



Administrator's Guide

Mathcad 14.0

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About the *Administrator's Guide*

- ◆ How to Read This Manual
- ◆ Before You Install

How to Read This Manual

This *Administrator's Guide* is written primarily for the system administrator — the person responsible for installing and maintaining Mathcad and any FLEXnet server administering Mathcad licenses. It assumes you have a basic familiarity with Windows and network administration.

For Mathcad installation, this *Administrator's Guide* targets the Windows XP platform. Dialog titles, menu options, and other elements mentioned in this Guide reflect Windows XP navigation and object names.

For the System Administrator

The following sections contain important information for persons installing and administering Mathcad and FLEXnet:

<i>Before You Install</i>	An introduction to the concepts covered and terminology used in this manual (see page 2.)
<i>Installing Mathcad</i>	Instructions for performing an installation of Mathcad (see page 7.)
<i>Installing Internet Explorer and Adobe Reader</i>	Instructions for installing Internet Explorer and Adobe Reader, included on the Mathcad CD (see page 11.)
<i>License Management</i>	Instructions for installing and configuring a FLEXnet license server (see page 12.)

For the End User

End-users of Mathcad should refer to the *User's Guide* as their primary source of information, although the following sections of this guide may be of interest as well:

<i>Before You Install</i>	An introduction to the concepts covered and terminology used in this manual (see page 2).
<i>Installing Internet Explorer and Adobe Reader</i>	Instructions for installing Internet Explorer and Adobe Reader, included on the Mathcad CD (see page 11).
<i>Borrowing Licenses</i>	Using Mathcad while disconnected from a FLEXnet server (see page 24).

Other Sources of Information

The following other sources of information may prove helpful as you install, configure, and license Mathcad across your enterprise.

- The *FLEXnet End User Guide*: how to configure a FLEXnet installation:
http://www.macrovision.com/pdfs/flexnet_licensing_end_user_guide.pdf
- The *PTC Customer Support Site*: how to obtain and manage Mathcad licenses:
<http://www.ptc.com/olm/index.htm>
- The *Mathcad Knowledge Base*: a listing of known issues with Mathcad and licensing, their causes, and applicable solutions (login required):
<http://www.ptc.com/support/index.htm>
- The updated *Release Notes* for Mathcad: last-minute changes to the product and documentation:
<http://www.ptc.com/appserver/cs/doc/refdoc.jsp>
- The *Mathcad Licensing FAQ*: additional information on administering Mathcad licenses:
http://www.ptc.com/support/mathcad_licensing.htm
- The *Pro/ENGINEER® Wildfire™3.0 Installation and Administration Guide*: additional information about installing and using FLEXnet, including information on using FLEXnet on platforms other than Windows.
<http://www.ptc.com/WCMS/files/42725/en/DOC-U0134A-EN-350.pdf>

Technical Support

Contact PTC Technical Support if you encounter problems using the software. Contact information for PTC Technical Support is available on the PTC Customer Support Site.

<http://www.ptc.com/support/>

You must have a Service Contract Number (SCN) to receive technical support. If you do not have an SCN, contact PTC using the instructions found in the *PTC Customer Service Guide* under “Technical Support.”

http://www.ptc.com/support/cs_guide

Comments

We welcome your suggestions and comments on our documentation. Please submit your feedback to **mathcad-doc@ptc.com**.

When you submit feedback, remember to include the release number and name of the documentation piece with your comments.

Before You Install

CD Contents

The Mathcad CD contains the following software for use on computers running a supported version of the Microsoft Windows operating system:

- **The installation program for Mathcad 14.** This package contains the Mathcad program; associated online Help; Resources worksheets; the *Data Analysis*, *Image Processing*, *Signal Processing*, and *Wavelets* Extension Packs; and electronic (PDF) versions of the *Mathcad User's Guide*, this *Administrator's Guide*, *Customer Service Guide*, and *Release Notes*.
- **The installation program for FLEXnet 10.8.** The installation package for FLEXnet contains both FLEXnet license management software from Macrovision Corporation and a *vendor daemon* created by PTC to administer Mathcad licenses (see "Vendor Daemon" on page 6).
- **The installation program for Internet Explorer 7.0.** Internet Explorer, version 6.0 or later, is required for full functionality of the Help system, accessing HTML content within the Resources window, and the opening and saving of Web-based files. Mathcad does not require that you set Internet Explorer as your default browser to take advantage of this functionality.
- **The installation program for Adobe Reader 8.0.** Adobe Reader, version 5.0 or later, is required to view PDF versions of installed Mathcad documentation.

File Formats

Mathcad 14 supports two XML file formats: XMCD and XMCDZ (compressed XMCD). These XML formats are designed to facilitate the addition of tracking and management metadata to Mathcad worksheets. This metadata can be retrieved by any XML-compliant or text-based search tool. In addition, the worksheet contents can also be read by an XML-compliant tool, allowing for the distribution of worksheets without the need for Mathcad.

The Mathcad 14 versions of the XMCD/XMCDZ formats differ substantially from previous versions of these file formats.

Mathcad can save files in supported older formats, though newer features may not be supported in earlier versions. Worksheet content dependent upon a new feature is saved in static, bitmap form when you save as an earlier version.

Mathcad 14 does not support an updated binary MCD format, though it can open MCD files.

License Management

Mathcad uses a license management program called FLEXnet, provided by Macrovision Corporation. Additionally, the *Image Processing*, *Signal Processing*, *Data Analysis*, and *Wavelets* Extension Packs are also license managed with FLEXnet.

In order to use Mathcad, you need the appropriate license file. Mathcad is sold with either *floating*, *locked*, or *registered-user* volume licenses, which must be renewed on an annual basis. Floating licenses can be used by any workstation on your network, while locked licenses can only be used on specified workstations. Registered-users are

administered from a license server, but always allocated to a particular workstation, regardless of whether the workstation is running Mathcad at the time.

The Mathcad End User License Agreement allows you to obtain *home-use* licenses when you purchase a volume license.

To request a license, you must know the CPU ID of the computer to which you intend to assign the license. In most cases, the CPU ID will be the MAC address of the active network adapter. For more information on types of licenses and the CPU ID, see the section “Obtaining a License File” on page 12.

Licenses must be renewed on a yearly basis on the PTC Customer Support site, or by contacting your local support office.

License Management Utilities

PTC provides a suite of utilities with its FLEXnet installation, located in the **bin** folder:

<i>lmtools</i>	Launches the FLEXnet utility LMTOOLS , similar to the shortcut icon created in Start > Programs > PTC License Management tools . Functionality includes customer configuration of the license service, starting and stopping the lmgrd license server(s), server and licensing status, as well as diagnostic tools. lmutil provides the same functionality as command-line arguments.
<i>lmutil</i>	Provides optional arguments to check the server and licensing status. Refer to the <i>FLEXnet End Users Guide</i> .
<i>ptcflush</i>	Releases licenses. This may be necessary if there are network problems.
<i>ptchostid</i>	Returns the Host ID, with required formatting, used for license requests.
<i>ptcsetup</i>	Allows you to reconfigure an existing installation without running the installer from the CD-ROM. Use ptcsetup for modifications or reconfigurations only. It cannot install FLEXnet.
<i>ptcshutdown</i>	Shuts down a license server process for administrative maintenance of the license server. On Windows systems, you can also use LMTOOLS to stop a license server process. See “License Administration Tools” in the <i>FLEXnet End Users Guide</i> .
<i>ptcstartserver</i>	Starts a license server process. On Windows systems, you can also use LMTOOLS to start a license server process.
<i>ptcstatus</i>	Displays information on server status and the current usage and availability of licenses.

