Cycle Model Studio

Version 9.2

Installation Guide

Non-Confidential

ARM®

ARM DUI 0959E (ID041017)

Cycle Model Studio
Installation Guide

Release Information

The following changes have been made to this document.

Change History

Date	Issue	Confidentiality	Change
February 2016	A	Non-Confidential	Update for 8.1
May 2016	B	Non-Confidential	Update for 8.2
November 2016	C	Non-Confidential	Update for 9.0.0
February 2017	D	Non-Confidential	Update for 9.1.0
May 2017	E	Non-Confidential	Update for 9.2

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Product Status

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

Web Address

http://www.arm.com

Contents

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:

- Intended Audience
- System Requirements
- Accessing the Cycle Model Studio Software File
- Overview of Remote and Local Compilation
- Installing Cycle Model Studio Software
- Validating the Installation

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 Disk Space and Memory 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: ARM recommends a minimum of 2GB RAM for running Cycle Model Studio. Some designs may require more or less memory. Indications that you may be running out of memory include unexplained errors during the compilation, such as: `g++: internal compiler error: Killed (program cc1plus)`. Contact *support-esl@arm.com* if you are experiencing problems.

1.2.2 For Windows Users

Cycle Model Studio is supported on Windows 7 (64-bit).

To use Cycle Model Studio to work with compiled components, the Visual C++ Redistributable Package for Visual Studio 2013 is required.

To compile components (such as for SoC Designer), Visual Studio 2013 Update 4 is required.

1.2.3 For Linux Users

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
   ```

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 must 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`
Standard Windows installer containing libraries and support files for using Cycle Models on Windows.	`ARM-CycleModel-install-Windows-<version>.msi`

1.4 Overview of Remote and Local Compilation

Cycle Model Studio supports two types of compilation usage models:

- Native Linux compilation
- Remote Linux compilation from Windows

Output models are qualified using gcc 4.8.3 on Red Hat Enterprise Linux 6.6 (64-bit) and CentOS 6.6 (64-bit).

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 as on Linux. 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, the following command sets the port number to 25:

```
> set CARBON_PLINK_ARGS=-P 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

1.5.1 Linux Installation Procedure

This section describes installing Cycle Model Studio software on 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 version of Cycle Model Studio software, set the following environment variables to determine how Cycle Models are built:

```
CARBON_HOST_ARCH=Linux64
CARBON_TARGET_ARCH=Linux64
```

`CARBON_HOST_ARCH` configures Cycle Model Studio to use the 64-bit compiler to create the Cycle Model.

`CARBON_TARGET_ARCH` configures Cycle Model Studio to build Cycle Models as a 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

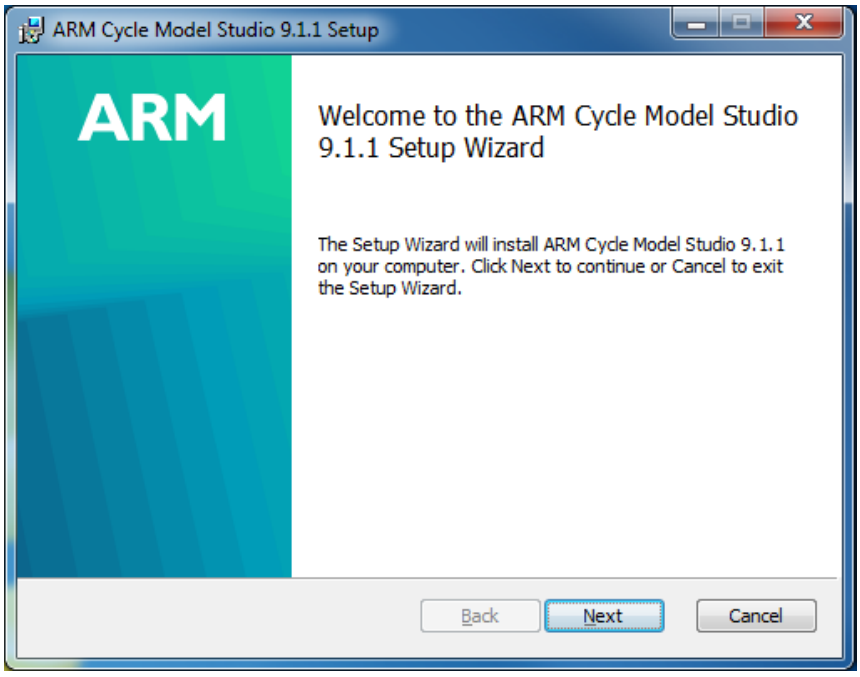
You can install multiple versions of Cycle Model Studio software on your Windows machine. The last installation sets the CARBON_HOME user environment variable; however, when you run Cycle Model Studio (**Start-> Programs->ARM Cycle Model Studio**), the program checks the location from which it is being 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 Application Note* (ARM DUI1042) for additional required project settings.

