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The Language of Technical Computing

Computation

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The MATH WORKS

Installation Guide for PC

Release 12.1 (MATLAB 6 Family of Products)

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Installation Guide for PC

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Standard PC Installation Procedure

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Start Here

This chapter describes how to install the MATLAB 6 family of products for Release 12.1, on a PC running Microsoft Windows 95, 98, ME, 2000, or NT. (See “System Requirements” on page 1-5 for information about specific platforms.)

Use this standard installation procedure if you have an *individual* license. An individual license allows products to be installed and used on a single computer. You can also use this procedure for *group* licenses. With a group license, you can install MATLAB on up to a designated number of systems using the same license.

For information about setting up a concurrent installation, see Chapter 2, “Concurrent License Installation Procedure.”

This chapter includes information about:

- Product licensing for individual users
- System requirements
- Steps you should perform before you install
- The standard installation procedure
- Recommended steps you should perform after a successful installation

This chapter also describes how to remove (uninstall) a MATLAB installation and how to add products to an existing installation.

Product Licensing

When you purchase products with an individual license, The MathWorks sends you a *Personal License Password* (PLP) by e-mail or fax. Your PLP identifies the products that you are licensed to install. A PLP is a series of five-digit numbers, prefixed with a two-digit release code, such as,

```
12-12345-12345-12345-12345-12345...
```

Obtaining Your Personal License Password

If you did not receive your PLP, you can obtain one during the installation procedure by clicking on the **Get my PLP** button on the **Personal License Password** dialog box. To get your PLP this way, you must have an Internet connection and your MATLAB Access number.

You can also obtain your PLP 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 MathWorks enrolls the primary contact on each license automatically in MATLAB Access and sends the contact an Access number via e-mail.
- E-mail at `service@mathworks.com`.
- Telephone at 508-647-7000; ask for Customer Service. To find the phone number of one of our international offices, go to the MathWorks Web site at `www.mathworks.com` and click **Contact Us** at the top of the page.
- Fax at 508-647-7001.

Customers outside North America should contact their local distributor.

When you request a PLP, please have ready, or include in your e-mail or fax, these 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 can obtain license information from their local MathWorks representative.

If you have a previous version of MATLAB running at your site, you can obtain your License Number by entering the `license` command or the `ver` command at the MATLAB command prompt.

- Your e-mail address.

System Requirements

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

- Pentium, Pentium Pro, Pentium II, Pentium III, Pentium IV, or AMD Athlon based personal computer
- Microsoft Windows 95, Windows 98 (original and Second Edition), Windows Millennium Edition (ME), Windows NT 4.0 (with Service Pack 5 for Y2K compliancy or Service Pack 6a), or Windows 2000
- CD-ROM drive (for installation from CD)
- 64 MB RAM minimum, 128 MB RAM recommended
- Disk space varies depending on size of partition and installation of online help files. The MathWorks Installer will inform you of the hard disk space requirement for your particular partition.
- 8-bit graphics adapter and display (for 256 simultaneous colors)

Other recommended items include:

- Microsoft Windows supported graphics accelerator card, printer, and sound card
- Microsoft Word 7.0 (Office 95), 8.0 (Office 97), or Office 2000 is required to run the MATLAB Notebook.
- MATLAB can be set up to operate on a network via the TCP/IP communications protocol.

One of the following is required to build your own MEX-files:

- Compaq Visual Fortran 5.0 or 6.1
- Microsoft Visual C/C++ version 5.0 or 6.0
- Borland C/C++ version 5.0 or 5.02
- Borland C++Builder version 3.0, 4.0, or 5.0
- Lcc 2.4 (bundled with MATLAB)

Adobe Acrobat Reader is required to view and print the MATLAB online documentation in PDF format.

Standard PC Installation Procedure

During the installation process, you answer three basic questions:

- Who: Specify your name, your company name, and your license information (PLP)
- What: Select the products and documentation you want to install
- Where: Choose the directory in which you want to install the MathWorks products

The MathWorks Installer program (`setup.exe`) steps you through the process. This section provides information about:

- Pre-installation tasks
- Notes for upgrade installations
- A brief summary of the installation procedure
- A detailed, step-by-step procedure

Note If you are performing multiple standard installations at your site, do not attempt to "clone" MATLAB installations by copying the MATLAB image from one system to another. The cloned installations will fail because MATLAB associates a license with a particular system.

Before You Install

Before you run the MathWorks Installer program:

- Exit any programs you may have running, especially existing copies of MATLAB.
- Make sure you have the Personal License Password (PLP) that you received from The MathWorks via e-mail when you purchased your software. If you don't have your PLP, see "Product Licensing" on page 1-3 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.

- Get administrator privileges if you are installing MATLAB on Microsoft Windows NT or Windows 2000 systems.

Upgrade Installations

Always install MATLAB in a new installation directory, even for upgrade installations. The installer creates a new installation directory for each release by default, for example, `MATLAB6p1`. You do not need to delete an existing MATLAB installation before installing R12.1. You can run multiple versions of MATLAB on the same system.

Upgrading and MATLAB Preference Files

MATLAB stores your preference information, such as command history and help favorites, in preference files. The installer does not overwrite these preference files if they already exist on your system. Multiple MATLAB installations on the same system will use the same preference files.

Note If you plan to remove your previous MATLAB installation, either before you install R12.1 or after running both versions on your system, you may want to save your MATLAB preference files. The uninstaller provided with earlier versions of MATLAB deletes these preferences files. See “Saving Your MATLAB Preferences” on page 1-21 for more information.

Standard Installation Checklist

This checklist summarizes the steps in the standard installation procedure. For a more detailed information about any of the steps, see its description in “Installation Instructions” on page 1-8.

Standard Installation Checklist
Perform the pre-installation tasks described in “Before You Install” on page 1-6
Step 1: Start the Installer
Step 2: Enter Your Personal License Password (PLP)

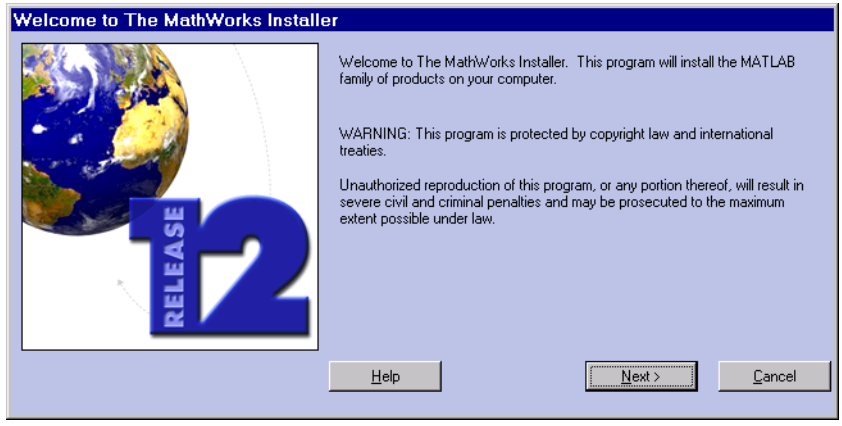
Standard Installation Checklist
Step 3: Review the Software Licensing Agreement
Step 4: Enter Your Name and Company Name
Step 5: Select the Products You Want to Install
Step 6: Get Configuration Information (Optional)
Step 7: Complete the Installation
Perform the post-installation tasks described in “After You Install” on page 1-16

Installation Instructions

This section details each step of the installation process. If you encounter any trouble during installation, see Chapter 4, “Troubleshooting a PC Installation” for answers to some common installation problems.

Step 1: Start the Installer

Insert the MathWorks product CD into the CD-ROM drive or double-click on the installer file you downloaded from the MathWorks Web site. The MathWorks Installer starts automatically, displaying the **Welcome to The MathWorks Installer** dialog box.

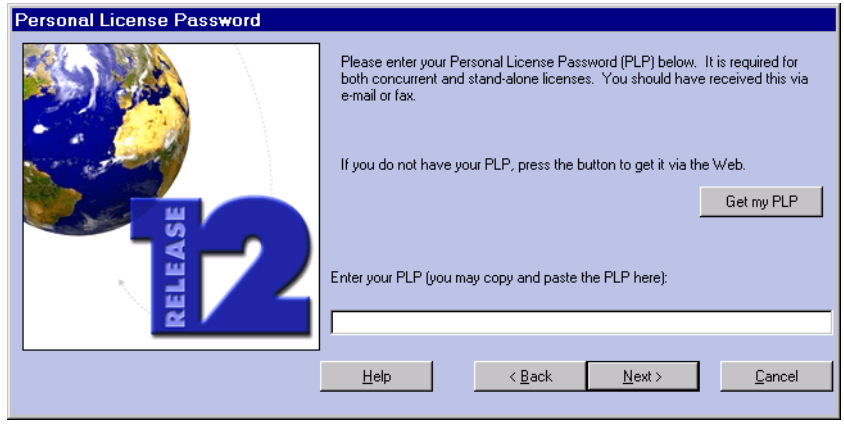


If the installer does not start, open a Windows Explorer window, click on your CD-ROM drive, and double-click the `setup.exe` program in the top level directory.

Note The MathWorks Installer requires the Microsoft Java Virtual Machine (JVM). If your system does not have the required version of the JVM, the installer prompts you to install it. When the JVM installation is complete, you must reboot your system. If you leave the MathWorks product CD in your CD-ROM drive during the JVM installation, the MATLAB installation resumes automatically.

Step 2: Enter Your Personal License Password (PLP)

Enter your Personal License Password (PLP) in the **Personal License Password** dialog box and click **Next**. To avoid typing errors, copy the PLP from the license e-mail and paste it into this dialog box, using **Ctrl+V**. Take care to copy the entire PLP if your e-mail program has caused it to wrap onto two lines.



Note Do not confuse your PLP with your License Number. A PLP is a series of five-digit numbers prefixed with a two-digit release code. For more information, see “Product Licensing” on page 1-3.

Step 3: Review the Software Licensing Agreement

Review the software licensing agreement and, if you agree with the terms, click **Yes**. After installation, you can view the license agreement in the file `license.txt` located in the top level of your MATLAB installation directory.

Step 4: Enter Your Name and Company Name

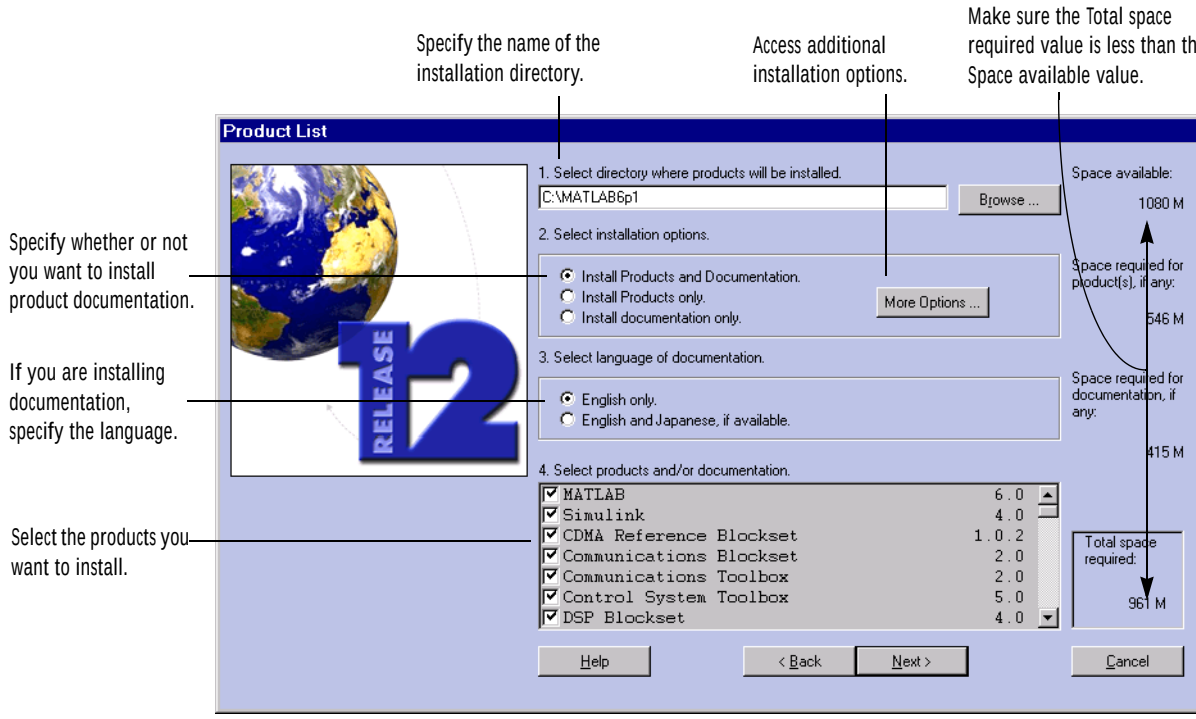
Enter your name and your company name in the **Customer Information** dialog box and click **Next**.

