



mathcad →13

Administrator's Guide

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Mathsoft Engineering & Education, Inc.

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About the *Administrator's Guide*

- ◆ Contacting Mathsoft®
- ◆ How to Read This Manual
- ◆ Before You Install

Contacting Mathsoft

U.S. and Canada

Web

- Web: <http://www.mathsoft.com>
- Technical Support: <http://support.mathsoft.com>

Email

- Technical support: support@mathsoft.com
- FLEX/m License Requests only: license@mathsoft.com

Phone

- Technical Support: 617-444-8102
- Sales: 800-MATHCAD — or — 617-628-4223

Fax

- Technical Support: 617-444-8101

International

If you reside outside the United States or Canada, please contact your local authorized Mathcad® distributor for technical support and license requests. Contact details can be found at: http://www.mathcad.com/buy/International_Contacts.asp.

If you do not have Web access, you can contact Mathsoft International directly for assistance at:

- **Email:** help@Mathsoft.com
- **Fax:** +44 (0)1276 475552
- **Telephone:** +44 (0)1276 450850

How to Read This Manual

The *Administrator's Guide* is written primarily for the system administrator — the person responsible for installing and updating Mathcad, and administering the FLEX/m server (where appropriate) that serves Mathcad licenses. As such, it assumes a basic familiarity with Windows and network administration. However, some content may be of use to end-users of Mathcad.

For the System Administrator

If you will be administering an installation of Mathcad, we recommend you read the following sections:

<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>License Management</i>	Instructions for installing and configuring a FLEXlm license server (see page 11.)
<i>Installing Internet Explorer and Acrobat Reader</i>	Instructions for installing Internet Explorer 6 and Acrobat Reader 6, included on the Mathcad CD (see page 24.)

For the End User

The following sections may be of interest to Mathcad users:

<i>Before You Install</i>	An introduction to the concepts covered and terminology used in this manual (see page 2).
<i>Borrowing FLEXlm Licenses</i>	Using Mathcad while disconnected from a FLEXlm server (see page 23).
<i>Installing Internet Explorer and Acrobat Reader</i>	Instructions for installing Internet Explorer 6 and Acrobat Reader 6, included on the Mathcad CD (see page 24).

Before You Install

CD Contents

The Mathcad CD contains the following software:

- **The installation program for Mathcad 13.** Contains the Mathcad program, associated online Help, Resources worksheets, and electronic (PDF) versions of the *Mathcad User's Guide* and this *Administrator's Guide*.
- **The installation program for FLEXlm 9.2.** The installation package for FLEXlm contains both FLEXlm license management software from the Macrovision Corporation and a *vendor daemon* created by Mathsoft to administer Mathcad licenses (see "Vendor Daemon" on page 5).
- **The installation program for Internet Explorer 6.0.** Internet Explorer, version 5.5 or higher, 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 your default browser to take advantage of this functionality.

- **The installation program for Adobe Acrobat Reader 6.0.** Adobe Acrobat Reader, version 5.0 or higher, is required to view PDF versions of installed Mathcad documentation.

File Formats

Mathcad 13 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 Designate™ (a component of Mathsoft's Calculation Management Suite™) or 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.

Mathcad 13 does not support the binary MCD format, though it can open MCD files saved with a previous version of Mathcad. Mathcad 13 can save files in supported older formats. However, features not supported in earlier versions of Mathcad will not be saved to the file.

License Management

Mathcad uses a license management program called FLEXlm, provided by the Macrovision Corporation, to control access to the program. Additionally, any Extension Packs for which you have purchased a license, such as the *Image Processing*, *Signal Processing*, *Data Analysis*, or *Wavelets Extension Pack*, are also license-managed with FLEXlm.

In order to use Mathcad after installing it, you need the appropriate license file(s). The files you need are dependent upon how you decide to install Mathcad and monitor its usage.

Mathcad is sold with either *floating* or *node-locked* licenses, on either a *perpetual* or an *annual* basis. Floating licenses can be used by any workstation on your network. Node-locked licenses can only be used on specified workstations. Information on these license types is available in the section “Obtaining a License File” on page 11.

Upon ordering Mathcad, you need to request a FLEXlm license. To obtain your license file(s), fill out the appropriate FLEXlm License Request Form, available at <http://support.mathsoft.com/enterprisepolicy.asp>. US and Canadian customers should submit the completed form to license@mathsoft.com. Users in all other countries should submit the completed form to their local support contact. A listing of international local support contacts is available online at http://www.mathcad.com/buy/International_Contacts.asp.

Annual licenses must be renewed on a yearly basis by contacting either Mathsoft, at license@mathsoft.com (US and Canadian customers), or your local support contact.

Order of Installation

You can elect to perform *either* the Mathcad install or the FLEXlm install first, as the Mathcad install no longer prompts you to specify a license server or license file. Instead, Mathcad prompts you for a license file or license server upon launching. You can still specify a license file/server as part of a silent install, however; see “Silently Installing Mathcad” on page 8.

Product Code

The product code is a 22-character string of letters and numbers required to install Mathcad. This code is printed on the back of the Mathcad CD envelope.

