MATLAB®

The Language of Technical Computing

Installation Guide for UNIX

Release 11 (MATLAB 5.3 Product Family)

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Installation Guide for UNIX

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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)

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Installing Release 11 on UNIX Workstations

Introduction

This guide contains instructions for installing Release 11 of the MathWorks MATLAB family of products. Also included in this distribution is the licensing software used by the MathWorks products, FLEXlm, a product of GLOBE*trotter* Software, Inc.

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 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 Help Desk online documentation. For more information about the documentation, see “Viewing Documentation” on page 1-29.

Licensing

On UNIX systems The MathWorks licenses its products on a concurrent basis. Each product can execute on any computer in a network for up to a specified number of concurrent users. This license type is called a *concurrent* license. (sometimes referred to as a *floating* license.)

System Requirements

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

- 40 MB disk space
- 16 MB memory
- 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-based workstation
- Solaris 2.5 (SunOS 5.5)
- OpenWindows version 3.5 or X Windows (X11R5)

HP 9000

- HP 9000 PA-RISC workstation
- HP-UX 10.20
- X Windows (X11R5)

DEC Alpha

- DEC Alpha workstation
- Digital UNIX 4.0
- DECwindows or X Windows (X11R5)

Note For Digital 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 4.2
- X Windows (X11R5)

Silicon Graphics (SGI)

- SGI (R4000) MIPS-based workstation
- IRIX 6.3
- X Windows (X11R5)

Silicon Graphics (SGI64)

- SGI (R8000/R10000) MIPS-based workstation
- IRIX64 6.4
- X Windows (X11R5)

Linux

- 80486 or Pentium PC
- Linux 2.0.34 kernel (Red Hat 4.2 distribution with upgraded kernel)
- X Windows (X11R6)

Creating Your License File

To install MATLAB and its related products and toolboxes, you must have a *License File* on your hard disk that contains a valid set of license passcodes. This License File is used during installation to identify the products you are licensed to install and at run-time by the license manager.

When you purchase products, the MathWorks sends you a License File by e-mail or fax. This License File contains a set of license passcodes that identify the products you are licensed to use, the number of concurrent users that may use each product (also known as the *keys* associated with a license), and the expiration date of each license.

The following is a sample set of license passcodes from the license message sent by the MathWorks. Each line that begins with the keyword `INCREMENT` encodes the license for a particular product. (The `TMW_Archive` line is a special `INCREMENT` line used by the installation program to identify the products you are licensed to use.) Lines that begin with a pound sign (#) are comments. For detailed information about these license passcodes, see Chapter 2.

```
# BEGIN-------cut here-------CUT HERE-------BEGIN
# MATLAB license passcode file for use with FLEXlm 5.12b
# LicenseNo: 12345       HostID: 8050aa49
INCREMENT TMW_Archive             MLM 5 01-feb-2000   0
       AC1527C00D323784008F "20081cd0bf" DEMO
INCREMENT MATLAB                  MLM 5 01-feb-1999  57
       FC0507A04EE7B513ED08 ""
INCREMENT SIMULINK                MLM 5 01-feb-1999  12
       CCE5E7D09FF687AD8ADE ""
# END---------cut here-------CUT HERE-------END
```

When you receive this License File 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. When you run the installation program, you must move the License File to the top-level MATLAB installation directory. For information about creating this directory, see step 6 in the section “Installing from CD” on page 2-8.

Note Electronic mail programs frequently cause INCREMENT lines to wrap, as illustrated in the example above. There can be no line breaks between the start and end of an INCREMENT line. (INCREMENT lines end with "" or the keyword DEMO.) When you create your License File, remove any line breaks that may have been inserted. Be careful to leave a space between each field in the INCREMENT line. Do not use tabs to separate these fields. You can use the \ (backslash) character to continue an INCREMENT line onto more than one 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 using any of the following methods:

- 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 and their Access number sent via e-mail.
- Via e-mail at service@mathworks.com.
- Via telephone at 508-647-7000, ask for Customer Service.
- Via fax at 508-647-7001.

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

1 Your License Number:

  a 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.

b If you are updating an existing MATLAB installation and MATLAB is running, type `license` or `ver` at the MATLAB prompt.

c If MATLAB is not running due to a license manager issue, use the `cat` command on the file `$MATLAB/toolbox/local/license.m`, where `$MATLAB` represents your MATLAB root directory.

2 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 2-5. *Be sure to provide your server hostid, not your client workstation hostid.*

3 Your e-mail address.

Installing from CD

The instructions that follow describe how to install the MathWorks Release 11 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.

There are two CDs to install: the software CD, and the documentation CD. In general, the installation procedure for both CDs is the same. However, certain steps in the procedure need only be performed the first time through.

Note If you are upgrading from a previous release you may not need to perform steps in this procedure that provide for optional, site-specific customization. These steps are noted in the procedure.

To install the MathWorks products on your UNIX workstation from the CD:

1 Log in to your file server.

   Superuser status is required to install the symbolic links that add MATLAB to your users' paths. Superuser status is also required 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, and the MATLAB license manager must be started manually each time the system is rebooted.

