Mentor®

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Questa® SIM Installation and Licensing Guide

Software Version 10.7c

Document Revision 3.6

Note - Viewing PDF files within a web browser causes some links not to function (see MG595892).
Use HTML for full navigation.

Revision History

Revision	Changes	Status/ Date
3.6	Modifications to improve the readability and comprehension of the content. Approved by Farshad Dailami. All technical enhancements, changes, and fixes listed in the Release Notes are reflected in this document. Approved by Tim Peeke.	Released August 2018
3.5	Modifications to improve the readability and comprehension of the content. Approved by Farshad Dailami. All technical enhancements, changes, and fixes listed in the Release Notes are reflected in this document. Approved by Tim Peeke.	Released June 2018
3.4	Modifications to improve the readability and comprehension of the content. Approved by Farshad Dailami. All technical enhancements, changes, and fixes listed in the Release Notes are reflected in this document. Approved by Tim Peeke.	Released March 2018
3.3	Modifications to improve the readability and comprehension of the content. Approved by Farshad Dailami. All technical enhancements, changes, and fixes listed in the Release Notes are reflected in this document. Approved by Tim Peeke.	Released December 2017

Author: In-house procedures and working practices require multiple authors for documents. All associated authors for each topic within this document are tracked within the Mentor Graphics Technical Publication's source. For specific topic authors, contact Mentor Graphics Technical Publication department.

Revision History: Released documents maintain a revision history of up to four revisions. For earlier revision history, refer to earlier releases of documentation which are available on Support Center (http://support.mentor.com).

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List of Tables

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 10.7c of Questa SIM uses version v11.14.1.3 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.

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 • Red Hat Enterprise Linux 6 and 7	32-bit	linux	3GB[3]
		64-bit	linux_x86_64	terabytes
x86	• Windows 7, 8.1 and 10 (32-bit)	32-bit	win32[4]	2GB
	• Windows 7, 8.1 and 10 (64-bit)	64-bit	win64	terabytes
	• SUSE Linux Enterprise Server 11 and 12 • Red Hat Enterprise Linux 6 and 7	32-bit	linux	3GB
		64-bit	linux_x86_64	terabytes
AMD64	• SUSE Linux Enterprise Server 11 and 12 • Red Hat Enterprise Linux 6 and 7	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.

Note - Viewing PDF files within a web browser causes some links not to function. Use HTML for full navigation.

SystemC Supported Platforms

Questa SIM runs SystemC on a subset of supported platforms.

One subset exists for SystemC-2.3.1 (Table 1-2) and another for SystemC-2.2 (Table 1-3).

Table 1-2. Supported Platforms for SystemC-2.3.1

Platform/OS	Supported compiler versions[1]	32-bit	64-bit	TLM
linux, linux_x86_64	gcc-5.3.0 gcc-4.7.4 gcc-4.5.0 VCO is linux (32-bit binary) VCO is linux_x86_64 (64-bit binary)	yes	yes	2.0.2
Windows[2]7, 8.1, and 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.

Table 1-3. Supported Platforms for SystemC-2.2

Platform/OS	Supported compiler versions[1]	32-bit	64-bit	TLM
linux, linux_x86_64	gcc 4.5.0 VCO is linux (32-bit binary) VCO is linux_x86_64 (64-bit binary)	yes	yes	2.0.1
Windows[2]7	Minimalist GNU for Windows (MinGW) gcc 4.2.1— VCO is win32	yes	no	2.0.1

1. Header files location: <path to install tree>/include/systemc/sc22
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

   - 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.

  o 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.

  o 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 DOS shell, Cygwin bash shell, and the make utility.

- Gain an understanding of manifest files, which were introduced with Visual Studio 2013.

  o 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.

  o 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.

  o 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.