Order of Installation

You can elect to perform *either* the Mathcad install or the FLEXnet install first. If you install Mathcad first, click “Cancel” to dismiss the **Mathcad License Setup** wizard presented during installation, and provide the location of your license server or license file when you launch Mathcad.

To specify a license file or server as part of a silent install, see the section “Silently Installing Mathcad” on page 9.

Product Code

The product code is a 22-character string of letters and numbers required to install Mathcad. This code is provided with your Mathcad CD, or by e-mail if you purchased a downloadable version of Mathcad.

If you create a silent install for Mathcad, the same product code is applied to each workstation installation. If you install from the CD, you must enter the same product code for each installation.

System Requirements

FLEXnet Server Requirements

- Windows 2000 SP4, or Windows XP Home or Professional Edition
- 16 MB free memory (for license management processes)
- 9 MB of hard disk space (not including log file)
- CD-ROM or DVD drive
- SVGA or higher graphics card and monitor
- Mouse or compatible pointing device

To serve floating and registered-user licenses, you must use FLEXnet 10.8 or later. FLEXnet 10.8 for Windows is available on the Mathcad CD.

Note You can also use the FLEXnet executable for Linux, Solaris, or 64-bit Windows provided with other PTC products. You cannot use a FLEXnet executable provided by another vendor, as it does not include PTC's [vendor daemon](#).

Under regular usage, license administration places little load on your server or network. The FLEXnet license daemon and PTC vendor daemon both require approximately 3 MB of memory when running. Additionally, aside from license check-out and check-in, and periodic *heartbeats* sent out to verify the continued presence of the license server, Mathcad generates no network traffic to the FLEXnet server when running. However, as more workstations access the license server, network traffic may become an issue, and your log file will grow more quickly.

Mathcad Requirements

- Pentium-compatible 32-bit (x86) or 64-bit (x86-64, EM64T) processor, 400 MHz or higher; 700+ MHz recommended
- Windows 2000 SP4, Windows XP Home or Professional Edition, Windows XP Professional x64 Edition, Windows 2003, or Windows Vista; Windows XP SR2, XP-x64 SR2, 2003, or Vista recommended
- Microsoft .NET Framework[®] 2.0 or later
- MSXML 4.0 SP2 or later
- Microsoft Data Access Components (MDAC) 2.6 or later
- 256 MB of RAM; 512 MB or more recommended
- 550 MB of hard disk space (250 MB for Mathcad, 100 MB for prerequisites, 200 MB temporary space during installation)

- Internet Explorer 6.0 or later (IE does not need to be your default browser)
- Adobe Reader 5.0 or later
- CD-ROM or DVD drive (not required for silent installations)
- SVGA or higher graphics card and monitor
- Keyboard and mouse or compatible pointing device

Internet Explorer 6.0 or later is required for full functionality of the Help system, accessing HTML content within the Resources window, the opening and saving of Web-based files, and automatic product licensing.

MSXML, MDAC, and the .NET Framework are available on the Mathcad CD, and from the Microsoft Web site at <http://www.microsoft.com/downloads/>. Software can be installed automatically during the Mathcad installation.

Upgrading from a Previous Version of Mathcad

Installing Mathcad Alongside Previous Versions

Mathcad 14 can be installed on a workstation currently running Mathcad 11 or later. You do not need to uninstall any previous versions before you install Mathcad 14, nor does installing Mathcad 14 automatically remove previous Mathcad installations. Mathcad 14 can be installed alongside *other* previous versions, although compatibility is not assured with unsupported versions of Mathcad.

If you elect to uninstall an earlier version after installing Mathcad 14, you may need to re-register Mathcad 14. For more information on re-registering Mathcad, consult the Release Notes ([relnotes.htm](#)), located either in the Mathcad folder or on the CD.

FLEXnet and Upgrading from Earlier Versions of Mathcad

If you are upgrading from an earlier version of Mathcad Enterprise Edition, you *must* install FLEXnet from your Mathcad CD. Both FLEXlm and the vendor daemon provided with previous versions of Mathcad are not compatible with Mathcad 14.

Previous versions of Mathcad are compatible with the version of FLEXnet provided with Mathcad 14. Additionally, multiple versions of FLEXnet can exist on the same server or network. This allows you to use the current version of FLEXnet to manage Mathcad 14 licenses, and an existing installation of FLEXlm to manage licenses for earlier versions of Mathcad.

More information on running multiple license services is available in the *FLEXnet End User Guide*; see “Other Sources of Information” on page 2.

Vendor Daemon

In addition to a license file, FLEXnet also requires a *vendor daemon* to properly serve Mathcad licenses. This vendor daemon actually dispenses a license to your machine when you start Mathcad. Without it, Mathcad cannot check out a license at start up.

The vendor daemon is provided as part of the FLEXnet install, available on the Mathcad CD. The vendor daemon included on the CD works only on supported Windows operating systems. Serving Mathcad licenses with a UNIX-based installation of FLEXnet requires a copy of the PTC vendor daemon that runs under UNIX.

Installing Mathcad

- ◆ Installing Mathcad
- ◆ Installing Internet Explorer and Adobe Reader

Installing Mathcad

Installing Mathcad on a Workstation

When you place the Mathcad CD into a CD-ROM drive, the Installation Wizard should automatically start. If it does not:

1. Click **Start > Run** in Windows and browse to your CD-ROM drive.
2. Select the file **setup.exe**.
3. Click “Open” in the **Browse** dialog, then “OK” in the **Run** dialog.

At this point, the Installation Wizard should start.

Note The installation program does not uninstall any detected previous version(s) of Mathcad.

Note Only persons with administrative privileges can install Mathcad onto a workstation. If you lack administrator privileges for the workstation onto which you are installing, or are not sure you have administrator privileges, contact your system administrator.

Before installing Mathcad, make sure that all of the [required system components](#) are installed. (See “Mathcad Requirements” on page 5.) You can install any missing system components from the **PreReq** folder on the Mathcad CD.

If all of the required system components have been installed, click the “Mathcad 14” button to install Mathcad.

Note Unlike previous versions of Mathcad, online Help and Mathcad Resources are installed in separate processes with individual entries in the **Add/Remove Programs** control panel. Users must uninstall Help and the Resources separately.

1. On the Welcome page of the Installation Wizard, click “Next.”
2. Read the License Agreement, select “I accept the terms in the license agreement,” and click “Next.” If you do *not* agree to the terms, the wizard does not enable this button, and *you cannot* proceed with the installation.
3. On the Customer Information page, confirm that the listed user name and organization are correct, and enter the product code (see Figure 1). Decide whether the copy of Mathcad installed onto the workstation should be usable only by the specified user (“Only for me”), or for anyone who might use the workstation (“Anyone who uses this computer”). Click “Next.”