Step 5: Select the Products You Want to Install

The installer displays the **Product List** dialog box. If you click **Next,** the installer starts installing all the products and documentation you are licensed to install into the default directory (`C:\MATLAB6p1`). You can use this dialog box to customize many aspects of your MATLAB installation, including:

- "Specifying the Installation Directory" on page 1-11
- "Selecting and Deselecting Products" on page 1-11
- "Installing Documentation" on page 1-12
- "Updating Your License File" on page 1-12
- "Creating a Read-Only Installation" on page 1-13

Note Before you select any products for installation, the installer asks if you want to connect to the MathWorks Web site, `www.mathworks.com`, to see if more up-to-date versions of the products you are installing, or new products that were released after the CD was produced, are available there. The installer provides a list of these new and updated products at the end of the installation. You must go to the Web site after the installation is complete to download the new or updated products. *The installer does not download the new or updated products.*



Specifying the Installation Directory. If you specify an installation directory, do not specify a directory name that contains spaces, an at (@) sign, or a dollar ($) sign. Also, you cannot have a directory named “private” as part of the installation path. If the directory that you specify does not exist, the installer creates it.

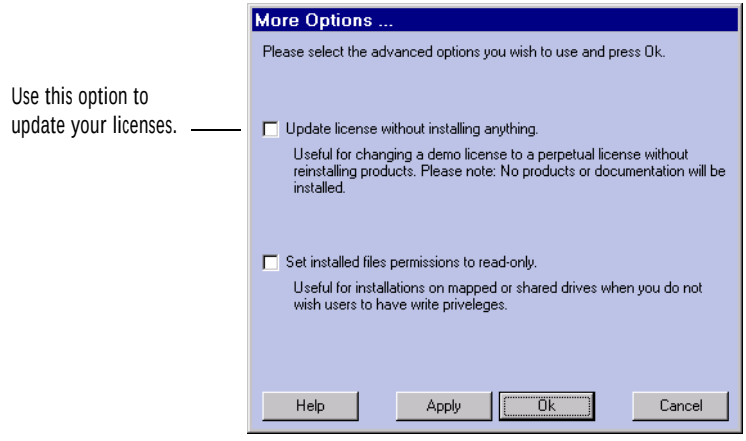
Note Always install MATLAB in a new directory, even if you are performing an upgrade installation.

Selecting and Deselecting Products. If you do not want to install a particular product, deselect it in the list by clicking on the check mark next to its name. If you deselect a component now, you can always install it later. See “Installing Additional Products” on page 1-23 for more information.

Installing Documentation. If you are installing the documentation, the installer prompts you to insert the documentation CD into your CD-ROM drive to complete the installation. If you plan to view the documentation from the CD or install the documentation in a directory other than the MATLAB installation directory, choose the **Install Products only** option. If you change your mind, you can always install the documentation later.

Note The installer does not install the PDF version of the documentation, only the HTML version. The PDF documentation is available on the CD or at the MathWorks Web site and is accessible through the Help browser.

Updating Your License File. If you just want to update your product licenses without installing any products or documentation, click the **More Options...** button on the **Product List** dialog box. In the dialog box displayed, select the **Update license without installing anything** option.

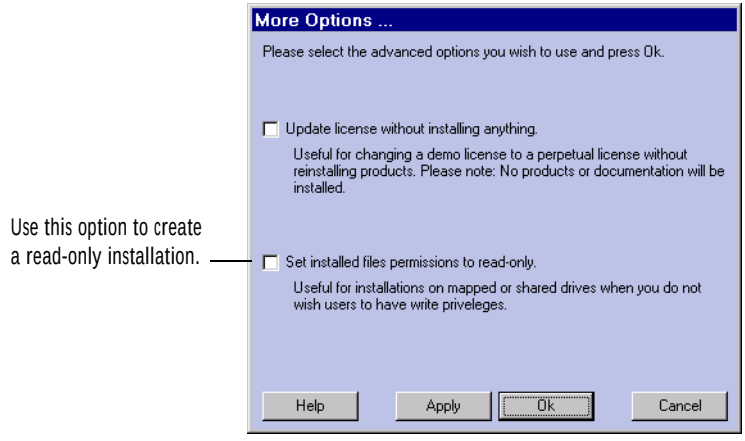


You can use this option to:

- Extend the expiration date of a demo license.
- Convert a demo license to a standard license, without reinstalling MATLAB.
- Move your installation onto a new system. (Licenses are locked to particular systems.)

Note When you choose the **Update license** option, *no products or documentation are installed*. The installer disables items 2 and 3 in the **Product List** dialog box.

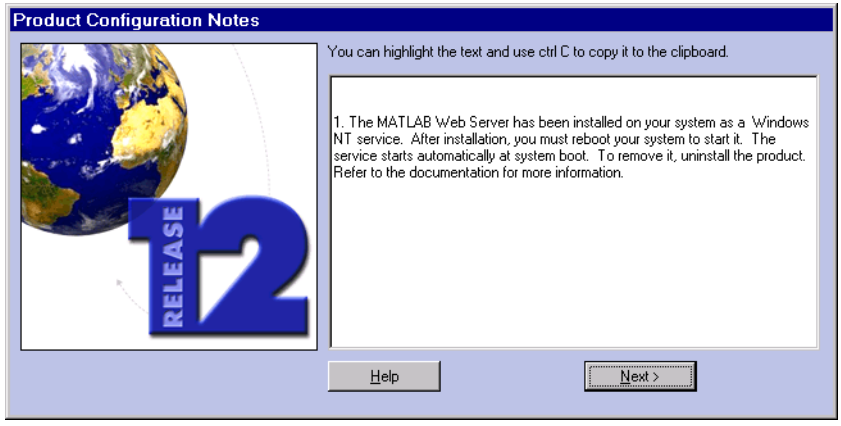
Creating a Read-Only Installation. To set the file permission of all the installed files to read-only, click the **More Options...** button on the **Product List** dialog box. In the dialog box displayed, select the **Set installed files permissions to read-only** option. This option can be useful if you are installing MATLAB on a shared drive and want to protect the files from write access.



When you click **Next** in the **Product List** dialog box, the installer begins copying files onto your hard disk. The installer indicates the progress of the installation in the **Install Status** window.

Step 6: Get Configuration Information (Optional)

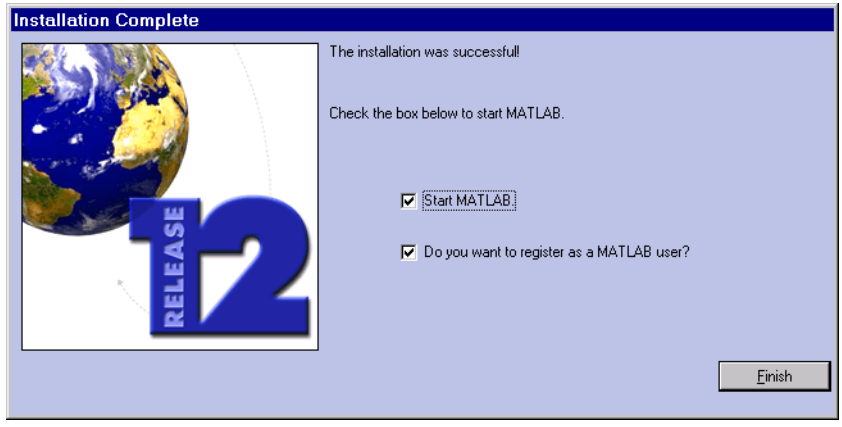
After it finishes the installation, the installer may display a dialog box containing product-specific configuration information, depending on which products you selected.



You can copy information from this dialog box, such as configuration commands, for use later when you start MATLAB. See “Configuring Certain Release 12.1 Products” on page 1-17 for more information.

Step 7: Complete the Installation

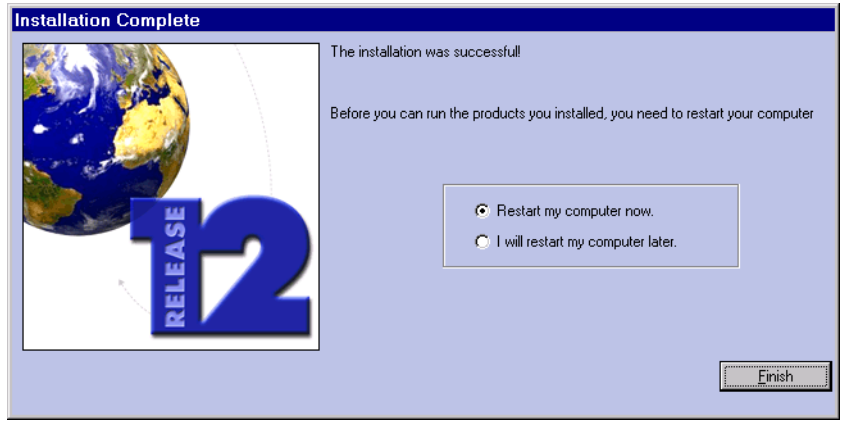
When the installer finishes, it displays the **Installation Complete** dialog box.



In this dialog box, you can choose to start MATLAB as you exit the installer and also to register as a MATLAB user. If you select the register option, the

installer starts an internet browser and opens the MATLAB Access page at the MathWorks Web site.

If you have installed products that require you to reboot your system before you can run them, the installer displays this alternate **Installation Complete** dialog box.



After You Install

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

- "Starting MATLAB"
- "Setting Your Initial Current Directory"
- "Setting Up MATLAB Environment Options" on page 1-17
- "Configuring Certain Release 12.1 Products" on page 1-17
- "Finding Information About MATLAB" on page 1-18

Starting MATLAB

To start MATLAB, you can use any of these methods.

- Double-click on the MATLAB icon (called a "shortcut") that the installer creates on your desktop.

- Click on the **Start** button, select **Programs**, and click on the **MATLAB 6.1** entry. Select **MATLAB 6.1** from this menu.
- Using Windows Explorer, open your top level MATLAB installation directory and double-click on the shortcut to the MATLAB executable, MATLAB 6.1.

Setting Your Initial Current Directory

By default, when you start MATLAB using the shortcut the installer puts on your desktop, the initial current directory is the `$MATLAB\work` directory, where `$MATLAB` represents the name of your installation directory. The `\work` directory is a good place to store the M-files you modify and create because the MATLAB uninstaller does not delete the `\work` directory if it contains files.

You can, however, use any directory as your MATLAB initial current directory. To specify another directory as your initial current directory, right-click on the MATLAB shortcut that the installer creates on your desktop and select the **Properties** option. Specify the name of the directory in the **Start in** field.

Setting Up MATLAB Environment Options

To include welcome messages, default definitions, or any MATLAB expressions that you want executed every time MATLAB is invoked, create a file named `startup.m` in the `$MATLAB\toolbox\local` directory. MATLAB executes this file each time it is invoked.

Configuring Certain Release 12.1 Products

Certain Release 12.1 products require additional configuration. The following table lists these products and the commands used to configure them. If you installed any of these products, see the documentation for that product for detailed configuration information.

Product	Command
MATLAB Notebook	`notebook -setup`
MATLAB Runtime Server	`rtsetup`
Real-Time Windows Target	`rtwintgt -setup`

Excel Link Versions

By default, Excel Link (a separately orderable product) supports Excel 97. However, the installer puts two versions of Excel Link in the `toolbox\exlink` subdirectory. Files with 95 appended to their names (e.g. `excllink95.xla` and `ExliSamp95.xls`) correspond to Excel 7. Files without this identifier (e.g., `excllink.xla` and `ExliSamp.xls`) correspond to Excel 97. Use the appropriate files for your version of Excel.

Finding Information About MATLAB

After successfully installing MATLAB, you are probably eager to get started using it. This list provides pointers to sources of information and other features you may find helpful in getting started with MATLAB.

Task	Description
To get an overview of MATLAB and its capabilities	Read *Getting Started with MATLAB*.
To find out what's new in this release	Read the *Release Notes for R12.1*.
To start a product or run one of the demonstration programs	Use the Launch Pad in the MATLAB desktop.
To get information about specific MATLAB features	Choose the **Help** item in the MATLAB menu bar to view reference and tutorial information in hyperlinked HTML form.
To get help with specific questions you can't find answered in the documentation	Go to the MathWorks Web site (`www.mathworks.com`) and use the Technical Support solution search area to find more information.