   - 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*

   ```
   <?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.

Table 1-4. Discontinued and Retiring Operating Systems

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

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 v2017_1_patch2 with MGLS v9.17_10.2.4 and PCLS v9.17_10.2.0 (or newer) and Packaging Information version v3.1_0.2a (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.

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.

  o Security key ID number — check the number printed on the key.

  o 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".

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 1-5. Determining Linux Workstation ID

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

Note - Viewing PDF files within a web browser causes some links not to function. Use HTML for full navigation.

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.

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_<uvm-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 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 or choose **No** if you licensed Questa SIM to the PC's Ethernet ID.

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 Computer 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.

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 UNIX license server.

Procedure

1. Install Questa SIM from the CD 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 Computer 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.

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 Computer 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.

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

- Use the Licensing Wizard located in the Questa SIM program group to solve licensing problems. Run the wizard on a client machine to check the availability of the license from your PC server.

In addition to running the Licensing Wizard, try the following:

- Open a DOS 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 DOS 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 v11.14.1.3 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.

5. Click **Remove**.

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

6. Click **Done**.

Linux Installation Instructions

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

Available Files for Linux Installation

There are a number of files you will need to acquire, either from the CD or via download. A complete release contains the Mentor Graphics Install program, the base install file, the platform specific install file(s) for your machine type(s) and the documentation install file.

- Installer executable— (*install.<platform>*) the executable for the Mentor Graphics Install interface.

  You should acquire the Installer executable specific to the platform from which you will be performing the installation.

- Base install file — (*<productname>-base.mis*) contains the base functionality for all platforms.

- Documentation install file — (*<productname>-docs.mis*) contains the documentation for all Linux platforms. Using this file you could install only the documentation, but on Linux platforms only.

- Platform-specific install file — (*<productname>-<platform>.mis*) contains installation files specific to the target platform (the platform, to which you are installing).

  You will need to acquire a platform-specific install file for each target platform.

- gcc compiler install file — (*<productname>_gcc-<ver>-<platform>.mis*) 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 — (*qsv_regassistuvm_<uvm_ver>_ixl.mis* or *qcp_regassistuvm_<uvm_ver>_ixl.mis*) contains the Register Assistant UVM functionality

  o *qsv_regassistuvm_<uvm_ver>_ixl.mis* (Questa SV/Questa AFV)

  o *qcp_regassistuvm_<uvm_ver>_ixl.mis* (Questa Prime)

  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>*.

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 (*install.<platform>*) specific to the platform of the machine you are using to perform the installation. Be sure to execute the Mentor Graphics Installer from the same directory as the original download location containing the *.mis* files.

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. For SystemC, it should also contain the gcc 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.

Create a Batch File for Automated Installation

To automate Questa SIM installation, you save the settings that you enter when using the Mentor Graphics Install interface. You save these settings to a file, which you can then use as a batch file for installing Questa SIM again in the same location.

Procedure

1. Invoke the Mentor Graphics Install interface (wizard).

2. On the opening page, click Install Products.

3. On the License Agreement page, click Agree.

4. On the Source and Target page, click the Browse buttons to navigate to the source and target locations for the installation.

5. Click Next.

6. On the Product Selection page, select all products that you want to install.

7. Click Next.

8. On the Confirm Selections page, click Save.

9. In the Save dialog box, use the Save in and File Name fields to specify the location and name of a text file that contains your installation settings.

10. The next time you want to run the same installation, run the following in a command shell:

```
install.linux -batch <filename>
```

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 checkout licenses to clients.

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 (*install.<platform>*) specific to the platform you are installing from to begin the installation process. This command displays 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.

Design Library Regeneration

When you upgrade between number versions (for example, from 10.3 to 10.4), you must regenerate your design libraries. This is not true for letter versions of the same number, such as 10.4 to 10.4a.

Libraries are compatible between different letter versions of the product, as long as the version number is the same. For example, 10.3 libraries are compatible with 10.3a, but not with 10.2d.

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.

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 10.4 library files can be used by any 10.4 simulator type with the help of AutoRefresh. AutoRefresh works during the loading of the simulation to build the library files needed by the current simulator type.

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 for Starter/PE/DE (.psm), SE (.asm), and SE/64-bit (.asm64) that are stored in the Questa SIM libraries.

For example, if a module is changed and recompiled on Starter/PE/DE, the next time an SE simulator tries to use that library, Questa SIM automatically regenerates the necessary .asm 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 Starter/PE/DE version co-existing. In fact if you run a Starter/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 Starter/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 Starter/PE/DE compiler. Consequently, the generated code for SE has to be different.

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 v11.14.1.3 of FlexNet licens 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:

  o Extra space characters at the end of the line: Remove these characters.

  o Invalid characters added to the end of the line: Remove these characters.

  o Incorrect split in the line: Rejoin the lines.

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.

Maintenance Renewals and Licenses

When maintenance is renewed, a new license file that incorporates the new maintenance expiration date will be sent to you automatically. If maintenance is not renewed, the current license file will still permit the use of software versions built before maintenance expired until the stop date is reached.

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 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.

Table 1-6. Feature Names

Feature name	Description	ModelSim			Questa				
S = Standard **O = Option**		**PE**	**DE**	**SE**	**SV**	**AFV**	**Core**	**Prime**	**Ultra**
msimcdebug	Enables C debugging.	O	O	S	S	S	S	S	S
msimdataflow	Enables Dataflow and Schematic Window	S	S	S	S	S	S	S	S
msimhdlmix	Second license for mixed simulation, regardless of language			S		S	S	S	S
msimhdlsim	Language Neutral License (LNL) simulation; can act as either VHDL or Verilog			S		S	S	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	S	O	S	S
qhsimvh	Enables VHDL simulation			S			S		
qhsimvl	Enables Verilog simulation			S	S		S		
msimcompare	Enables simulation results comparison; waveform compare.	S	S	S	S	S	S	S	S
msimcoverage	Enables code coverage	S	S	S	S	S	S	S	S
msimprofile	Enables code profiling	O	O	S	S	S	S	S	S
msimviewer	Enables the GUI	O	S	S	S	S	S	S	S
peproassertions	Enables SystemVerilog and PSL assertions		S						
txanalysis	Enables transaction viewing	O	O	O	S	S	O	S	S

Note - Viewing PDF files within a web browser causes some links not to function. Use HTML for full navigation.

Table 1-6. Feature Names (cont.)

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

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

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End-User License Agreement

The latest version of the End-User License Agreement is available on-line at:
www.mentor.com/eula

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7.2.   THE WARRANTIES SET FORTH IN THIS SECTION 7 ARE EXCLUSIVE. NEITHER MENTOR GRAPHICS NOR ITS LICENSORS MAKE ANY OTHER WARRANTIES EXPRESS, IMPLIED OR STATUTORY, WITH RESPECT TO PRODUCTS PROVIDED UNDER THIS AGREEMENT. MENTOR GRAPHICS AND ITS LICENSORS SPECIFICALLY DISCLAIM ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OF INTELLECTUAL PROPERTY.

8. **LIMITATION OF LIABILITY.** TO THE EXTENT PERMITTED UNDER APPLICABLE LAW, IN NO EVENT SHALL MENTOR GRAPHICS OR ITS LICENSORS BE LIABLE FOR INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS) WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY, EVEN IF MENTOR GRAPHICS OR ITS LICENSORS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL MENTOR GRAPHICS' OR ITS LICENSORS' LIABILITY UNDER THIS AGREEMENT EXCEED THE AMOUNT RECEIVED FROM CUSTOMER FOR THE HARDWARE, SOFTWARE LICENSE OR SERVICE GIVING RISE TO THE CLAIM. IN THE CASE WHERE NO AMOUNT WAS PAID, MENTOR GRAPHICS AND ITS LICENSORS SHALL HAVE NO LIABILITY FOR ANY DAMAGES WHATSOEVER. THE PROVISIONS OF THIS SECTION 8 SHALL SURVIVE THE TERMINATION OF THIS AGREEMENT.

9. **THIRD PARTY CLAIMS.**

9.1.   Customer acknowledges that Mentor Graphics has no control over the testing of Customer's products, or the specific applications and use of Products. Mentor Graphics and its licensors shall not be liable for any claim or demand made against Customer by any third party, except to the extent such claim is covered under Section 10.

