorks product family
- Related utility files
- Any program options you purchased, such as toolboxes

For a detailed list of the files, see Chapter 4, "MATLAB Directory Structure."

The documentation disk contains the MATLAB online documentation. For more information about the documentation, see "Viewing Documentation" on page 1-27.

Installation Procedure

To install the MathWorks products on your UNIX workstation, follow these instructions. If you encounter any problems during the installation process, refer to Chapter 3, "Troubleshooting."

1 Log in to your file server.

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.

2 If you are installing from a CD, mount the CD-ROM drive. If you have downloaded your products from the MathWorks Web site, skip ahead to step 3.

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

   ```
   mkdir /cdrom
   ```

   b Place the software CD, or the documentation CD, label face up, into the CD-ROM drive. 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.

   c 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 Your CD-ROM Drive" on page 1-21.

3 Create the installation directory and move into it, using the `cd` command. For example, to install into the location `/usr/local/matlabr12`, use these commands:

   ```
   cd /usr/local
   mkdir matlabr12 (needed for first time installation only)
   cd matlabr12
   ```

   Subsequent instructions in this book refer to this directory as `$MATLAB`.

Note Do not install MATLAB 6 over any previous released version of MATLAB.

---

4 Move your License File, named `license.dat`, into the `$MATLAB` directory. For information about creating a License File, see "Before You Install" on page 1-3. The installer looks for the license file in the `$MATLAB` directory and,

after processing it, moves the License File to `$MATLAB/etc` during installation.

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`.

5 Run the install script appropriate for your platform.

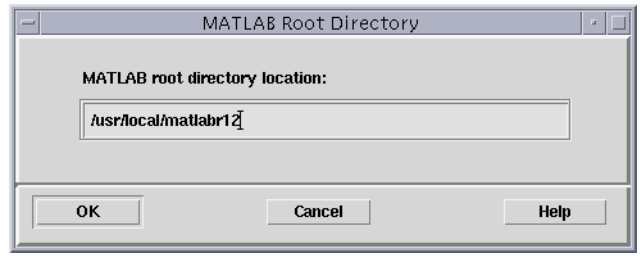
`/cdrom/install* &` (Sun, Alpha, IBM, SGI, and Linux platforms)
`/cdrom/INSTALL* &` (HP platform)

If you are installing software products, the installation script displays the following welcome screen.

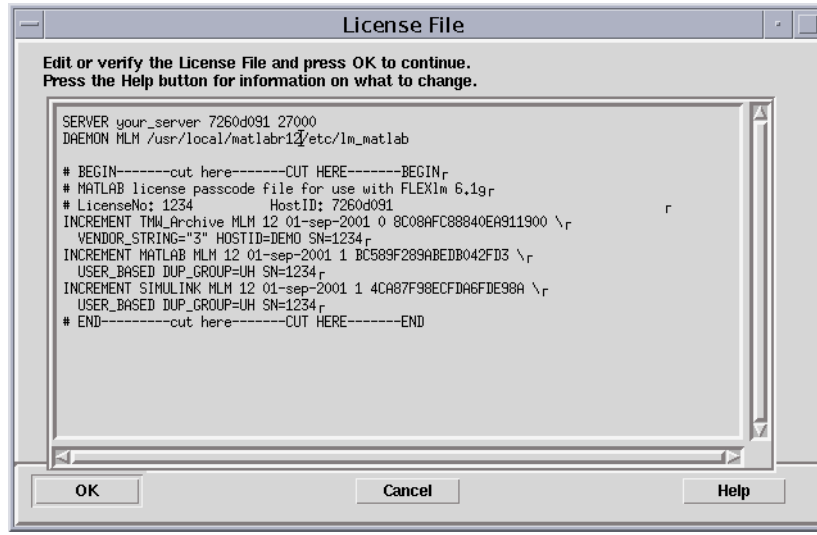
If you are installing documentation, the installation script displays the same screen; however, the title bar contains the text **Begin Documentation Installation**. Click **OK** to continue.

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

7 Verify the name of the installation directory in the **MATLAB Root Directory** dialog box. If the pathname for the MATLAB root directory is correct, click **OK**.



