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# Questa® SIM Installation and Licensing Guide

Software Version 2020.4

Document Revision 5.3

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# Chapter 1
# Installation and Licensing

The Questa SIM simulation environment supports a set of hardware platform and software combinations that require differing styles of installation procedures. In addition, Questa SIM installation makes use of a licensing server environment.



## Upgrading to a New Release

When upgrading to a new environment release, you should make sure that your environment is set up properly.

### Procedure

1. Regenerate your design libraries after installing the software. For more information, refer to the section Design Library Regeneration.
2. Release 2020.4 of Questa SIM uses version v11.16.4.0 of FlexNet. Sites that have existing license servers running an older version must shut down the servers and restart them using the license server (lmgrd) and vendor daemon (mgcld) provided in this release.



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# Supported Platforms

Questa SIM supports a select group of hardware platform and software combinations.

It is expected that you have a standard installation of the operating system that you are going to use to install Questa SIM. Where applicable, this includes libraries recommended by operating system vendors to enable 32-bit applications to run on a 64-bit installation.

**Table 1-1. Supported Platforms**

| Platform | OS | Binary | VCO name[1] | Memory capacity |
|---|---|---|---|---|
| EM64T | • SUSE Linux®[2] Enterprise Server 11 and 12<br>• Red Hat Enterprise Linux 6, 7, and 8 | 32-bit | linux | 3GB[3] |
| | | 64-bit | linux_x86_64 | terabytes |
| x86 | • Windows 10 (32-bit) | 32-bit | win32[4] | 2GB |
| | • Windows 10 (64-bit) | 64-bit | win64 | terabytes |
| | • SUSE Linux Enterprise Server 11 and 12<br>• Red Hat Enterprise Linux 6, 7, and 8 | 32-bit | linux | 3GB |
| | | 64-bit | linux_x86_64 | terabytes |
| AMD64 | • SUSE Linux Enterprise Server 11 and 12<br>• Red Hat Enterprise Linux 6, 7, and 8 | 32-bit | linux | 3GB |
| | | 64-bit | linux_x86_64 | terabytes |

1. The VCO name refers to the platform directories that are created during installation.
2. Linux® is a registered trademark of Linus Torvalds in the U.S. and other countries.
3. Memory usage is limited to the maximum process size allowed by the Linux kernel.
4. Questa SIM 32-bit (win32) installs and runs on Windows 64-bit OS, though it only runs as a 32-bit binary.





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# SystemC Supported Platforms

Questa SIM runs SystemC on a subset of supported platforms.

**Table 1-2. Supported Platforms for SystemC-2.3.2**

| Platform/OS | Supported compiler versions[1] | 32-bit | 64-bit | TLM |
|---|---|---|---|---|
| linux,<br>linux_x86_64 | gcc-7.4.0<br>gcc-5.3.0<br>gcc-4.7.4<br>VCO is linux (32-bit binary)<br>VCO is linux_x86_64 (64-bit binary) | yes | yes | 2.0.2 |
| Windows[2]10 | gcc 4.2.1— VCO is win32 | yes | no | 2.0.2 |

1. Header files location: <path to install tree>/include/systemc/sc
2. 32-bit executable and 32-bit gcc can be used with 64-bit Windows systems, though they only run as 32-bit binaries.

**Note**

Questa SIM and SystemC are tested with the gcc versions provided in the install tree for this release. It is strongly recommended to use the gcc version that came with your installation—customized versions of gcc may cause problems.



# Installing SystemC Compilers on Windows Platforms

For the Windows platform, you must install the compilers manually. The following steps describe how to obtain and install your required compiler.

## Procedure

1. Install the product.

   This installs the base product and the documentation.

2. Navigate to the following site.

   `https://support.mentor.com`

3. Locate the appropriate MinGW ZIP file:

   - *questasim_gcc-4.2.1-mingw32vc12.zip*



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- *questasim_gcc-4.5.0-mingwv64vc12.zip* for Windows 64-bit

4. Extract the contents of the ZIP file to the top level of your install directory.

# Creating .dll or .exe Files using Compiled .lib Files on Windows Platforms

You can create *.dll* or *.exe* files using *.lib* files supplied with Questa SIM. These scenarios typically involve DPI, VPI, PLI, FLI, or the UCDB API.

## Prerequisites

To create a *.dll* or *.exe* file using Questa SIM *.lib* files found in the *<install_dir>/win32* directory you must be aware of the following:

