Cycle Model Studio

Version 9.0.0

Installation Guide

Non-Confidential



Cycle Model Studio Installation Guide

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Release Information

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Product Status

The information in this document is final, that is for a developed product.

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Chapter 1

Installing Cycle Model Studio Software

This document provides instructions for installing the Cycle Model Studio software, and includes information about system requirements, environment variables, and licensing.

1.1 Intended Audience

This guide is intended for system administrators or other users familiar with shell commands and installation packages.

1.2 System Requirements

This section describes general space requirements, requirements for Windows users, and requirements for Linux users.

1.2.1 General Requirements:

- 3 GB of disk space for unpacked media (see "Installation Packages" on page 9 for platform-specific details).
- RAM and working memory general guidelines:

Cycle Model Studio software: 500MB-2G

Cycle Model: 10MB per 1 million gates (if you replicate blocks within a design model, the incremental memory will be less than 10MB).

1.2.2 For Windows Users

- The supported Windows operating systems is Windows 7 (64-bit) (runtime only, no compilation).
- Visual Studio 2013 Update 4 has been qualified for compiling the model.

To compile components (such as for SoC Designer) using the Windows version of the Cycle Model Studio GUI, you must have Visual Studio 2013 Update 4 installed on the machine before running Cycle Model Studio. If it is not necessary to compile components, then at a minimum the Visual C++ Redistributable Package for Visual Studio 2013 must be installed.

1.2.3 For Linux Users

- GCC 4.7.2 has been qualified for compiling the model. This is included in your Cycle Model Studio installation.
- The supported Linux operating systems are:
 - Red Hat Enterprise Linux 6.6 (64-bit)
 - CentOS 6.6 (64-bit)

On CentOS and Red Hat machines, you must install certain additional packages and group packages as described below:

Note: If you are using a package manager other than yum, refer to its documentation for instructions on installing the required additional packages.

1. Add the following line to /etc/yum.conf.

```
multilib policy=all
```

2. Execute the following command to install the necessary group packages:

```
yum groupinstall "Additional Development" "Compatibility Libraries" "Development tools" "Perl Support"
```

3. Execute the following command to install additional required font packages:

```
yum install xorg-x11-fonts-75dpi xorg-x11-fonts-100dpi
```

4. Execute the following command to install additional required packages:

```
yum install libXext libXext-devel libXrender libXrender-devel glibc-devel
```

For SoC Designer users:

SoC Designer 9.0.0

For SystemC users:

• SystemC Versions 2.3.1

For Synopsys Platform Architect users:

• Platform Architect version K-2015.06

1.3 Accessing the Cycle Model Studio Software File

You can access software from the *Downloads* page on the *Support* section of the ARM IP Exchange web site (http://www.armipexchange.com). You will need to register for an account to get access to this web page. Contact ARM Techical Support (support-esl@arm.com) if you have any questions.

Then you can copy the software file, or files, for your specific configuration and platform requirements to your host machine.

1.3.1 Installation Packages

Cycle Model Studio supports two installation packages that are intended for specific platforms and operating systems. There are two versions of each Linux installation: one that provides a tarball, and one that provides a graphical installation wizard. Select the version that you prefer to use.

To ensure you are installing the correct package, refer to the following table (substitute the current release number for <release#>):

If you wish to install	Use this Installation Package
The full release containing Cycle Model Studio for Linux and Windows packaged as a single TGZ.	tar: ARM-CycleModel-release- <version>.tgz</version>
Standard Windows installer containing libraries and support files for using Cycle Models on Windows.	ARM-CycleModel-install-Windows- <version>.msi</version>

1.4 Configuring for Remote and Local Compilation

Cycle Model Studio supports two types of compilation usage models:

- Native Linux compilation
- Remote Linux compilation from Windows

1.4.1 Configuring for Native Linux Compilation

Native Linux compilation means launching and compiling a Cycle Model from within a Cycle Model Studio session that was launched on a Linux platform.

For example, you would open an X-Window session on your Linux machine and launch Cycle Model Studio. You would then add your RTL source files to a project and compile them. In this traditional Linux usage scenario, everything is done locally.

1.4.2 Configuring for Remote Linux Compilation

You can choose to run Cycle Model Studio on Windows as well. However, since the ARM Cycle Model Compiler is not available for Windows, you still need to be able to cross-compile your Cycle Models on Linux, and then build any Windows-based, platform-specific components, such as components for SoC Designer, on a Windows machine.