8 Verify your License File in the **License File** dialog box. 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.



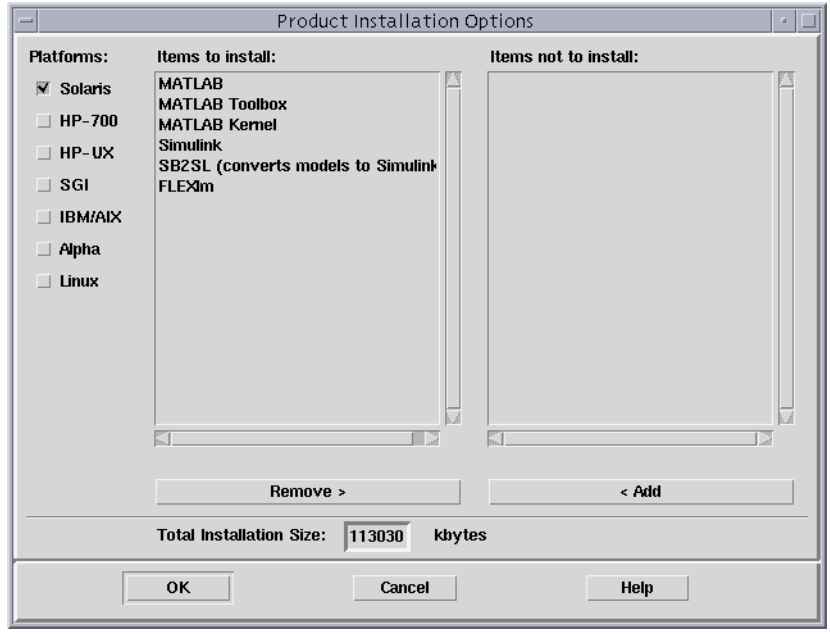
When verifying your License File, check that the expiration date, number of keys, and passcode fields in each `INCREMENT` line match the license information you received from The MathWorks. To avoid warning messages appearing in the log file when you start MATLAB, delete `INCREMENT` lines for products with expired licenses. Also make sure that your electronic 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. If you edit your License File, do not use tabs to separate the fields in an `INCREMENT` line.

If you prefer to use another text editor to edit your License File, press **Cancel**. Otherwise, click **OK** to continue.

9 If you are installing software, go to step 9a. If you are installing documentation, go to step 9b.

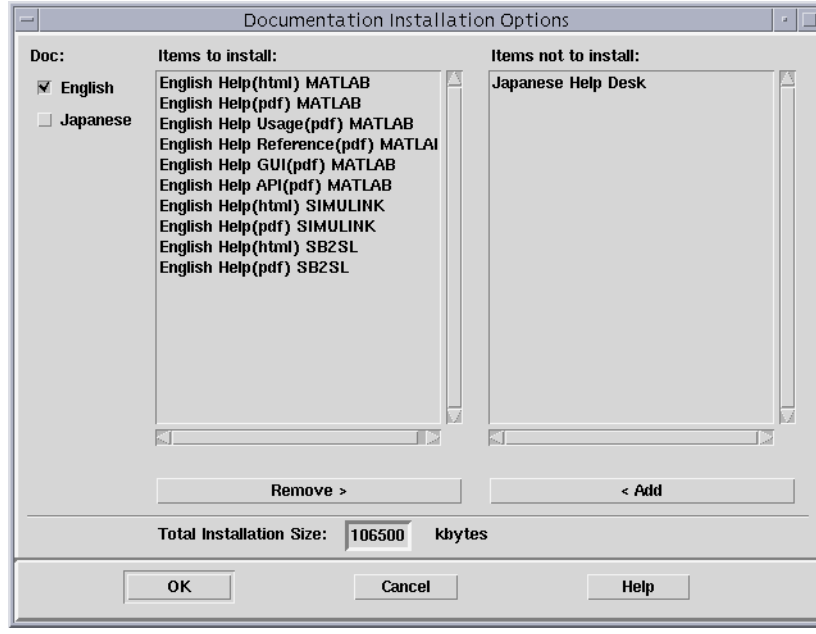
a If you are installing software, the installer displays the **Product Installation Options** dialog box.



This dialog box lists all the products you are licensed to install in the **Items to Install** box. To remove a product from the **Items to install** list, select it and press the **Remove** button. (A MATLAB installation includes MATLAB, the MATLAB Kernel, and the MATLAB Toolbox.)

Select any additional platforms needed at your site from the column of check boxes.

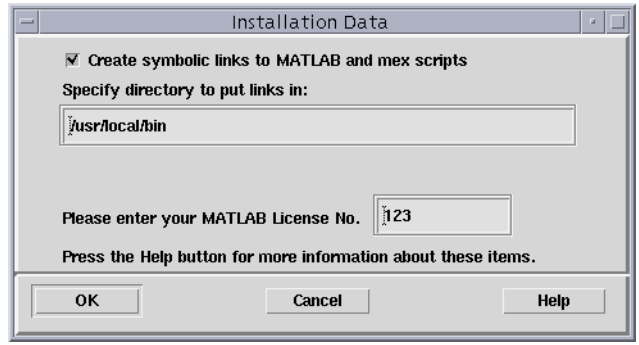
b If you are installing documentation, the installer displays the **Documentation Installation Options** dialog box.



This dialog box lists all the documentation you are licensed to install in the **Items to Install** list box. To remove a item from the list, select it and press the **Remove** button. To install the Japanese language version of the documentation, click the appropriate check box.

The documentation installation procedure continues with step 11.

10 If you are installing MATLAB, the installer displays the **Installation Data** dialog box.



Specify the location in your file system for symbolic links to the `matlab` and `mex` scripts. 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.

11 The installer displays the **Start Installation** dialog box. Click **OK** to start the installation.

12 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 1-15 for more information. Click **Exit** to dismiss the installer.

Note If you have a user-based license, see "Setting Up User-Based Licensing" on page 1-15 for more information.