- Use Microsoft Visual Studio 2013 (version 12.0) to create your *.dll* or *.exe* files. Your existing*.dll* and *.exe* files compiled with Visual Studio 2008 will likely still work, but this use is not recommended. Whenever possible, you should recompile using Visual Studio 2013.
  - Install Visual Studio 2013 on the machine from which you create your *.dll* and *.exe* files rather than working from a remote server. This is due to the requirements of Visual Studio 2013.
  - Ensure your environment is correctly pointing to Visual Studio 2013 by running a compile command and analyzing the output.
- Review the examples we have created and placed in the *<install_dir>/examples/c_windows/ucdb_static* directory for information on compiling and linking *.lib* files into a *.dll* or *.exe* using Visual Studio 2013. The examples include use models using the Microsoft command prompt shell, Cygwin bash shell, and the make utility.
- Gain an understanding of manifest files, which were introduced with Visual Studio 2013.
  - Each time you build a *.dll* or *.exe*, Visual Studio 2013 creates a manifest file. The manifest file describes the dependencies that a *.dll* or *.exe* has. You must always store the manifest file in the same directory as the *.dll* or *.exe* file. If the manifest is not located with the *.dll* or *.exe* files, they will not load properly.
  - Alternatively you can use the Microsoft *mt.exe* command to embed the manifest file with the *.dll* or*.exe* file. Review the documentation for *mt.exe* for more information.
  - The included examples make use of the *mt.exe* command.

## Procedure

1. Alter your existing compile and linking commands to work with Visual Studio 2013. Paying special attention to any hard coded paths that may refer to previous versions of Visual Studio.



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- Review the Visual Studio 2013 documentation for more information.
- You should be able to transfer simple compile and linking commands to Visual Studio 2013.

2. Notify anyone receiving your *.dll* or *.exe* file that they must install the Microsoft Visual C++ 2013 Redistributable Package, available from Microsoft's support site:

   www.microsoft.com/downloads/

### Examples

The following is an example of the commands you could use. You can find a complete *.bat* version of this example in the *<install_dir>/examples/c_windows/ucdb* directory:

```
cl.exe /c /DWIN32 /DNTDDI_VERSION=NTDDI_WINXP
/DWIN32_LEAN_AND_MEAN /Z7 /Od /MD
/I%MTI_HOME%\include /I"%TOOLPATH%\include" ..\src\ucdbdump.c

link.exe /INCREMENTAL:NO /DEBUG /subsystem:console
/OUT:ucdbdump.exe ucdbdump.obj %MTI_HOME%\win32\ucdb.lib
/LIBPATH:"%TOOLPATH%\lib" /LIBPATH:"%SDKPATH%\lib"

mt.exe /manifest ucdbdump.exe.manifest
/outputresource:ucdbdump.exe
```

## Compiling Executables Using gcc v4.2.1 on Windows Platforms

With the introduction of gcc-4.2.1-mingw32vc12 a change was made to the installation specs file such that the default Windows C-runtime library cannot be accessed. Use the following procedure to link your C programs to the *msvcr120.dll* C-runtime library.

### Procedure

1. Create the *test.rc* and *test.exe.manifest* files.

   Filename: *test.rc*

   ```
   #include <windows.h>
        /*
         * 1 - executable, 2 - dll
         * RT_MANIFEST
         * test.exe.manifest
         */
        1 RT_MANIFEST test.exe.manifest
   ```

   Filename: *test.exe.manifest*



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```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<assembly xmlns="urn:schemas-microsoft-com:asm.v1"
manifestVersion="1.0"
      xmlns:asmv3="urn:schemas-microsoft-com:asm.v3">
   <assemblyIdentity
      version="8.5.0.0"
      processorArchitecture="X86"
      name="example"
      type="win32"
      />
   <description>example</description>
   <asmv3:application>
      <asmv3:windowsSettings
            xmlns="http://schemas.microsoft.com/SMI/2005/
            WindowsSettings">
         <dpiAware>true</dpiAware>
               </asmv3:windowsSettings>
      </asmv3:application>
   <dependency>
      <dependentAssembly>
         <assemblyIdentity
            type="win32"
            name="Microsoft.Windows.Common-Controls"
            version="6.0.0.0"
            processorArchitecture="X86"
            publicKeyToken="6595b64144ccf1df"
            language="*"
            />
      </dependentAssembly>
   </dependency>
</assembly>
```

2. Create a *test.res* file from the *test.rc* file using the windres program (located in your */c/MingW/bin* directory)

   ```
   windres --input test.rc --output test.res --output-format=coff
   ```

3. Link the *test.res* file to *test.exe*

   ```
   gcc.exe -o test.exe test.o test.res
   ```

# Discontinued and Retiring Operating Systems

This section contains a list of discontinued operating systems and their last-supported Questa SIM release. No patches are available subsequent to the last supported Questa SIM release.

Also, please be aware of the operating systems that Mentor Graphics has scheduled to retire. Retiring operating systems will receive patches through the number release indicated.



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**Table 1-3. Discontinued and Retiring Operating Systems**

| Operating System | Status | Last supported Questa SIM release |
|---|---|---|
| Solaris 10 x86 and UltraSPARC | discontinued | 10.0g |
| Red Hat Linux Enterprise version 3 | discontinued | 10.1g |
| SUSE Linux Enterprise Server (SLES) 9 | discontinued | 10.1g |
| Red Hat Linux Enterprise version 4 | discontinued | 10.2g |
| Windows XP and Windows Vista | discontinued | 10.3g |
| Red Hat Linux Enterprise version 5 | discontinued | 10.5g |
| SUSE Linux Enterprise Server (SLES) 10 | discontinued | 10.5g |
| Windows 7 and 8.1 | retiring | 10.7g |
| Red Hat Enterprise Linux (RHEL) 6 | retiring | Last release of 2020.4_x |



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# Licensing

Questa SIM uses FLEXnet licenses, which are tied to a workstation or hardware identifiers.



## Mentor Graphics Licensing on Linux Platforms

To use this version of Questa SIM in a Mentor Graphics environment, you must be running Mentor Graphics Standard Licensing MSL v2019_3 with MGLS v9.22_3.1.0 and PCLS v9.22.3.1.0 (or newer).

To check your current versions:

1. Make sure the MGLS_HOME environment variable is set to:

   ```
   <install directory>/<platform>/mgls
   ```

2. Enter the following command:

   ```
   $MGLS_HOME/bin/mgls_admin -v
   ```

If you are running a license server with an earlier version, the you need to shut down the license server and restart it using the license server (lmgrd) and vendor daemon (mgcld) found in MGLS. Platform-specific MGLS is included in the Questa SIM installation at:

```
<install directory>/<platform>/mgls
```

In Questa SIM, the MGLS_HOME environment variable is set in a non-persistent way inside the simulation environment. If MGLS_HOME is already set, it will be changed temporarily to point at the known good mgls tree while Questa SIM is invoked. The persistent setting of MGLS_HOME will not be changed.

The mgcld daemon is automatically installed into the binary directory when you install Questa SIM.



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# License File Example

The following shows an abbreviated example of a license file:

```
SERVER server1 117234f39g1m 1650
DAEMON mgcld <install_dir>/win32/mgcld
INCREMENT qhsimvh mgcld 2007.220 4-dec-2007 1 DD35265192B8C3224364
VENDOR_STRING=66E0B055 SN=6264745
SIGN2="1688 0801 FAEC 27CE A6AD 0C2D F9DB C37D 1E9C 7B5A F483 67BE 4F11
2C0C B7FC 135B 50AE 6C20 BE1E A991 2BCC 51BB 756D E2D5 CFB7 C801 FCE7 68F4
A24A A499"
INCREMENT qhsimvlog mgcld 2007.220 4-dec-2007 1 8D05E6017C8E0DE044AB
VENDOR_STRING=1AF05984 SN=6264744
SIGN2="071F 2C8E F935 C771 9C0A 763A CE62 9424 9B00 6810 7C5A E8C5 3BD3
0DF7 9E04 1511 233E 9A52 B8B0 FD65 CFCB 8B30 1384 CF3D 8323 444F 51F0 F6EE
177B 79DC"
```

The installation instructions on subsequent pages tell you how to install the license file. Keep in mind that you should modify the license file only as directed in these instructions. Make sure you do not inadvertently add spaces or line breaks to the file; this may prevent Questa SIM from running.

# Locating Your Hardware Identifier on Windows Platforms

On Windows platforms, the hardware identifier may be either a hardware security key or an Ethernet ID.

## Procedure

Locate your hardware identifier in one of two ways.

- Locate your hardware identifier.
  - Security key ID number — check the number printed on the key.
  - Ethernet ID —
    a. select **Start > Run**
    b. Open “cmd” to open a command prompt.
    c. At the command prompt type:

       **ipconfig -all | more**

    d. Check the configuration listing for your Ethernet “Physical Address”.



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# Locating your Hardware Identifier on Linux Platforms

On Linux platforms you will need your workstation ID to obtain a license.

## Procedure

Determining your hardware identifier.

**Table 1-4. Determining Linux Workstation ID**

| Platform | Syntax | Notes |
|---|---|---|
| Linux | /sbin/ifconfig eth0 | Look for the line that reads something like:<br>“Ethernet HWaddr 00:00:00:00:00:00.”<br>Remove the colons and you have the required 12-digit ID. |



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# Installation

The following sections describe how to install Questa SIM, depending on the license specific to your operating system environment or platform.

The commands for installing Questa SIM are case-sensitive, so you must enter them exactly as shown. If you are upgrading from a previous release, it is recommended that you install your upgrade in its own directory to avoid overwriting your old files and libraries.





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# Windows Installation Instructions

Questa SIM uses Mentor Graphics Install for installation on Windows machines. When installing multiple Windows products, use separate folders for each product. Installing multiple Windows products into the same folder will cause problems when you uninstall the product.

The main product executable is named:

- *questasim_win32-<ver>.exe* (win32)
- *questasim_win64-<ver>.exe* (win64)

and the gcc compiler is named:

- *questasim_gcc-4.2.1-mingw32vc12.zip* (win32)
- *questasim_gcc-4.5.0-mingw64vc12.zip* (win64)

and the Register Assistant UVM executable is named:

- *regassistuvm_<ver>_win.exe*

Register Assistant UVM will be installed in a subdirectory relative to a Questa install tree, such as *questa_sim/RUVM_<ver>* or *questasim/RUVM_<ver>*.



## Installing a Floating License on a Stand-Alone Windows PC

Use this setup if you are installing on a stand-alone Windows PC with a floating license. When stand-alone PCs use a floating license, Questa SIM and the license server run on the same system.

### Procedure

1. If you received a hardware security key (dongle), install it on the parallel or USB port of your PC. Skip this step if you licensed Questa SIM to the PC's Ethernet ID.
2. Install Questa SIM from the DVD or via a downloaded installation executable.
3. Once the software is done installing, you will be prompted to install a hardware security key driver. Choose **Yes** if you installed a security key or choose **No** if you licensed Questa SIM to the PC’s Ethernet ID.



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4. After installation is complete, save the *license.dat* file to <*install_dir*>*win32**license.dat*.

   Make sure there are no extra spaces or line breaks in the license file. It must exactly match the license you received by e-mail, including upper and lower case and any backslashes (\).

5. Verify the name of your PC via the Windows Control Panel by selecting **System and Security**, then **System**, then looking at the Computer Name entry.

6. Open the *license.dat* file and change the server name to the name of your PC. Use a text editor like Notepad rather than a word processor. Word processors may add extra hidden formatting characters to the file and cause problems. Edit the DAEMON line to point to the full path for the *mgcld.exe*, for example:

   ```
   SERVER server1 123456789123 1717
   DAEMON mgcld C:\<install_dir>\win32\mgcld.exe
   ```

7. Set the LM_LICENSE_FILE environment variable with the port number and hostname:

   - For Windows, right-click the My Computer or This PC icon and select Properties, then select Advanced System settings and then select Environment Variables.

     Add LM_LICENSE_FILE with a value of 1650@hostname, where hostname is the name of your PC.

     The software does not look for licensing variables in the registry, therefore you must set either LM_LICENSE_FILE or MGLS_LICENSE_FILE environment variable.