2 Create a directory to be the mount point for the CD-ROM drive.

   ```
   mkdir /cdrom
   ```

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

Note On older CD-ROM drives, this may involve placing the CD in a caddy. Make sure the arrow on the caddy is pointing towards the CD-ROM drive. Insert the caddy into the drive.

4 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 2-20.

5 Move to the installation location using the `cd` command. For example, if you are going to install into the location `/usr/local/matlab5`, use the commands:

```
cd /usr/local
mkdir matlab5  (needed for first time installation only)
cd matlab5
```

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

If you are upgrading from a version of the MathWorks software earlier than Version 5.0, install the Release 11 software in a new directory. Do not install MATLAB 5 over MATLAB 4 (or any prerelease version of MATLAB 5). Current MATLAB 5 users who are updating to a shipping (not prerelease) MATLAB 5 version can install into their existing MATLAB 5 area.

6 Move your License File, named `license.dat`, into the `$MATLAB` directory. For information about creating a License File, see "Creating Your License File" on page 1-5. The installation program looks for the license file in the `$MATLAB` directory and, after processing it, moves the License File to `$MATLAB/etc` during installation.

If you are upgrading an existing installation of the MathWorks software, save a copy of your existing License File to another directory for safe-keeping during the installation, for example:

```
mv etc/license.dat /tmp/license.dat
```

7 Run the CD install script appropriate for your platform.

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

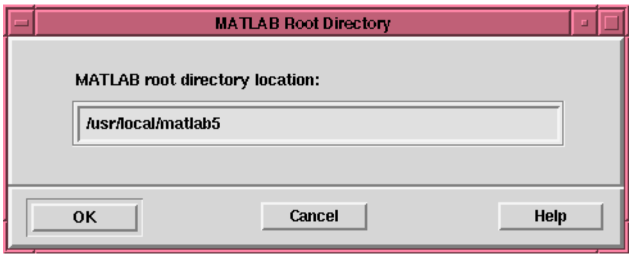
If you are installing software products, the installation script displays the following welcome screen.

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

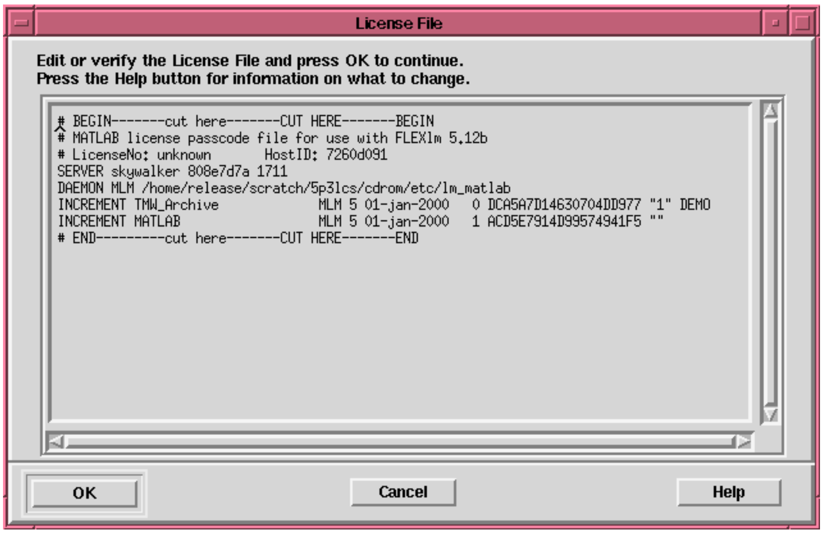
Select **OK** to proceed with the installation.

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

9 The **MATLAB Root Directory** screen is displayed. Select **OK** if the pathname for the MATLAB root directory is correct.



10 The **License File** screen is displayed.



Verify that the `INCREMENT` lines displayed match the `INCREMENT` lines in the License File e-mail or fax sent to you by the MathWorks. If the `INCREMENT` lines match, select the **OK** button to continue. (In previous releases, The MathWorks used `FEATURE` lines to encode license passcode information.

With this release, license passcodes are encoded in `INCREMENT` lines. This change does not affect how License Files function.)

If the `INCREMENT` lines displayed do not match the `INCREMENT` lines in the e-mail or fax you received, edit the License File directly on this screen until the `INCREMENT` lines match. If you prefer to use your own editor, press **Cancel**, and then invoke your editor on the License File to make the changes.

The specific items you must match for each `INCREMENT` line are:

- Expiration date
- Number of keys
- Passcode

In addition, ensure that all the lines in the License File that begin with the word `INCREMENT` end with either `""` or the keyword `DEMO`.

Note If you received your License File through e-mail, make sure that your electronic mail program did not cause lines to wrap. If you edit the License File, do not use tabs to separate the different fields of the License File.