After You Install

This section describes tasks you can perform after a successful installation, including:

Setting Up User-Based Licensing

If you have a user-based license, you must set up a FLEXlm license options file after your installation is complete. The `INCREMENT` lines in a user-based License Files contain the word `USER_BASED`. User-based licenses let you control who can check out license keys for products. You use license options file to specify the list of users who can use the product. Any MATLAB installation can use license options files; user-based licenses must use them.

To set up a user-based license, you must:

1. Check that the `DAEMON` line in your processed License File (`$MATLAB/etc/license.dat`) includes the name of an options file as its fourth argument. See "Creating a Local License Options File" on page 2-10 for an example.

   For user-based licenses, the installer creates a default license options file, `$MATLAB/etc/MLM.opt`, if there isn't already an existing options file. If you are adding a product to an installation with an existing options file, you can use that options file to set up user-based licensing. An options file is a simple text file, not encrypted, that can have any name, as long as the `DAEMON` line points to the correct one.

2. Edit the license options file to make sure the correct users are listed.

   When the installer creates a default license options file, it gives access to only one user: the user that performed the installation. If you want to change this user name or add more users, you must edit the license options file. See

"Creating a Local License Options File" on page 2-10 for information about editing a license options file.

Starting MATLAB

Start MATLAB by entering the `matlab` command. If you did not set up symbolic links in step 10 of the installation procedure, you must type `$MATLAB/bin/matlab`.

Starting the License Manager

If the license manager daemons are not running, you can start them by executing the `lmstart` script (located in the `$MATLAB/etc` directory) or by rebooting your system, if you edited the system boot script. The license manager must be running to start MATLAB.

Note Any time you make changes to the `license.dat` file, you must restart the license manager daemons by running `lmstart`. The `lmstart` script stops any currently running daemons and starts new ones.

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.glnx86` contains the boot script commands required to start the license manager on Linux systems.

```
#
#MATLAB FLEXlm Network License Manager Daemon
#
if [ -f /etc/lmboot_TMW12 ]; then
     /etc/lmboot_TMW12 -u username && echo 'MATLAB_lmgrd'
fi
```

Table 1-1 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 user name. Do not specify the name associated with superuser. For security reasons the license manager daemons cannot be owned by superuser.

Table 1-1: Bourne Shell Code Fragments

Platform	Procedure

Compaq Alpha (Tru64 UNIX)	Execute the commands
	`cd $MATLAB/etc`
	`cp rc.lm.alpha /sbin/init.d/flexlm`
	`chmod 555 /sbin/init.d/flexlm`
	
	Edit `/sbin/init.d/flexlm`, replacing `username` in the code with an actual user name.
	
	Execute the commands
	`cd /sbin/rc3.d`
	`ln -s /sbin/init.d/flexlm S56flexlm`

Table 1-1: Bourne Shell Code Fragments (Continued)

Platform	Procedure

HP 9000 (HP-UX)	Execute the commands
	`cd $MATLAB/etc`
	`cp rc.lm.hp /sbin/init.d/flexlm`
	`chmod 555 /sbin/init.d/flexlm`
	
	Edit `/sbin/init.d/flexlm`, replacing `username` in the code with an actual user name.
	
	Create the file `/etc/rc.config.d/flexlm` containing the line `FLEXlm_MATLAB=1` and then create the links
	`cd /sbin/rc3.d`
	`ln -s /sbin/init.d/flexlm S900flexlm`
	`cd /sbin/rc2.d`
	`ln -s /sbin/init.d/flexlm K100flexlm`

IBM RS/6000 (AIX)	Copy the code from `$MATLAB/etc/rc.lm.ibm_rs` and paste it at the end of `/etc/rc.nfs`. Replace `username` in the code fragment with an actual user name.
Linux	Copy the code from `$MATLAB/etc/rc.lm.glnx86` and paste it at the end of `/etc/rc.d/rc.local`. Replace `username` in the code fragment with an actual user name.

SGI (IRIX/IRIX64)	Execute the commands
	`cd $MATLAB/etc`
	`cp rc.lm.sgi /etc/init.d/lm`
	`chmod 555 /etc/init.d/lm`
	
	Edit `/etc/init.d/lm`, replacing `username` in the code with an actual user name.
	
	Execute the commands
	`cd /etc/rc2.d`
	`ln -s /etc/init.d/lm S45lm`

Table 1-1: Bourne Shell Code Fragments (Continued)

Platform	Procedure

Sun (Solaris 2.x)	Copy the code from `$MATLAB/etc/rc.lm.sol2` and paste it at the beginning of `/etc/init.d/lmgrd`. Create this file if it doesn't already exist.
	
	Edit `/etc/init.d/lmgrd`, replacing `username` in the code fragment with an actual user name.
	
	If file (link) `/etc/rc3.d/S17lmgrd` does not exist, create it with
	`cd /etc/rc3.d`
	`ln -s ../init.d/lmgrd S17lmgrd`

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

MATLAB includes default settings for online documentation viewing options. If you want to change these defaults, you can edit the M-file `docopt.m`, located in the directory `$MATLAB/toolbox/local`. This file allows you to specify an alternative Web browser, additional initial browser options, or a different initial path to the viewable documentation.