Cycle Model Studio supports this configuration with the following conditions:

- 1. There must be a shared read/write file system mounted on both the Windows and Linux machines. This can be accomplished using an application such as Samba or other shared file systems, such as a Network Appliance.
- 2. The version of the software must be the same on both the Windows and Linux machines. This is specified in the *Remote CARBON_HOME* property in the *Project Properties* view in Cycle Model Studio, and is verified before compilation proceeds.
- 3. The Cycle Model Studio project must reside on the shared file system. It cannot be located in C:\ or any other local disk.
- 4. The remote Linux machine must support the SSH protocol.

Note: Cycle Model Studio connects to the remote host running SSH on port 22. If you need to use a different port, you can use the environment variable CARBON_PLINK_ARGS and the "-P" argument. For example, "CARBON_PLINK_ARGS=-P 25" sets the port number to 25.

1.5 Installing Cycle Model Studio Software

Installation can be done on Linux machines, or on Windows computers (runtime only). The following installation sections are described in this chapter:

- Linux Installation Procedure
- Windows Installation Procedure

During the installation you will need to define the licensing environment variable. This variable points to the license that will be used with your Cycle Model Studio software. Typically, a license server is set up prior to the installation by a system administrator to host the licenses. The license server details are described in Installing and Managing FLEXnet License Files.

1.5.1 Linux Installation Procedure

The Cycle Model Studio software can be installed using two different methods for Linux computers:

- Installing Using the Tar File
- Setting the License Environment Variable on Linux
- Setting System Architecture Environment Variables
- Setting Home and Path Environment Variables

1.5.1.1 Installing Using the Tar File

Follow the steps below to install Cycle Model Studio software on Linux machines using the provided tar file:

1. Create a directory where you want to install the software:

```
mkdir <installation directory>
```

2. Change the working directory to the installation directory (if you are not already in that directory):

```
cd <installation directory>
```

3. Untar the Cycle Model Studio software kit that you downloaded:

```
tar xzf ARM-CycleModel-release-v<version>.tgz
```

1.5.1.2 Setting the License Environment Variable on Linux

Prior to running Cycle Model Studio or simulations using Cycle Models, you need to set the ARM-specific license environment variable, ARMLMD_LICENSE_FILE. This environment variable offers the best performance, although you may use the standard FlexNet license variable LM LICENSE FILE instead.

Linux csh shell

For the Linux csh shell, set:

```
setenv ARMLMD LICENSE FILE licenseFile
```

where *licenseFile* is either a license file or *<socket>@<hostname>* (for example, 7275@licserver). For example:

```
setenv ARMLMD LICENSE FILE 7275@licserver
```

Linux Bourne shell

For the Linux Bourne shell, set:

```
ARMLMD_LICENSE_FILE=licenseFile export ARMLMD LICENSE FILE
```

where *licenseFile* is either a license file or *<socket>@<hostname>* (for example, 7275@licserver). For example:

```
ARMLMD_LICENSE_FILE=7275@licserver export ARMLMD LICENSE FILE
```

1.5.1.3 Setting System Architecture Environment Variables

When you have installed the Linux 64-bit version of Cycle Model Studio software, the following environment variables are used to determine how the Cycle Model is built:

```
CARBON_HOST_ARCH=<Linux | Linux64>
CARBON TARGET ARCH=<Linux | Linux64>
```

CARBON_HOST_ARCH determines whether the 32- bit or 64-bit compiler is used to create the Cycle Model.

CARBON_TARGET_ARCH determines whether the Cycle Model is built as a 32-bit or 64-bit executable.

1.5.1.4 Setting Home and Path Environment Variables

Setting the CARBON_HOME and PATH environment variables is done using setup scripts. The two computing environment preparation commands that are used in Linux to prepare for running the Cycle Model Studio tool are:

- Bourne shell source < CMS install path > /etc/setup.sh
- C-Shell source <CMS install path>/etc/setup.csh

Cycle Model Studio users often find it convenient to insert one of these command lines into their login files. As a root user Administrator, you can insert the appropriate command line into the global logins of all users who require access the Model Studio tools.