Removing (Uninstalling) a MATLAB Installation

To remove a MATLAB installation from your system, use the MATLAB uninstaller program (`uninstall.exe`).

This section describes how to:

- Start the uninstaller
- Use it to remove MATLAB software from your computer
- Save your MATLAB preferences
- Removing installations that use dongles

Note Make sure to shut down MATLAB before trying to uninstall it.

Starting the Uninstaller

To start the MATLAB uninstaller, use either of these methods.

- Click on the **Start** button, choose the **Programs** option, and select the **MATLAB 6.1** entry. Click the **Uninstall MATLAB 6.1** option on the MATLAB menu.

- Click on the **Start** button, select the **Settings** option, and click **Control Panel**. In the Control Panel, double-click the **Add/Remove Programs** option. Select the **MATLAB 6.1** from the list of products.

When you start the uninstaller, it displays the **Uninstall Product List** dialog box. See “Running the Uninstaller” on page 1-20 for more information.

Running the Uninstaller

In the **Uninstall Product List** dialog box, select the products you want to remove by clicking the check box next to their names. If you remove MATLAB, you automatically remove all other MathWorks products. By default, the uninstaller does not remove your MATLAB preference files. If you want to remove these files, click the **Uninstall MATLAB preferences** check box. For more information about preference files, see "Saving Your MATLAB Preferences" on page 1-21.

Note The uninstaller leaves the MATLAB installation directory on your system, empty except for the `\uninstall` subdirectory and the `\work` subdirectory, if it contains files. To completely remove a MATLAB installation, you must delete these directories. You may want to move any M-files you created in the `\work` directory to another directory before deleting it.

When you run the uninstaller, it may display a dialog box, asking if you want to remove the `mwsamp.ocx` file. This file is an ActiveX control that is registered as a shared file during the MATLAB installation. You can remove this file.

Saving Your MATLAB Preferences

MATLAB stores your environment preferences, such as command history and Help favorites, in four files, listed below.

Filename	Preferences
`cwdhistory.m`	Command Window history
`history.m`	Command History
`matlab.prf`	General MATLAB preferences
`matlab_help.hst`	Help Favorites

By default, the Release 12.1 uninstaller does not delete these preference files. The uninstaller for Release 12 and earlier MATLAB releases, however, deletes these preference files. Before removing one of these earlier MATLAB releases, you may want to preserve your preference files by performing these steps:

1. Save copies of the existing preference files in a directory that is not going to be deleted.

   To find the location of your preferences files, run the `prefdir` function at the MATLAB prompt. For example, on Windows NT systems, `prefdir` returns

   ```
   prefdir
   ans =
   C:\WINNT\Profiles\yourname\Application Data\MathWorks\MATLAB\R12
   ```

2. Run the uninstaller associated with the a MATLAB Release 12 or earlier installation. This deletes the preference files.

Note Because preferences are associated with particular users, the uninstaller only deletes the preferences for the user performing the uninstall.

---

3. Move the saved copies of the preferences files back into the appropriate Windows preference directories.

Removing Installations That Use Dongles

In some installations, MATLAB requires a *dongle*. A dongle is a hardware-based security device that attaches to the serial or parallel printer port of a desktop computer. It uses embedded codes and passwords to control access to software applications.

If your system uses dongles, the uninstaller asks if you want to delete the dongle drivers. If other applications you run on your system use dongles, do not delete these drivers. For more information, see “Troubleshooting an Installation That Uses Dongles” on page 4-14.

Installing Additional Products

When you order additional products, The MathWorks sends you a new Personal License Password (PLP). Your PLP identifies all the products you are licensed to install.

To install additional products:

1. Shut down MATLAB.
2. Insert the Release 12.1 CD into your CD-ROM drive, or double-click on the file you downloaded from the MathWorks Web site. The installer starts automatically.
3. Follow the instructions on the installer dialog boxes, detailed in "Standard PC Installation Procedure" on page 1-6. (For concurrent installations, follow the instructions in "Concurrent Installation Procedure" on page 2-8.)
4. At Step 5, in the **Product List** dialog box:
   a. Specify your current MATLAB installation directory as the installation directory.
   b. Deselect all but the product (or products) you want to add. By default, the installer lists *all* the products you are licensed to install, preselected for installation, not just the new products.
5. When the installation program is finished, perform any configuration required by the new products. See "Configuring Certain Release 12.1 Products" on page 1-17 for more information.

2

Concurrent License Installation Procedure

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Start Here

This chapter describes how to set up a concurrent installation of the MATLAB 6 family of products for Release 12.1.

In a concurrent installation, The MathWorks uses a license manager program called FLEXlm (a product of GLOBEtrotter Software, Inc.) to control access to its products. To set up a concurrent installation, you must install the license manager as well as the MathWorks products you purchased. You use the MathWorks Installer to perform both installations.

This chapter includes information about:

- How to set up a concurrent installation. This section describes how you determine on which systems you will install the license manager and on which systems you will install the MathWorks products.
- The concurrent installation procedure

For information about starting MATLAB and other tasks you can perform after a successful installation, see “After You Install” on page 2-21.

Note Using the installer you can set up a concurrent installation with little knowledge of license management software, even if you own other products that use FLEXlm for license management. However, if you want to integrate the MathWorks products into an already established license management scheme, you may need a more thorough understanding of product licensing. Chapter 3, “License Management” provides an overview of how The MathWorks uses FLEXlm. For more detailed information about licensing, read the *FLEXlm End User Manual*, which is included in your MATLAB installation in PDF format (`$MATLAB\flexlm\enduser.pdf`).

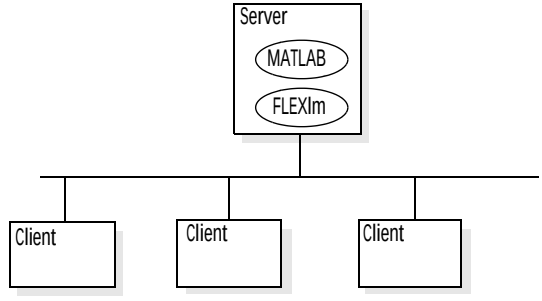
Setting Up a Concurrent Installation

This section describes two ways you can set up a MATLAB concurrent installation on your network:

- "Remote Client Access Configuration"
- "Local Client Access Configuration"

Remote Client Access Configuration

In a *remote client access* configuration, you install MATLAB and the license manager on a central file server. (These instructions refer to this system as your *license server*.) Users on client systems access MATLAB over the network. This figure shows one possible configuration. The license manager (FLEXlm) and MATLAB can be installed on the same server or on separate servers.



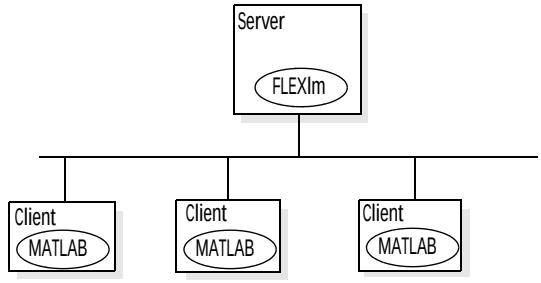
If your license server is a PC, follow the instructions in "Concurrent Installation Procedure" on page 2-8. If your license server is a UNIX system, follow the instructions in the *Installation Guide for UNIX*. A UNIX license server can serve PC clients and a PC server can serve UNIX clients.

In remote client access configurations, it can be helpful to give clients a script that sets up a shortcut to the network copy of MATLAB and specifies a default startup directory for MATLAB. See "After You Install" on page 2-21 for more setup suggestions.

Local Client Access Configuration

In a *local client access* configuration, you install the license manager on a server and you install MATLAB on each client system. When users on client

systems start MATLAB, it contacts the license manager over the network to check out a license key. This figure shows one possible configuration.



You perform the same procedure, described in "Concurrent Installation Procedure" on page 2-8, to install the license manager and each MATLAB client installation. However, there are some differences. See "Installing MATLAB on a Client System" on page 2-19 for complete information.

Concurrent Licensing

When you purchase a concurrent license, The MathWorks sends you two types of licensing information in an e-mail or fax:

- Personal License Password (PLP)
- License File

Your PLP identifies the products you are licensed to *install*. Your License File identifies the products you are licensed to *run*.

Personal License Password

A PLP is a series of five-digit numbers preceded by a two-digit product release code.

```
12-12345-12345-12345-12345...
```

If you did not receive your PLP, you can obtain one during the installation procedure by clicking the **Get my PLP** button on the **Personal License Password** dialog box. For information about other options, see “Obtaining Your Concurrent License Information” on page 2-7.

License File

A License File is a specially formatted ASCII text file that contains encrypted product passcodes for each product you are licensed to run. Each product passcode identifies the number of *keys* available for each product. The license manager grants or denies access to a product, depending on the availability of the license keys associated with each product at any given moment.

The MathWorks includes information in your License File that identifies the system on which you intend to run the license manager. You had to identify this system, your license server, when you made your purchase. The MathWorks needs the Host ID of your license server when it creates your License File. See “Finding the Host ID on a Windows System” on page 2-7 for more information.

Figure 2-1 is a sample of a License File sent by The MathWorks. Each line in the License File that begins with the keyword `INCREMENT` identifies a product you purchased. The lines that begin with a pound sign (#) are comments. The license server identification information (Host ID or Internet address) is

included as a comment in the License File. A backslash character at the end of a line indicates that the line continues onto the next line. (For more detailed information about License Files, see Chapter 3, "License Management.") This sample identifies the license server by Host ID (`00600805a7ac`) but you can also use an internet address (`HostID: INTERNET=144.201.21.203`).

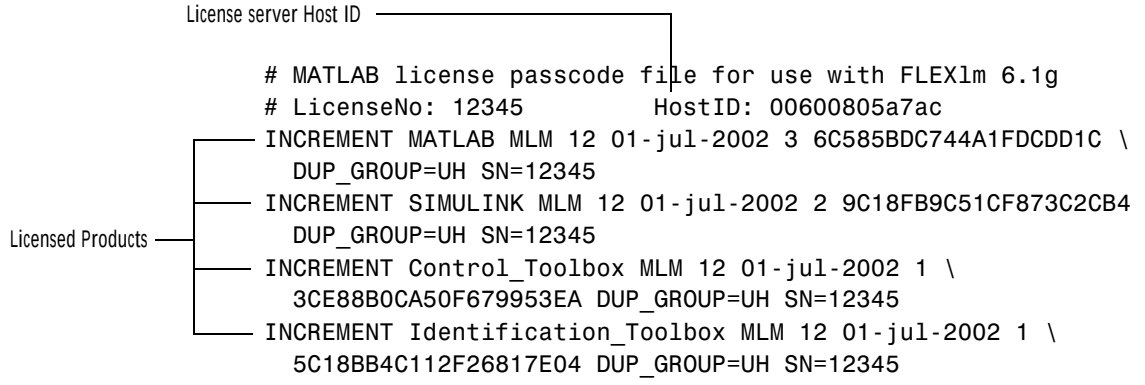


Figure 2-1: Sample License File

Creating Your License File

You must create a License File from the license e-mail you received from The MathWorks. Open a text file using a text editor, such as Notepad, 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 in a temporary directory, such as `C:\TEMP`. Make sure you save the file as a plain text file and that the text editor didn't add a `.txt` file extension to the filename.

If you received your license information in a fax, you must create a License File. Open a text file, using a text editor, and type in the license information exactly as it appears in the fax. Take care to preserve all spaces and line breaks.

Note The MathWorks recommends that you do not edit your licensing information. Any changes you make may invalidate your License File.

Obtaining Your Concurrent License Information

If you did not receive your PLP and License File, you can obtain them during the installation procedure by clicking on the **Get my PLP** button on the **Personal License Password** dialog box and the **Get my License File** on the **License File Path** dialog box. You can also obtain them 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. Your Access number is sent via e-mail.
- E-mail at `service@mathworks.com`.
- Telephone at 508-647-7000; ask for Customer Service. To find the phone number of one of our international offices, go to the MathWorks Web site at `www.mathworks.com` and click **Contact Us** at the top of the page.
- Fax at 508-647-7001.

When requesting your license information, please have ready, or include in your e-mail or fax, these 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 MathWorks representative.
  - If you are updating an existing MATLAB installation and MATLAB is running, type `license` or `ver` at the MATLAB prompt, or look in your existing `license.dat` file.
- Your e-mail address (if you have one).
- The Host ID of the server on which you will run the license manager.

Finding the Host ID on a Windows System

On Windows systems, you use the Ethernet address or IP address as the Host ID. To get this information, run the `ipconfig` command from `C:\WINNT\system32`.