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.

For example, you can use this file to change the default paper size used for printing to A4. Open the file with any text editor and uncomment the line

```
set(0,'DefaultFigurePaperType','a4')
```

If you do not have write-access to `matlabrc.m`, you can also create a file called `startup.m` in the top-level MATLAB directory and include the preceding line in the file.

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 stamp your copy of MATLAB with a password of your choosing. See the *MATLAB Runtime Server Application Developer's Guide* for complete information.

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

If the CD-ROM drive is located on your system, use the table below to determine the correct `mount` command for your system. In the example commands, the word `<extension>` represents a part of the actual device name that is site specific. The full device name depends on the SCSI port to which your CD-ROM drive is attached. You must supply the full device name when you use these commands.

Platform	Mount Command
Compaq Alpha (Tru64 UNIX)	`mount -t cdfs -r -o noversion /dev/rz<extension> /cdrom`
HP 9000 (HP-UX)	`mount -F cdfs -r /dev/dsk/c0t<extension> /cdrom`
IBM RS/6000 (AIX)	`mount -v cdrfs -r /dev/cd<extension> /cdrom`
Linux	`mount -t iso9660 /dev/cdrom /cdrom` 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)	`mount -t iso9660 -o setx /dev/scsi/sc<extension> /cdrom`
Sun (Solaris 2.x)	`mount -F hsfs -o ro /dev/dsk/c0t<extension> /cdrom` 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 is connected, mount it locally using the appropriate `mount` command from the table in "Mounting a CD-ROM Drive Locally" on page 1-21.

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 the following table.

Table 1-2: Export Commands for Supported Platforms

Platform	Export Instructions
Compaq Alpha (Tru64 UNIX)	Add the line to the exports file, `/etc/exports` `/cdrom -ro`

HP 9000 (HP-UX)	Add the line to the exports file, `/etc/exports`
	`/cdrom -ro`
	
	Export this information by executing
	`exportfs -av`

IBM RS/6000 (AIX)	Add the line to the exports file, `/etc/exports`
	`/cdrom -ro`
	
	Export this information by executing
	`exportfs -av`

Table 1-2: Export Commands for Supported Platforms (Continued)

Platform	Export Instructions

Linux	Add the line to the exports file, `/etc/exports`
	`/cdrom -ro`
	
	Export this information by executing
	`kill -s SIGHUP pid_of_rpc.mountd pid_of_rpc.nfsd`
	
	The pids are taken from the output of the command
	`ps -agx`

SGI (IRIX)	Add the line to the exports file, `/etc/exports`
	`/cdrom -ro`
	
	Export this information by executing
	`exportfs -av`

Sun (Solaris 2.x)	Execute `share -F nfs -o ro -d <cd-rom device> /cdrom` Note that the `-d <cd-rom device>` is for information purposes only. It can be ignored.

3 On your local system, mount the remote CD-ROM drive using the appropriate `mount` instructions from the list below. 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.

Platform	Mount Instructions
Compaq Alpha (Tru64 UNIX)	`mkdir /cdrom` `mount -r -t nfs cdrom_host:/cdrom /cdrom`
HP 9000 (HP-UX)	`mkdir /cdrom` `mount -r cdrom_host:/cdrom /cdrom`
IBM RS/6000 (AIX)	`mkdir /cdrom` `mount -r cdrom_host:/cdrom /cdrom`

Platform	Mount Instructions
Linux	`mkdir /cdrom` `mount -r cdrom_host:/cdrom /cdrom`
SGI (IRIX/IRIX64)	`mkdir /cdrom` `mount -r cdrom_host:/cdrom /cdrom`
Sun (Solaris 2.x)	`mkdir /cdrom` `mount -F nfs -r cdrom_host:/cdrom /cdrom`

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. Stop MATLAB and the license manager with the `lmdown` command. (See "License Manager Tools" on page 2-8 for information about this and other license manager commands.)

2. You can either edit your existing License File or create a new License File.

   a. If you edit your existing License File, `$MATLAB/etc/license.dat`, copy the `INCREMENT` lines from the license e-mail you received from The MathWorks. This new License File information includes the new products you purchased as well as all the existing products for which you have licenses. Do not delete the `SERVER` and `DAEMON` lines in your license file.

   b. Create a new License File from the license e-mail you received from The MathWorks and place it in your MATLAB installation directory (`$MATLAB`). For more information about creating a License File, see "Before You Install" on page 1-3. If you create a new License File, you must rename your existing license file in `$MATLAB/etc` to get the Installer to process your new License File.

3. Perform the installation procedure, following the instructions given on each screen. However, when the installer presents the **Product Installation Options** screen, remove all the products listed in the **Items to Install** list box except the new products you want to install.

4. Restart the license manager with the `lmstart` command.

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

Managing Your Licenses

If you want to purchase additional products or if your system environment changes and you need to contact us, visit the MathWorks Web site at `www.mathworks.com`.

If you need to:

- 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, click on **Contact Us** and select **Contact Customer Service**. Depending on what you want to do, you will need the License Numbers and names of the products you want to change and the hostid of your license server.