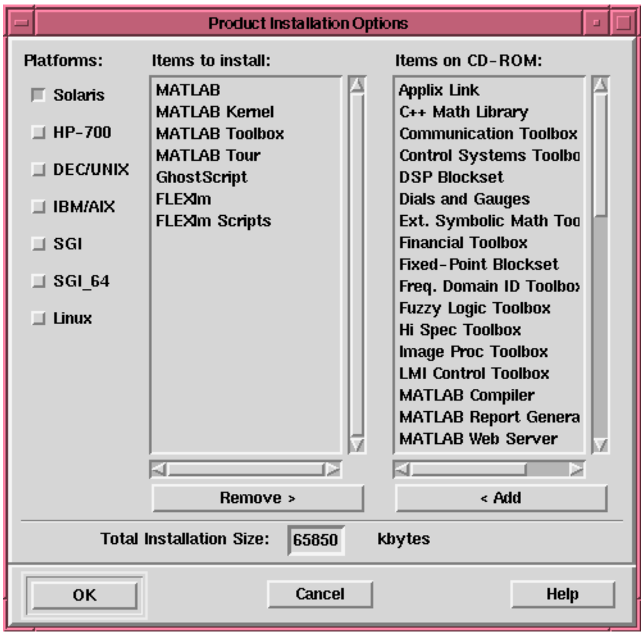
To avoid warning messages appearing in the log file when you start MATLAB, delete `INCREMENT` lines for products with expired licenses. For more information, see the complete description of the License File that appears in "License Manager Administration" on page 2-2.

After you have finished editing the License File, press the **OK** button to continue.

11 This step differs depending upon whether you are installing the software or the documentation.

Software Installation

If you are installing the software, the installation program displays the **Product Installation Options** screen.

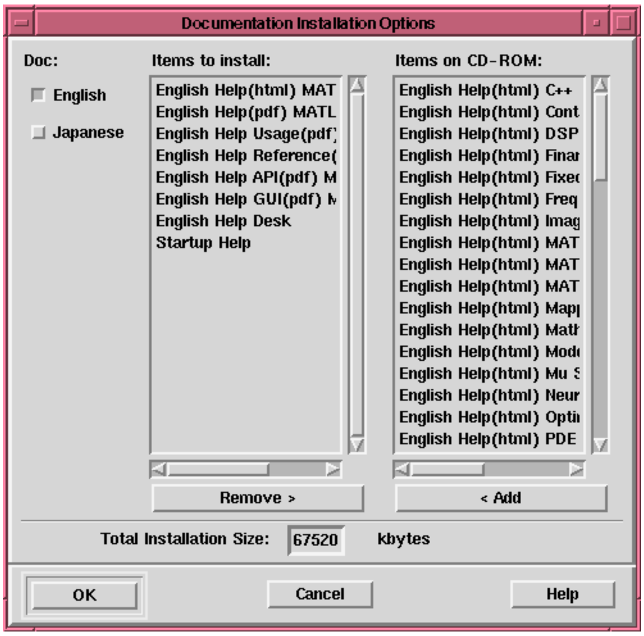


The products you are licensed to install are listed in the **Items to Install** list box. The right list box displays all the products on the CD. If you select a product in this window and click on the **Add** button below it, the product is added to the list in the **Items to Install** list box. To remove a product from the **Items to install** window, select it and press the **Remove** button. (A MATLAB installation includes the MATLAB, MATLAB kernel, and MATLAB toolbox items.)

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

Documentation Installation

If you are installing documentation, the installation program displays the **Documentation Installation Options** screen.

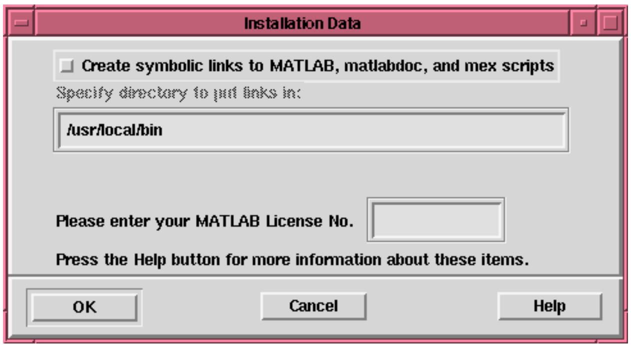


Choose Help for the documentation in either English or Japanese by clicking the appropriate check box.

The right list box displays all the documentation available on the CD. Select the documentation you want to install in this window and click on the **Add** button below it. The items you select appear in the **Items to Install** list box. To remove a product from the **Items to install** window, select it and press the **Remove** button.

The documentation installation procedure continues with step 13.

12 If you are installing software, the installation program displays the **Installation Data** screen.



Specify the location in your file system for symbolic links to the `matlab`, `matlabdoc`, and `mex` scripts. Choose a directory such as `/usr/local/bin` that is common to all your users' paths.

Enter your License Number. This number is provided on your packing slip or in the your License File e-mail or fax. If you do not know what this number is, enter the word `unknown`.

Note The License Number allows The MathWorks to locate your account when you call for technical support or other service. The MATLAB `license` command displays its value. If you need to change the value at a later time, simply reinstall or edit the file `$MATLAB/toolbox/local/license.m`.

Select **OK** to continue.

13 The **Start Installation** screen is displayed. Select **OK** to start the installation. After the installation is complete, the **Installation Complete** screen is displayed, assuming your installation is successful. Select **Exit** to exit from the setup program.