1.5.2 Windows Installation Procedure

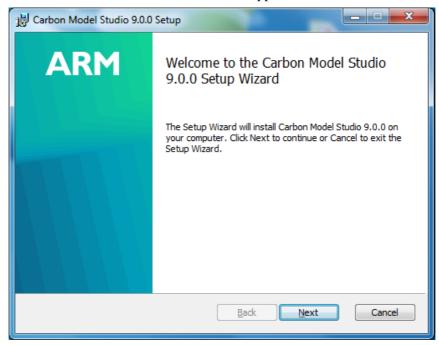
The Windows version of Cycle Model Studio software can be installed on Windows 7 computers. This section describes:

- Installing Using the Windows Setup Wizard
- Setting the License Environment Variable on Windows
- Setting additional required environment variables
- Uninstalling Cycle Model Studio on Windows

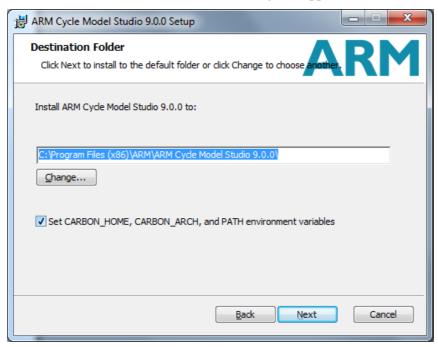
1.5.2.1 Installing Using the Windows Setup Wizard

Follow the steps below to install Cycle Model Studio on Windows machines:

- 1. Download the software kit ARM CycleModel-install-Windows-v<version>.msi.
- 2. Run the executable. The *Welcome* screen appears:



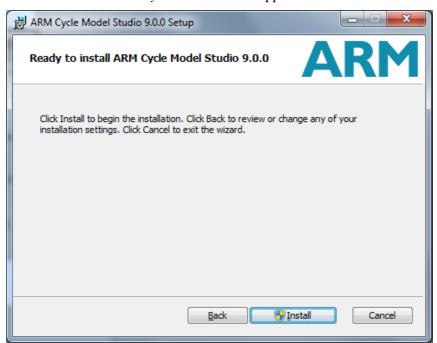
3. Click **Next** and the *Destination Folder* dialog box appears:



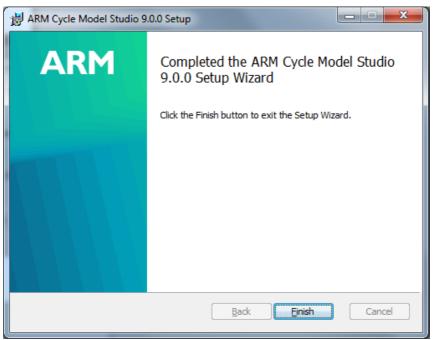
- 4. Accept the default installation location or click **Change** to define the location where the software will be installed.
- 5. By default, the checkbox under the installation location are enabled. You can uncheck this box to disable the feature:
 - Set CARBON_HOME, CARBON_ARCH, and PATH environment variables. When checked, the listed environment variables are set during the installation. Note that the path %CARBON_HOME%\Win\lib is added, and it should be at, or close to, the beginning of the PATH statement.

If you do not want this to occur automatically, uncheck the box. Later you can set these variables as described in "Setting Environment Variables" on page 18.

6. Click **Next** and the *Ready to Install* screen appears.



7. Click **Install** and the installation process begins. After the installation is complete, the *Completed* screen appears.



8. Click **Finish** and the installation completes and the window closes.

If the *Launch License Wizard* check-box was enabled checked, the License Wizard starts so you can install your license. See "Setting the License Environment Variable on Windows" on page 16 for more information.

You can install multiple versions of Cycle Model Studio software on your Windows machine. Note that the last installation sets the CARBON_HOME user environment variable. However,

when you run Cycle Model Studio (**Start-> Programs->ARM Cycle Model Studio**), it checks the location from which it is being launched and sets CARBON_HOME to the appropriate directory location.

If you are planning to develop your own applications using Microsoft® Visual Studio, refer to the *Windows Visual C++ Integration Application Note* in the ARM Cycle Models Documentation for additional required project settings.

1.5.2.2 Setting the License Environment Variable on Windows

Prior to running Cycle Model Studio, or running simulations using Cycle Models, you need to set the ARM-specific license environment variable, ARMLMD_LICENSE_FILE. This environment variable offers the best performance, although you may use the standard FlexNet license variable LM LICENSE FILE instead.

Point ARMLMD_LICENSE_FILE to the location where the license file is located; either a license file or <*socket*>@<*hostname*>. For example:

ARMLMD LICENSE FILE=7275@licserver;7276@licserver

- If you are using a *floating license*, enter the license in the format *port@host*, for example, 7275@FlexServer. A floating license requires that your system administrator install the license on a license server and provide you with the server name and port number. To list multiple floating licenses, separate each license with a semi-colon, for example, 7275@FlexServer;7276@FlexServer.
- If you are using a node-locked license, insert the path to the location on the local computer where the license file (*.lic) is located. A node-locked license only works on this one computer.