Figure 1: Specify the “Product Code” on the Customer Information page. The “User Name” and “Organization” should be drawn automatically from the operating system. If multiple users use the workstation, make sure that Mathcad is installed for “Anyone who uses this computer (all users).”

4. On the Destination Folder page, confirm that the given installation destination is correct. If you want to install Mathcad to a different folder, click “Change,” specify the location to which you want to install, and click “OK.” Click “Next.”
5. Click “Install” to install Mathcad according to your selections. If you change your mind, click “Back” until you reach the appropriate page in the wizard, edit your choice, and click “Next” until you return to this last page, verifying that any choices along the way have not changed.
6. The installer now copies the appropriate files to the installation folder. As the installation proceeds, the installer displays its progress on-screen. The Installation Wizard automatically launches the installation programs for both online Help and the Resource Center.
7. Near the end of the installation, the progress bar stops and the installer presents the **Mathcad License Setup** wizard. Specify the name of your license server or the location and name of your locked or home-use license file. For information on the different types of license files, see “Obtaining a License File” on page 12.

Note To access the **Mathcad License Setup** wizard at any time, type **mathcad /license** at a command prompt. This allows you to change the license server or file used by the workstation.

8. Once the Installation Wizard notifies you that it has completed the installation of Mathcad, click “Finish” to quit the installation program.

Silently Installing Mathcad

To standardize deployment of Mathcad across your entire enterprise, the Mathcad CD includes three editable batch files, located in the **Mathcad** folder. In these batch files, you can predefine the installation variables normally set by users during installation. By doing so, Mathcad installation can occur *silently*, or without the need for user input. All prerequisite software must be installed before performing a silent installation.

SilentInstall.bat only installs the Mathcad program files, **SilentHelp.bat** installs the online Help, and **SilentRC.bat** installs the Resources contents. Sample scripts illustrating how you can integrate the Help and Resources window installs with the Mathcad silent install are provided on the Mathcad CD.

Note At this time, the silent installers do not support installation locations involving non-ASCII characters. Any path specified in the silent installation should use ASCII characters only.

The following can be set in **SilentInstall.bat** for a silent installation:

- **PRODUCT_CODE** — Enter your Product Code. You *must* supply a Product Code in order for the silent install to work properly.
- **INSTALLDIR** — Enter the full path of the desired Mathcad installation directory on the workstation. If no directory is specified, Mathcad installs to:

C:\Program Files\Mathcad\Mathcad 14\.

- **LICENSEPATH** — Specify the name of your license server or pathname of your license file, depending on the type of license you purchased. If no value is given, Mathcad prompts the user for this information when launched. When specifying a FLEXnet server, use the syntax **[port]@server**, where **server** is the name of the server running FLEXnet, and **port** is an optional argument specifying which port the server uses to administer licenses. For information on configuring FLEXnet, see “Using the License Service Utilities” on page 17.
- **DEFAULTFILEFORMAT** — Select the file format to use as the default when saving worksheets. The choices are “XML14” (the default value) and “XMLZ14”. This entry is *case-sensitive*. For more information on the available file formats, see “File Formats” on page 3.
- **LOGFILE** — Specify the full path, including file name, of the log file reporting the status of your silent installation. By default, the installer creates a file named **Mcad14_install_log.txt** in the folder from which you run the batch file.
- **TEMPLATEDIRPATH** — Specify a semi-colon separated list of path names, through which Mathcad searches at startup for template files. Do *not* leave any space between the paths and semi-colons. If left blank, Mathcad defaults to looking only in its **Templates** folder.
- **EXTPACKDIR** — Enter the full path of the installation directory for the Extension Pack handbooks bundled with Mathcad. If no directory is specified, the installer defaults to the **handbook** folder in the path specified by the **INSTALLDIR** variable. Extension Pack DLLs are always installed to the path specified by **INSTALLDIR**.

The following settings are necessary only if you wish to access a copy of Help and the Mathcad Resources located in folders other than the Mathcad folder. If you leave these

entries blank, Mathcad defaults to locations within the program folder. In each case, the path specified *must* include the file name, or else Help and the Mathcad Resources will not work properly when opened from either the Resources toolbar or the **Help** menu.

Note The Mathcad silent installer does not install either Help or the Mathcad Resources to the locations specified by the following variables. If you specify an alternate value for the following variables, you must also edit **SilentHelp.bat** and/or **SilentRC.bat** to install Help and/or the Resources to the corresponding folder.

- **HELPDIR** — Enter the full path of the directory for Mathcad Help, including the *Author's Reference* and *Developer's Reference*. If no directory is specified, the installer defaults to the **doc** folder in the path specified by the **INSTALLDIR** variable.
- **HBKLOCATION** — Specify the location of the Mathcad Resources E-book file (**qsheet.hbk**). If left blank, Mathcad will search for **qsheet.hbk** in the path specified by the **INSTALLDIR** variable.
- **MYSITEDESTINATION** — The HTML page opened in the Resources window when you select “My Site” on the Resources Toolbar. If no alternate location is specified, Mathcad appends **qsheet\html\ehome.html** to the path specified by the **INSTALLDIR** variable.
- **HOMEPAGE** — Points to the opening page of the Mathcad Resources (**map.xmcd**). If left blank, Mathcad appends **qsheet\map.xmcd** to the path specified by the **INSTALLDIR** variable.

The following can be set in **SilentHelp.bat** for a silent installation:

- **HELPLOGFILE** — Specify the full path, including file name, of the log file reporting the status of your silent installation. By default, the installer creates a file named **Mcad14_install_help_log.txt** in the folder from which you run the batch file.
- **HELP_INSTALL_DIR** — Specify the installation location for the Mathcad Documentation: *Help*, the *Author's Reference* and *Developer's Reference*, and the *Mathcad User's Guide*. The installer defaults to:

C:\Program Files\Mathcad\Mathcad 14\doc\.

The following can be set in **SilentRC.bat** for a silent installation:

- **RCLOGFILE** — Specify the full path, including file name, of the log file reporting the status of your silent installation. By default, the installer creates a file named **Mcad14_install_rc_log.txt** in the folder from which you run the batch file.
- **RC_INSTALL_DIR** — Specify the installation location for the Mathcad Resources (**qsheet.hbk** and the **qsheet** folder). The installer defaults to:

C:\Program Files\Mathcad\Mathcad 14\.

All values must be delimited by quotation marks, with each quotation mark preceded by a backslash. Unspecified variables (those left in the batch file as an empty string, written as “”) assume the default values in each case, except for the Product Code, which is required.

The batch files contain detailed instructions for customizing your silent installation.

Executing a Silent Installation

To perform a silent installation of Mathcad:

1. Copy the contents of the **Mathcad** folder from the Mathcad CD to a shared network volume.
2. Modify **SilentInstall.bat** as necessary. If necessary, also modify **SilentHelp.bat** and **SilentRC.bat**.

Note If you run the silent installation from a shared network location, specify a unique log file for each user. Otherwise, only the log file from the last attempted installation is preserved. One suggestion is to save the log file to the installation folder; for example **C:\Program Files\Mathcad\Mathcad 14\Mcad14_install_log.txt**.