14 *(Not required for upgrade installations.)* If you want to start the license manager daemons automatically at boot time, insert into a UNIX boot script on your system the appropriate Bourne shell code fragment from those

provided in the `$MATLAB/etc` directory. Table 1-1 lists the procedure for inserting this code fragment for all supported platforms. You must have superuser status to perform this step.

For example, the fragment for Linux looks like this:

```
#
#MATLAB FLEXlm Network License Manager Daemon
#
if [ -f /etc/lmboot_TMW5 ]; then
     /etc/lmboot_TMW5 -u username && echo 'MATLAB_lmgrd'
fi
```

When you edit these boot scripts, replace *`username`* by 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

Sun (Solaris 2.x)	Get the code fragment from `$MATLAB/etc/rc.lm.sol2`.
	
	Place the code fragment at the beginning of `/etc/init.d/lmgrd`. Create this file if it doesn't already exist.
	
	Replace *`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`

HP 9000 (HP-UX)	Execute the commands:
	`cd $MATLAB/etc`
	`cp rc.lm.hp /sbin/init.d/flexlm`
	`chmod 555 /sbin/init.d/flexlm`
	Replace *`username`* in the code fragment with an actual user name.
	
	Create the file `/etc/rc.config.d/flexlm` containing the line `FLEXlm_MATLAB=1`. 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`

DEC Alpha (Digital UNIX)	Execute the commands:
	`cd $MATLAB/etc`
	`cp rc.lm.alpha /sbin/init.d/flexlm`
	`chmod 555 /sbin/init.d/flexlm`
	Replace *`username`* in the code fragment with an actual user name.
	
	Then execute the commands:
	`cd /sbin/rc3.d`
	`ln -s /sbin/init.d/flexlm S56flexlm`

IBM RS/6000 (AIX)	Get the code fragment from `$MATLAB/etc/rc.lm.ibm_rs`. Place the code fragment at the end of `/etc/rc.nfs`. Replace *`username`* in the code fragment with an actual user name.

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

Platform	Procedure

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

Linux	Get the code fragment from `$MATLAB/etc/rc.lm`. Place the code fragment at the end of `/etc/rc.d/rc.local`. Replace *`username`* in the code fragment with an actual user name.

15 If the license manager daemons are not running, start them by rebooting your system or by executing the `lmstart` script (located in the `$MATLAB/etc` directory). 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 daemons by running `lmstart`. `lmstart` brings down any currently running daemons and starts new ones.

---

16 *(Not required for upgrade installations.)* Specify an appropriate site-wide default for printing device type and location by editing the M-file `printopt.m`, located in the directory `$MATLAB/toolbox/local`. This file contains the options for the `print` command that MATLAB uses to spool graphics hardcopy.

17 *(Not required for upgrade installations.)* Specify online documentation viewing options by editing 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. It is configured for Netscape Navigator.

18 *(Not required for upgrade installations.)* Edit the M-file `matlabrc.m` in `$MATLAB/toolbox/local`, which is invoked automatically each time a user starts MATLAB. You can include welcome messages, default definitions, or any MATLAB expressions that you want to run for all users.

   You also 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.

19 Start MATLAB. If you placed symbolic links into a directory on your path during installation, type `matlab`. Otherwise, type `$MATLAB/bin/matlab`.

Post Installation Procedures

Successful Installation.

If MATLAB executes properly, you will have complete access to the Help Desk and all installed documentation. Enter the command `helpdesk` to view the online user documentation. The Help Desk provides access to online documentation for all MathWorks products.

Certain products may require additional configuration. 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.

Unsuccessful Installation.

If MATLAB does not execute correctly after installation:

1 Refer to Chapter 3, “Troubleshooting.” To learn more about the license manager, read “License Manager Administration” in Chapter 2.

2 Review the release notes by starting the `matlabdoc` script at the UNIX prompt. `matlabdoc` allows you to view the release documentation even if MATLAB itself has not been successfully installed.

3 Check the MATLAB *Known Software and Documentation Problems* manual for the latest information concerning installation.

Mounting Your CD-ROM Drive

You can install MATLAB from a locally mounted CD-ROM drive or from a remotely mounted network CD-ROM drive. The following sections describe both options.

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
Sun (Solaris 2.x)	`mount –F hsfs –o ro /dev/dsk/c0t<extension> /cdrom` Note: On Sun Solaris systems, the CD-ROM drive will mount automatically if the volume manager is running.
HP 9000 (HP-UX)	`mount –F cdfs –r /dev/dsk/c0t<extension> /cdrom`
DEC Alpha (Digital UNIX)	`mount –t cdfs –r –o noversion /dev/rz<extension> /cdrom`
IBM RS/6000 (AIX)	`mount –v cdrfs –r /dev/cd<extension> /cdrom`
SGI (IRIX/IRIX64)	`mount –t iso9660 –o setx /dev/scsi/sc<extension> /cdrom`
Linux	`mount –t iso9660 /dev/cdrom /cdrom`

Mounting a CD-ROM Drive Remotely

If the CD-ROM drive is located on a remote system, follow these instructions. You must be logged in as superuser to perform all 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 preceding table.