If you want to purchase additional products, go to the MathWorks Web site and visit our Web store. There you can purchase individual products or product suites, add products to an existing license, purchase subscription service, and many other options.

If you do not have Web access, you can contact The MathWorks via telephone at 508-647-7000.

Viewing Documentation

The documentation commands available at the MATLAB command prompt are:

`doc`	Starts the MATLAB Help browser
`help function`	Displays M-file help for `function`
`helpwin`	Displays a list of MATLAB help topics in the Help browser
`helpdesk`	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 use of Adobe Acrobat Reader. Additional information about Acrobat Reader is available at `www.adobe.com`.

2

License Management

Overview

Using the MathWorks Product installer, and following the instructions in Chapter 1, “Installing Release 12 on UNIX Workstations” you can set up an installation with little knowledge of license management. However, if you want to integrate MATLAB into an existing license management scheme, you may require a more thorough understanding of using the FLEXlm license manager.

This chapter:

- Provides an overview of The MathWorks product licensing, including information about the primary licensing components, files and environment variables.
- Describes how to perform common license management tasks, including monitoring license activity.

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

Licensing Components

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

FLEXlm consists of these main components:

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

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 deny 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
```

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 about creating a License File from this message, see "Before You Install" on page 1-3.)

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

```
# MATLAB license passcode file for use with FLEXlm 6.1g
# LicenseNo: 123     HostID:170a3472
INCREMENT TMW_Archive MLM 12 01-jun-2001 0 EC2889409F00E6230A02 \
  VENDOR_STRING="3" HOSTID=170a3472 SN=123
INCREMENT MATLAB MLM 12 01-jun-2001 1 CC98B9F0B9B5A75B38BC \
  DUP_GROUP=UH SN=123
INCREMENT SIMULINK MLM 12 01-jun-2001 1 BCE8A9C0759F3C0FB744 \
  DUP_GROUP=UH SN=123
# END---------cut here-------CUT HERE-------END
```

Each INCREMENT line has the form

```
INCREMENT product MLM 12 expir-date users passcode license_num
```

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 the installation process, the installer processes the License File, adding information about the name, location, and port number of the license manager daemon. After processing the License File, the installer moves it into the `$MATLAB/etc/` directory.

The following is a sample of a processed License File.

```
# MATLAB license passcode file for use with FLEXlm 6.1g
# LicenseNo: 123    HostID: 170a3472
SERVER myserver 1234 27000
DAEMON MLM /usr/local/matlabr12/etc/lm_matlab
INCREMENT TMW_Archive MLM 12 01-jun-2001 0 EC2889409F00E6230A02 \
  VENDOR_STRING="3" HOSTID=170a3472 SN=123
INCREMENT MATLAB MLM 12 01-jun-2001 1 CC98B9F0B9B5A75B38BC \
  DUP_GROUP=UH SN=123
INCREMENT SIMULINK MLM 12 01-jun-2001 1 BCE8A9C0759F3C0FB744 \
  DUP_GROUP=UH SN=123
# END---------cut here-------CUT HERE-------END
```

Note the addition of two lines to the License File:

- `SERVER` line
- `DAEMON` line

The `SERVER` line identifies the system on which the license manager daemon runs, by `hostname` and `hostid`, and specifies the TCP/IP port number used to connect to it. The `SERVER` line has this general format.