9.2.   In the event that a third party makes a claim against Mentor Graphics arising out of the use of Customer's products, Mentor Graphics will give Customer prompt notice of such claim. At Customer's option and expense, Customer may take sole control of the defense and any settlement of such claim. Customer WILL reimburse and hold harmless Mentor Graphics for any LIABILITY, damages, settlement amounts, costs and expenses, including reasonable attorney's fees, incurred by or awarded against Mentor Graphics or its licensors in connection with such claims.

9.3.   The provisions of this Section 9 shall survive any expiration or termination of this Agreement.

10. **INFRINGEMENT.**

10.1.   Mentor Graphics will defend or settle, at its option and expense, any action brought against Customer in the United States, Canada, Japan, or member state of the European Union which alleges that any standard, generally supported Product acquired by Customer hereunder infringes a patent or copyright or misappropriates a trade secret in such jurisdiction. Mentor Graphics will pay costs and damages finally awarded against Customer that are attributable to such action. Customer understands and agrees that as conditions to Mentor Graphics' obligations under this section Customer must: (a) notify Mentor Graphics promptly in writing of the action; (b) provide Mentor Graphics all reasonable information and assistance to settle or defend the action; and (c) grant Mentor Graphics sole authority and control of the defense or settlement of the action.

10.2.   If a claim is made under Subsection 10.1 Mentor Graphics may, at its option and expense: (a) replace or modify the Product so that it becomes noninfringing; (b) procure for Customer the right to continue using the Product; or (c) require the return of the Product and refund to Customer any purchase price or license fee paid, less a reasonable allowance for use.

10.3.   Mentor Graphics has no liability to Customer if the action is based upon: (a) the combination of Software or hardware with any product not furnished by Mentor Graphics; (b) the modification of the Product other than by Mentor Graphics; (c) the use of other than a current unaltered release of Software; (d) the use of the Product as part of an infringing process; (e) a product that Customer makes, uses, or sells; (f) any Beta Code or Product provided at no charge; (g) any software provided by Mentor Graphics' licensors who do not provide such indemnification to Mentor Graphics' customers; (h) OSS, except to the extent that the infringement is directly caused by Mentor Graphics' modifications to such OSS; or (i) infringement by Customer that is deemed willful. In the case of (i), Customer shall reimburse Mentor Graphics for its reasonable attorney fees and other costs related to the action.

10.4.   THIS SECTION 10 IS SUBJECT TO SECTION 8 ABOVE AND STATES THE ENTIRE LIABILITY OF MENTOR GRAPHICS AND ITS LICENSORS, AND CUSTOMER'S SOLE AND EXCLUSIVE REMEDY, FOR DEFENSE,

SETTLEMENT AND DAMAGES, WITH RESPECT TO ANY ALLEGED PATENT OR COPYRIGHT INFRINGEMENT OR TRADE SECRET MISAPPROPRIATION BY ANY PRODUCT PROVIDED UNDER THIS AGREEMENT.

11. **TERMINATION AND EFFECT OF TERMINATION.**

11.1. If a Software license was provided for limited term use, such license will automatically terminate at the end of the authorized term. Mentor Graphics may terminate this Agreement and/or any license granted under this Agreement immediately upon written notice if Customer: (a) exceeds the scope of the license or otherwise fails to comply with the licensing or confidentiality provisions of this Agreement, or (b) becomes insolvent, files a bankruptcy petition, institutes proceedings for liquidation or winding up or enters into an agreement to assign its assets for the benefit of creditors. For any other material breach of any provision of this Agreement, Mentor Graphics may terminate this Agreement and/or any license granted under this Agreement upon 30 days written notice if Customer fails to cure the breach within the 30 day notice period. Termination of this Agreement or any license granted hereunder will not affect Customer's obligation to pay for Products shipped or licenses granted prior to the termination, which amounts shall be payable immediately upon the date of termination.

11.2. Upon termination of this Agreement, the rights and obligations of the parties shall cease except as expressly set forth in this Agreement. Upon termination of this Agreement and/or any license granted under this Agreement, Customer shall ensure that all use of the affected Products ceases, and shall return hardware and either return to Mentor Graphics or destroy Software in Customer's possession, including all copies and documentation, and certify in writing to Mentor Graphics within ten business days of the termination date that Customer no longer possesses any of the affected Products or copies of Software in any form.