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

Server Requirements

FLEX/m Requirements

- Windows 95, 98, ME, NT®, 2000, XP or later (NT, 2000, or XP recommended)
- 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

Under regular usage, license administration places little load on your server or network. The FLEX/m license daemon and Mathsoft 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 FLEX/m 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/Celeron processor, 300 MHz or higher; 400+ MHz recommended
- Windows 2000 SP4, XP or later
- Microsoft .NET Framework® 1.1 or later
- MSXML 4 SP2 or later
- MDAC 2.6 or later
- Minimum 128 MB of RAM; 256 MB or more recommended
- At least 100 MB of hard disk space
- Internet Explorer version 5.5 or later
- CD-ROM or DVD drive (not required for silent installations)
- SVGA or higher graphics card and monitor
- Mouse or compatible pointing device

MSXML, MDAC, and the .NET Framework are available on the Mathcad CD, or from the Microsoft Web site, at <http://www.microsoft.com/downloads/search.aspx>.

Upgrading from a Previous Version of Mathcad

Uninstalling Concurrent Installations of Earlier Versions of Mathcad

When upgrading from a concurrent installation of an earlier version of Mathcad, you need not remove the previous version of Mathcad from the server. If you elect to do so, however, you must uninstall from all workstations *before* deleting the server folder, as the workstation uninstall requires files on the server to perform properly.

FLEX/m and Upgrading from Mathcad 2001i/11

If you are upgrading from an earlier version of Mathcad Enterprise Edition, and have already installed the version of FLEX/m provided to you with your previous version of Mathcad, you do not *need* to install FLEX/m from your Mathcad CD. If you are upgrading from Mathcad 2001i or 11, installing the version of FLEX/m supplied on the Mathcad CD allows you to return borrowed licenses before they expire. The versions of FLEX/m and the Mathsoft vendor daemon provided with earlier versions of Mathcad are otherwise fully compatible with Mathcad 13.

Installing Mathcad 13 on a Workstation with a Previous Version

Mathcad 13 can be installed on a workstation currently running either Mathcad 11 or Mathcad 12. You do not need to uninstall either version before installing Mathcad 13, nor does installing Mathcad 13 automatically remove either previous version. Mathcad 13 can be installed alongside other previous versions, although compatibility is not assured with unsupported versions of Mathcad.

If you elect to uninstall one of these earlier versions after installing Mathcad 13, you may need to re-register Mathcad 13. For more information on re-registering Mathcad, consult the Release Notes (**relnotes.htm**), located either in the Mathcad folder or on the CD.

Vendor Daemon

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

Installing Mathcad

- ◆ Installing Mathcad
- ◆ License Management
- ◆ The FLEX/*m* Server
- ◆ Borrowing FLEX/*m* Licenses
- ◆ Installing Internet Explorer and Acrobat 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 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, check to see if all of the [required system components](#) are installed. You can install the missing system components from the **PreReq** folder on the Mathcad CD.

If all of the required system components have been installed, click the “Mathcad 13” button to install Mathcad.

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 will not enable this button, and you will *not* be allowed to proceed with the installation.
3. On the Customer Information page, confirm that the *User Name* and *Organization* listed are correct, and enter the *Product Code* supplied on the CD envelope (see Figure 1). Decide whether the copy of Mathcad installed onto the workstation should be usable only by the user listed in *User Name* (“Only for me”), or for anyone who might use the workstation (“Anyone who uses this computer”). Click “Next.”

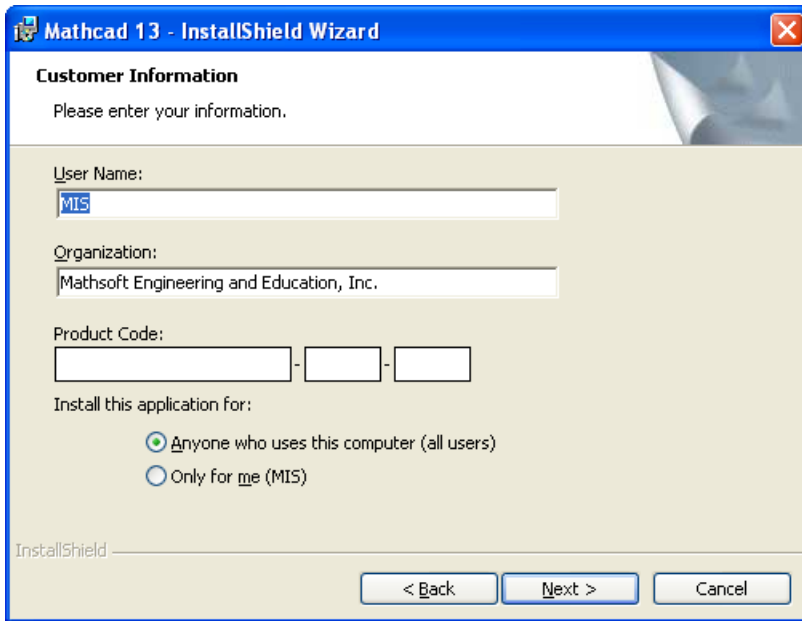


Figure 1: Specify the “Product Code” on the Customer Information page. The “User Name” and “Organization” should be drawn automatically from the operating system. If multiple users use the workstation, make sure that Mathcad is installed for all users.