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

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

DEC Alpha (Digital UNIX)	Add the line to the exports file, `/etc/exports`: `/cdrom -ro`

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	Expor t Instructions

SGI (IRIX/IRIX64)	Add the line to the exports file, `/etc/exports`:
	`/cdrom -ro`
	
	Export this information by executing:
	`exportfs -av`

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`.

3 On your local system, mount the remote CD-ROM drive using the appropriate `mount` instructions from the list below. `cdrom_host` is the hostname for 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
Sun (Solaris 2.x)	`mkdir /cdrom` `mount -F nfs -r` *`cdrom_host`*`:/cdrom /cdrom`
HP 9000 (HP-UX)	`mkdir /cdrom` `mount -r` *`cdrom_host`*`:/cdrom /cdrom`
DEC Alpha (Digital UNIX)	`mkdir /cdrom` `mount -r -t nfs` *`cdrom_host`*`:/cdrom /cdrom`
IBM RS/6000 (AIX)	`mkdir /cdrom` `mount -r` *`cdrom_host`*`:/cdrom /cdrom`
SGI (IRIX/IRIX64)	`mkdir /cdrom` `mount -r` *`cdrom_host`*`:/cdrom /cdrom`
Linux	`mkdir /cdrom` `mount -r` *`cdrom_host`*`:/cdrom /cdrom`

Installing from the Internet

Authorized users with access to the Internet can obtain distributions of MATLAB and other products produced by the MathWorks via FTP download. You need a password, supplied by the MathWorks, to log in to the MathWorks FTP server and obtain your products. If you have not yet received your password, contact the MathWorks via:

- E-mail at `service@mathworks.com`
- Telephone at 508-647-7000, and ask for Customer Service
- Fax at 508-647-7001

To retrieve your distribution:

1. Log in to the MathWorks FTP account, specifying your login name and password:

   ```
   ftp ftp.mathworks.com
   Name: login_name
   Password: password
   ```

2. Transfer a copy of the `README.unix` file to your local computer:

   ```
   ftp> ascii
   ftp> get README.unix
   ftp> bye
   ```

   The `README.unix` file contains the complete information you need to install the products via FTP. Review especially the "What's New" section.

3. To start the installation process, move to the installation location using the `cd` command. For example, if you are going to install into the location `/usr/local/matlab5`, use the commands:

   ```
   cd /usr/local
   mkdir matlab5  (needed for first time installation only)
   cd matlab5
   ```

   If you are upgrading from a version of the MathWorks software earlier than Version 5.0, install the Release 11 software in a new directory. Do not install MATLAB 5 over MATLAB 4 (or any prerelease version of MATLAB 5).

Current MATLAB 5 users who are updating to a shipping (not prerelease) MATLAB 5 version can install into their existing MATLAB 5 area.

4 Place a copy of the License File in the MATLAB 5 root directory and call it `license.dat`. For information about creating a License File, see "Creating Your License File" on page 1-5.

5 Reconnect to the MathWorks FTP server, change to the `unix` directory:

```
ftp> cd unix
```

Note: You will not be able to view a listing of the files in this directory using the `ls` command.

6 Set the FTP server to binary mode

```
ftp> binary
```

and transfer the appropriate files from the FTP server to your system using FTP commands. If you are not sure what to download, download only the file `boot.ftp`:

```
ftp> get boot.ftp
ftp> bye
```

Now, extract the file using the command `tar -xvf boot.ftp`. Then run `install_matlab -w` to generate a file called `files.ftp` in the MATLAB root directory. This file contains a list of files you need to download from our FTP server.

7 Run `download_matlab`, which reconnects you to the MathWorks FTP server, and download all the files in the `file.ftp` list to your MATLAB root directory.

8 Extract the `boot.ftp` file if you have not done so earlier.

Leave all the other files as is in the MATLAB root directory.

9 Execute the installation script:

```
./install_matlab
```

Be prepared to provide your License Number.

By default, the downloaded files are saved in the `ftp` subdirectory below the MATLAB root directory. If you want them deleted as part of the installation, use the `-d` option with the installation script.

10 Start the license manager:

```
cd ./etc
./lmstart
```

You must be on the host specified by the `SERVER` line in your License File.

11 To complete the installation, go to page 1-15 and continue with the CD installation procedure, starting at step 14.

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 the license manager with the `lmdown` command. (See "License Manager Tools" on page 2-7 for information about this and other license manager commands.)

2. When you purchase additional products, you will receive a new License File from the MathWorks. This new License File reflects all the products for which you are currently licensed. For information about creating a License File, see "Creating Your License File" on page 1-5.

3. Perform the installation procedure, following the instructions given on each screen. However, note the following:

   For CD installations, at step 11 when the installation program 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.

   For FTP installations, at step 6 when you run the `install_matlab -w` command, deselect all the products from the **Select MATLAB Products** screen except the new products you want to install.

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

Individual products may have additional installation requirements. Consult the documentation that comes with these products for any specific configuration information.