Concurrent Installation Procedure

This section describes how to install MATLAB in a concurrent installation. You can use this procedure to install MATLAB and the license manager on a PC server running Windows.

If your concurrent installation uses a UNIX system as a license server, see the *Installation Guide for UNIX* for instructions on installing the license manager on a UNIX system.

If you are setting up a local client access configuration, you use this same procedure to install MATLAB on each client system; however, there are some differences. See "Installing MATLAB on a Client System" on page 2-19 for details.

This chapter includes information about:

- Pre-installation tasks
- A brief summary of the installation procedure
- Notes for upgrade installations
- A detailed step-by-step procedure

Before You Install

Before you run the installation program:

- Have your concurrent PLP and your License File handy. See "Concurrent Licensing" on page 2-5 for more information about License Files.
- Exit any programs you may have running, especially existing copies of MATLAB.
- Make sure your system satisfies the requirements of the software you intend to install. For more information, see "System Requirements" on page 1-5.
- Shut down the FLEXlm license manager, if it's running. (See "Starting and Stopping the License Manager" on page 3-15 for instructions.)

Note To install MATLAB on a Microsoft Windows NT or Windows 2000 system, you must have administrator privileges.

Upgrade Installations

Always install MATLAB in a new installation directory, even for upgrade installations. The installer creates a new installation directory for each new release by default, for example, `MATLAB6p1`. You do not need to delete an existing MATLAB installation before installing R12.1. You can run multiple versions of MATLAB on the same system; see "Running Multiple Versions of MATLAB" on page 3-6 for more information.

Upgrading and MATLAB Preference Files

MATLAB stores your preference information, such as command history and help favorites, in preference files. The installer does not overwrite these preference files if they already exist on your system. Multiple MATLAB installations on the same system will use the same preference files.

Note If you plan to remove your previous MATLAB installation, either before you install R12.1 or after running both versions on your system, you may want to save your MATLAB preference files. The uninstaller provided with earlier versions of MATLAB deletes these preferences files. See "Saving Your MATLAB Preferences" on page 1-21 for more information.

Concurrent Installation Procedure Summary

This list summarizes the steps in the concurrent installation procedure. For more detailed information about any of the steps, see the description of each step that follows. For information about client installations, see “Installing MATLAB on a Client System” on page 2-19.

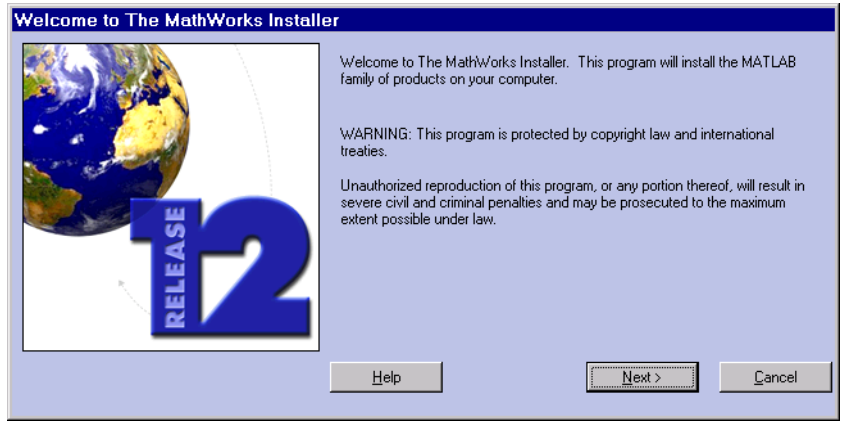
Concurrent Installation Procedure
Perform the pre-installation tasks described in “Before You Install” on page 2-8
Step 1: Start the Installer
Step 2: Enter Your Personal License Password (PLP)
Step 3: Review the Software Licensing Agreement
Step 4: Enter Your Name and Company Name
Step 5: Select the Products You Want to Install
Step 6: Specify the Location of Your License File
Step 7: Install the License Manager as a Service
Step 8: Get Product Configuration Information (Optional)
Step 9: Complete the Installation
Perform the post-installation tasks described in “After You Install” on page 2-21

Installation Instructions

To install MATLAB and the license manager on a PC, follow these instructions. If you encounter any trouble during installation, see Chapter 4, “Troubleshooting a PC Installation” for answers to some common installation problems.

Step 1: Start the Installer

Insert the MathWorks product CD into the CD-ROM drive or double-click on the installer file you downloaded from the MathWorks Web site. The MathWorks installer starts automatically, displaying the **Welcome to The MathWorks Installer** dialog box.

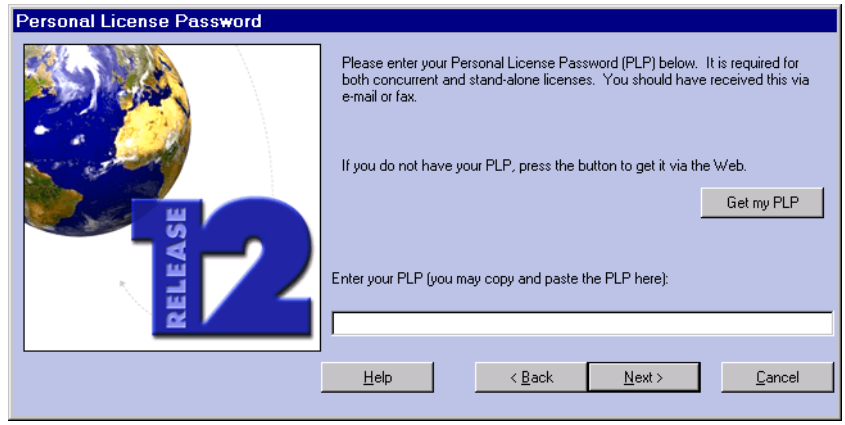


If the installer does not start, open a Windows Explorer window, click on your CD-ROM drive, and double-click the `setup.exe` program in the top level directory.

Note The MathWorks Installer requires the Microsoft Java Virtual Machine (JVM). If your system does not have the required version of the JVM, the installer prompts you to install it. When the JVM installation is complete, you must reboot your system. If you leave the MathWorks product CD in your CD-ROM drive during the JVM installation, the MATLAB installation resumes automatically.

Step 2: Enter Your Personal License Password (PLP)

Enter your Personal License Password (PLP) in the **Personal License Password** dialog box and click **Next**. To avoid typing errors, copy the PLP from the license e-mail and paste it into this dialog box, using **Ctrl+V**. Take care to copy the entire PLP if your e-mail program has caused it to wrap onto two lines.



Note Do not confuse your PLP with your License Number. A PLP is a series of five-digit numbers prefixed with a two-digit release code.

Step 3: Review the Software Licensing Agreement

Review the software licensing agreement and, if you agree with the terms, click **Yes**. After installation, you can view the license agreement in the file `license.txt` located in the top level of your MATLAB installation directory.

Step 4: Enter Your Name and Company Name

Enter your name and your company name in the **Customer Information** dialog box and click **Next**.

Step 5: Select the Products You Want to Install

If you are only installing the license manager, select it in the **Product List** dialog box, deselect all the other products, and click **Next**. The installer starts installing the license manager in the default directory `C:\MATLAB6p1\flexlm`.

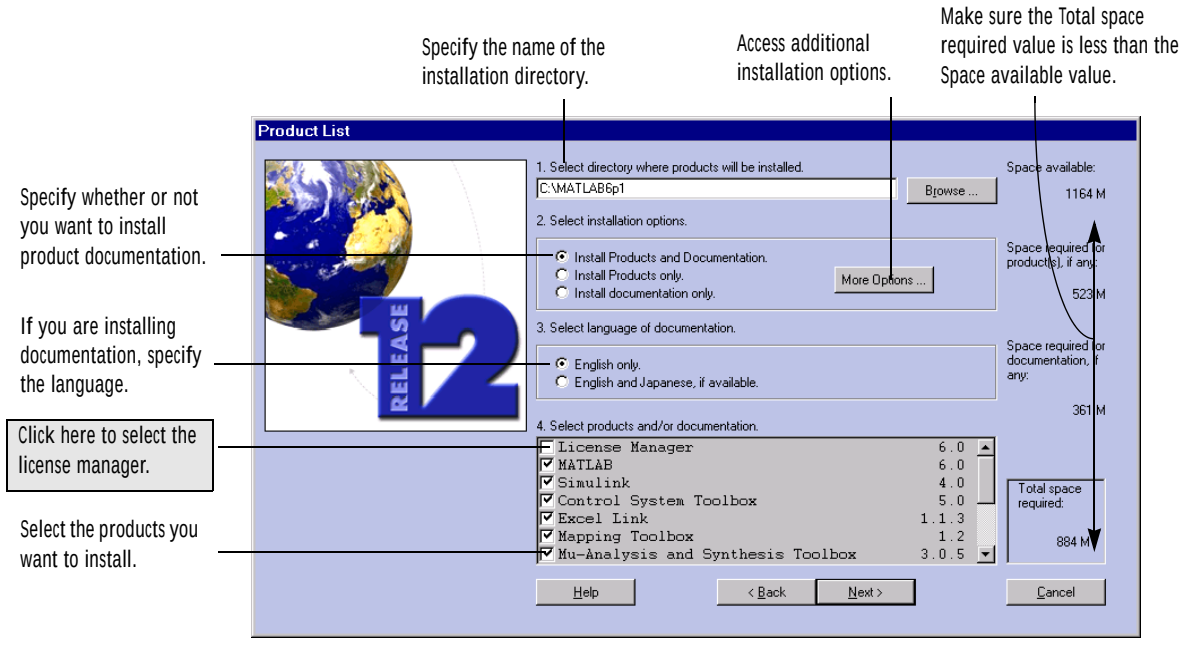
If you are also installing MATLAB on your license server, select the license manager and leave the other products selected in the **Product List** dialog box and click **Next**. The installer starts installing all the products you are licensed to install in the default directory, `C:\MATLAB6p1`.

You do not have to install the license manager on client systems in local client access configurations. See “Installing MATLAB on a Client System” on page 2-19 for more information.

You can also use the **Product List** dialog box to customize many aspects of the installation, including:

- “Specifying the Installation Directory” on page 2-14
- “Selecting Products” on page 2-14
- “Installing Documentation” on page 2-14
- “Creating a Read-Only Installation” on page 2-15

Note Before you select products, the installer asks if you want to connect to the MathWorks Web site, `www.mathworks.com`, to see if more up-to-date versions of the products you are installing, or new products that were released after the CD was produced, are available there. The installer provides a list of these new and updated products at the end of the installation. You must go to the Web site after the installation is complete to download the new or updated products. *The installer does not download the new or updated products.*



Specifying the Installation Directory. If you specify an installation directory, do not specify a directory name that contains spaces, an at (@) sign, or a dollar ($) sign. Also, you cannot have a directory named `private` as part of the installation path. If the directory that you specify does not exist, the installer creates it.

Note Always install MATLAB in a new directory, even if you are performing an upgrade installation.

Selecting Products. If you do not want to install a particular product, deselect it in the list by clicking on the check mark next to its name. If you deselect a component now, you can always install it later. See “Installing Additional Products” on page 1-23 for more information.

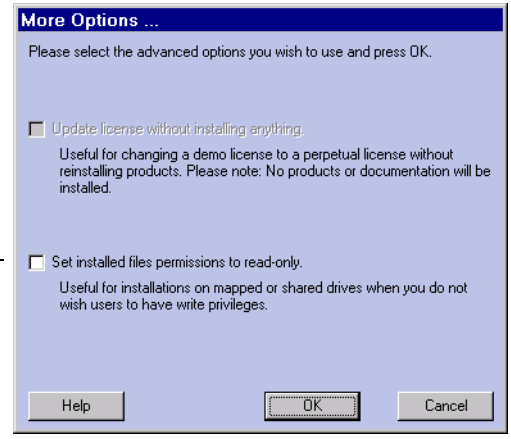
Installing Documentation. If you are installing the documentation, the installer prompts you to insert the documentation CD into your CD-ROM drive to

complete the installation. If you plan to view the documentation from the CD or install the documentation in a directory other than the MATLAB installation directory, choose the product-only option. See “Installing MATLAB Help Files in a Separate Directory” on page 2-21 for more information.

Note The installer does not install the PDF version of the documentation, only the HTML version. The PDF documentation is available on the CD or at the MathWorks Web site and is accessible through the Help browser.

Creating a Read-Only Installation. To set the file permission of all the installed files to read-only, click the **More Options...** button on the **Product List** dialog box. In the dialog box displayed, select the **Set installed files permissions to read-only** option. This option can be useful if you are installing MATLAB on a shared drive and want to protect the files from write access. (The **Update license** option is for standard installations only.)