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. 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 an editable batch file (**silentinstall.bat**), located in the **Mathcad** folder. In this batch file, you can predefine the install variables normally set by users during installation. By doing so, the install can run *silently*, or without the need for user input. All prerequisite software must be installed before running the silent install.

The following can be set for a silent install (default values, if any, are noted in **bold**, and do not need to be specified):

- **PRODUCT_CODE** — The Product Code is located on the CD envelope. 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\Mathsoft\Mathcad 13**.
- **LICENSEPATH** — The name of your license server or pathname of your license file. If no value is given, Mathcad prompts for the server name or file location when launched. When specifying a FLEXlm server, use the syntax **[port]@server**, where **server** is the name of the server running FLEXlm, and **port** is an optional argument specifying which port the server uses to administer licenses. For information on configuring FLEXlm, see “Configuring the FLEXlm Server” on page 14.
- **DEFAULTFILEFORMAT** — Select the file format to use as the default when saving worksheets. The choices are **XML13** and **XMLZ13**. 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 filename, of the log file reporting the status of your silent installation. The default filename is **Mcad13_install_log.txt**, and the default location is the folder from which you run the batch file.

The following settings are necessary only if you wish to access a copy of the Mathcad Resources located in a folder other than the Mathcad folder. If you leave these entries blank, Mathcad defaults to the Resources located in the program folder. In each case, the path specified *must* include the filename, or else the Mathcad Resources will not work properly when opened from either the Resources toolbar or the **Help** menu.

Note The Mathcad Install Wizard does not copy the Mathcad Resources to the specified location(s). If you specify an alternate value for the following variables, you must manually copy the Mathcad Resources to the specified location(s) after installing Mathcad.

- **HBKLOCATION** — Points to the Mathcad Resources E-book file (qsheets.hbk). If left blank, Mathcad will search for **qsheets.hbk** in the path specified by the **INSTALLDIR** variable.
- **QUICKSHEETSTOC** — Points to the QuickSheets Table of Contents file (toc_qs.xmcd). If left blank, Mathcad appends **qsheets\toc_qs.xmcd** to the path specified by the **INSTALLDIR** variable.
- **TUTORIALSTOC** — Points to the Mathcad Tutorial Table of Contents file (toc_tuto.xmcd). If left blank, Mathcad appends **qsheets\toc_tuto.xmcd** to the path specified by the **INSTALLDIR** variable.
- **REFERENCETABLESTOC** — Points to the Reference Tables Table of Contents file (toc_fctb.xmcd). If left blank, Mathcad appends **qsheets\toc_fctb.xmcd** to 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 **qsheets\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.

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.

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

The batch file contains detailed instructions for customizing your silent installation.

License Management

About License Management

In order to run Mathcad, you must install and run **FLEXlm** version 8.1a or later for Windows. If you already use a supported version of **FLEXlm** in your organization, you do not need to use the version that ships with Mathcad — though upgrading to the more recent version is advised — but you still need to install the Mathsoft vendor daemon. You can copy your Mathcad license to an existing server.

If you are not running a supported version of **FLEXlm**, you need to install the version that ships on the Mathcad CD.

Note If you have opted to use a local license file, you do not need to install and configure **FLEXlm**. Simply save the license file you receive from Mathsoft to the **LICENSES** folder of the Mathcad installation on the appropriate workstation.

When you start up Mathcad, it searches for an available valid license. If one is available, it is allocated to the workstation, and Mathcad launches for use. If a license is not available, Mathcad notifies the user with an error message and shuts down. If you are using a local license file, the license resides on the workstation and cannot be copied to another workstation. Otherwise, Mathcad must have access to your license server in order to check out a license.

If users wish to access 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, and as long as the borrowed license is valid, Mathcad does not need to access the license server in order to start up. More information on borrowing licenses is available in “Borrowing **FLEXlm** Licenses” on page 23.

Note The Mathcad CD comes with **FLEXlm** version 9.2, which allows the early return of borrowed licenses. You do not need to upgrade from a supported version to this one if you do not want to allow users to return borrowed licenses before they expire, although we do advise using the most recent version of **FLEXlm** with Mathcad.

Obtaining a License File

Depending on how you intend to administer Mathcad licenses, you need one of three license file packages. In all cases, you receive a license file (**license.dat**). If you purchased a *node-locked* license for use with a license server, you receive an options file template (**mathsoft.opt**) as well. See “License Management” on page 3 for instructions on requesting the appropriate license files.

- **A FLEXlm server license file** — for administering floating licenses *only* from a license server. Licenses are allocated from a common pool to workstations on a first-come, first-serve basis.
- **A FLEXlm server license file and an options file** — for administering node-locked licenses from a license server, or a combination of floating and node-locked licenses. Node-locked licenses can be reallocated to specific workstations by editing the options file; read “Editing the FLEXlm Options File” on page 18 for instructions on how to do so.
- **A local license file** — Licenses are not administered from a license server, but instead are tied to the individual workstation. Licenses cannot be moved from workstation to workstation; contact Mathsoft to receive a new license file. If Mathcad is installed on a user’s home PC, the Home Use License you request is a local license file.