3. Log on to the workstation as an administrator.
4. Confirm that the workstation satisfies the system requirements outlined on page 5. This includes the installation of prerequisite software.
5. Map the folder created in Step 1, above, to a drive letter on the workstation.
6. Run **SilentInstall.bat**. Installation takes several minutes, and quits without notification. To confirm that installation was successful, check the log file.
7. Run **SilentHelp.bat** and **SilentRC.bat** to install the online Help and Resources, either manually or through an installation script.

Installing Internet Explorer and Adobe Reader

In addition to installing Mathcad and FLEXnet, you may find it necessary to install either Internet Explorer or Adobe Reader. Internet Explorer 6.0 or later is required for full functionality of the Help system, accessing HTML content within the Resources window, and the opening and saving of Web-based files. Internet Explorer does not need to be the default browser to take advantage of this functionality. Adobe Reader is required to view the PDF versions of Mathcad documentation.

Installation programs for both of these software packages are available on the Mathcad CD. You can access the installers for either application from the main installation program, which launches when you place the Mathcad CD into your CD-ROM drive. If the installation program does not automatically run, you can access it manually by performing the following steps:

1. Click **Start > Run** in Windows, and browse to your CD-ROM drive.
2. Select the file **setup.exe**.
3. Click “Open” in the Browse dialog, then “OK” in the Run dialog.

At this point, the main installation window should appear. Click the “Other Software” button. On the next screen, click the appropriate button to launch the installer for the corresponding software package. The Installation Wizard guides you through the installation process.

License Management

- ◆ License Management
- ◆ Using the License Service
- ◆ Borrowing Licenses

License Management

About License Management

When launched, Mathcad searches for an available license. If available, this license is allocated to the workstation, and Mathcad opens for use. If a license is not available, Mathcad notifies the user with an error message and shuts down. Mathcad requires use of a license server for *floating* and *registered-user* licenses. *Locked* license files reside on the workstation, and do not require a license server.

If users with server-based licenses wish to run Mathcad while disconnected from your network — for example, on a laptop while out of the office — they can *borrow* a license from the server for a limited amount of time. This borrowed license is stored on the workstation, so Mathcad does not need to access the license server at start up. More information on borrowing licenses is available in “Borrowing Licenses” on page 24.

In addition, purchasing a volume license for Mathcad entitles you to *home-use* licenses as part of your purchase. Unlike borrowed licenses, which are not available to other workstations while borrowed, home-use licenses supplement your license purchase.

Note If you have a locked or home-use license file, you do not need to install and configure FLEXnet. Save the license file generated for you to the **LICENSES** folder of the Mathcad installation on the appropriate workstation. Specify the location and name of this file when prompted by the **Mathcad License Setup** wizard.

Obtaining a License File

Four types of Mathcad licenses are available:

- **A floating license (server)** — for administering floating licenses *only* from a license server. Licenses are allocated to workstations from a common pool, on a first-come, first-serve basis.
- **A locked license (workstation)** — for use on a workstation, without a license server. Locked licenses must be reallocated from one workstation to another through the PTC Customer Support Web site.
- **A registered-user license (server)** — for administering locked licenses from a server, rather than individual workstations. Registered-user licenses are allocated to workstations with an options file, provided by the FLEXnet installer. For instructions on how to edit the options file, see “Editing the Options File” on page 19.
- **A home-use license (workstation)** — for use on a workstation, without a license server. Licenses cannot be moved to another workstation; use the PTC Customer

Support Web site to request a new license file. Home-use licenses are available only with a purchase of floating, locked, or registered-user licenses.

Note The use of non-ASCII characters in the path of your license file may cause an error. When saving your license file, use only ASCII characters in folder names.

To obtain your license files, use your PTC user account to log on to the PTC Customer Service Web site at <http://www.ptc.com/olm/index.htm>. If you do not have a PTC user account, follow the instructions on the Web site to create one. Once you log in, click “Configure New Software,” in the **License Management** section, and enter your Sales Order Number to begin your request. You must provide the CPU ID for each server or workstation in your request.

To determine the CPU ID for a server or workstation:

1. Type **ipconfig /all** at a command prompt, and press **[Enter]**.
2. Find the 12-digit number labelled “Physical Address,” in the form XX-XX-XX-XX-XX-XX. Enter this number as the CPU ID.

Note The CPU ID, or MAC address, identifies the active network adapter on a workstation. Mathcad attempts to match the CPU ID in a locked or home-use license file against **all** detected MAC addresses at startup. As long as *any* available address matches, Mathcad launches.

After you complete your request, your licenses will arrive by email, as attachment files. To use your licenses:

- If you ordered floating or registered-user licenses, save the license file to your server. Then, install FLEXnet from the Mathcad CD, following the instructions in the section “Installing the License Service” on page 13.
- If you ordered locked or home-use licenses, distribute the license files to the corresponding workstations. Launch Mathcad on each workstation, and point the application to the license file in the **Mathcad License Setup** wizard.

If you intend to serve licenses from multiple servers, see “Using Multiple License Servers” on page 21 before you obtain your license files.

Transferring A License File to Another Server or Workstation

To transfer a license file to another computer, you must de-allocate a current license, then request the license file for the new computer. To do so, use the “Reconfigure Software Licenses” option available at the PTC Customer Support Web site.

Using the License Service

Installing the License Service

The FLEXnet installer is available from the main install screen as a separate install process. Perform this installation to a server on your network accessible by Mathcad users. Otherwise, Mathcad cannot obtain a license from the server.

Note Obtain a license file **before** you install FLEXnet, as the installer validates your license file.

To install the license service:

1. Click the “Other Software” button on the main install screen.
2. Click the “FLEXnet 10” button.

Tip You can also browse to the **Flex10** folder on the Mathcad CD and run **SETUP.EXE**.

3. Select your country from the drop-down list. Click “Next.”
4. Read the License Agreement. To proceed with installation, select “I Accept the Agreement Terms and Conditions” and click “Next.” If you do not accept the terms of the License Agreement, select “I Decline the Agreement Terms and Conditions,” and request a refund for your purchase.

To cancel installation without declining the License Agreement, click “Exit.”