1.5.2.3 Setting additional required environment variables

The following environment variables need to be set:

- CARBON_ARCH CARBON ARCH=Win
- CARBON_HOME Set to the location where you installed the software. For example:

 CARBON HOME=C:\Program Files\ARM\Cycle Model Studio v9 0 0\
- PATH Include the following paths:

PATH=%CARBON_HOME%\bin;%CARBON_HOME%\Win\lib;%CARBON_HOME%\Win\lib\winx\shared

1.5.2.4 Uninstalling Cycle Model Studio on Windows

You can uninstall Cycle Model Studio using the **Add or Remove Programs** dialog from the **Control Panel**.

1.5.3 Obtaining Accellera™ SystemC™

If you intend to use Accellera SystemC on a Windows platform, follow the instructions in the readme file SystemCInstall.txt, located in the userdoc directory of your Cycle Model Studio installation.

1.5.4 Completed Installation Directory Structure

Cycle Model Studio software is installed under a single directory structure as shown below. This file system must be visible to all systems that run Cycle Model Studio software, or multiple installation areas must exist. Following is a high-level view of the installation tree.

To fully test the installation, run the example as described in "Testing the Installation" on page 18.

Root	Subdirectory or File	Contents
\$CARBON_HOME/	bin/	Cycle Model Studio executables
	examples/	Example designs
	fixate	Installation script (Linux only)
	include/	API header files
	installjammer/	Installer files
	lib/	Libraries
	Linux64/	Third-party executables for Linux 64-bit platform (<i>e.g.</i> , gcc), and appropriate libraries
	makefiles/	Makefiles
	README	README file
	userdoc/	All end-user documentation
	Win/	Third-party executables for cross development, and appropriate Cycle Model Studio libraries

1.6 Testing the Installation

To test the installation, you can run a Verilog example:

1. Copy the example files into your local work directory:

```
cp -r $CARBON HOME/examples/twocounter ./twocounter
```

2. Change to your work directory:

```
cd twocounter
```

3. Run the Makefile within the twocounter directory:

```
make
```

The results of the example will be output to the twocounter.out file:

```
0: clk1=1 reset1=1 clk2=1 reset2=1 out1=0 out2=0
100: clk1=1 reset1=1 clk2=1 reset2=1 out1=0 out2=0
200: clk1=1 reset1=1 clk2=1 reset2=1 out1=0 out2=0
300: clk1=1 reset1=1 clk2=1 reset2=1 out1=0 out2=0
400: clk1=1 reset1=1 clk2=1 reset2=1 out1=0 out2=0
500: clk1=1 reset1=1 clk2=1 reset2=1 out1=0 out2=0
```

If the example runs without error, then Cycle Model Studio software has been installed properly.

1.7 Accessing Cycle Model Studio Documentation

The end-user documentation is available in Portable Document Format (PDF). If you do not have Adobe Reader installed on your system, you can download and install it free from the following site:

```
https://get.adobe.com/reader/
```

Note that if you transfer PDF files from one platform to another, you must use binary mode.

To access the documentation (from within the software kit):

1. Invoke your web browser and set the URL to the following:

```
file: <$CARBON_HOME>/userdoc/index.html
```

2. Select the link to the document you want to view or print.

Documentation is available from the Cycle Model Studio graphical interface by selecting **Help-**>**CMS User Manual**.

Appendix A

Installing and Managing FlexNet License Files

ARM Cycle Model products are licensed via the FlexNet license manager. To obtain a license you must have a license server available on your network. The license server can be downloaded from the support site (http://www.armipexchange.com). The license server is also included as a part of the Cycle Model Studio installation package.

License Server packages, which include the utilities discussed in this appendix, are available for Linux and Windows. Download the version applicable to your installation:

- Linux ARM-CycleModel-license-Linux64-mainline.tgz
- Windows ARM-CycleModel-license-Windows-mainline.tgz

For additional information on FlexNet licensing, refer to the Flexera web site (www.flexerasoft-ware.com).

Note: The vendor daemon provided is for use with FlexNet Version 11.13. If there is a version compatibility problem, an error is generated when you issue lmstat on the host machine.

A.1 FlexNet Software Location

After installing Cycle Model Studio, the FlexNet programs and the FlexNet daemon are found in the following directories:

- Linux: \${CARBON_HOME}/Linux/bin/ES6
- Windows: %CARBON HOME%\Win\bin\winx

A.2 FlexNet Software Programs

The following FlexNet license programs are included once you complete the installation.