8. Reboot your PC.

9. Launch *lmtools.exe* from the <*install_dir*>*win32* directory.

10. Choose the Config Services tab and add the pathnames for *lmgrd.exe*, *license.dat*, and *debug.log*. Typical entries might look like this:

    ```
    lmgrd.exe -- <install_dir>\win32\lmgrd.exe
    License file -- <install_dir>\win32\license.dat
    Debug log file -- <install_dir>\win32\debug.log
    ```

    Click **Save Setup** when you finish entering the pathnames.

11. Choose the Start/Stop/Reread tab and click **Start Server**.

12. To verify that the server started, choose the Config Services tab and click **View Log**. Look for two lines similar to the following:

    ```
    14:31:00 (lmgrd) Starting vendor daemons ...
    14:31:00 (lmgrd) Started mgcld (pid 1088)
    ```

    Close lmtools once the server is started.

13. Invoke Questa SIM through the Windows Start menu.



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# Installing on a Windows PC Client where it Obtains a License from a Server

Use this setup if you are installing on a Windows PC that will obtain a license from a Windows PC or Linux license server.

### Procedure

1. Install Questa SIM from the DVD or via a downloaded installation executable.
2. Once the software is done installing, you will be prompted to install a hardware security key driver. Choose **No** since you are obtaining the license from a server.
3. Once installation is complete, check with your system administrator for the license server's hostname (the network machine name) and port number (1650 is the default port number).
4. Set the LM_LICENSE_FILE environment variable with the port# and hostname given you by the system administrator.
   - For Windows, right-click the My Computer or This PC icon and select Properties, then select Advanced System settings and then select Environment Variables.

     Add LM_LICENSE_FILE with the value port#@hostname, reflecting the data given you by your system administrator, such as 1650@server1.

     The software does not look for licensing variables in the registry, therefore you must set either LM_LICENSE_FILE or MGLS_LICENSE_FILE environment variable.
5. Reboot your PC.
6. Make sure the license server is running, then invoke Questa SIM through the Windows Start menu.

# Windows PC License Server

Use this setup if you are installing a Windows PC license server that checks out licenses to Windows or Linux clients. If you already have a FlexNet installation on the server, you need to install only the mgcld daemon and the license file.

### Procedure

1. If you received a hardware security key (dongle), install it on the parallel or USB port of your server. Skip this step if you licensed Questa SIM to the server's Ethernet ID.
2. Install Questa SIM from the CD or via a downloaded installation executable.
3. Once the software is done installing, you will be prompted to install a hardware security key driver. Choose **Yes** if you installed a security key in Step 1; choose **No** if you licensed Questa SIM to the server's Ethernet ID.



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4. After installation is complete, save the *license.dat* file to <*install_dir*>*win32**license.dat*.

   Make sure there are no extra spaces or line breaks in the license file. It must exactly match the license you received by e-mail, including upper and lower case and any backslashes (\).

5. Verify the name of your server via the Windows Control Panel by selecting **System and Security**, then **System**, the looking at the Computer Name entry.

6. Open the *license.dat* file and change the server name to the name of your server. Use a text editor like Notepad rather than a word processor. Word processors may add extra hidden formatting characters to the file and cause problems. Edit the DAEMON line to point to the full path for the mgcld.exe, for example:

   ```
   SERVER server1 123456789123 1717
   DAEMON mgcld C:\<install_dir>\win32\mgcld.exe
   ```

7. Set the LM_LICENSE_FILE environment variable with the port# and hostname.

   - For Windows, right-click the My Computer or This PC icon and select Properties, then select Advanced System settings and then select Environment Variables.

     Add LM_LICENSE_FILE with a value of 1650@hostname, where hostname is the name of your server.

     The software does not look for licensing variables in the registry, therefore you must set either LM_LICENSE_FILE or MGLS_LICENSE_FILE environment variable.

8. Reboot the server.

9. Launch *lmtools.exe* from the <*install_dir*>*win32* directory.

10. Choose the Config Services tab and add the pathnames for *lmgrd.exe*, *license.dat*, and *debug.log*. Typical entries might look like this:

    ```
    lmgrd.exe -- <install_dir>\win32\lmgrd.exe
    License file -- <install_dir>\win32\license.dat
    Debug log file -- <install_dir>\win32\debug.log
    ```

    Click **Save Setup** when you finish entering the pathnames.

11. Choose the Start/Stop/Reread tab and click **Start Server**.

12. To verify that the server started, choose the Config Services tab and click **View Log**. Look for two lines similar to the following:

    ```
    14:31:00 (lmgrd) Starting vendor daemons ...
    14:31:00 (lmgrd) Started mgcld (pid 1088)
    ```

    Close lmtools once the server is started.



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# Troubleshooting Windows PC Server Setup

If you do not properly set up your licensing environment, you can use the following techniques to help solve the issue or problem.

## Solution

- The *Getting Started with Mentor Standard Licensing* Knowledge Base Article provides a number of solutions for Windows PC-based licensing issues. This article is available on Support Center at the following URL:

  https://support.sw.siemens.com/en-US/product/905395197/knowledge-base/MG605582

In addition to the solutions found in the Knowledge Base Article, also try the following:

- Open a command prompt window and go to the appropriate *<install_dir>\win32* directory. Enter the command:

  ```
  lmutil.exe lmdiag
  ```

  This allows you to verify each feature independently.

- From a command prompt window, and the same *win32* directory, enter the following:

  ```
  lmutil.exe lmstat -a
  ```

  This shows you all licenses that are available.

- Go to the *debug.log* inside the *win32* directory. This may provide other information about the source of the license server problems.

- Verify that FlexNet v11.16.4.0 was installed on the server. Launch *lmtools.exe* from the *<install_dir>\win32* directory and select **Help > About**.

# Uninstalling from a Windows Machine

Remove any or all products installed with the Mentor Graphics Install.

## Procedure

1. From the Start Menu, choose **Start > Programs > Mentor Graphics > Mentor Uninstall > Uninstall Mentor Products**.
2. Select from:
   - **Sort by Target** — Choose this sort option to list all targets you have installed to.
   - **Sort by Product** — Choose this sort option to list all installed products.
3. Select individual, multiple, or **Select All** products to be removed.
4. Click **Next** to proceed to the Confirm Removal Selection window.



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5. Click **Remove**.

   The Install program will prompt you to remove itself after the last product is removed.

6. Click **Done**.



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# Linux Installation Instructions

Questa SIM uses the Mentor Graphics Install program for installation on Linux platforms.



## Available Files for Linux Installation

A complete release executable, either from the DVD or via download, contains the Mentor Graphics Install program.

- Installer executable. There are two forms of executable:
  - Single-file installer — (<*product_name*>.*aol*) This executable includes all required parts of product for you to pick and choose from within the Mentor Graphics Install program. This form of installer is available by download from Support Center or on a DVD. This form of installer makes for a larger file, but you have everything you could need for installing at your location.
  - Online installer — (<*product_name*>_<*version*>*online.bin*) This executable includes the Mentor Graphics Install program, but instead of including all parts of the product. This form of installer is a smaller file, allowing you to download only those parts you require at the time of installation, thus saving on download time.

  In both cases, the Mentor Graphics Install program will lead you through the process and provides internal documentation for any assistance you may require.
- gcc compiler install file — (<*productname*>*_gcc*-<*ver*>-<*platform*>*.zip*) contains gcc compilers specific to your target platform.

  If you are using SystemC, you will need to acquire a gcc compiler install file for all target platforms.
- Register Assistant UVM install file — (*regassistuvm_*<*version*>*_ixl.exe*) contains the Register Assistant UVM functionality

  Register Assistant UVM will be installed in a subdirectory relative to a Questa install tree, such as *questa_sim/RUVM_*<*ver*> or *questasim/RUVM_*<*ver*>.



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# General Install Instructions for Linux

There are several different situations for installing on Linux platforms.



## Basic Install Instructions

Installation on a Linux platform uses the Mentor Graphics Install program.

### Procedure

1. Download the necessary files into the same directory location, referring to the section Available Files for Linux Installation.
2. Execute the Mentor Graphics Install program (<*product_name*>.*aol*)
3. Use the Mentor Graphics Install program interface to install the tool to the locations required. The Help button at the top of the window provides documentation for using the Install program.

   At this point, the installed directory contains all the base files, the documentation files, and the platform specific executables.
4. After installing the product you should set your PATH environment variable to find the Questa SIM executables.

   If you know that you will only be using a single environment, you can explicitly set the PATH environment variable to your specific VCO:

   **PATH = <install_dir>/<platform>/**

   where platform could be: linux, linux_x86_64. In this scenario, you do not need to set the MTI_VCO_MODE environment variable because you are explicitly specifying either the 32- or 64-bit executables.

   It is also possible to have an invocation scheme that is more platform-independent, based on the state of the MTI_VCO_MODE environment variable:

   **PATH = <install_dir>/bin/**

   This allows Questa SIM to automatically detect which VCO to use for the vsim, vcom, and other executables.

   By default, it will choose the 32-bit executables. You can override this behavior by setting the MTI_VCO_MODE to 64, which instructs Questa SIM to choose the 64-bit executables.