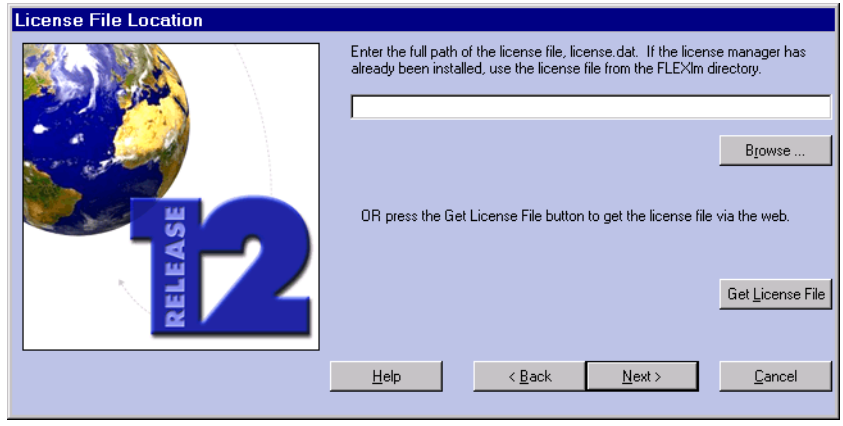
Use this option to create a read-only installation.



Step 6: Specify the Location of Your License File

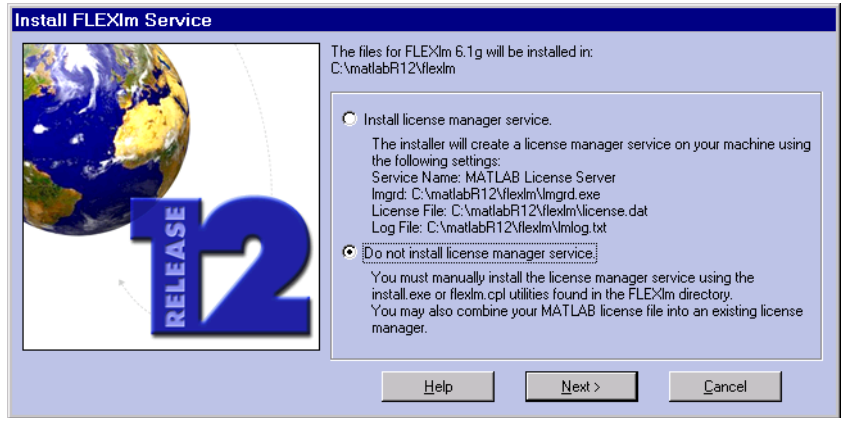
In the **License File Path** dialog box, specify the location of your License File. If you are installing the license manager, use the License File you created from the license e-mail. If you are installing MATLAB on a client system, see “Installing MATLAB on a Client System” on page 2-19 for instructions.

Note Specify the location of the License File you created from your license e-mail. See “Creating Your License File” on page 2-6 for more information.



Step 7: Install the License Manager as a Service

On Windows NT and Windows 2000 systems, the installer displays the **Install FLEXlm Service** dialog box. (On Windows 95, 98, and ME systems, the top option is disabled because these platforms do not support services.)

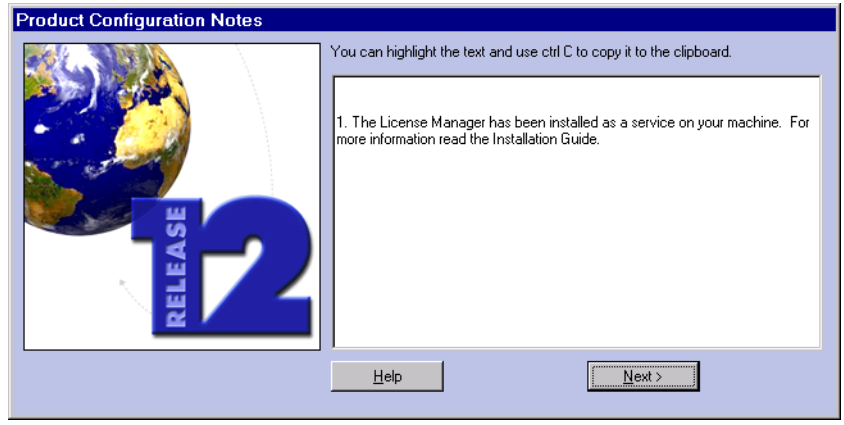


Installing the license manager as a service provides automatic startup at system boot time and centralizes administration of the license manager through the Windows **Services** control panel. If you choose not to install the license as a service, you can do it later. See “Installing the License Manager as a Service” in Chapter 3 for more information.

When you make your choice and click **Next,** the installer starts copying files into your installation directory. The installer indicates the progress of the installation in the **Install Status** window.

Step 8: Get Product Configuration Information (Optional)

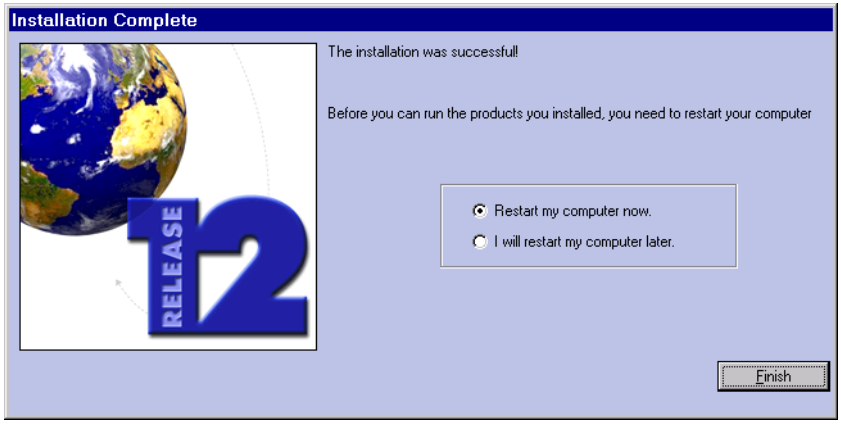
Depending on which products you selected, the installer may display a dialog box containing product-specific configuration information such as the following.



You can copy information from this dialog box, such as configuration commands, for use later when you start MATLAB. See “Configuring Certain Release 12.1 Products” on page 1-17 for more information.

Step 9: Complete the Installation

When the installer finishes, it displays the **Installation Complete** dialog box.



If you installed the license manager as a service, The MathWorks recommends that you restart your computer now. Restarting your computer starts the license manager, which must be running to start MATLAB. For more information, see “Starting and Stopping the License Manager” on page 3-15.

Note On Windows 2000 systems, if you do not start MATLAB while you have administrator privileges, users without administrator privileges will get a warning message each time they start MATLAB.

For information about setting up MATLAB after an installation, see “After You Install” on page 2-21.

Installing MATLAB on a Client System

This section describes how to install MATLAB on a PC client system in a local client access concurrent configuration. See “Local Client Access Configuration” on page 2-3 for information about this type of concurrent installation. The installation procedure on a client system is almost identical to the procedure on a server; however, there are some important differences.

This table lists all the steps in the concurrent installation procedure and notes where they are different on client systems. For more detailed information about any of the steps, go to the description of the step in “Installation Instructions” on page 2-10.

Concurrent Installation Procedure	Client Installation Notes
Perform the pre-installation tasks described in “Before You Install”	Same on client, except you do not have to stop the license manager
Step 1: Start the Installer	Same on client
Step 2: Enter Your Personal License Password (PLP)	Same on client. Use the same PLP for each client installation.
Step 3: Review the Software Licensing Agreement	Same on client
Step 4: Enter Your Name and Company Name	Same on client
Step 5: Select the Products You Want to Install	Do not select the license manager in the Product List dialog box. You do not need to install the license manager on client systems.
Step 6: Specify the Location of Your License File	Specify the location of the *processed* license file that was created during the license manager installation on the license server. See “Specifying the License File Location on Client Installations” for more information.
Step 7: Install the License Manager as a Service	Not applicable on client systems

Concurrent Installation Procedure	Client Installation Notes
Step 8: Get Product Configuration Information (Optional)	Same on client
Step 9: Complete the Installation	Start MATLAB and run a demo to verify your installation. Note that the license manager must be running on your license server before you can run MATLAB on a client.
Perform the post-installation tasks described in “After You Install” on page 2-21	Same on client

Specifying the License File Location on Client Installations

For MATLAB client installations, you must specify the location of the *processed* License File created by the installer during the license manager installation on the license server. (Processed license files contain the `SERVER` and `DAEMON` lines. See “License File” in Chapter 3 for more information.) This table lists the location of the processed license file on PC and UNIX license servers.

License Server Platform	Location of Processed License File on Server
PC	`$MATLAB\flexlm\license.dat`
UNIX	`$MATLAB/etc/license.dat`

In a client installation, the installer replaces the `DAEMON` line with the line `USE_SERVER`. The installer puts this version of the license file in the `$MATLAB\bin\win32` directory.

If your license server is a UNIX system, you must remove the UNIX line-ending characters from the `license.dat` file before using it on a PC. For example, on Sun systems, use the `unix2dos` utility to perform this function.

After You Install

For general information about starting MATLAB and other setup tasks you can perform after an installation, see “After You Install” on page 1-16. This section describes some post-installation tasks that are specific to concurrent installations, including:

- Reducing startup time for clients in remote client access configurations
- Installing MATLAB Help files on a central file server

Reducing Startup Time with Toolbox Path Caching

You can significantly reduce MATLAB startup time by using the MATLAB toolbox path cache. The toolbox path cache stores search path information for all toolbox directories under the MATLAB root directory.

This can be especially useful in a remote access client installation, where users access MATLAB over a network server. (See “Remote Client Access Configuration” on page 2-3 for more information.) During startup, MATLAB obtains path data from the cache rather than by reading it from the remote file system.

To use toolbox path caching, select **Preferences** from the MATLAB **File** menu. On the Preferences dialog box, select the General preferences panel and click the **Enable toolbox cache** check box. To learn more about toolbox path caching, click the **Help** button in the Preferences dialog box.

Note If you install additional toolboxes, you must regenerate the toolbox path cache by repeating the steps described above.

Installing MATLAB Help Files in a Separate Directory

In a concurrent installation, you may prefer to install MATLAB Help files in a central location and make them available, over the network, to client systems. This significantly reduces the amount of disk space required on each client system in local client access configurations.

To install MATLAB Help on a central file server:

1. Copy the `\help` directory and all of its contents from the MathWorks Documentation CD to a directory on your central file server. Copy the `\jhelp` directory if you need the Japanese language version of the help files.

2. Change the MATLAB Help preferences to specify the location of the Help files. Select **Preferences** from the MATLAB **File** menu and click **Help** to view the **Help Preferences** panel.

3

License Management

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The License Management Daemons 3-3
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Overview

Note The information in this section pertains to concurrent installations only. You do not need to read this section if you are performing a standard installation.

Using the MathWorks Installer, and following the instructions in Chapter 2, "Concurrent License Installation Procedure", you can set up a concurrent installation with little knowledge of license management. However, if you want to integrate MATLAB into an existing FLEXlm licensing scheme, you may require a more thorough understanding of license management.

This section describes:

- Important licensing components, such as the License File and the daemons that are used by FLEXlm
- 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 format in `$MATLAB\flexlm\enduser.pdf`, where `$MATLAB` is your installation directory.

Licensing Architecture

In a concurrent installation, The MathWorks uses a license manager program, called FLEXlm (a product of GLOBEtrotter Software, Inc.), to control access to its software. This section describes:

- The license management daemons
- The License File format and its processing by the installer
- Important license management files

In addition, this section describes how to:

- Run multiple versions of MATLAB
- Set up a License File when MATLAB shares a license manager with other applications
- Set up redundant license servers

Throughout this section, `$MATLAB` refers to your MATLAB installation directory.

The License Management Daemons

FLEXlm uses a group of processes, called daemons, running on a central server, to control access to software applications. In this section, this system is referred to as your license server.

License Manager Daemon

The main daemon is the license manager daemon (`lmgrd.exe`). This daemon is responsible for managing the initial communication between the licensed application and the vendor daemons associated with each application.

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 available for a particular application and for granting or denying access to the application, depending on the current usage of these license keys. The MathWorks vendor daemon is named `mlm.exe`.

When users start applications that use FLEXlm license management, the applications contact the license manager daemon running on the license

server, requesting permission to run the application. The license manager daemon forwards this request to the vendor daemon associated with the application that grants or denies the request.