Note Since FLEXlm is not fully internationalized at this time, using 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.

The FLEXlm Server

Installing the FLEXlm Server

The FLEXlm server software is available from the main install screen as a separate install process. FLEXlm should be installed to a server on your network accessible by Mathcad users. Without access to this server, Mathcad cannot start up.

To install FLEXlm:

1. Click the “Other Software” button on the main install screen.
2. Click the FLEXlm 9.2 button.

Tip You can also launch the FLEXlm install by running **SETUP.EXE** in the **FlexLM** folder on the Mathcad CD.

3. On the Setup Type page, select the installation type you want. If you have never installed FLEXlm, or currently use a non-Windows version of FLEXlm or Windows version earlier than 8.1a, choose the “Complete” installation. Click “Next.”

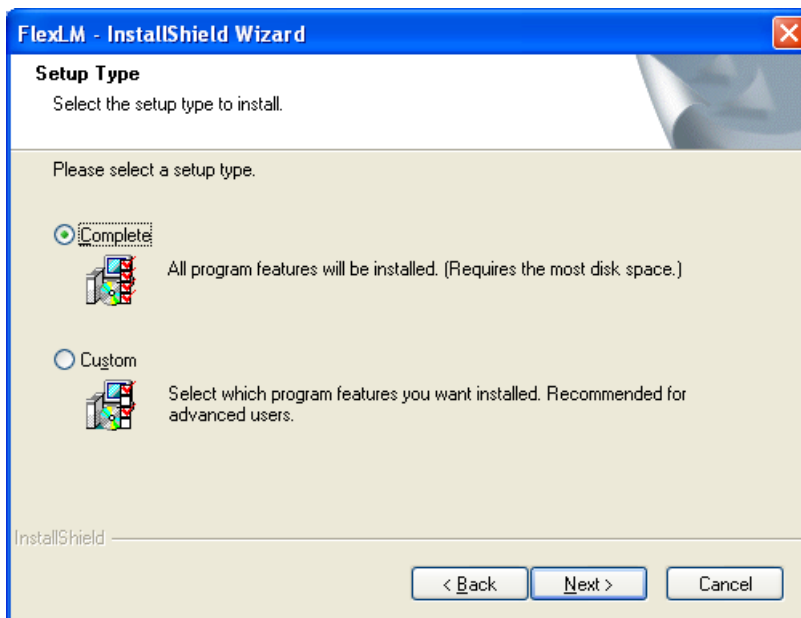


Figure 2: On the Setup Type page, you can choose either the “Complete” or “Custom” Setup Type. For most users, the Complete Setup will suffice.

Note If you already use a supported version of FLEXlm, you can choose the “Custom” installation, click “Next,” and deselect “FLEXlm Components” to install only the Mathsoft vendor daemon (see Figure 3).

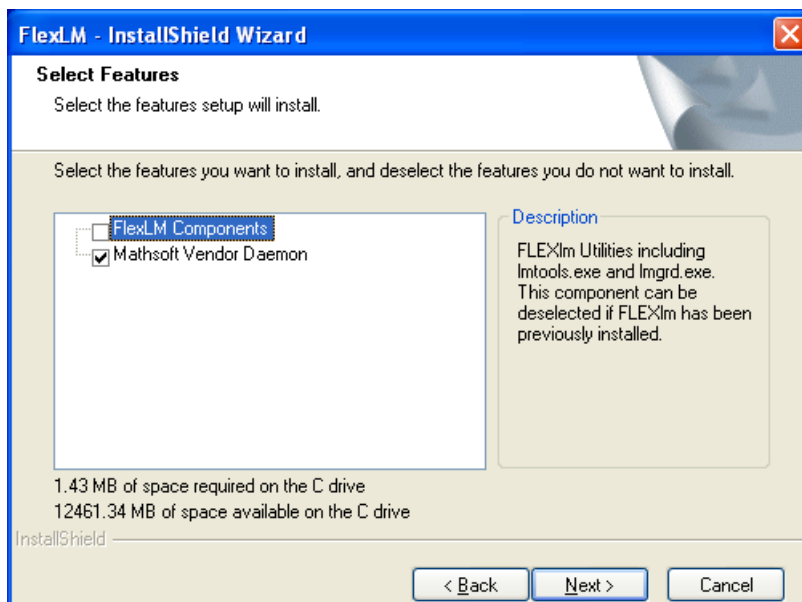


Figure 3: The Select Features page of the FLEXlm Installation Wizard allows you to choose which components are installed. The “FLEXlm Components” can be deselected if you already have a supported version of FLEXlm installed on your network and will use it to serve Mathcad licenses.

- Click “Next” to bring up the Choose Destination Location page of the wizard (see Figure 4).