Viewing a List of Your Licensed Products

To display a list of the products you are licensed to install, use one of the following commands, depending on the type of installation.

CD Installation

In the `$MATLAB` directory, enter the command:

`/cdrom/install* -f` (Sun, DEC, IBM, SGI, and Linux platforms)
`/cdrom/INSTALL* -f` (HP platform)

FTP Installation

From the `$MATLAB` directory enter the command:

```
install_matlab -f
```

Managing Your Licenses

As you purchase additional products or your system environment changes, you may need to change your license configuration. It is easy for you to request these changes by logging into our Web site at `www.mathworks.com` and using the **Contact Us** page.

The following table describes how to perform several common license management tasks.

Task	Contact Information
Move toolboxes from one license to another	Go to **Contact Us** on the MathWorks Web site and select **Contact Customer Service**. Click **Move Toolboxes** and provide the License Numbers and the names of the toolboxes you want moved. The MathWorks will generate new License Files for both licenses and send them to you.
Combine multiple licenses into a single license	Go to **Contact Us** on the MathWorks Web site and select **Contact Customer Service**. Click **Combine Licenses** and provide the License Numbers and the hostid of the server. When you combine licenses, The Mathworks inactivates one license and generates one, all-inclusive License File.
Add a new license	North American customers can visit the MathWorks Web site for price information. Customers outside North America may obtain this information from their local distributor.

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

Viewing Documentation

CD Distribution

To view the startup information files, mount either the product or documentation CD and execute the command

```
/cdrom/doc*
```
(on HP systems: `/cdrom/DOC*`)

The remainder of the documentation must be installed from the documentation CD before you can view it.

FTP Distribution

To view the startup information files, extract the files from `boot.ftp` (see "Installing from the Internet" on page 2-23). Then execute the command in `$MATLAB`:

```
matlabdoc
```

The remainder of the documentation must be downloaded and installed before you can view it.

Viewing Documentation Without Running MATLAB

After completing the installation via either CD or FTP, you can use the command

```
matlabdoc
```

to view all the documentation even if MATLAB is not running. The `matlabdoc` shell script resides in the MATLAB root directory. During installation, you can create a symbolic link to `matlabdoc` so that it can be accessed from any place on your path.

`matlabdoc` by itself enables you to view HTML-formatted user documentation. Additional options are:

`-help`	Command usage information
`-ascii`	View ASCII `README` files
`-man`	View man pages

Viewing Documentation While Running MATLAB

The documentation commands available at the MATLAB command prompt are:

`doc`	Starts Help Desk
`help`	Displays function help at command line
`helpwin`	Displays function help in a separate window
`helpdesk`	Invokes the Help Desk, a Web page that provides access to the full documentation set, including HTML and PDF formatted documents

The Help Desk provides access to the user documentation in HTML and PDF formats. The Help Desk is available only after installation; the Help Desk cannot be used to view documents residing on the CD.

Viewing the HTML files on the Help Desk requires the use of a Web browser, either Netscape Navigator or Microsoft Internet Explorer. (To find out which versions of these products MATLAB supports, see the Technical Support page on the MathWorks Web site, `www.mathworks.com`.) The MathWorks does not redistribute these products. You can obtain them directly from the companies that developed them. If you have Web access, you can find additional information at `www.netscape.com` or `www.microsoft.com`.

Viewing the PDF files requires the use of Adobe Acrobat Reader, which is available for the Sun, IBM, SGI, and HP platforms on the CD. Additional information about Acrobat Reader is available at `www.adobe.com`.

Installing Acrobat Reader

To install Acrobat Reader on your system:

1. Mount the CD-ROM drive. (See "Mounting Your CD-ROM Drive" on page 1-20 for the mount instructions for your system.)

2. Put the MathWorks documentation CD in the drive.

3 Move to the `acrobat` directory.

`cd /cdrom/acrobat` (Sun, IBM, and SGI platforms)
`cd /cdrom/ACROBAT` (HP platform)

A detailed Acrobat Reader *Installation Guide* in ASCII form is available as

`instguid.txt` (Sun, IBM, and SGI platforms)
`INSTGUID.TXT*` (HP platform)

4 Run the install script and answer the install questions.

`./install*` (Sun, IBM, and SGI platforms)
`./INSTALL*` (HP platform)

2

License Management

License Manager Administration

To manage product licensing, the MathWorks uses a license manager called FLEXlm, which is a product of GLOBE*trotter* Software, Inc. The FLEXlm software consists of a *license manager daemon* and a *vendor daemon* that run on a server node. The server node is usually the file server on which you install the MathWorks products. The license manager and vendor daemons run in the background on the server node. They are responsible for checking in and out license *keys* as users invoke and quit MATLAB and other MathWorks products. (For more information on FLEXlm, view the online documentation available at `www.globetrotter.com`.).

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

Understanding the 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 a License File in an e-mail or fax. (For more information about creating a License File from this message, see "Creating Your License File" on page 1-5.)

You must put the License File in the top-level MATLAB installation directory. The installation program processes the License File, adding information about the location of the license manager server and daemon, and moves it to the `$MATLAB/etc/` directory.