5. Select the “PTC License Server” installation.

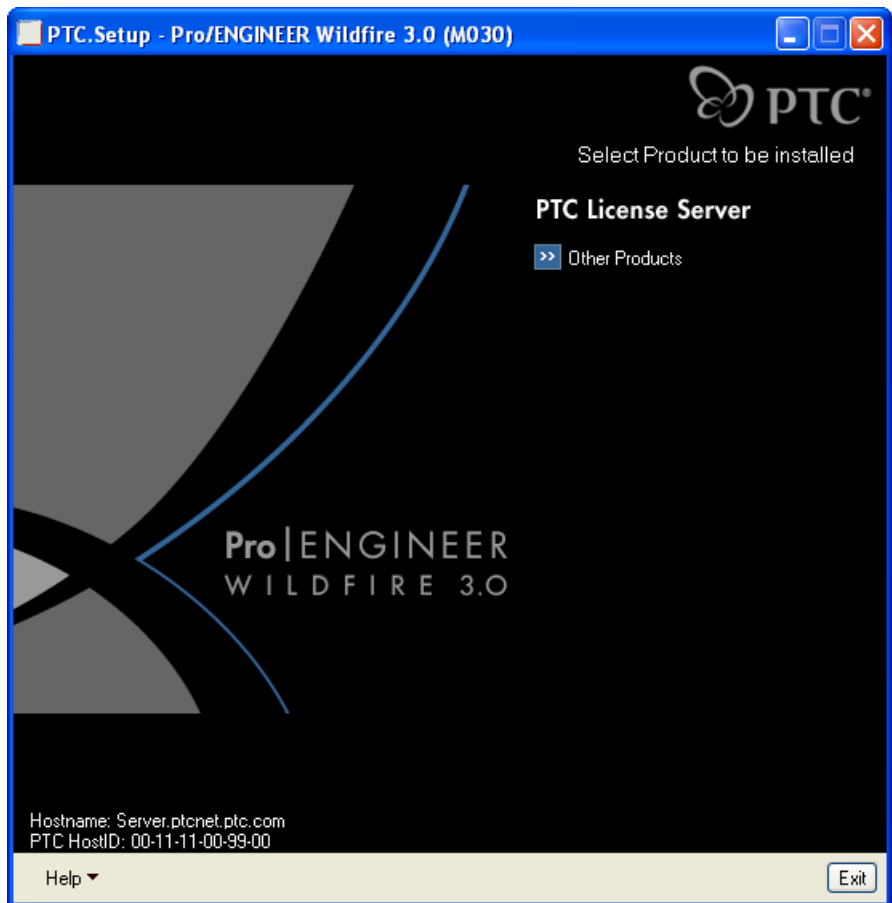


Figure 2: For most users, the “PTC License Server” install will suffice. Click “Other Products” to customize your installation options.

To customize your installation, click “Other Products,” then the resulting “Custom Installer” option. In most cases, the “PTC License Server” installation should suffice.

Note If you selected the “Custom Installer” option in Step 5, skip to Step 8.

6. Either accept the default installation location, or specify a new location by clicking the folder button to the right of the “Destination Folder” drop-down, then specifying the location of your license in the “License File” text field. You can instead click the folder button next to the text field to browse to the license file (see Figure 3). Do not specify a license file containing licenses from both PTC and other software vendors, as the installer considers combined licenses to be invalid.

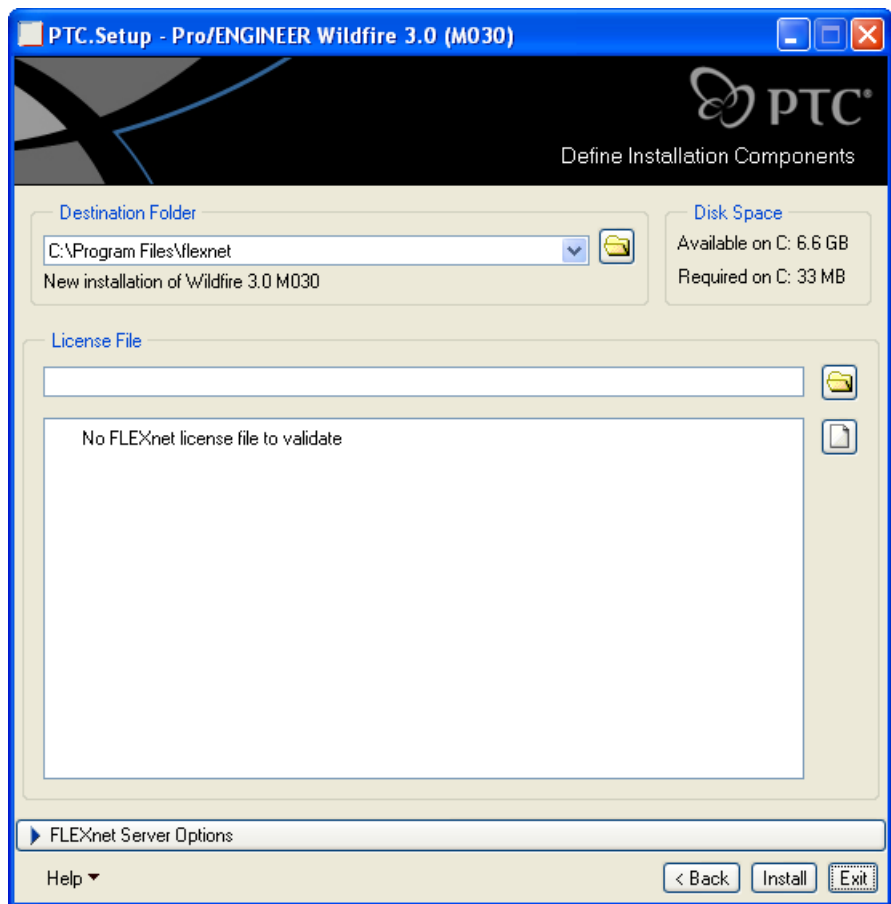


Figure 3: Specify the Destination Folder for the installation, and the license file to validate. You can also opt to configure the startup options for the license service (Step 7).

Note When the license service (**lmgrd.exe**) runs, it uses **C:\FLEXlm** to store temp files related to the licensing services. To avoid possible errors, *do not* install to this folder.

7. To configure the license service to start automatically the next time you reboot the server, click “FLEXnet Server Options” and enable “Start on Reboot.” Use the “Command Line Arguments” text field to specify any desired startup parameters. For information on the allowed parameters, click “Command Line Arguments” to open the *FLEXnet Licensing End User Guide*.

Note If you selected the “PTC License Server” option in Step 5, proceed to Step 9.

8. Either accept the default installation location or specify a new location by clicking the folder button to the right of the “Destination Folder” drop-down, then choose which features you wish to install (see Figure 4).