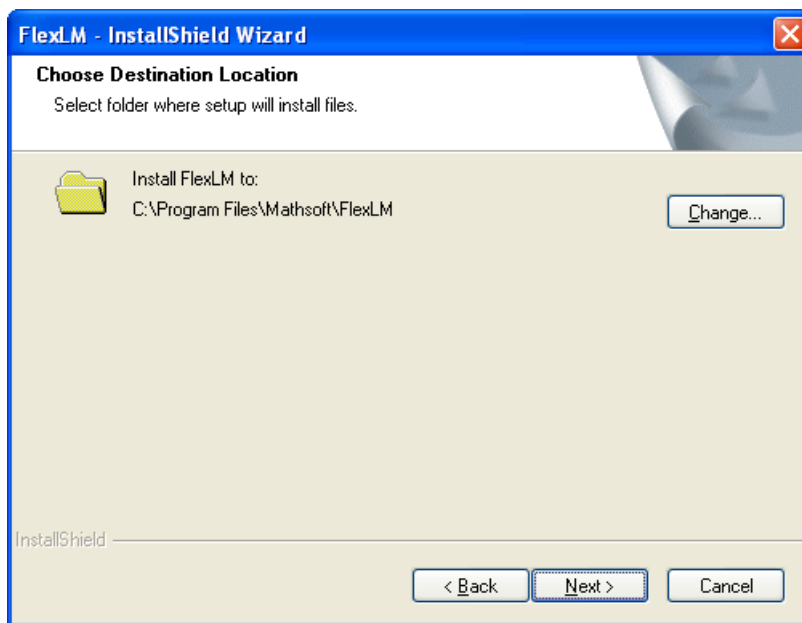


Figure 4: The Choose Destination Location page of the FLEXlm Installation Wizard allows you to specify where you install the FLEXlm licensing software.

Note When the FLEXlm server (**lmgrd.exe**) runs, it uses the directory **C:\FLEXlm** to store temp files related to the licensing services. To avoid possible errors, *do not* install FLEXlm directly to the root of the C:\ drive.

- If necessary, click “Change” to change the folder to which you will install FLEXlm. Once you are satisfied with the destination, click “Next.”
- Review the install options you selected. If an option is incorrect, click “Back” until you reach the appropriate page in the wizard, change the option, and click “Next” to return to the Start Copying page. When you are satisfied with the options listed, click “Next.”
- Click “Finish” to end the FLEXlm install. If you want to launch FLEXlm or read the release notes, check the appropriate box(es).

Configuring the FLEXlm Server

Once you have installed the FLEXlm server, you must configure it to interact properly with Mathcad. If your organization already uses FLEXlm to meter another application, read “Using FLEXlm with Mathcad and Other Applications” on page 20 before proceeding.

To configure FLEXlm for serving Mathcad licenses:

1. Create a folder named **LICENSES** within the FLEXlm installation folder (referred to as **INSTALLDIR**, in these instructions). Copy your license file — and options file, if you received one — into **LICENSES**.
2. Launch the **FLEXlm Utilities (lmtools.exe)** from **Programs > Mathsoft Apps** in the **Start** menu.
3. Select **Configuration using Services**, from either the **Mode** menu or the Service/License File tab (see Figure 5).

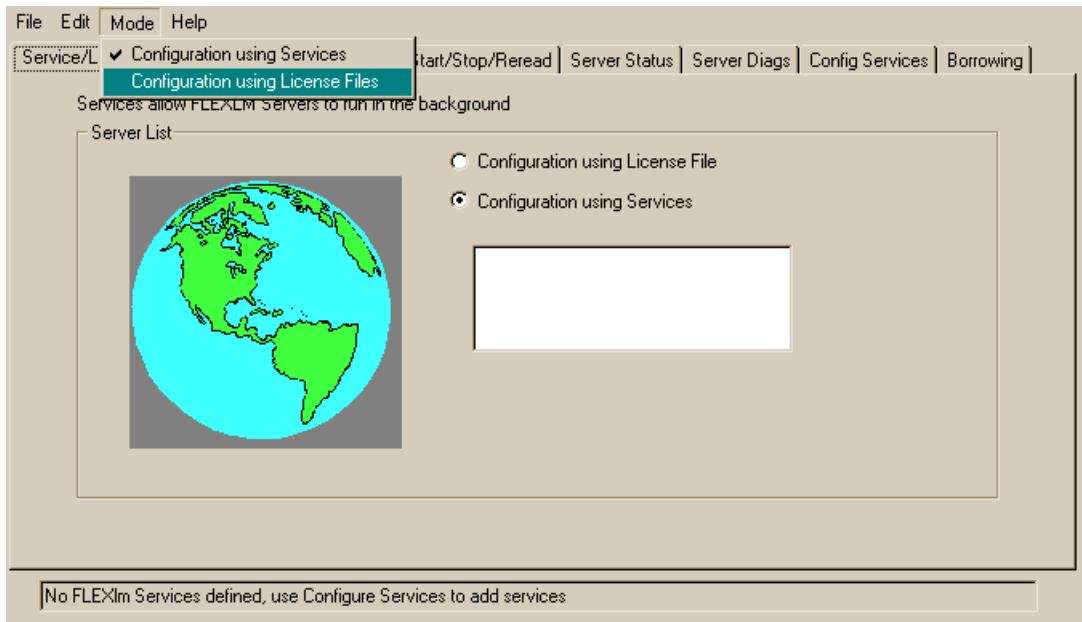


Figure 5: Use either the Mode menu or the Service/License File tab to configure LMTOOLS to use services to serve Mathcad licenses.