The following is a sample of a processed License File.

```
1    # MATLAB license passcode file for use with FLEXlm 5.12b
     # LicenseNo: 12345            HostID: 7250aa17
2    SERVER   madmax  7250caa17  1711
3    DAEMON   MLM  /usr/local/matlab/etc/lm_matlab
4    INCREMENT   TMW_Archive             MLM 5 01-feb-2000   0 \
              AC1527C00D323784008F "20081cd0bf" DEMO
5    INCREMENT   MATLAB                  MLM 5 01-feb-1999  57 \
              FC0507A04EE7B513ED08 ""
     INCREMENT   SIMULINK                MLM 5 01-feb-1999  12 \
              CCE5E7D09FF687AD8ADE ""
     INCREMENT   Control_Toolbox         MLM 5 01-feb-1999   6 \
              3CE527801D14B9EB5C6F ""
     INCREMENT   Identification_Toolbox  MLM 5 01-feb-1999   4 \
              0C9567F07819EF4DDA71 ""
     INCREMENT   Robust_Toolbox          MLM 5 01-feb-1999   1 \
              1CC5072092377E07891F ""
```

The numbers in this list refer to the numbered areas of code above.

1 Two comment lines (beginning with the character #) indicating license version, License Number, and hostid information.

2 A `SERVER` line that describes the license manager daemon. The `SERVER` line has the general format:

`SERVER` *`hostname hostid TCP_PortNumber`*

The `1711` at the end of the `SERVER` line specifies the TCP port number to use for communication with the daemons. Do not change this number unless you know it 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.

If your network is running NIS (Network Information Services, formerly Sun Yellow Pages) and you prefer to consolidate TCP port number assignments, you can remove the number from the end of the SERVER line and add it to the file /etc/services on the NIS server by inserting

```
license 1711/tcp
```

Propagate the services map to the network by typing

```
cd /var/yp
make
```

3 A DAEMON line that describes the vendor daemon.

4 A TMW_Archive INCREMENT line with archive passcodes, used only during the installation process. This line specifies the products you are licensed to install.

5 One or more INCREMENT lines that itemize the products you are licensed to use. The INCREMENT line has the form:

INCREMENT *product* MLM 5 *expirdate users passcode*

Note In previous releases, The MathWorks used FEATURE lines to encode license passcode information in License Files. With this release, license passcodes are encoded in INCREMENT lines. INCREMENT lines perform the same function as FEATURE lines.

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 sets the value of this variable to $MATLAB/etc/license.dat. If you want to change the value of this environment variable to point to some other location, you must edit the .matlab5rc.sh script, which resides in $MATLAB/bin.

If you edit the .matlab5rc.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 execute 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, there are two ways to determine your server hostid:

- Log in to your server, mount the CD-ROM drive, and enter the `install` command appropriate for your system:

  `/cdrom/install* -l` (Sun, DEC, IBM, SGI, and Linux platforms)
  `/cdrom/INSTALL* -l` (HP platform)

- Use a native operating system command from the following table to determine your hostid.

Note 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 SP ARC	32-bit hostid	Enter the `hostid` command.	`170a3472`
HP 9000	32-bit hostid	`` echo `uname -i` 16o p | dc ``	`778DA4550`
	Ethernet address	`lanscan` (use station address without leading `0x`).	`070020005532`
DEC Alpha	Ethernet address	`/usr/sbin/netstat -i` Look under address and remove all colons (`:`) from entry associated with `ln0`.	`080020005532`
SGI	32-bit hostid	`` echo `/etc/sysinfo -s` 16o p | dc ``	`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:

- Run MATLAB in a heterogeneous network
- Run MATLAB with other FLEXlm applications
- Create a license manager options file
- Configure redundant license servers

License Manager Tools

License administration tools available in `$MATLAB/etc` are listed below.

Tool	Description
`lmboot`	Start license daemons at boot time.
`lmcksum`	Produce `license.dat` file checksums.
`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.
`lmremove`	Return license to license pool.
`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, with workstations of different architectures running off the same license server. 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 server, or run separate license servers either on the same or different hosts.

Sharing a License Server

To share a license server with another application, combine the `DAEMON`, `FEATURE`, and `INCREMENT` lines from both License Files into a single License File with the appropriate `SERVER` line, and install a license server on a single host. If the other applications are using a different version of the FLEXlm software than the MathWorks products, run the newer version of the license server.

If you share a license server 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 steps:

- Create `$MATLAB/etc/license.dat` as a symbolic link to the central License File.
- Redefine the `LM_LICENSE_FILE` environment variable in the `$MATLAB/bin/.matlab5rc.sh` script.

Running Separate License Servers

To run separate license servers, 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 Options File

You can instruct the FLEXlm license manager to:

- Reserve one or more 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.

To use these options, you or your users can create a `local.options` file and list its pathname as the fourth field on the `DAEMON` line in the License File. Depending on the length of your paths, this line can get quite long. The following example shows the line on two lines; however, you must type it on one line (or use the continuation character `\` at the end of the first line).

```
DAEMON MLM /usr/local/matlab/etc/lm_matlab \
/usr/local/matlab/etc/local.options
```

A `local.options` file is not required. If it does exist, it can have one or many lines. The license manager allocates keys according to these options until all 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.