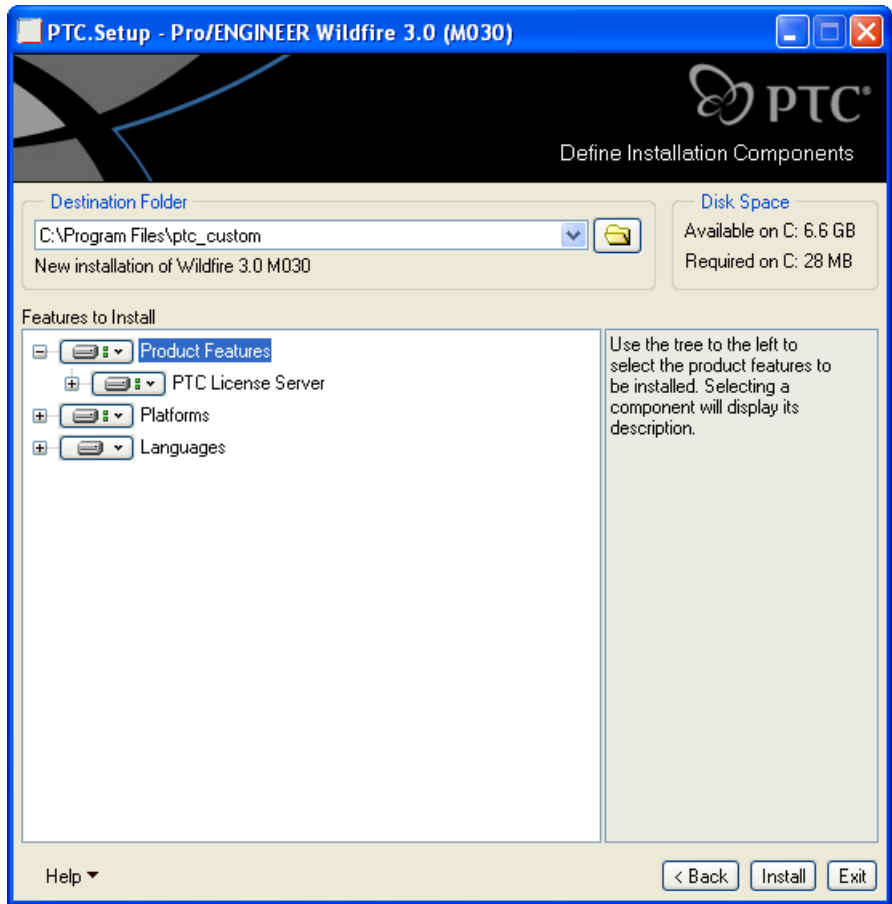


Figure 4: Specify the Destination Folder for the installation, along with the specific features to install.

9. Click “Install” to begin installation. You can click “Cancel” to terminate installation, if necessary. If installation fails, check the log file **ptcsetup.log**, located in the **temp** directory, for errors.
10. When installation completes, the License Service launches automatically. Click “Exit” to end installation.

Using the License Service Utilities

The FLEXnet installer automatically configures the license server; no additional configuration is required to begin serving Mathcad licenses. However, as your needs change, you may need to perform maintenance or configuration tasks on the FLEXnet server. PTC provides a set of utilities in the **bin** folder of your FLEXnet installation, for this purpose.

Note If your organization already uses FLEXnet or FLEXlm to meter another application, read “Licensing Both Mathcad and Other Applications” on page 21 before proceeding.

Changing Your License File

If you receive a new license file, run the **ptcsetup** utility (**ptcsetup.bat**). When prompted, specify the new license file. The utility stops the current license server process, replaces the existing license file with the new one, and restarts the license server. This utility does *not* reinstall FLEXnet.

Checking the HOSTID of A Computer

To check the HOSTID of a computer, run the **ptchostid** utility (**ptchostid.bat**). This utility determines the HOSTID for a computer and returns it in the desired format. Use this HOSTID when you request a license file.

Releasing Licenses

If you experience network disruptions, you may need to reclaim all licenses on the server, and then allow users to re-obtain them. If you need to reclaim any licenses in-use, run the **ptcflush** utility (**ptcflush.bat**). You can run **ptcflush** only once every twelve minutes.

For a list of arguments allowed by **ptcflush**, run the utility from a command prompt. Values for all of the arguments can be obtained with the **ptcstatus** utility.

Stopping and Restarting the License Server Process

Occasionally, you may need to stop the license server process for administrative maintenance. To do so, run the **ptcshutdown** utility (**ptcshutdown.bat**). Once you have completed the maintenance operation, you can restart the license server process with the **ptcstartserver** utility (**ptcstartserver.bat**).

Checking the Status of Your Licenses

To check the number of floating or registered-user licenses in use, run the **ptcstatus** utility (**ptcstatus.bat**). You can execute this utility in either normal or *verbose* mode (**ptcstatus -v**). Verbose mode provides additional information about your licenses, such as their version number and expiration date.

If you require more detailed information about the status of your licenses or license server, you can perform a *status enquiry*, using the **PTC License Server tools** (**lmttools.exe**):

1. Launch the **PTC License Server tools** from **Programs > PTC > PTC License Server** in the **Start** menu.
2. On the Service/License File tab, select **FLEXlm server for PTC** (see Figure 5).

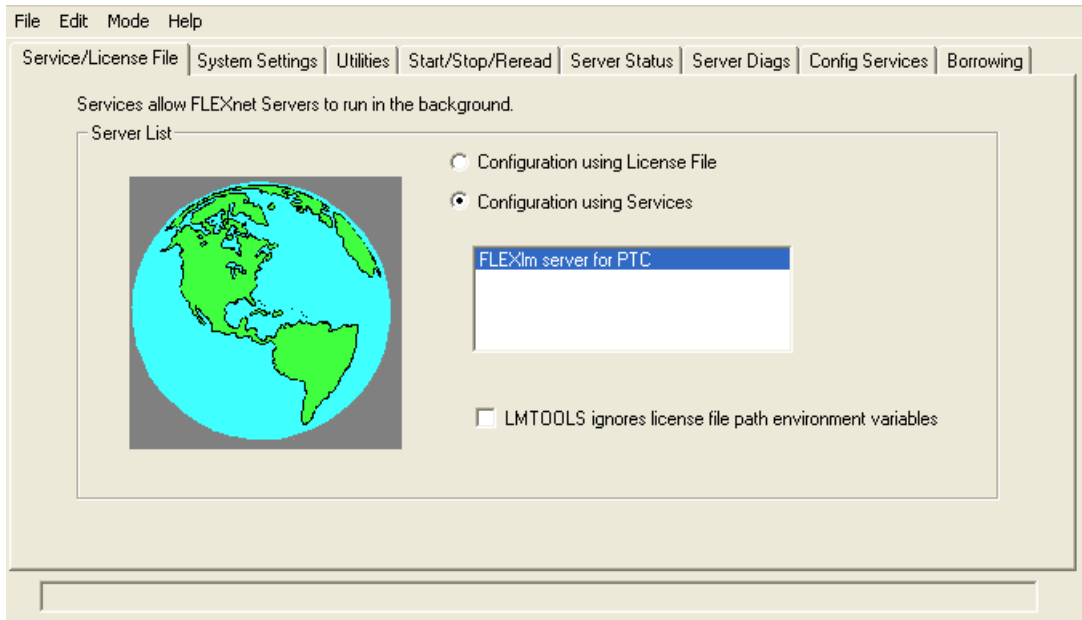


Figure 5: Select the FLEXlm server for PTC service to check the status of Mathcad licenses.

3. Click **Perform Status Enquiry**, located on the Server Status tab. If the service has been configured properly, you should see a status report that shows:
 - The name of the license server.
 - The port number used by the license service.
 - The license file in use.
 - The status of the server and the PTC vendor daemon.
 - The number of licenses in use, and the workstation to which they are assigned. The report indicates borrowed licenses with the word *linger*, followed by the length of the borrow period, in seconds, in parentheses after the workstation information.
4. If your status report does not return the correct information, verify that the server has been configured properly. On the Config Services tab (see Figure 6):
 - Select **FLEXlm server for PTC** in the **Service Name** drop-down box.

- Confirm the path to the licensing service daemon (**lmgrd.exe**, located in the **i486_nt\obj** folder of your FLEXnet installation).
- Confirm the path to the license file (**license.dat**, located in the **licensing** folder of your FLEXnet installation). If this information is incorrect, run the **ptcsetup** utility to point the license service to the proper license file.
- Confirm the path to the log file used by the PTC license management service. The default is **ptclmgrd.log**, located in the **licensing** folder of your FLEXnet installation. If your license server hosts multiple services, you should create an individual log for each service.
- Verify that **Use Services** is selected.
- Double-check that paths to files are absolute and include the name of the file.