- lmgrd
- lmutil

A.2.1 Imgrd

The **lmgrd** program starts the FlexNet license daemon.

```
Linux: lmgrd -c licenseFile [-l logFile]
Windows: lmgrd.exe -c licenseFile [-l logFile]
```

A.2.2 Imutil

The **lmutil** program performs many functions depending on the option used.

The **lmhostid** option returns the FlexNet hostid.

```
lmutil lmhostid
```

Note: lmhostid returns a different ID than the Linux hostid command.

The **lmdown** option gracefully shuts down the FlexNet license daemon.

```
lmutil lmdown -c licenseFile
```

The **lmstat** option provides status information on the license server.

```
lmutil lmstat -c licenseFile [-a]
```

The **Imreread** option causes the ARM Cycle Model Compiler license daemon to reread the license file and start any new vendor daemons.

```
lmutil lmreread -c licenseFile
```

In the above example, *licenseFile* is either a license file, or the location of the license server in the format *<socket>@<hostname>*, for example 7275@licserver.

A.3 Setting Up the License File

The following modifications should be made to the provided FlexNet license file:

• Change "this_host" on the SERVER line to the actual hostname, for example, for hostname *licserver*:

```
change from: SERVER this_host 7274e893 7275
to: SERVER licserver 7274e893 7275
```

• Linux: Add the path to the daemon object, armlmd (see "FlexNet Software Location" on page 20 for the location of the daemon). For example:

```
change from: VENDOR armlmd
to: VENDOR armlmd <path to $CARBON HOME>/Linux/bin/ES6/armlmd
```

- Windows: You cannot specify the path to the daemon; it must be in same directory as lmgrd.
- Optional: Change the socket number from 7275 on SERVER line if a different socket is to be used.

A.4 Starting and Managing the License Server on Linux

See "FlexNet Software Location" on page 20 to find the appropriate FlexNet programs.

To start the license server:

```
lmgrd -c licenseFile [-l logFile]
```

For example:

```
lmgrd -c carbon.lic -l carbonlic.log
```

To verify that the license started up correctly:

```
lmutil lmstat -c licenseFile -a
```

For example:

```
lmutil lmstat -c 7275@licserver -a
lmutil lmstat -c carbon.lic -a
```

To gracefully stop the license server:

```
lmutil lmdown -c licenseFile -a
```

For example:

```
lmutil lmdown -c 7275@licserver -a
lmutil lmdown -c carbon.lic -a
```

To update license information while the license server is running:

```
lmutil lmreread -c licenseFile
```

For example:

```
lmutil lmreread -c carbon.lic
```

A.5 Starting and Managing the License Server on Windows

The FlexNet Windows programs include LMTOOLS (Imtools.exe). LMTOOLS is a graphical user interface used to start and stop the license server, configure the license server, check the license server status, etc. LMTOOLS can be used to configure the license server to startup automatically when booting Windows.

To configure the license server using LMTOOLS:

- 1. Start LMTOOLS by launching the *lmtools.exe* program.
- 2. Select the **Services/License File** tab and then select **Configuration using Services** ("FLEXImService1" should be highlighted).
- 3. Select the **Config Service** tab.
 - If not already specified, specify the Service Name (this normally should be "FLEXImService1").
 - Enter the full paths to the following items: 1) path to the *lmgrd.exe* file, 2) path to the license file, and 3) path to the debug log file (license server log file). You can use the *Browse* feature to identify the full path.
 - Check "Start Server at Power Up".
 - Check "Use Services".
 - Click Save Services.
- 4. Select the **Start/Stop/Reread** tab.
 - Verify that the correct service is highlighted (for example, "FLEXImService1").
 - Start the license server by clicking Start Server.
- 5. Select the **Server Status** tab. To verify that the license server is running, click on **Perform Status Enquiry** and then examine the log window under this button.

A.6 Setting Up Licensing on EL-5 License Servers

Flexera Software specifies that the license client (Cycle Model Studio) version must not be higher than the license server version. Cycle Model Studio is built using Flexera version 11.13, so you may need to update the lmgrd, lmutil, and armlmd utilities to 11.13 versions.

The 11.13 versions of lmgrd, lmutil, and armlmd are distributed with SoC Designer Plus. If you own a licensed version of SoC Designer, refer to the *SoC Designer Installation Guide* (ARM DUI 0953) or instructions on updating these utilities. If you do not own SoC Designer, contact ARM Technical Support (support-esl@arm.com) for instructions.