License File

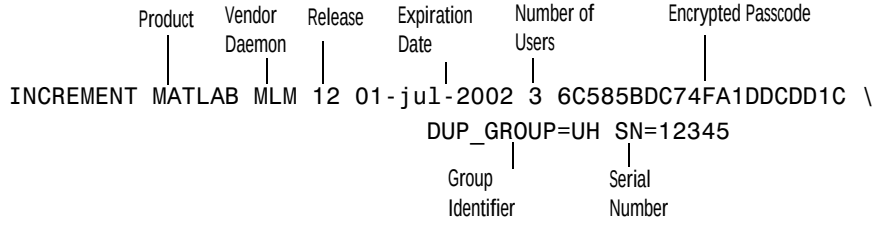
The MathWorks sends you, by e-mail or fax, the licensing information you need to be able to run the products in a concurrent configuration. You must create a License File, named `license.dat`, on your hard disk that contains this licensing information. You can create this file in any directory on your system. For more information about creating a License File, see "Creating Your License File" on page 2-6.

The license manager uses the License File to determine how many keys are available for each licensed product. MATLAB client installations use the License File to determine how to connect to the license server.

The following is a sample License File sent by The MathWorks.

```
# MATLAB license passcode file for use with FLEXlm 6.1g
# LicenseNo: 12345          HostID: 00600835a7ac
INCREMENT MATLAB MLM 12 01-jul-2002 3 6C585BDC74FA1DDCDD1C \
  DUP_GROUP=UH SN=12345
INCREMENT SIMULINK MLM 12 01-jul-2002 2 9C18FB9CF1CA873C2CB4 \
  DUP_GROUP=UH SN=12345
INCREMENT Control_Toolbox MLM 12 01-jul-2002 1 \
  3CE88B0CAF04679953EA DUP_GROUP=UH SN=12345
INCREMENT Identification_Toolbox MLM 12 01-jul-2002 1 \
  5C18BB4C1F2326817E04 DUP_GROUP=UH SN=12345
```

License Files contain one or more `INCREMENT` lines that itemize the products you are licensed to use. Each `INCREMENT` line has this format. (The `INCREMENT` lines in your License File may not include every element.)



License File Processing on a License Server

When you install the license manager as part of a concurrent installation, the installer processes your License File, adding information about the location of the license server and daemon. After processing the file, the installer puts a copy of the License File in the `$MATLAB\flexlm` directory.

In this sample processed License File, note the addition of the `SERVER` and `DAEMON` lines.

```
# MATLAB license passcode file for use with FLEXlm 6.1g
# LicenseNo: 12345         HostID: 00600835a7ac
SERVER smithj 00600835a7ac 27000
DAEMON MLM C:\matlab6p1\flexlm\mlm.exe
INCREMENT MATLAB MLM 12 01-jul-2002 3 6C585BDC74FA1DDCDD1C \
  DUP_GROUP=UH SN=12345
INCREMENT SIMULINK MLM 12 01-jul-2002 2 9C18FB9CF1CA873C2CB4 \
  DUP_GROUP=UH SN=12345
INCREMENT Control_Toolbox MLM 12 01-jul-2002 1 \
  3CE88B0CAF04679953EA DUP_GROUP=UH SN=12345
INCREMENT Identification_Toolbox MLM 12 01-jul-2002 1 \
  5C18BB4C1F2326817E04 DUP_GROUP=UH SN=12345
```

The `SERVER` line identifies the system on which the license manager is running, using the format

```
SERVER hostname HostID TCP_PortNumber
```

Note The `HostID` in the `SERVER` line must match the `HostID` in the commented section of the License File.

In the example above, the host name is `smithj`, the Host ID is `00600835a7ac`, and the port number is `27000`. The TCP port number identifies the port to use for communication with the daemons. Do not change this number unless you know it conflicts with other software.

The `DAEMON` line identifies the MathWorks vendor daemon, `MLM`, and the fully specified path to the daemon executable.

```
DAEMON MLM C:\matlab6p1\flexlm\mlm.exe
```

License File Processing on Client Systems

In client installations in concurrent configurations, you specify the name of the processed License File in the **License File Path** dialog box during the installation procedure. The installer deletes all the `INCREMENT` lines and the `DAEMON` line in the License File and replaces them with a single line: `USE_SERVER`.

On client systems, the installer puts the processed License File (`license.dat`) in the `$MATLAB\bin\win32` directory.

If you use your original License File instead of the processed License File, the installer proceeds with the installation, creating a template License File in `$MATLAB\bin\win32`. You cannot run MATLAB until you edit this License File, adding the `SERVER` line from the processed License File.

Running Multiple Versions of MATLAB

If you want to continue running a previously installed version of MATLAB after you install MATLAB 6.1, note the following:

- The previously installed version of MATLAB must be 5.2.x or higher.
- Both versions of MATLAB must use the latest version of the license manager (FLEXlm). MATLAB 6.1 requires FLEXlm 6.1g.
- Replace the processed License File that your previous MATLAB installation uses with the processed License File created during the installation of MATLAB 6.1.

Note Because MATLAB 6.0 (R12) and MATLAB 6.1 (R12.1) both use FLEXlm 6.1g, you can run both versions of MATLAB on the same system without reinstalling the license manager. For earlier releases of MATLAB, you must reinstall the license manager.

To set up this configuration, follow these instructions:

1. Shut down your previously installed version of MATLAB.
2. Stop the license manager. (See “Starting and Stopping the License Manager” on page 3-15.)

3 Remove the license manager service. (See “Installing the License Manager as a Service” on page 3-16.)

4 If your existing MATLAB installation is version 5.2.x or 5.3.x, you must reinstall the license manager, using the procedure described in “Concurrent Installation Procedure” in Chapter 2. At step 7 in the installation procedure, install the license manager as a service and start the license manager service. (See “Starting and Stopping the License Manager” on page 3-15.)

5 Install MATLAB 6.1 on your client systems. (See “Installing MATLAB on a Client System” on page 2-19.)

6 Replace the License File used by your existing MATLAB client installations with the License File created by the installer during the new client installations. This table lists the License File locations for different MATLAB releases.

MATLAB Version	Location of License File
MATLAB 6.x	`$MATLAB\bin\win32\license.dat`
MATLAB 5.2.x or 5.3.x	`$MATLAB\bin\license.dat`

If your existing installation is MATLAB 6, replace the `license.dat` file in the `$MATLAB\bin\win32` directory with the file from the same directory in your new installation. If your existing installation is MATLAB 5.2.x, replace the `license.dat` file in the `$MATLAB\bin` directory.

Running MATLAB with Other FLEXlm Applications

If you have another application that uses FLEXlm for license management, you can share a single license manager, or run separate license managers either on the same or different hosts. (For more information, go to the Support page at the MathWorks Web site and see Technical Support solution 20746.)

Sharing a Single License Manager

To share a license manager, combine the `DAEMON` and `INCREMENT` lines from both License Files into a single License File. Use only one of the `SERVER` lines and install the license manager on that host. If MATLAB and the other application

are using different versions of the FLEXlm software, run the newer version of the license server.

For further information, see the GLOBEtrotter Web page at `www.globetrotter.com` or the *FLEXlm End User Manual*, available in PDF form in `$MATLAB\flexlm\enduser.pdf`.

Running Separate License Managers

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

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 systems are designated to be license servers. All three systems must be running at the time the license manager is started. However, once the license manager is running, only two systems 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. When choosing servers, keep 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 system 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 system fails, the next server listed in the License File becomes primary.
- The servers should be running supported versions of their operating systems.

License Files in Redundant Configurations

Once you have chosen the servers, determine the Host IDs of each server and provide them to The MathWorks when you request your License File. The MathWorks will generate an appropriate License File.

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 27000
SERVER piglet 7275caa1 27000
SERVER rabbit 72701448 27000
DAEMON MLM /usr/local/matlabr6p1/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
```

Note After you install the license manager on all the server systems in the redundant configuration, you must edit the processed License File, `$MATLAB\flexlm\license.dat`, created during these installations. The installer only adds the first SERVER line to the License File during the installation. You must add the additional SERVER lines. Make sure to include the names, Host IDs, and IP addresses of the other systems in the redundant configuration in these additional SERVER lines, as shown in the example. Put a copy of this edited License File in the `$MATLAB\flexlm` directory on all of the systems in the redundant configuration.

Starting License Manager Daemons in Redundant Configurations

You must start the license manager on each system in the redundant configuration and wait for the license manager daemons on the three systems 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.

Important License Management Files

This table summarizes all the important filenames involved in license management.

Component	Name and Location
FLEXlm documentation	`$MATLAB\flexlm\enduser.pdf`
License File	On servers, after installation: `$MATLAB\flexlm\license.dat` On clients, after installation: `$MATLAB\bin\win32\license.dat`
License management tools	`$MATLAB\flexlm\lmutil.exe`
License management tools control panel	`$MATLAB\flexlm\flexlm.cpl`
License manager daemon	`$MATLAB\flexlm\lmgrd.exe`
License manager log file	`$MATLAB\flexlm\lmlog.txt`
Vendor daemon	`$MATLAB\flexlm\mlm.exe`

Performing Common License Management Tasks

MATLAB concurrent installations include a set of license management tools provided by FLEXlm. Using these tools you can:

- Monitor the status of all network licensing activities
- Start up and shut down all license daemons, both the license manager (`lmgrd.exe`) and all vendor daemons on the license server node
- Determine the Host ID of a system
- Change the default name of the license manager log file

The following sections describe how you can access these tools by using:

- The MS-DOS command line (`lmutil.exe`)
- A graphical user interface (GUI) (`lmtools.exe`)
- A control panel interface (`flexlm.cpl`)

This section also includes specific information about:

- Starting and stopping the license manager
- Installing the license manager as a service

Note You must run these tools on the system on which the license manager is running.

Using the Command Line

All the FLEXlm license management tools are packaged into a single executable called `lmutil.exe`. The installer puts this program in the `$MATLAB\flexlm` directory.

You invoke each separate tool using the format

```
lmutil command
```

where `command` is the name of the individual tool.

For example, to monitor the status of network license activity, you can use the `lmstat` tool.

Note In this example, note the use of the `-c` flag to specify the location of the License File. You must specify this flag with every tool invoked through `lmutil.exe`.

```
lmutil lmstat -a -c C:\matlab6p1\flexlm\license.dat

lmutil - Copywright (C) 1989-1999 Globetrotter Software, Inc.
Flexible License Manager status on Friday 11/1/2000 15:17

License server status: 27000@smithj
    License File(s) on smithj: C:\matlab6p1\flexlm\license.dat:

smithj: license server UP (MASTER) v.6.1

Vendor daemon status (on smithj):
    MLM: UP v6.1

Feature usage info:

Users of MATLAB: (Total of 1 licenses available)
  "MATLAB" v12, vendor: MLM
  floating license
  jsmith smithj smithj (v12)(smithj/27000 103),start Fri 11/15.07

Users of SIMULINK: (Total of 1 licenses available)

Users of Control_Toolbox: (Total of 1 licenses available)

Users of Identification_Toolbox: (Total of 1 licenses available)
```

To view a list of all the tools available through `lmutil.exe`, open a **Command Prompt** window, go to the `$MATLAB\flexlm` directory and type