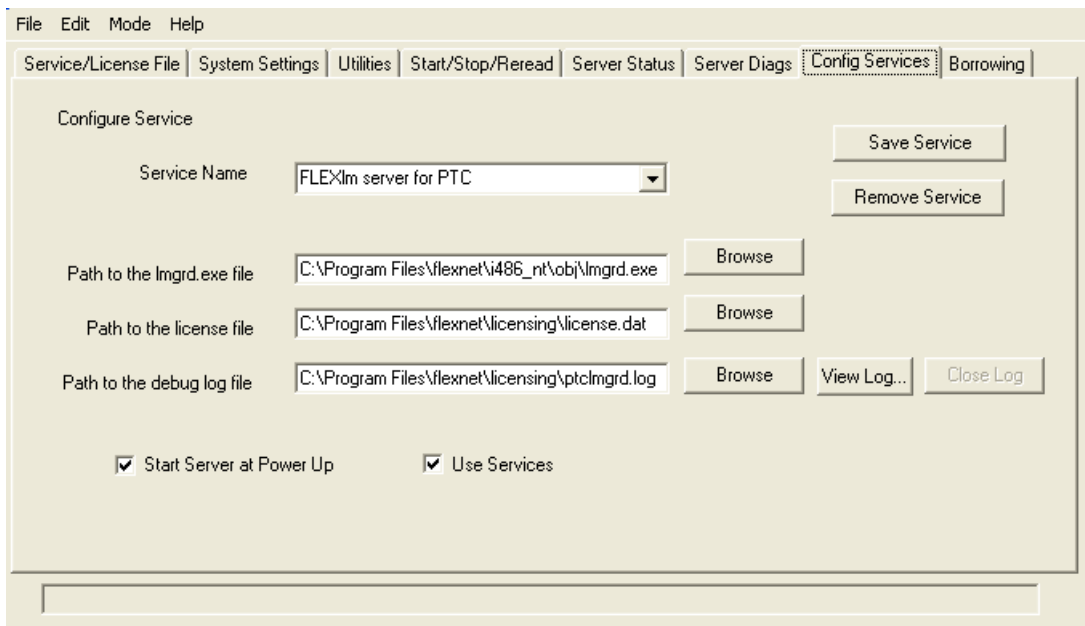


Figure 6: Use the Config Services tab to confirm the license service daemon, license, and log file used by the “FLEXlm server for PTC” service.

Editing the Options File

The options file created during installation allows you to tailor the installation to your particular environment. The default options file contains two lines that read:

```
REPORTLOG +"C:\Program
Files\flexnet\licensing\ptcreport.log"
TIMEOUTALL 7200
```

If you purchased a 5-seat floating Mathcad license, you could edit the options file to add the lines:

```
INCLUDE MATHCAD HOST Eng1
INCLUDE MATHCAD HOST Eng2
INCLUDE MATHCAD HOST Eng3
INCLUDE MATHCAD HOST Eng4
INCLUDE MATHCAD HOST Eng5
```

where **MATHCAD** is the metered application, or *feature*, and *Eng1*, *Eng2*, ... are the specific workstations allowed to use Mathcad. If you purchased two licenses for the *Signal Processing Extension Pack*, and wanted to deny them specifically to *Eng2* and *Eng3*, you would add the following lines to the options file:

```
EXCLUDE 256 HOST Eng2
EXCLUDE 256 HOST Eng3
```

where 256 is the feature name for the *Signal Processing Extension Pack*. Both the workstation and feature names are case-sensitive.

Supported FLEXnet Keywords

The *vendor daemon* used by Mathcad supports the full set of FLEXnet options file keywords. The following keywords may prove useful in administering licenses:

- **BORROW_LOWWATER** — specifies the number of licenses that *cannot* be borrowed.
- **DEBUGLOG** — the log file used by the vendor daemon for debug information.
- **EXCLUDE** — prevents access to the specified feature.
- **EXCLUDE_BORROW** — prevents the borrowing of a license for the specified feature.
- **EXCLUDEALL** — prevents access to all features served by the vendor daemon.
- **GROUP** — defines a group of users for use with any options.
- **HOST_GROUP** — defines a group of hosts for use with any options.
- **INCLUDE** — allows use of the specified feature, if a valid license is available.
- **INCLUDE_BORROW** — allows a user to borrow licenses.
- **INCLUDEALL** — allows a user to use all features served by the vendor daemon.
- **MAX** — limits usage for a particular feature or group, prioritizing usage among users.
- **NOLOG** — turns off logging of certain items in the debug log file.
- **REPORTLOG** — specifies the report log file to be written. This file can be read by *SAMreport*, available from the Macrovision Corporation.
- **RESERVE** — reserves licenses for the specified feature for the specified user or group.
- **TIMEOUTALL** — allows the server to reclaim inactive licenses after a specified number of seconds.

More information on using these and other keywords is available in the FLEXnet documentation; see “Other Sources of Information” on page 2.

Customizing a Registered-user License

If you purchased a registered-user license, you are bound by the license agreement to restrict Mathcad usage to the proper number of workstations. One way to do this is with the RESERVE keyword:

```
RESERVE 1 MATHCAD HOST Eng1
```

This would reserve one Mathcad license exclusively for the workstation *Eng1*. You can also create a group of user names or host names, using the GROUP or HOST_GROUP keywords.

Licensing Both Mathcad and Other Applications

If you are already serving licenses for other applications with FLEXlm or FLEXnet for Windows, you can manage licenses for all your applications from one server. Install FLEXnet from the Mathcad CD to the server. Once installation completes, FLEXnet displays all licenses served from the server. When configuring FLEXnet to meter Mathcad, make sure the Mathcad license service is selected on the Config Services tab (see Step 4 on page 18).

Tip To prevent name conflicts between Mathcad license files and those for other applications, save your Mathcad license files to a folder named “Mathcad” within your existing license folder.

Note Do **not** merge your Mathcad license with licenses of other software vendors into a combined license file for use on the same license server. Although the server can handle combined license files, license files from PTC use a vendor-specific HOSTID, which makes them incompatible with license files using a FLEXnet HOSTID.

Using Multiple License Servers

FLEXnet supports the usage of multiple servers to administer licenses. Multiple server usage tends to fall into one of two scenarios, either *load-balancing* or *triad servers*. Mathcad works in either scenario; however, you will need to provide extra information when requesting licenses for use in multiple-server environments.

Load-balancing allows you to split your licenses between any number of servers located anywhere on your network. Triad servers are three servers located on the same subnet and physically close to each other. Proximity reduces the chance for delays due to network traffic, as the servers must exchange periodic *heartbeats* with each other; as long as the FLEXnet service is running on two of the servers, it has achieved *quorum* and will administer licenses.

When generating either type of license, you need to provide information for each server that will be administering licenses. In addition, when attempting to load-balance your licenses, you must specify how many licenses will be allocated to each server.

To administer licenses on a **load-balanced** system:

1. Request license files for each server, using the PTC Customer Support Web site. Allocate the desired number of licenses to each server.