12. **EXPORT.** The Products provided hereunder are subject to regulation by local laws and European Union ("E.U.") and United States ("U.S.") government agencies, which prohibit export, re-export or diversion of certain products, information about the products, and direct or indirect products thereof, to certain countries and certain persons. Customer agrees that it will not export or re-export Products in any manner without first obtaining all necessary approval from appropriate local, E.U. and U.S. government agencies. If Customer wishes to disclose any information to Mentor Graphics that is subject to any E.U., U.S. or other applicable export restrictions, including without limitation the U.S. International Traffic in Arms Regulations (ITAR) or special controls under the Export Administration Regulations (EAR), Customer will notify Mentor Graphics personnel, in advance of each instance of disclosure, that such information is subject to such export restrictions.

13. **U.S. GOVERNMENT LICENSE RIGHTS.** Software was developed entirely at private expense. The parties agree that all Software is commercial computer software within the meaning of the applicable acquisition regulations. Accordingly, pursuant to U.S. FAR 48 CFR 12.212 and DFAR 48 CFR 227.7202, use, duplication and disclosure of the Software by or for the U.S. government or a U.S. government subcontractor is subject solely to the terms and conditions set forth in this Agreement, which shall supersede any conflicting terms or conditions in any government order document, except for provisions which are contrary to applicable mandatory federal laws.

14. **THIRD PARTY BENEFICIARY.** Mentor Graphics Corporation, Mentor Graphics (Ireland) Limited, Microsoft Corporation and other licensors may be third party beneficiaries of this Agreement with the right to enforce the obligations set forth herein.

15. **REVIEW OF LICENSE USAGE.** Customer will monitor the access to and use of Software. With prior written notice and during Customer's normal business hours, Mentor Graphics may engage an internationally recognized accounting firm to review Customer's software monitoring system and records deemed relevant by the internationally recognized accounting firm to confirm Customer's compliance with the terms of this Agreement or U.S. or other local export laws. Such review may include FlexNet (or successor product) report log files that Customer shall capture and provide at Mentor Graphics' request. Customer shall make records available in electronic format and shall fully cooperate with data gathering to support the license review. Mentor Graphics shall bear the expense of any such review unless a material non-compliance is revealed. Mentor Graphics shall treat as confidential information all information gained as a result of any request or review and shall only use or disclose such information as required by law or to enforce its rights under this Agreement. The provisions of this Section 15 shall survive the termination of this Agreement.

16. **CONTROLLING LAW, JURISDICTION AND DISPUTE RESOLUTION.** The owners of certain Mentor Graphics intellectual property licensed under this Agreement are located in Ireland and the U.S. To promote consistency around the world, disputes shall be resolved as follows: excluding conflict of laws rules, this Agreement shall be governed by and construed under the laws of the State of Oregon, U.S., if Customer is located in North or South America, and the laws of Ireland if Customer is located outside of North or South America or Japan, and the laws of Japan if Customer is located in Japan. All disputes arising out of or in relation to this Agreement shall be submitted to the exclusive jurisdiction of the courts of Portland, Oregon when the laws of Oregon apply, or Dublin, Ireland when the laws of Ireland apply, or the Tokyo District Court when the laws of Japan apply. Notwithstanding the foregoing, all disputes in Asia (excluding Japan) arising out of or in relation to this Agreement shall be resolved by arbitration in Singapore before a single arbitrator to be appointed by the chairman of the Singapore International Arbitration Centre ("SIAC") to be conducted in the English language, in accordance with the Arbitration Rules of the SIAC in effect at the time of the dispute, which rules are deemed to be incorporated by reference in this section. Nothing in this section shall restrict Mentor Graphics' right to bring an action (including for example a motion for injunctive relief) against Customer in the jurisdiction where Customer's place of business is located. The United Nations Convention on Contracts for the International Sale of Goods does not apply to this Agreement.

17. **SEVERABILITY.** If any provision of this Agreement is held by a court of competent jurisdiction to be void, invalid, unenforceable or illegal, such provision shall be severed from this Agreement and the remaining provisions will remain in full force and effect.

18. **MISCELLANEOUS.** This Agreement contains the parties' entire understanding relating to its subject matter and supersedes all prior or contemporaneous agreements. Any translation of this Agreement is provided to comply with local legal requirements only. In the event of a dispute between the English and any non-English versions, the English version of this Agreement shall govern to the extent not prohibited by local law in the applicable jurisdiction. This Agreement may only be modified in writing, signed by an authorized representative of each party. Waiver of terms or excuse of breach must be in writing and shall not constitute subsequent consent, waiver or excuse.

Rev. 170330, Part No. 270941