```
lmutil
```

The following table lists the names of the most useful tools available through `lmutil`.

Utility	Description
`lmdiag`	Diagnose license checkout problems
`lmdown`	Shut down all license daemons (both `lmgrd` and all vendor daemons) on the license server node.
`lmhostid`	Report the Host ID of a system
`lmreread`	Make the license manager daemon reread the License File and start any new vendor daemons
`lmstat`	Display the status of all network licensing activities
`lmswitchr`	Switch the report log file
`lmver`	Determine the FLEXlm version of a library or binary file

The `lmutil.exe` listing includes brief syntax descriptions for most of the tools. For more detailed information, see the *FLEXlm End User Manual*, included in PDF format in your MATLAB installation (`$MATLAB\flexlm\enduser.pdf`).

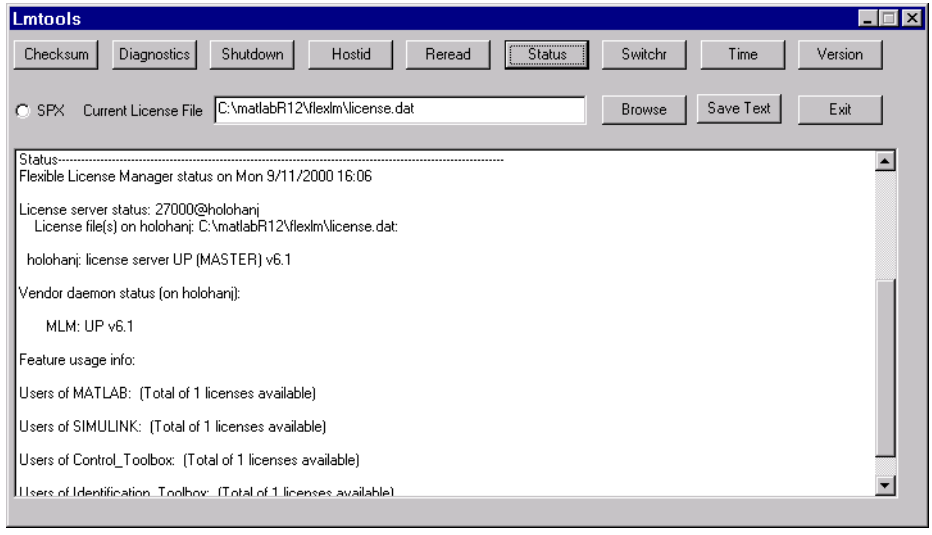
Using the lmtools.exe GUI

FLEXlm provides a graphical user interface (GUI) to its license management tools. To invoke this GUI, double-click on the `lmtools.exe` file in the `$MATLAB\flexlm` directory. The GUI uses buttons to provide access to the same set of tools as `lmutil.exe` and displays the results returned in an integrated display window.

Note When using the `lmtools` GUI, you must specify the location of the License File in the **Current License File** field.

For example, to use the `lmtools` GUI to monitor the status of network license activity, click the **Status** button. `lmtools` prompts you to further qualify your

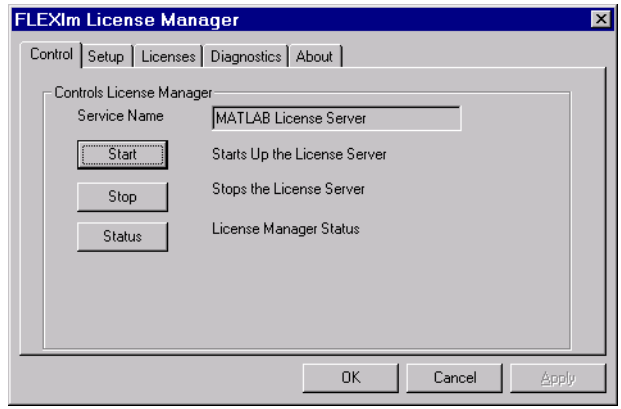
status request to a particular daemon or feature. By default, `lmtools` displays the same information as if you had entered `lmutil lmstat -a`.



See “Using the Command Line” on page 3-11 for more information about the tools.

Using the FLEXlm Control Panel

FLEXlm provides access to its license management tools in a tabbed, control panel GUI format. To start the control panel, go to the `$MATLAB\flexlm` directory, right-click on the file `flexlm.cpl`, and select **Open with Control Panel**. The control panel provides access to the same set of tools as `lmutil.exe`.



Starting and Stopping the License Manager

On Windows NT and Windows 2000 systems, if you installed the license manager as a service, you can start it by rebooting your system. As a service, it gets started automatically at system boot time.

You can also start or stop the license manager using:

- The **Services** control panel
- The **FLEXlm License Manager** control panel

Using the Services Control Panel

To start or stop the license manager on a Windows NT or Windows 2000 system using the **Services** control panel:

- Click on the **Start** menu.
- Select the **Settings** option.
- On the **Settings** menu, select the **Control Panel** option.
- In the **Control Panel** dialog box, double-click on the **Services** control panel icon, on NT systems. On Windows 2000 systems, double-click on **Administrative Tools** and then double-click on **Services**.

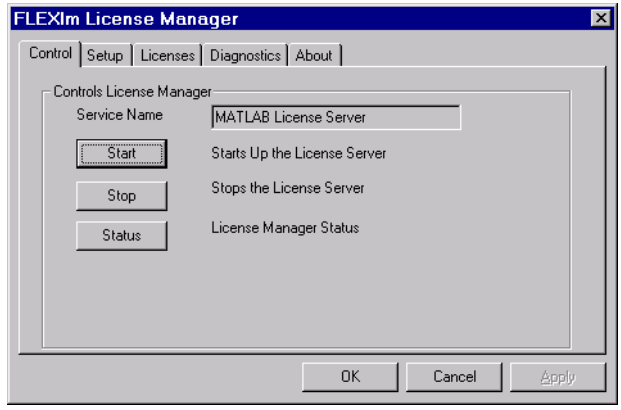
In the **Services** control panel, scroll through the list of services and look for the **MATLAB License Server** entry. The Status field of the license manager entry should be **Started** and the Startup field should be **Automatic**. To start or stop

the license manager, select it in the list of services and click the appropriate button in the **Services** control panel.

Using the FLEXlm Control Panel

To start or stop the license manager on any Windows system, using the **FLEXlm License Manager** control panel (`flexlm.cpl`), follow this procedure:

1. Move to the `$MATLAB\flexlm` directory, where `$MATLAB` represents your MATLAB installation directory.
2. Right-click on the `flexlm.cpl` file and select **Open with Control Panel**.
3. In the **FLEXlm License Manager** control panel, click the **Control** tab. On this panel, click on the appropriate button to start, stop, or obtain status information about the license manager.



Installing the License Manager as a Service

The installer gives you the option of installing the license manager as a Windows NT service. (See “Step 7: Install the License Manager as a Service” on page 2-16.) Installing the license manager as a service provides for automatic startup at system boot time and centralizes administration of the license manager through the Windows **Services** control panel.

If you choose not to install the license manager as a service during installation, you can do it later using the `install.exe` program or the **FLEXlm License**

Manager control panel, which are both available in the `$MATLAB\flexlm` directory.

Note If you choose not to install the license manager as a service, you will have to start the license manager manually each time you want to run MATLAB. See "Starting and Stopping the License Manager" in Chapter 3 for more information.

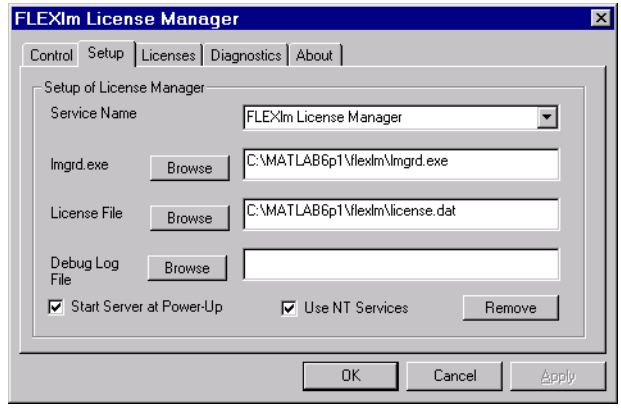
Using the FLEXlm Control Panel

To use the **FLEXlm License Manager** control panel (`flexlm.cpl`) to install the license manager as a Windows service, follow this procedure:

1. Move to the `$MATLAB\flexlm` directory, where `$MATLAB` represents your MATLAB installation directory.

2. Right-click on the `flexlm.cpl` file and select **Open with Control Panel**.

3. In the FLEXlm control panel, click the **Setup** tab. Specify the full path of the license manager daemon (`lmgrd.exe`) and the processed license file. You can also specify the name and location of the license manager log file. Select the **Use NT Services** check box and, if you want the license manager to start automatically each time your system starts, click the **Start Server at Power-Up** check box.



4 Click **OK**.

Using install.exe

To use `install.exe` to install the license manager as a service, follow this procedure:

1 Open a **DOS Command Prompt** window.

2 Move to the `$MATLAB\flexlm` directory, where `$MATLAB` represents your MATLAB installation directory.

3 Enter the command

```
install -c $MATLAB\flexlm\license.dat -e $MATLAB\flexlm\lmgrd.exe
```

where the `-c` flag specifies name of your processed license file and the `-e` flag specifies the name of the license manager daemon.

Note You must always specify the `-e` flag.

You can also use `install.exe` to perform other license manager administration tasks, such as:

- Specifying the name of the service as it will appear in the Windows **Services** control panel, using the `-n` flag
- Removing the license manager service, using the `-r` flag

By default, the license manager service is called the **MATLAB License Server** in the Windows **Services** control panel. To get more information about the syntax of the `install.exe` program, enter `install` at the command prompt.

Managing Your Licenses

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 (`www.mathworks.com`), 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 Host ID of your license server. See “Finding the Host ID on a Windows System” on page 2-7 to learn how to find your Host ID.

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.

4

Troubleshooting a PC Installation

Introduction 4-2

Problems During Installation 4-3

License Manager Error Messages 4-5

Troubleshooting an Installation That Uses Dongles . . 4-14

Introduction

This chapter provides information that can help you solve common problems that occur with an individual installation or a concurrent installation.

If you cannot find a description here that matches your problem, try these options:

- Check the *Release Notes* that you received with your MATLAB products. This document contains the most up-to-date information about products and installation procedures.
- Check the Installation Wizard for general help or search the Tech Support Knowledge Base for help with a specific license manager error number. Both are available on the Support page at the MathWorks Web site, `www.mathworks.com`.

Problems During Installation

This section provides answers to some problems commonly encountered during installation.

Note If the installer appears to hang, you may want to turn off any virus checking software you are running on your system and restart the installer.

Unable to Start the Installer: Missing Java Class File

The installer requires the Microsoft Java Virtual Machine (JVM). When the installer starts, it checks to make sure you have the version of the JVM that it requires. If it detects that you do not have the version it needs, it prompts you to install it and exits.

Sometimes, your system may have some of the correct JVM files but not all of them. In this case, the installer starts but displays this error message.

```
Unable to start the application - the class file could not be
loaded.
```

To solve this problem, run the Microsoft JVM installer (`msjavx86.exe`) that is included with the MATLAB package in the `\MSutils` subdirectory of the top-level CD directory. If you are running the Japanese version of Microsoft Windows, run `jmsjavx86.exe`.

Invalid Personal License Password

During installation, you must enter your PLP. If your PLP is invalid, you cannot continue with the installation. Check that:

- You entered your PLP in the **Personal License Password** dialog box. Do not confuse your License Number with your PLP. A PLP is a series of five-digit numbers, prefixed by a 2-digit release code, such as:

  ```
  12-12345-12345-12345-12345
  ```

- You have a current PLP. PLPs are version-specific. Do not use an old PLP with a new version of MATLAB.

For information about troubleshooting License File issues, see “License File” on page 3-4.

License File Could Not Be Updated

You can receive this error message when you are using the installer to update your licenses. (This installer option is available on the **More Options...** dialog box.)

There are two reasons why you received this message:

- The license file (`license.dat`) in the `$MATLAB\bin\win32` directory is invalid.
- You have multiple valid license files in the specified directory (e.g., `demo.lic` and `license.dat`).

Failure Overwriting an Existing Toolbox

Stop any versions of MATLAB or a toolbox that may be running before attempting to run the installation procedure.

License Manager Error Messages

After a successful installation, you may encounter problems starting MATLAB. Many of these problems have their root in the license manager used by the MathWorks products, FLEXlm. This section provides information about some of the more common license manager errors, listed in this table by error number.

License Manager Error
"License Manager Error -2: Invalid License File Syntax" on page 4-6
"License Manager Error -3: Cannot Connect to a License Server" on page 4-7
"License Manager Error -5: License Checkout Failed. No Such Feature Exists." on page 4-7
"License Manager Error -8: Invalid (Inconsistent) License Key" on page 4-8
"License Manager Error -9: Invalid Host. License Checkout Failed." on page 4-8
"License Manager Error -10: Feature Has Expired" on page 4-9
"License Manager Error -11: License Checkout Failed. Invalid Date Format in License File." on page 4-9
"License Manager Error -12: License Checkout Failed. Invalid Return Data from License Server." on page 4-9
"License Manager Error -13: No SERVER Line in License File" on page 4-10
"License Manager Error -14: Cannot Find SERVER Hostname in Network Database" on page 4-10
"License Manager Error -15: Cannot Connect to License Server" on page 4-11
"License Manager Error -16" on page 4-11

License Manager Error
“License Manager Error -18: License Checkout Failed. License Server Does Not Support This Feature.” on page 4-11
“License Manager Error -21: License File Does Not Support This Version” on page 4-12
“License Manager Error -25: License Server Does Not Support This Version of This Feature” on page 4-12
“License Manager Error -83” on page 4-13
“License Manager Error -88” on page 4-13
“License Manager Error -97: License Checkout Failed” on page 4-13

It can also be helpful to view the FLEXlm log file, `lmlog.txt`, in the `$MATLAB\flexlm` directory. To get more information about a FLEXlm license manager problem, see the *FLEXlm End User Manual*, available in PDF format in `$MATLAB\flexlm\enduser.pdf` or go to the GLOBEtrotter Software, Inc. Web site, `www.globetrotter.com`.

Note You can also go to the support page on the MathWorks Web site, `www.mathworks.com`, and find information about a particular license manager error by searching the solution database by error number. For example, to find information about License Manager Error -15, enter “License Manager Error -15” in the search engine.

License Manager Error -2: Invalid License File Syntax

This error message typically indicates that there is a problem in your License File. On client systems, make sure your License File (`$MATLAB\bin\win32\license.dat`) has the following format.