A local options file might look something like the following:

```
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
```

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.

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.

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.

Obtaining a License File

Once you have chosen the servers, determine the hostid 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 2-5 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 5.0a
# LicenseNo: 12345          HostID: 7260d091
#                           HostID: 7275caa1
#                           HostID: 72701448
SERVER pooh   7260d091 1705
SERVER piglet 7275caa1 1705
SERVER rabbit 72701448 1705
DAEMON MLM /usr/local/matlab/etc/lm_matlab
FEATURE   TMW_Archive  MLM 5 01-jan-1999   0 0123456789ABCDEF1234 \
                       VENDOR_STRING="3" HOSTID=DEMO
FEATURE   MATLAB       MLM 5 01-jan-1999   2 0123456789ABCDEF1234
FEATURE   SIMULINK     MLM 5 01-jan-1999   1 0123456789ABCDEF1234
```

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 2-4.

Starting License Manager Daemons

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/matlab`, use this procedure:

1 Log in to `pooh`:

```
cd /usr/local/matlab/etc
lmstart
```

2 Log in to `piglet`:

```
cd /usr/local/matlab/etc
lmstart
```

3 Log in to `rabbit`:

```
cd /usr/local/matlab/etc
lmstart
```

If you change the definition of `LM_LICENSE_FILE` in `.matlab5rc.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 w ant the license manager to start automatically when rebooting the mac hine , 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_TMW5` 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_TMW5
```

3

Troubleshooting

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 Technical Note 1310, "UNIX Installation and License Manager Troubleshooting Guide," which is available on the Support and Services page at the MathWorks Web site, `www.mathworks.com`.

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 user mask is checked for a correct range of values. If the user mask is outside of the correct range, you are prompted for an alternative. This provides correct permissions to 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, DEC, 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 1-20.
- 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, DEC, IBM, SGI, and Linux platforms)
  `INSTALL* -debug > debug.out` (HP platform)

  You can also view error messages by rerunning the installation procedure using one of the terminal options:

  `install* -t` (Sun, DEC, IBM, SGI, and Linux platforms)
  `INSTALL* -t` (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 Verify that your client workstation can connect to the license manager over the network.

3 Check the license manager log file for error messages and take appropriate corrective action.

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.

The following sections provide more detail about each step.

Checking the License Manager Daemons

Because the license manager must keep track of the number of users, the license manager must be running before you can start MATLAB. On the license manager server (usually the file server), determine whether the license daemons are operating by using the `lmstat` command:

```
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_TMW5.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 -9 pid_of_daemon
```

If either the license server 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_TMW5.log contains a log of all license check-outs, check-ins, and denials. 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. A sure 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/matlab`, the install script defines `$MATLAB` as `/usr/local/matlab` in the file `.matlab5rc.sh`. If MATLAB is automounted on other workstations in directories other than `/usr/local/matlab`, MATLAB fails at startup because it cannot find `LM_LICENSE_FILE`. The `LM_LICENSE_FILE` is determined by `$MATLAB`.

Edit `$MATLAB/bin/.matlab5rc.sh` and comment out the line that defines the variable `MATLAB`. If this line is not found in `.matlab5rc.sh`, `$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.

Shell Escape to Start Another FLEXlm Application Fails

If the value of `LM_LICENSE_FILE` is correct in the environment before you start MATLAB, you can edit the `$MATLAB/bin/.matlab5rc.sh` file to make it available inside MATLAB. Under the appropriate architecture, edit the `LM_LICENSE_FILE` line so that it reads:

```
LM_LICENSE_FILE='$MATLAB/etc/license.dat'":$LM_LICENSE_FILE"
```

This edit simply concatenates the string `":$LM_LICENSE_FILE"` with evaluation (using double quotation marks) to the end of the line. Don't forget the colon and the double quotation marks.

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 connected to the Internet, the `lmdebug` script automatically e-mails its results to Technical Support. 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

You should also feel free to contact the MathWorks Technical Support department by phone or e-mail.

To reach the MathWorks Technical Support:

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_TMW5.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_TMW5.log`). It should indicate the specific `INCREMENT` line for which 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. There should be zeros and not the letter O. Make sure Bs are not 8s and vice versa.

Also, the date format in your License File may be incorrect; e.g., `01-mar-99` instead of `01-mar-1999`. 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 "System Requirements" 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 `FEATURE` or `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_TMW5.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. 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, you may need to place an alias in the license server's local host table for the fully qualified name.

2. To verify that the server name can be resolved, use 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_TMW5.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. Enter 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 1711 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 1711 may be in use by some other program, including another license manager. The TCP port number 1711 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.

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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
matlabdoc	Script to start online documentation
installguide.ps	PostScript copy of this *Installation Guide for UNIX*
install_matlab	The top-level script that installs the MATLAB system
setup.txt	UNIX setup README file for MATLAB
/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
`.matlab5rc.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`)
`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 FLEX*lm* 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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