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# Installing on a Stand-Alone Linux Workstation

Use this setup if you are running Questa SIM on a stand-alone Linux workstation. Questa SIM and the license server run on the same system.

### Procedure

1. After installation is complete, save the *license.dat* file into the <*install_path*>/ directory.
2. Open the *license.dat* file and change the server name to the hostname of your workstation.
3. Start the license manager daemon with the following commands:

   ```
   cd <install_path>/<platform>  START_SERVER
   ```

4. Set the LM_LICENSE_FILE environment variable to the hostname:

   ```
   setenv LM_LICENSE_FILE 1650@hostname
   ```

5. Enter the following command at the shell prompt to start Questa SIM:

   ```
   vsim
   ```

# Installing on a Linux Client that Obtains a License From a Server

Use this setup if you are installing on a Linux system that will obtain a license from a Linux or PC server.

### Procedure

1. Once installation is complete, check with your system administrator for the license server's hostname (the network machine name) and port number (1650 is the default port number).
2. Set the LM_LICENSE_FILE environment variable with the port# and hostname:

   ```
   setenv LM_LICENSE_FILE 1650@hostname
   ```

   where hostname is the name of the license server.
3. Make sure the license server is running, then enter the following command at the shell prompt to start Questa SIM:

   ```
   vsim
   ```

# Installing a Linux License Server

Use this setup if you are installing a Linux license server that will check out licenses to clients.



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If you already have a FlexNet installation on the server, you need only install the mgcld daemon and the license file (log into https://support.mentor.com if this is your situation).

## Procedure

1. Run the Install file (<*product_name*>.*aol*), which invokes the Mentor Graphics Install wizard.
   a. Click the icon next to Install Products to initiate the procedure for licensing and installation. This procedure allows you to specify your installation location.
   b. To display online help for the wizard, click the Help button at the top of the window.
2. After installation is complete, save the *license.dat* file into the <*install_dir*> directory.
3. Open the *license.dat* file and change the server name to the hostname of your server.
4. Start the license manager daemon with the following commands:

   ```
   cd <install_path>/<platform>
   START_SERVER
   ```

   where <platform> can be linux, or linux_x86_64.
5. Set the LM_LICENSE_FILE environment variable with the port# and hostname:

   ```
   setenv LM_LICENSE_FILE 1650@hostname
   ```

   where hostname is the name of the license server.



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# Design Library Regeneration

When you upgrade between calendar releases (for example, from 2019.1 to 2020.1), you must regenerate your design libraries. This is not true for quarterly releases of the same calendar year, such as 2019.1 to 2019.2.

Libraries are compatible between different quarterly releases of the product, as long as the version number is the same. For example, 2019.1 libraries are compatible with 2019.2, but not with older releases.



## Regenerating Design Libraries Explicitly

You can regenerate your design libraries by adding the -refresh argument to your compiler commands.

An important feature of -refresh is that it rebuilds the library image without using source code. This means that models delivered as compiled libraries without source code can be rebuilt for a specific release of Questa SIM. In general, this works for moving forwards or backwards on a release. Moving backwards on a release may not work if the models used compiler switches or directives (Verilog only) that do not exist in the older release or if a bug was fixed that makes it impossible to do a “backwards” refresh.

**Note**

You do not need to regenerate the std, ieee, modelsim_lib, vital, and verilog libraries as these are provided with each release of Questa SIM. However, if you have your own copies of these libraries, you will need to refresh them.

### Procedure

Use either of the following actions, depending on your design language.

- Use the vcom command with the -refresh argument to update the VHDL design units.
- Alternatively, use the vlog command with the -refresh argument to update Verilog design units.

By default, the work library is updated, however you can use the argument -work <library> to update a different library.



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### Examples

If you have a library named *mylib* that contains both VHDL and Verilog design units you would use both of these commands:

```
vcom -work mylib -refresh
vlog -work mylib -refresh
```

## Automatic Regeneration of Design Libraries with AutoRefresh

Questa SIM library files can be used by any ModelSim/Questa simulator variant with the help of AutoRefresh. AutoRefresh works during the loading of the simulation to build the library files needed by the current simulator variant.

AutoRefresh builds only the files needed by the loading simulation, and then only refreshes files for design units that have changed, leaving the rest of the library files untouched.

### Details of Binary Files from using AutoRefresh

AutoRefresh regenerates the binaries files compiled by any simulator variant that are stored in the Questa SIM libraries.

For example, if a module is changed and recompiled on PE/DE, the next time an SE simulator tries to use that library, Questa SIM automatically regenerates the necessary files.

One library can contain the code for both formats. For example, for each design unit in a “work” library, there can be an SE and PE/DE version co-existing. In fact if you run a PE/DE-compiled design on SE, it will auto-refresh itself when you invoke vsim. The library format that SE needs is generated “on the fly” from the PE/DE format. After that point, both formats exist in the library and no more format conversion will occur.

Why two different formats? The SE compiler has several performance optimizations that are not in the PE/DE compiler. Consequently, the generated code for SE has to be different.



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# FlexNet Licenses

Questa SIM uses Flexera Software FlexNet license manager and files. FlexNet license files contain lines of text that can be referred to by the word that appears first on the line. Each kind of line has a specific purpose, and there are many more kinds of lines that Questa SIM does not use.

This version of Questa SIM uses version v11.16.4.0 of FlexNet license manager. Sites that have existing license servers running an older version must shut down the servers and restart them using the license server (lmgrd) and vendor daemon (mgcld) provided in this release.



## General License Concepts

This section contains several conceptual topics about licenses and licensing.

### License Transfers and Server Changes

There is a charge for server changes or license transfers. For details, please contact your local Mentor Graphics sales office.

### Where to Obtain Your License

See https://support.mentor.com/licenses for details.

### Troubleshooting Common Licensing Problems

- What licenses are needed for mixed language simulation?

  To simulate a mixed language design, two licenses are required. The msimhdlmix and msimhdlsim licenses together or TWO msimhdlsim licenses will allow mixed language simulation. With just one msimhdlsim license, only one language at a time can be used.

- What can I do if get an error message that states that the encryption code has been modified?

  The most likely causes and solutions for this error are the following:

  - Extra space characters at the end of the line: Remove these characters.
  - Invalid characters added to the end of the line: Remove these characters.
  - Incorrect split in the line: Rejoin the lines.



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Solution: If the original version of the license file is available (in an e-mail archive or elsewhere), compare the modified license file to the original file.

If extra SERVER lines were added, this also throws off the decryption of the license. You should remove those extra SERVER lines and restart the server. If you cannot remove the lines, contact your account manager to request a license file transfer.

## License File Examples

This section uses several examples of a license file to explain its content and functions.

A node-locked *license.dat* file for FLEXid keys:

```
INCREMENT qhsimvh mgcld 2007.220 12-dec-2007 0 BD8652099FD3BC2ACF0D
VENDOR_STRING=520BC0CA HOSTID=FLEXID=9-542226d9 SN=7188197 SIGN2="1A00
B1E7 4D54 9232 BC8E D685 6FCD 3B8D 5E00 BBE8 AF51 BB4A 59C4 7551 AACA
0B41 8048 87DD CB3B A72E B1A3 36F6 FE9C 096C 51F3 6BA4 6C01 8E19 765A
F9FB"
INCREMENT qhsimvl mgcld 2007.220 12-dec-2007 0 3D968239F07091363556
VENDOR_STRING=E9EF2145 HOSTID=FLEXID=9-542226d9 SN=7188196 SIGN2="07D1
C7CE 2E0B 0639 AAF5 9A1A 3C8C 542D 298F D2A6 13D3 7FB0 8C26 6D31 B906
1A92 1CE4 83F8 2178 DC4A 7D31 184C 8439 3E3A 8337 BCB5 273A B0D2 4C2A
DA3E"
```

A floating *license.dat* file:

```
SERVER server1 00065B4213F2 1717
DAEMON mgcld C:\Modeltech_6.3\win32\mgcld.exe
INCREMENT qhsimvh mgcld 2007.220 4-dec-2007 1 DD35265192B8C3224364
VENDOR_STRING=66E0B055 SN=6264745 SIGN2="1688 0801 FAEC 27CE A6AD 0C2D
F9DB C37D 1E9C 7B5A F483 67BE 4F11 2C0C B7FC 135B 50AE 6C20 BE1E A991 2BCC
51BB 756D E2D5 CFB7 C801 FCE7 68F4 A24A A499"
INCREMENT qhsimvlog mgcld 2007.220 4-dec-2007 1 8D05E6017C8E0DE044AB
VENDOR_STRING=1AF05984 SN=6264744 SIGN2="071F 2C8E F935 C771 9C0A 763A
CE62 9424 9B00 6810 7C5A E8C5 3BD3 0DF7 9E04 1511 233E 9A52 B8B0 FD65 CFCB
8B30 1384 CF3D 8323 444F 51F0 F6EE 177B 79DC"
```

An Flexera Software FlexNet floating license file contains information about the license SERVER, the DAEMON required to authorize the feature, and a line for each product FEATURE you are authorized to execute.

### The SERVER Line

The first line is a SERVER line; it spells out which computer on the network is the license server. The license server is a network resource that will manage the features for all users of Questa SIM products. The SERVER line includes the server's hostname (the server’s network identification - for Windows, check the Network properties Identification tab), hostID (a unique serial number), and a port number. The hostname and port number may be changed in a license file, but any change to the hostID will invalidate the license. If the host is a Windows machine, the hostID is the FLEXid security key number or the machine’s Ethernet ID. The possible



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security key numbers include: 6-xxxxxxxx or 7-xxxxxxxx for Sentinel keys; 8-xxxxxxxx for Dallas keys; 9-xxxxxxxx for Aladdin USB keys.

**Note**

Dallas key IDs (8-xxxxxxxx) must be upper case. Aladdin USB key IDs (9-xxxxxxxx) must be lower case.

See Licensing for information on how to locate a server or key ID.

### The DAEMON Line

A DAEMON line specifies the name of the license daemon and the locations of the daemon and options files it will use. This is the full path to the mgcld daemon. In the example file, the Linux "./" means "look in the current directory". This is the directory in which the server was started. If the server is to be started from another directory, the full path to the *mgcld* and *options* files would need to be added to this line.

For example,