```
SERVER hostname hostid TCP_PortNumber
```

You typically do not need to edit this line except if you know the port number conflicts with other software. You can use any port number; however, to run the daemons from a nonroot account, the port number must be greater than 1024.

The DAEMON line identifies the name and location of the vendor daemon. In user-based licenses, the DAEMON line also contains the path of the license 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 to change the value of this environment variable to point to some other location, you must edit the .matlab6rc.sh script, which resides in $MATLAB/bin.

If you edit the .matlab6rc.sh file, you need to specify the new location in the license manager options file $MATLAB/etc/lmopts.sh before calling lmstart.

Determining Your Hostid

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

- 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 hostid.

The following table lists the operating system commands you can use to determine your hostid for each supported system. In the table, note that the license manager uses different hostid formats for different hardware platforms because some hardware platforms, such as Sun, have a unique hostid, while others do not. For this reason, the Ethernet address is used on some platforms as the unique hostid. An Ethernet address is 6-bytes long and each byte is specified as two hex digits. Specify all 12 hex digits when using an Ethernet address as the hostid. For example, if the Ethernet address is 8:0:20:0:5:AC, specify the hostid as 0800200005AC.

Hardware Platform	Hostid Description	How to Obtain the Hostid	Sample Hostid
Sun SPARC	32-bit hostid	Enter the `hostid` command.	`170a3472`
HP 9000	32-bit hostid Ethernet address	`echo `uname –i` 16o p | dc` `lanscan` (use station address without leading `0x`).	`778DA4550` `070020005532`
Compaq Alpha	Ethernet address	`/usr/sbin/netstat –i` Look under address and remove all colons (:) from the entry associated with `ln0`.	`080020005532`
SGI	32-bit hostid	`echo `/etc/sysinfo –s` 16o p | dc` On systems with multiple CPUs, use the first hostid.	`90D40225`
IBM RS/6000	32-bit hostid	Enter the `uname -m` command. Remove the last two digits and use the lowest eight digits, ignoring any high level zeros.	`00249477`
Linux	Ethernet address	`/sbin/ifconfig eth0` Use the string to the right of `HWaddr` and remove all colons (:).	`00400516E525`

Performing Common License Management Tasks

This section provides an overview of the tools provided with the license manager and describes how to perform some common license management tasks, including:

License Manager Tools

The most useful license administration tools available in `$MATLAB/etc` are listed below.

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 hostid of 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.

Running MATLAB on a Heterogeneous Network

You can run MATLAB and other MathWorks products on a heterogeneous network. A system acting as a license server can service clients running on workstations of different architectures.

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.

To implement a heterogeneous licensing configuration, select one of the machines to be the license server. Request a License File from The MathWorks, specifying this machine's hostid. Create a License File, put it in your MATLAB root directory, and make sure the MATLAB root directory is available (mounted) on all workstations. Start the license manager on the machine selected as the license server.

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 either the `LM_LICENSE_FILE` or the `MLM_LICENSE_FILE` environment variable. 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.

Creating a Local License Options File

Note For more detailed information about creating license options files, see the *FLEXlm End User Manual*, available in PDF form in the `$MATLAB/etc` directory, where `$MATLAB` represents your installation directory.

With license options files, you can instruct the FLEXlm license manager to:

- Reserve one or more license keys for a user, group of users, host, or group of hosts.
- Specify the users, groups of users, hosts, or groups of hosts that have permission to access one or more products.

The license manager allocates keys according to the options specified in the options file, until all license keys are in use. If you try to reserve more than the authorized number of keys in the options file, a warning message appears in the `license.log` file.

Note For user-based licenses, you must use an options file. The installer creates a default license options file (`MLM.opt`), if the installation doesn't already have an existing options file.

Specifying an Options File

To use an options file, you must list its pathname as the fourth field on the DAEMON line in the License File. For user-based licenses, the installer creates a default license file (`MLM.opt`) and includes it in the DAEMON line automatically. If your paths are long, use a line continuation character (\) to continue the DAEMON line onto the next lines.

```
DAEMON MLM /usr/local/matlab/etc/lm_matlab \
/usr/local/matlab/etc/mlm.opt
```

Options File Contents

An options file contains any number of RESERVE, INCLUDE, EXCLUDE, GROUP, or HOST_GROUP lines.

The lines that begin with RESERVE contain the number of product keys set aside for a specific user, user group, host, or host group. This does not limit the number of keys; it simply ensures that a key will be available when you want it (unless the specified number of reserved keys has already been reached).

The lines starting with INCLUDE contain the products to be restricted to a particular user, user group, host, or host group; only that user, user group, host, or host group is allowed to use this product. You can have multiple INCLUDE lines for the same feature, including different users, user groups, hosts, or host groups. You use INCLUDE lines with user-based licenses.

Note For MATLAB user-based licenses, you cannot use the INCLUDEALL specification.

The lines starting with EXCLUDE contain the features to be restricted from a particular user, user group, host, or host group; that user, user group, host, or host group is not allowed to use that product. You can have multiple EXCLUDE lines for the same feature, excluding different users, user groups, hosts, or host groups.

Any line starting with GROUP defines the users in that group name. If a user group name is used in a RESERVE, INCLUDE, or EXCLUDE line, the group membership must be defined in a GROUP line. Any line starting with HOST_GROUP defines the hosts in that host group name. If a host group name is used in a RESERVE, INCLUDE, or EXCLUDE line, the group membership must be defined in a HOST_GROUP line.

The following is a sample local options file.

```
RESERVE 1 MATLAB USER patricia
RESERVE 3 MATLAB HOST pegasus
RESERVE 1 CONTROL_Toolbox GROUP devels
RESERVE 3 CONTROL_Toolbox HOST_GROUP hosts
```

```
INCLUDE SIGNAL_Toolbox HOST orion
INCLUDE SIGNAL_Toolbox USER tom
EXCLUDE SIMULINK GROUP devels
EXCLUDE SIMULINK HOST_GROUP hosts
GROUP devels andrea tom fred
HOST_GROUP hosts cygnus sirrus
```

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 hostids of each server and provide them to the MathWorks when you request your License File. The MathWorks will generate an appropriate License File. See “Determining Your Hostid” on page 2-6 for information about determining hostids.

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 6.1g
# LicenseNo: 12345         HostID: 7260d091
#                          HostID: 7275caa1
#                          HostID: 72701448
SERVER pooh   7260d091 1705
SERVER piglet 7275caa1 1705
SERVER rabbit 72701448 1705
DAEMON MLM /usr/local/matlabr12/etc/lm_matlab
INCREMENT TMW_Archive MLM 12 01-jun-2001 0 EC2889409F00E6230A02 \
  VENDOR_STRING="3" HOSTID=DEMO SN=12345
INCREMENT MATLAB MLM 12 01-jun-2001 1 CC98B9F0B9B5A75B38BC \
  SN=12345
INCREMENT SIMULINK MLM 12 01-jun-2001 1 BCE8A9C0759F3C0FB744 \
  SN=12345
```

Make sure this License File is available on each server machine. By default, the license manager looks for the License File in `$MATLAB/etc/license.dat`. For information about changing this location, see "Specifying the Location of the License File" on page 2-6.