4. On the Config Services tab (see Figure 6):
 - Type **Mathcad** in the **Service Name** drop-down box.
 - Set the full paths to the FLEXlm daemon (**lmgrd.exe**, in **INSTALLDIR**), and your license file (**license.dat**, in **LICENSES**).
 - Specify the name and full path for the log file you want FLEXlm to create (we recommend naming the file **mathsoft.log**, and saving it in **INSTALLDIR**).
 - Select **Use Services**.
 - If you want to run the Mathcad License Manager service automatically at startup, select “Start Server at Power Up.”

- Click “Save Service” to save your settings, and click “Yes” in the confirmation dialog box.

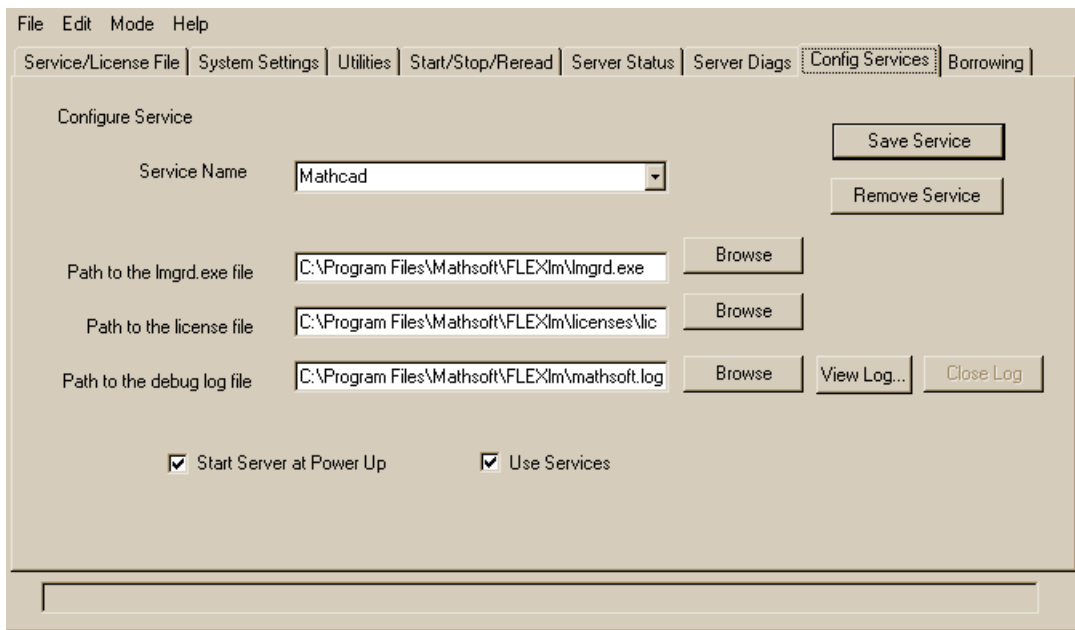


Figure 6: The Config Services tab allows you to specify the FLEXlm daemon, as well as the license and log files used by the “Mathcad” service.

5. On the Start/Stop/Reread tab, confirm that the Mathcad service is selected and click “Start Server.”

6. On the Server Status tab (see Figure 7), set the “Individual Daemon” to **mathsoft.exe** and the “Server Name” to the name of your license server.