```
DAEMON mgcld /usr/mti10.1/linux/mgcld \
/usr/mti10.1/linux/options
```

**Note**

The "options" line is only necessary if you are using a FlexNet options file.

### The INCREMENT Line

An INCREMENT line describes how many licenses ("tokens") are available; it contains the feature name, daemon required, most current build date authorized to run, token expiration date, number of tokens for the feature, license code, and a checksum.

If an INCREMENT entry is too long to fit on a single line, a backslash (\) appears at the end of the line. A system interprets that as joining the next line with the current line (that is, treating both lines as one, without a linefeed or carriage return). Therefore, never delete a backslash at the end of a line when you are transcribing a license file. Similarly, do not insert another character after a backslash.

## License Feature Names

The names on the feature lines in the license file correspond to particular functions in the ModelSim and Questa products. msimhdlsim' & 'qhsimvl'



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**Table 1-5. Feature Names**

| Feature name<br>S = Standard<br>O = Option | Description | ModelSim | | Questa | |
|---|---|---|---|---|---|
| | | PE | DE | Core | Prime |
| msimcdebug | Enables C debugging. | O | O | S | S |
| msimdataflow | Enables Dataflow and Schematic Window | S | S | S | S |
| msimhdlmix | Second license for mixed simulation, regardless of language | | | S | S |
| msimhdlsim | Language Neutral License (LNL) simulation; can act as either VHDL or Verilog. For full SystemVerilog support, you must have this feature and qhsimvl. | | | S | S |
| msimpevsim | PE VHDL simulator | S | S | | |
| msimpevsimvlog | PE Verilog simulator | S | S | | |
| msimsystemcnl | Enables SystemC simulation (node-lock) | O | O | | |
| msimsystemc | Enables SystemC simulation | O | O | O | S |
| qhsimvh | Enables VHDL simulation | | | S | |
| qhsimvl | Enables Verilog simulation. For full SystemVerilog support, you must have this feature and msimhdlsim. | | | S | |
| msimcompare | Enables simulation results comparison; waveform compare. | S | S | S | S |
| msimcoverage | Enables code coverage | S | S | S | S |
| msimprofile | Enables code profiling | O | O | S | S |
| msimviewer | Enables the GUI | O | S | S | S |
| peproassertions | Enables SystemVerilog and PSL assertions | | S | | |
| txanalysis | Enables transaction viewing | O | O | O | S |
| mtiverification | Enables PSL and SystemVerilog assertions | | | S | S |



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**Table 1-5. Feature Names (cont.)**

| Feature name<br>S = Standard<br>O = Option | Description | ModelSim | | Questa | |
|---|---|---|---|---|---|
| | | PE | DE | Core | Prime |
| svverification | Enables functional coverage, constrained random stimulus generation, and Program Blocks | | | | S |
| svrnm | Real Valued Modeling (Real Number) | | | | O |
| svwreal | Real Valued Modeling (Wire Real) | | | | O |
| qpasim | Enables Power Aware verification | | | | O |
| zncwmbase | Enables checker and monitor functionality | | | | S |
| qxprop | Enables X Propagation functionality | | | | |
| qvrm | Enables the Verification Run Manager | | | O | S |
| qvman | Enables the Verification Management features (including triage report, vcover report -trend, vcover report -html, Testplan analysis) | | | O | S |
| mc2sim[1] | Enables multi-core, multi-processor simulation | | | O | O |
| msimreguvm | Enables the Register Assistant UVM tool. | | | | S |

1. Linux platform support only.

## Finding License Features for Your Site

A list of features for your site is available on the Support Center web site at the following URL:

https://support.mentor.com/licenses

This displays the Licensing tab of your “My Account” page.

- To find your current license file, click the link for “Authorization codes.”



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- To view the license feature by product, click the link for “License reports” and generate the report.

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https://support.sw.siemens.com

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https://support.sw.siemens.com/register



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