```
SERVER host hostID port_num
USE_SERVER
```

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

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

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

To remedy this error, try the following.

- Make sure that the SERVER line in your License File matches the SERVER line in the License File on your license server. On client systems, the License File is $MATLAB\bin\win32\license.dat; on your license server, the License File is $MATLAB\flexlm\license.dat, where $MATLAB is the root MATLAB installation directory.

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

- Make sure the TCP port number at the end of the SERVER line in your License File is not already being used by another application. On NT systems, run the netstat -p tcp command from C:\WINNT\system32. If the local system appears on the Foreign Address list, then the port number listed is being used. Change the port number on the SERVER line to a port that is not being used. FLEXlm has reserved ports in the range 27000 to 27009. Restart the license manager after making this change.
- Make sure that you do not have multiple vendor daemons (mlm.exe) running. Check your FLEXlm log file ($MATLAB\flexlm\lmlog.txt) for the error "Multiple MLM Servers Running".

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

This message usually indicates that you are trying to use a product for which you are not licensed. Check your License File to see if you are licensed to use this product.

If you are licensed for this product, this error may be the result of having extra carriage returns in your License File. To avoid this, make sure that each line begins with either #, SERVER, DAEMON, or INCREMENT.

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

This error can also be caused by tab characters in the License File. Remove these tabs and replace with them spaces.

This error may also be the result of an incorrect system date. If your system date is set before the date that your license was made, you will get this error. See "License Manager Error -10: Feature Has Expired" on page 4-9 to learn how to reset the system date.

License Manager Error -8: Invalid (Inconsistent) License Key

This error message typically indicates that your License File, `$MATLAB\flexlm\license.dat`, has been corrupted. This can happen if the License File was edited or if an e-mail program inserted extraneous tabs or carriage returns in the `INCREMENT` lines.

One way to check for extraneous tabs and carriage returns is to open your License File in a text editor and view all nonprinting characters. Remove all the tab characters and all carriage returns that are not at the end of a line.

Check that the contents of your License File matches the license data sent you by The MathWorks.

License Manager Error -9: Invalid Host. License Checkout Failed.

If you get this error on a system running an individually licensed MATLAB, make sure you are running MATLAB on the same system it was installed on. The MathWorks locks a license to a particular system.

You can also get this error if you replaced your hard drive or changed the partition on an existing hard drive. To remedy this situation, rerun the installer. At "Step 5: Select the Products You Want to Install" on page 1-10, click on the **More Options...** button on the **Product List** dialog box and select the **Update license** option. This option updates your license without requiring that you reinstall MATLAB.

You can also get this error if you try to clone a Release 12.1 installation from one system to another.

License Manager Error -10: Feature Has Expired

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

Check the expiration date on each of the `INCREMENT` lines in your License File. If the dates in the license file have already passed, contact the Customer Service department at The MathWorks (through the Web or through e-mail at `service@mathworks.com`). When contacting The Mathworks, include your License Number and the Host ID of your license server.

If none of your product licenses has expired, check that your system date and time are correct:

1. Click on the **Start** menu.
2. Choose **Settings**.
3. Click on **Control Panel**.
4. Choose **Date/Time**.

License Manager Error -11: License Checkout Failed. Invalid Date Format in License File.

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

You can also get this error if the space character between the number of users field and the 20 digit encryption code in the `INCREMENT` line is missing. Compare the `INCREMENT` lines in your license file with the `INCREMENT` lines in your original license e-mail. They must be exactly the same.

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

License Manager Error -12: License Checkout Failed. Invalid Return Data from License Server.

This error can be caused by your network setup. When the license manager tries to connect to the server, the DNS Server does not find it because it does not add the domain name suffix into the search.

If *all* of your client systems are having this problem, change the name of the server in the SERVER line to the fully qualified name:

1. Change the SERVER line in all `license.dat` files on your network, which are located in `$MATLAB\bin\win32`, to have the fully qualified name of the server.
2. Restart the license manager on the server. (See "Starting and Stopping the License Manager" on page 3-15.)

If only *some* of the clients in your concurrent installation are having this problem, edit the TCP/IP Hosts file on your client systems:

1. Open the file, `C:\WinNT\system32\drivers\etc\hosts`
2. Add the hostname of your license server to this file. You can find your license server information in the SERVER line of your `license.dat` file.

   For example, if your SERVER line looks like this,

   ```
   SERVER hostname INTERNET=128.36.2.12 27000
   ```

   Add the following line to your TCP/IP Hosts file.

   ```
   128.36.2.12 hostname
   ```
3. Save the changes to the TCP/IP Hosts file.

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

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

To remedy this problem, run the installer again or manually edit the License File, `$MATLAB\flexlm\license.dat`, adding the SERVER line. See "License File" on page 3-4 for information about the format and contents of the SERVER line.

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

If this error occurs on a client system, check to make sure that the hostname on the SERVER line in the `license.dat` file on your client system matches the hostname on the SERVER line in your `license.dat` file on your license server. Edit the SERVER line in the client `license.dat` file, if necessary.

Also, make sure that the server's hostname, included in the SERVER line, is listed in the C:\WINNT\system32\drivers\etc\hosts file for Windows NT.

License Manager Error -15: Cannot Connect to License Server

This error message can have several causes but the most common cause is that the license manager isn't running on your license server.

Verify that both the license manager daemon and the vendor daemon processes, lmgrd and mlm, are running. You can check this via the Task Manager, which can be accessed by pressing the **Ctrl+Alt+Delete** key sequence. Run these commands on the system on which your license manager is running.

If the license manager isn't running, see "Starting and Stopping the License Manager" on page 3-15 for information about starting it.

License Manager Error -16

This error indicates that the path to the MATLAB vendor daemon, mlm.exe, is incorrect in your License File DAEMON line. See "License File" on page 3-4 for an example of a DAEMON line.

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

The most common cause of this error is updating your License File without restarting your license manager. Restart your license manager and then try to start MATLAB. See "Starting and Stopping the License Manager" on page 3-15.

If you get this error on a client system, but not your license server, the License File on the client probably needs to be updated. Copy the License File from the server onto the your client system ($MATLAB\bin\win32).

Here are some other possible solutions to this error:

- Make sure the INCREMENT lines in your license.dat file are exactly as they appeared in the original license e-mail you received from The MathWorks.
- Make sure the DAEMON line in your license.dat file identifies the correct license manager daemons, especially if you have multiple MATLAB installations on your system.

- Make sure the TCP port number at the end of the SERVER line in your license.dat file is not already being used by another application. Use the command netstat to show the status of all ports that are in use.

  On NT systems, run the netstat -p tcp command from C:\WINNT\system32. If the local system appears on the Foreign Address list, then the port number listed is being used. Change the port number on the SERVER line to a port that is not being used. FLEXlm has reserved ports in the range 27000 to 27009. Restart the license manager after making this change.
- Make sure the Host ID or IP Address listed in the commented section in the license.dat file matches the Host ID or IP Address in the SERVER line. If you are trying to run the license manager on a different system than the one that the license was generated for, you will need to get a new License File from The MathWorks.

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

If you are getting this error on your license server, make sure you have upgraded your FLEXlm version to FLEXlm 6.1g from the MATLAB R12.1 Product CD. Release 12.1 License Files will not work with the older FLEXlm versions.

If you have updated an existing license.dat file with new Release 12.1 passcodes, you still need to install FLEXlm 6.1g from the MATLAB R12.1 CD.

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

```
SERVER host hostname port_num
USE_SERVER
```

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

Also, make sure you are using your Release 12.1 license and not a license from a previous release.

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

This error indicates that you are trying to run MATLAB 6.1 with an old license. You must update your license.dat file with your new license passcodes.

If you do not have your MATLAB Release 12.1 license, contact Customer Service at The MathWorks.

License Manager Error -83

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

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

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

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

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

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

License Manager Error -88

This error indicates that your system clock has been set incorrectly. Check that your system date and time are correct. To learn how to change the system date, see “License Manager Error -10: Feature Has Expired” on page 4-9.

License Manager Error -97: License Checkout Failed

This error is often caused by trying to run both MATLAB 5.3 and MATLAB 6.1 on the same system with different license managers. If this is the case, run both copies of MATLAB with the same License File. See “Running Multiple Versions of MATLAB” on page 3-6 for more information.

If you are not trying to run MATLAB 5.3 but only want to run MATLAB 6.1, make sure you have installed FLEXlm version 6.1g from the MATLAB R12.1 CD. MATLAB 6.1 will not run with an older version of the license manager.

Troubleshooting an Installation That Uses Dongles

If your MATLAB installation requires the use of dongles, it can potentially run into conflicts with other applications you may be running that also use dongles. A dongle is a hardware-based security device that attaches to the serial or parallel printer port of a desktop computer. It uses embedded codes and passwords to control access to software applications.

MATLAB requires a certain set of dongle drivers. You cannot use other dongles with MATLAB. Also, if you remove other applications from your computer, these applications may delete the MATLAB dongle drivers as well as their own.

To help troubleshoot problems with dongles, MATLAB includes a utility program call `dongleutil.exe`. The dongle utility program can be used to:

- Determine the version of the currently installed dongle drivers. This information is useful to the MathWorks Technical Support.
- Specify the version of the dongle drivers required by MATLAB.
- Install the dongle drivers required by MATLAB.

If an installation uses dongles, the installer includes the `dongleutil.exe` utility in the `$MATLAB\bin\win32` directory, where `$MATLAB` represents your MATLAB installation directory.

5

MATLAB Directory Structure

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MATLAB Installation Directory Structure

After installation, your MATLAB installation directory contains:

- A text file, named `license.txt`, which contains the MATLAB software license agreement
- A shortcut to the MATLAB executable
- The subdirectories listed below

Note Your installation may not include all the subdirectories listed.

`\BIN\WIN32`	The MATLAB binary and associated files
`\DEMOS`	MATLAB demonstration programs
`\EXTERN`	Tools for building external interfaces to MATLAB
`\FLEXLM`	The FLEXlm license manager, license management utilities
`\HELP`	Help system
`\JA`	MATLAB internationalization files
`\JAVA`	MATLAB Java Jar files
`\NOTEBOOK`	MATLAB Notebook
`\SYS`	Tools and operating system libraries that MATLAB depends on
`\TOOLBOX`	The MATLAB toolboxes
`\UNINSTALL`	The MATLAB Uninstaller program
`\WORK`	Default initial current directory

MATLAB Subdirectories

The subdirectories and their contents are listed below.

MATLAB\BIN\WIN32

`LICENSE.DAT`	Processed License File on client systems
`MATLAB.EXE`	The MATLAB executable file
`*.DLL, *.EXE, *.BAT`	Miscellaneous files

MATLAB\EXTERN

`\EXAMPLES`	Examples of using the C and Fortran application program interface
`\INCLUDE`	Header files for the External Interface library
`\LIB`	Libraries required for compilers
`\SRC`	C source files for inclusion in MEX building

MATLAB\SYS\GHOSTSCRIPT

`\BIN`	The GhostScript binary
`\FONTS`	GhostScript versions of PostScript fonts
`\PS_FILES`	PostScript initialization and configuration files

MATLAB\SYS\PERL\WIN32

The full ActiveState Perl distribution

MATLAB\TOOLBOX\LOCAL

Local environment M-files

MATLAB\TOOLBOX\MATLAB

\AUDIO	Sound I/O commands
\DATAFUN	Data analysis and Fourier transform functions
\DATATYPES	Data types and structures
\DEMOS	Demonstrations and samples
\ELFUN	Elementary math functions
\ELMAT	Elementary matrices and matrix manipulation
\FUNFUN	Function functions – nonlinear numerical methods
\GENERAL	General purpose commands
\GRAPH2D	Two-dimensional graphs
\GRAPH3D	Three-dimensional graphs
\GRAPHICS	General-purpose graphics commands
\IOFUN	Low-level file I/O functions
\LANG	Language constructs and debugging
\MATFUN	Matrix functions – numerical linear algebra
\OPS	Operators and special characters
\POLYFUN	Polynomial and interpolation functions
\SPARFUN	Sparse matrix functions
\SPECFUN	Specialized math functions
\SPECGRAPH	Specialized graphs
\STRFUN	Character string functions
\TIMEFUN	Time, date, and calendar functions
\UITOOLS	User interface utilities
\VERCTRL	Version control functions
\WINFUN	Window functions

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