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/matlabr12`, use this procedure:

1 Log in to `pooh`:

```
cd /usr/local/matlabr12/etc
lmstart
```

2 Log in to `piglet`:

```
cd /usr/local/matlabr12/etc
lmstart
```

3 Log in to rabbit:

```
cd /usr/local/matlabr12/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 1-1 “Bourne Shell Code Fragments” on page 1-17. 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_TMW12 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_TMW12
```

3

Troubleshooting

Overview

This chapter provides solutions to some common installation problems. The first section addresses problems encountered during installation. The second section addresses problems after installation, when you try to start MATLAB. The last section provides detailed explanations of license manager error messages.

Note If you can't find an answer to your problem here, check the Installation Wizard for technical help which is available on the Support page at the MathWorks Web site, `www.mathworks.com`. For information about specific license manager errors, search the Tech Support Knowledge Base for the error number.

Installation Problems

Problems that prevent successful installation typically involve two areas:

- File permission problems
- CD-ROM drive problems

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, extract the distribution, 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 one of the installation procedures.

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

Solving CD-ROM Drive Problems

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

- Verify that the device is mounted correctly by checking the `mount` command table in "Mounting Your CD-ROM Drive" on page 1-21.
- 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 invoke the UNIX command

  ```
  chmod 555 device
  ```

- Check the MATLAB installation log files for error messages. For product installations, check the file `$MATLAB/install_matlab.outp`. For documentation installations, check the file `$MATLAB/install_matlab.outd`.
- To display additional diagnostic messages, rerun the installation procedure using one of the `install` commands.

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

Common License Manager Problems

If you encounter difficulties starting MATLAB after installation, check the following areas, in the order specified:

1. Check whether the license manager daemons are running.
2. Check the license manager log file for error messages and take appropriate corrective action.
3. Verify that your client workstation can connect to the license manager over the network.

This section addresses solutions to some other common license manager problems. It also describes how to generate a diagnostic report that you can send to the MathWorks Technical Support.

Checking the License Manager Daemons

The license manager must be running before you can start MATLAB. You can determine whether the license daemons are operating by using the `lmstat` command on the license server (usually the file 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 (`lm_TMW12.ld`) and the vendor daemon (`MLM`) are running. Only one version of each process should be running. 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_TMW12.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 3-9.

Correcting License File Problems

If an error message in the log file indicates that the problem is caused by mistakes in your License File, verify that all the features and keys for which you are licensed are recognized by the license manager. To do this, look at the output of the `lmstat -a` command. Make any changes necessary to the License File and restart the daemons by running `lmstart`.

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 3-9. A suggested action accompanies each message. In addition, you may need to contact your system administrator or system vendor to resolve the problem.

Other License Manager Problems

The following lists some common license manager problems and their 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/matlabr12`, the install script defines `$MATLAB` as `/usr/local/matlabr12` in the file `.matlab6rc.sh`. If MATLAB is automounted on other workstations in directories other than `/usr/local/matlabr12`, MATLAB fails at startup because it cannot find `LM_LICENSE_FILE`. The `LM_LICENSE_FILE` is determined by `$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 running MATLAB on a node that crashes, the license key sometimes remains unusable (i.e., it is never released back to the license manager). To release the key without restarting the license manager, use the `$MATLAB/etc/lmremove` utility. This script allows you to remove a single user's license for a specified feature by returning the license to the pool of available licenses. Refer to the script for the exact usage.

Obtaining a Diagnostic Report

If these troubleshooting steps do not resolve the problem you are experiencing, you should execute the script `lmdebug` in the `$MATLAB/etc` directory and send its diagnostic results to the MathWorks Technical Support department. If you are not, you should 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

License Manager Error Messages

Some common license manager error messages are listed below. The error messages are listed in alphabetical order and appear in bold followed by suggested troubleshooting steps.

Cannot connect to license server. This error is displayed when starting MATLAB.

- Determine whether 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_TMW12.log`, for diagnostic messages.
- If the license manager is running on the license server and this message is displayed on your host, ensure 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 computer. 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.

Encryption code in license file is inconsistent. See the log file (usually `/var/tmp/lm_TMW12.log`). It should indicate the specific `INCREMENT` line where it found bad codes in your License File (usually `$MATLAB/etc/license.dat`).

Check the 20-digit license passcode closely for typographical errors. This is most likely the problem. Make sure that zeros are not the letter O. Make sure Bs are not 8s, and so on.

Also, the date format in your License File may be incorrect; e.g., `01-mar-99` instead of `01-mar-2000`. The date format should always match the passcodes that were sent by e-mail or faxed to you.