2. Install FLEXnet on each license server. When prompted for the license file, use the file that corresponds to that server.
3. When you install Mathcad, point each installation to the proper license server. If you install Mathcad silently, create a version of `SilentInstall.bat` customized for each license server (see “Silently Installing Mathcad” on page 9).

You can instead configure each workstation to query each server in a predetermined order, until Mathcad obtains a license; see “Configuring Workstations to Query Multiple Servers” on page 22.

To administer licenses on a **triad server**:

1. Request your license file, following the instructions in “Obtaining a License File” on page 12. Provide information for each server in the triad and designate which server will act as the “master.”
2. When your license files arrive, copy them to the appropriate server. Edit the license file before you install each of the license servers, specifying the hostname of each of the triad partners. If this is not done, the license files will be different on each of the three triad partners, and the license server will not start.
3. Install FLEXnet on each triad server.
4. When prompted for a server name during Mathcad installation (or editing `SilentInstall.bat`), use the same server you designated as the “master” in Step 1.

Configuring Workstations to Query Multiple Servers

On each workstation, define an environment variable (using either the `set` or `setenv` commands, or the **System** control panel) called `LM_LICENSE_FILE`, listing the servers in the order they should be queried. For example:

```
7788@Server1;7788@Server2[; ...], or
7788@Server2;7788@Server1[; ...].
```

where *Server1* and *Server2* are your license servers, and 7788 is the port the server uses to administer Mathcad licenses. The port specified in `LM_LICENSE_FILE` must be the same one listed in your license file.

Each workstation queries servers in the order listed when checking out a license. If a server is unavailable, the workstation queries the next server on the list, until it either checks out a license or runs out of servers.

If you are serving licenses for multiple applications from the same server, you can use the environment variable `[VENDOR]_LICENSE_FILE` instead of `LM_LICENSE_FILE`. By doing so, you can specify exactly which servers each application should query, rather than forcing each application to query each server, regardless of whether that server has the appropriate license. For example, if you wanted to use two servers to serve licenses for another application, but only one of those servers would serve Mathcad licenses, you would set the following two environment variables:

```
PTC_LICENSE_FILE=7788@Server1
[OTHERAPP]_LICENSE_FILE=27000@Server1;27000@Server2
```

This prevents Mathcad from querying *Server2* for a license, since *Server2* has no Mathcad licenses.

Tip When using `[VENDOR]_LICENSE_FILE`, remember that FLEXnet checks `LM_LICENSE_FILE` before checking `[VENDOR]_LICENSE_FILE`. If you use both variables, `LM_LICENSE_FILE` should only list servers with licenses for *all* metered applications. Querying extraneous servers listed in `LM_LICENSE_FILE` slows Mathcad down at startup.

Troubleshooting your Installation

The following are common issues with installing, configuring, and running FLEXnet. If your problem is not listed, consult the Knowledge Base on the PTC Support site; see “Other Sources of Information” on page 2.

If you want to point Mathcad at a different license server or file, run the **Mathcad License Setup** wizard. Type `mathcad.exe /license` at a command prompt, and supply the name of the new license server or location of the new license file to use.

License server machine is down or not running (-96, 7)

Causes: The license server or file name was most likely misspelled when specified or has changed, or the registry key containing this information is corrupt. Mathcad waits for a license until the request times out and returns this error.

Solution: Run the **Mathcad License Setup** wizard and enter the correctly-spelled license server or file name. Restart Mathcad without using the license switch.

Cannot write data to license server (-17, 13)

Cause: The FLEXnet server is not accessible.

Solution: Confirm that the server is running and available by pinging it from the workstation, and that the server can ping the workstation as well; if necessary, check that hostnames are resolving properly on your network with the Windows utility `nslookup.exe`. Verify that the server name is correct in the license file, and the hostnames are correct in any options file. Check that the port number specified in the license file (or any environment variable) corresponds to the server port used by FLEXnet.

Cannot connect to license server (-15, 570)

Causes: The license server process (`lmgrd.exe`) is stopped or disabled, or you are using the wrong license file for the Mathcad service.

Solution: Check the **Services** control panel for the license server process (indicated by the name specified in Step 4 of “Using the License Service Utilities” on page 17); if necessary, re-enable or restart the service. If the service is running, verify that it is using the license file supplied by PTC.

You may also have multiple license server processes running on the server. Consolidate all services under one license server process, or move the Mathcad license service to another server.

Desired vendor daemon is down (-97, 121)

Causes: The vendor daemon is missing or in the wrong location, or you made a change to a Cadence license dongle on the server metering Mathcad.

Solution: Check that the vendor daemon is located in the same folder as the FLEXnet daemon, **lmgrd.exe**; if it is not, find the file on the server and move it to this folder. If you made a change to a Cadence license dongle, reboot the server.

Note This error may also occur if the FLEXnet daemon cannot create its temporary directory (C:\FLEXlm), or any of the files within it.

Invalid host (-9)

Cause: The volume serial number in your single-user license file is incorrect.

Solution: Request a replacement license file.

USER/HOST on EXCLUDE list for feature (-38, 147)

Cause: There are comment lines in the options file (**ptc.opt**), which are erroneously being interpreted as commands.

Solution: Delete the comment lines.

User based license has no specified users (-84)

Causes: The options file is missing, the hostname in the options file is not set properly, or you have more allowed users than licenses for a particular feature.

Solution: Confirm that the options file is in the same folder as your license file and that the hostname is set to the server metering Mathcad.

If you have more allowed users than available licenses, either delete the appropriate number of INCLUDE lines in the options file, or contact PTC or your distributor to purchase extra licenses.

Unable to obtain a license on Windows XP

Cause: Mathcad was unable to locate the FLEXnet server. If you are running Mathcad on Windows XP, you may have a firewall enabled, which is interfering with communication to and from the server.

Solution: Disable the firewall, or allow an exception for the Mathcad executable (**mathcad.exe**). If this does not resolve the issue, see “License server machine is down or not running (-96, 7)” on page 23 for additional guidance.

Borrowing Licenses

If you normally access a FLEXnet server for a license when you run Mathcad, but occasionally need to use Mathcad without network access, you can *borrow* a license from the server for use while disconnected from the network. Your license file specifies the maximum allowed borrowing period.

Borrowed licenses are checked out from the available pool until they expire, regardless of whether the workstation using the borrowed license is running Mathcad. If you have a pool of 25 floating licenses and borrow one, the workstations on your network can only use the remaining 24 licenses until the borrowed license returns to the pool.

Note Borrowing a registered-user license also reduces the overall number of licenses. However, since the license is already allocated to the workstation, it does *not* reduce the number of licenses available to *other* users.

End-users can borrow a license from within Mathcad by going to the **Tools** menu, selecting **License > Borrow**. Mathcad automatically selects the maximum borrow period. To borrow a license for a shorter duration, select a different return date. Click “OK” to borrow the license.

Borrowed licenses appear in the status report with the text (linger: xxxxxx) appended to the end, where the six-digit number xxxxxx indicates the duration of the borrowing period, in seconds. To generate a status report, read the section “Using the License Service Utilities” on page 17.