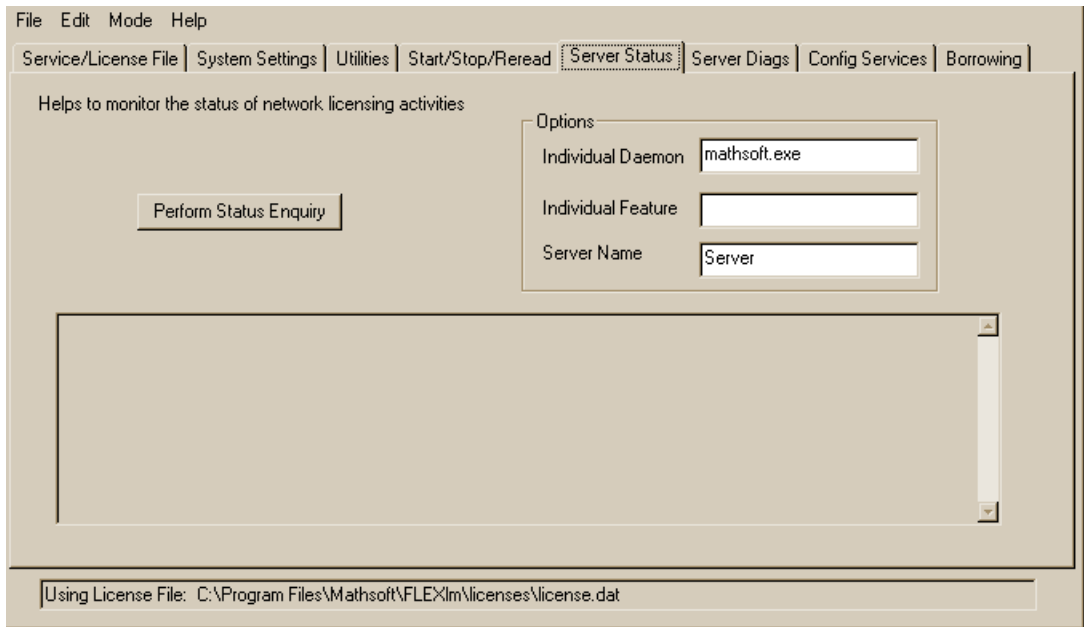


Figure 7: The Server Status tab allows you to check that FLEXlm is up and running and can read your license file.

7. Click **Perform Status Enquiry**. If the service has been configured properly, you should see a status report similar to the example in Figure 8. If your status does not look like this example, verify that you have configured the server properly. Double-check that paths to files have been fully qualified — that is, the path includes the name of the file.

Note “Server” is the name of the license server in this example.

```

-----
Status
-----
Flexible License Manager status on Fri 1/4/2002 14:54

[Detecting lmgrd processes...]
License server status: 27000@Server
    License file(s) on Server: C:\Program
Files\Mathsoft\FLEXlm\licenses\license.dat:

    Server: license server UP (MASTER) v8.0

DAEMONS in configuration file: mathsoft
Vendor daemon status (on Server):

    mathsoft: UP v8.0

Users of features served by mathsoft.exe:
Feature usage info:

Users of Mathcad: (Total of 20 licenses available)

NOTE: lmstat -i does not give information from the server,
      but only reads the license file. For this reason,
      lmstat -a is recommended instead.

Feature  Version  # licenses  Expires  Vendor
-----  -
Mathcad  1.0         20        1-jan-0  mathsoft

```

Figure 8: Example of a FLEXlm status report

Editing the FLEXlm Options File

If you purchased a *node-locked* license for Mathcad, an options file template was provided with your license file; you need to tailor this file to your particular environment. The options file consists of a series of lines with the following syntax:

```
INCLUDE mathcad HOST hostname
```

To configure the Options file for Mathcad, you would edit it to read:

```
INCLUDE mathcad HOST Client
```

where **mathcad** is the metered application, or *feature*, and **Client** is the name of the workstation on which you will use Mathcad. You will need one line for each unique combination of workstation and application covered by your license. Both the workstation and feature names are case-sensitive.

For example, if you purchased a 5-seat node-locked FLEXlm license, you would edit the options file so that it looked like:

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

where *Eng1*, *Eng2*, and so on, are the specific workstations allowed to use Mathcad. If you purchased two licenses for the *Signal Processing Extension Pack*, and wanted to allocate them specifically to *Eng2* and *Eng3*, you would add the following lines to the options file:

```
INCLUDE signal HOST Eng2
INCLUDE signal HOST Eng3
```

Supported FLEXlm Keywords

The *vendor daemon* supplied by Mathsoft supports the following FLEXlm options file keywords:

- 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. Mathsoft does not sell or distribute *SAMreport*.
- RESERVE — reserves licenses for the specified feature for the specified user or group.

More information on using these keywords is available in the FLEXlm documentation; see “More Information on FLEXlm” on page 23.

Using FLEXlm with Mathcad and Other Applications

If you are already using FLEXlm to manage licenses for other software packages, you may not need to use the version that ships with Mathcad. If you are already serving licenses with FLEXlm version 8.1a or later for Windows, you do not need to install FLEXlm — only the Mathsoft vendor daemon (**mathsoft.exe**) is required; see “The FLEXlm Server” on page 11 for instructions on how to install only the vendor daemon. In addition, when configuring FLEXlm to meter Mathcad, make sure the Mathcad license service is selected on the Config Services tab (see Step 4 on page 15).

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

Using Multiple FLEXlm Servers

FLEXlm 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 FLEXlm service is running on two of the servers, it has achieved *quorum* and will administer licenses.

When requesting 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 licensing, you must specify how many licenses will be allocated to each server.

To administer licenses on a load-balanced system:

1. Request your license file, providing information for every server, including how many licenses each will serve.
2. When your license files arrive, copy them to the appropriate server.
3. 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:

```
27000@Server1;27000@Server2[; ...], or  
27000@Server2;27000@Server1[; ...].
```

where *Server1* and *Server2* are your license servers, and 27000 is the port the server uses to administer 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 AutoCAD licenses, but only one of those servers would serve Mathcad licenses, you would set the following two environment variables:

```
MATHSOFT_LICENSE_FILE=27000@Server1
```

```
AUTOCAD_LICENSE_FILE=27000@Server1;27000@Server2
```

This way, Mathcad would never query *Server2* for a license, since it has no Mathcad licenses.

Tip When using `[VENDOR]_LICENSE_FILE`, remember that FLEXlm 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. Non-existent servers, or those without Mathcad licenses, listed in `LM_LICENSE_FILE` may slow Mathcad down at startup.