Environment variable LM_LICENSE_FILE is not defined and the default license file, $MATLAB/etc/license.dat, does not exist. Check to make sure that MATLAB has been properly installed on your machine. This error is displayed when starting MATLAB:

- Check the directory where you are running MATLAB. Make sure that you are running the script `$MATLAB/bin/matlab`.

- Check that you are running the correct version of the operating system as specified in "Before You Install" on page 1-3.

Feature not yet available. Feature ... is not enabled yet (Logfile version of message). Check for typographical errors in the 20-digit license passcode of the `INCREMENT` lines in your License File. The date on your system may be incorrect. To check the date, use the UNIX `date` command at the UNIX prompt.

Invalid returned data from license server. This error occurs when incompatible daemons are running. Most often this error is due to an installation update 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.

To fix this problem, shut down the currently running daemons and reinstall only the license manager files.

Invalid hostid for this CPU.

- Make sure the hostid on the fax or e-mail matches the hostid on the `SERVER` line in your License File.
- Make sure the hostid on the `SERVER` line is correct for the hostname that is on the `SERVER` line in your License File.
- Execute the `$MATLAB/etc/lmhostid` command to make sure that the hostid given to The MathWorks is correct. If the hostid given is incorrect, contact The MathWorks for new passcodes.

License.dat is corrupted. See the error message `Encryption code in license file is inconsistent`.

(lmgrd) License manager: Not a valid server host, exiting. This message is displayed in the log file (usually `/var/tmp/lm_TMW12.log`).

Make sure that the hostname in the `SERVER` line of the License File (usually `$MATLAB/etc/license.dat`) is correctly spelled and resolvable. See also the error message `MLM: cannot find SERVER hostname in network database`.

MATLAB cannot be started. Invalid returned data from license server. This error is displayed when starting MATLAB. It occurs if you are running incompatible versions of the license manager daemon.

You need to execute `$MATLAB/etc/lmstart` to start the license manager and vendor daemons corresponding to the current version of MATLAB.

MATLAB cannot be started. License server does not support this feature. This error is displayed when starting MATLAB:

- Check that the license manager was restarted after making changes to your License File.
- See if there is a typographical error in a `FEATURE` or `INCREMENT` line of your License File.

MATLAB is not allowed on this host. This error is displayed when starting MATLAB.

- Run `$MATLAB/etc/lmhostid` and make sure that the hostid matches the passcodes.
- Make sure your computer is running TCP/IP, which is the network software required by the license manager.

See the error message `Invalid hostid for this CPU`.

MLM: cannot find SERVER hostname in network database. This error commonly occurs when 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 allow access across separate domains, do the following:

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.

No features to serve! MLM daemon found no features. Please correct license file and re-start daemons. This may be due to the fact that you are using a different license file from the one you expect. Check to make sure that: "/var/tmp/lm_TMW.dat" is the license file you want to use. This message is displayed in the log file, usually `/var/tmp/lm_TMW12.log`. In most instances, this error can be ignored. The error message `there are truly no features to serve` means that the number of keys on each `INCREMENT` line is zero. You should still be able to run MATLAB successfully.

No TCP license server exists. This error is displayed when starting MATLAB:

- 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.
- A TCP port number such as 27000 may be missing at the end of the `SERVER` line in your License File, or your `/etc/services` file may not be configured correctly.

Not a valid server host. See the error message `Invalid hostid for this CPU`.

Socket bind error.

- `lmdown` did not work correctly, and not all license daemons were killed. Manually kill these daemons as outlined in "Checking the License Manager Daemons" on page 3-5, and then restart the daemons with `$MATLAB/etc/lmstart`.
- The TCP port number 27000 may be in use by some other program, including another license manager. The TCP port number 27000 is at the end of the `SERVER` line in the your License File. Check with your system administrator for another port number that you can use in your License File.

xxx is not currently licensed. This error message is displayed when attempting to access a MATLAB toolbox, where `xxx` is the name of the toolbox or feature name; e.g., `Signal_Toolbox`.

There may be a typographical error in the `INCREMENT` line indicated by the error. For example, this error will occur if `Signal_Toolbox` is entered as

signal_toolbox. Check the error message for typographical errors and case sensitivity, specifically in the feature name. Make sure the INCREMENT line matches the passcodes as generated by The MathWorks.

4

MATLAB Directory Structure

MATLAB Directories and Files

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

`/X11`	Files containing keyboard mapping and default window parameters for MATLAB, Simulink, and icon bitmaps
`/bin`	Scripts for executing the MATLAB system and computer-specific subdirectories for the binary images
`/etc`	All files associated with the license manager, including `license.dat` and computer-specific subdirectories
`/toolbox`	Toolbox subdirectories
`/extern`	Subdirectory containing subdirectories for source, include files, and libraries for the Application Program Interface
`/help`	MATLAB Help Desk
`/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

$MATLAB/bin

`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

`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`	*FLEXlm End User Manual* 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
`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

$MATLAB/toolbox

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

$MATLAB/extern

`/include`	Include files for C language programs with prototype declarations
`/lib`	Object libraries with compiled versions of the Application Program Interface routines beneath an architecture-specific name.
`/src`	Source code for example programs that demonstrate the use of routines in the Application Program Interface Library

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