To meter Mathcad with triad servers:

1. Request your license file, providing information for each server in the triad and designating which server will act as the “master.”
2. When you receive your license file, copy it onto each server in the triad.
3. When prompted for a server name (or editing `silentinstall.bat`), use the same server you designated as the “master” in Step 1.

Troubleshooting your FLEXlm Installation

The following are common issues with installing, configuring, and running FLEXlm. If your problem is not listed, consult the Knowledge Base on the Mathsoft Support site (see page 23).

Error in saving configuration settings

Cause: The FLEXlm server name was most likely misspelled when specified, or the registry key containing this information is corrupt. Mathcad searches for a server with the incorrect name until timing out and failing with this error.

Solution: Run mathcad with the switch *license* (`mathcad.exe /license`) from a command line and enter the correctly-spelled FLEXlm license server name. Mathcad will launch promptly. If you misspell the server name on the first try, cancel out of the dialog and retry.

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

Cause: The FLEXlm 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 FLEXlm.

Cannot connect to license server (-15, 570)

Cause: 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 “Configuring the FLEXlm Server,” on page 15); if necessary, re-enable or restart the service. If the service is running, verify that it is using the license file supplied by Mathsoft.

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)

Cause: The vendor daemon **mathsoft.exe** 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 **mathsoft.exe** is located in the same folder as the FLEXlm daemon, **lmgrd.exe**; if it is not, either find the file on the server and move it to this folder, or re-run the FLEXlm install to install mathsoft.exe. (See “Installing the FLEXlm Server” on page 11 for instructions on installing only the vendor daemon.) If you made a change to a Cadence license dongle, reboot the server.

Note This error may also occur if the FLEXlm 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 local license file is incorrect.

Solution: Request a replacement license file using the volume serial number of your **C:** drive.

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

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

Solution: Delete the comment lines.

User based license has no specified users (-84)

Cause: The options file (**mathsoft.opt**) is missing, the **VENDOR** variable in the license file (**license.dat**) is not set properly, 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 **VENDOR** is set to “mathsoft” in your license file. If you purchased a node-locked license, 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 Mathsoft or your distributor to purchase extra licenses.

Unable to obtain a license on Windows XP

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

Solution: Disable the Internet Connection Firewall. Open the **Network Connection** control panel (**Start > Control Panel > Network Connection**), right-click on the appropriate connection, and select **Properties**. Click the Advanced tab, and turn off the firewall by deselecting “Protect my computer.”

If this does not resolve the issue, see “Error in saving configuration settings” on page 21 for additional guidance.

More Information on FLEXlm

More information on installing and configuring FLEXlm is available from the following sources:

Mathcad License Management

For general questions regarding Mathsoft licensing policies:

http://www.mathcad.com/buy/License_Management.asp

Mathsoft Technical Support — FLEXlm FAQ

For technical questions regarding FLEXlm installation and its interaction with Mathcad:

<http://support.mathsoft.com/mcad2001i/FLEXlm.asp>

Mathcad Knowledge Base

For known support issues regarding FLEXlm and Mathcad:

<http://support.mathsoft.com/>

FLEXlm End User Guide

For specific issues with FLEXlm functionality, including both supported and unsupported features, and troubleshooting tips:

<http://www.macrovision.com/services/support/flexlm/enduser.pdf>

<http://www.macrovision.com/services/support/enduser/TOC.htm>

Borrowing FLEXlm Licenses

If you normally access a FLEXlm 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. Licenses can be borrowed for up to 17,520 hours, or approximately two years.

Borrowed licenses are removed from the available pool until they expire, regardless of whether the workstation using the borrowed license is running Mathcad. For example, if you have a pool of 25 floating licenses and borrow one, the workstations on your network can only use the remaining 24 licenses, regardless of whether the borrowed license is in use or not.

Note Borrowing a node-locked license reduces the overall number of licenses as well. However, since the license is already allocated to the workstation, it does not necessarily reduce the number of licenses available to other users.

FLEX/m allows you to return a borrowed license with version 9.2 of the server software, provided with Mathcad. If you opt not to upgrade to this version, we advise that you take special care when setting expiration dates. End-users can borrow a license from within Mathcad by going to the **Tools** menu, selecting **License > Borrow**, and setting an expiration date. If you are using version 9.2 of the FLEX/m server, users can return a borrowed license prior to its expiration date by selecting **License > Return** from the **Tools** menu.

Installing Internet Explorer and Acrobat Reader

In addition to installing Mathcad and FLEX/m, you may find it necessary to install either Internet Explorer 6 or Acrobat Reader 6 in order to fully utilize your installation of Mathcad. Internet Explorer 5.5 or higher 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 Acrobat Reader, version 5.0 or higher, is required to view the PDF versions of Mathcad documentation.

For your convenience, installation programs for both of these software packages are available on the Mathcad CD. You can access the installation programs 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, select either “Internet Explorer 6” or “Acrobat Reader 6” to launch the Installation Wizard for the corresponding software package. The Installation Wizard will guide you through the installation process.

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