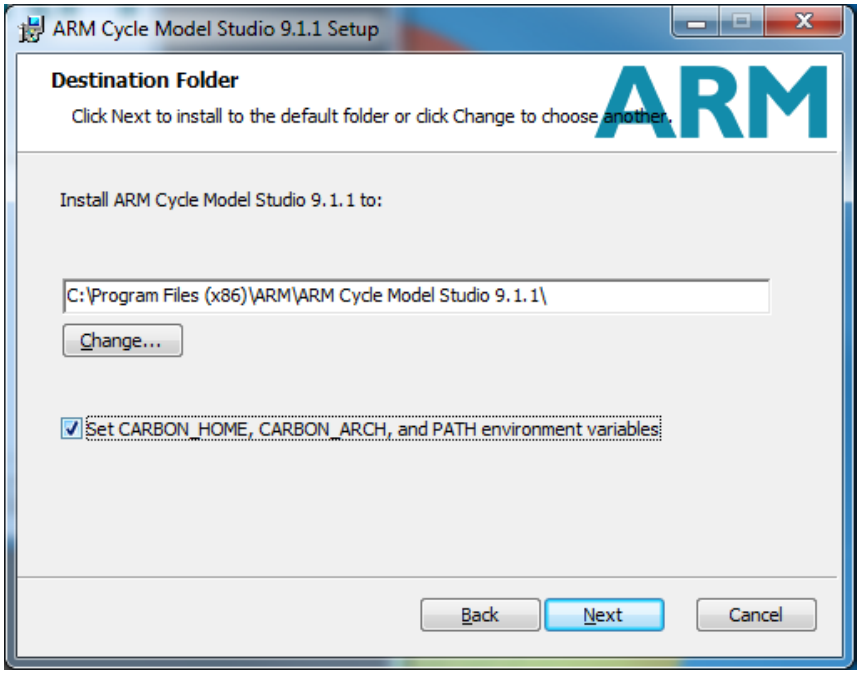
1.5.2.1 Installing Using the Windows Setup Wizard

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**. The *Destination Folder* dialog box appears:

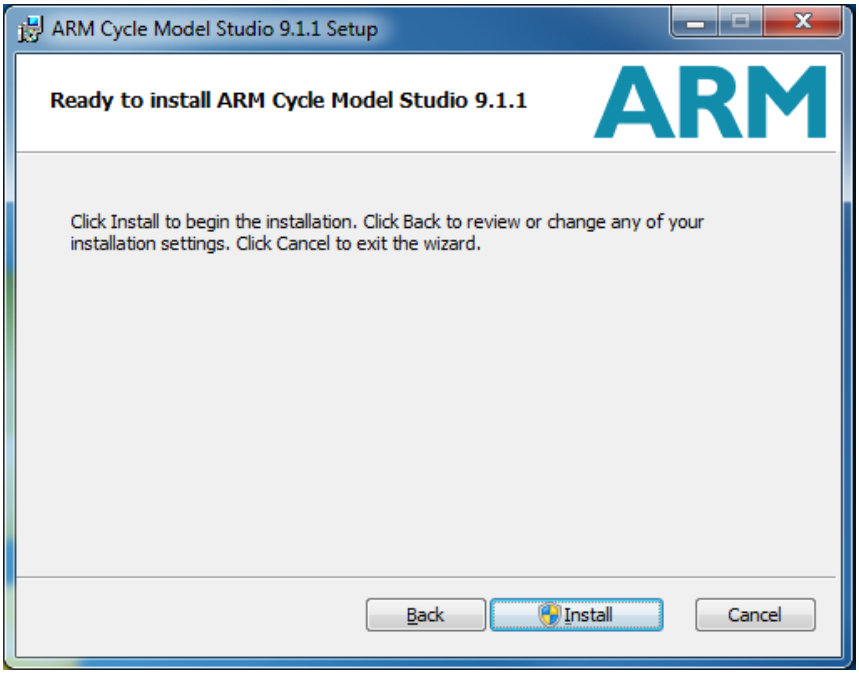


4. Accept the default installation location or click **Change** to define the location where the software will be installed.

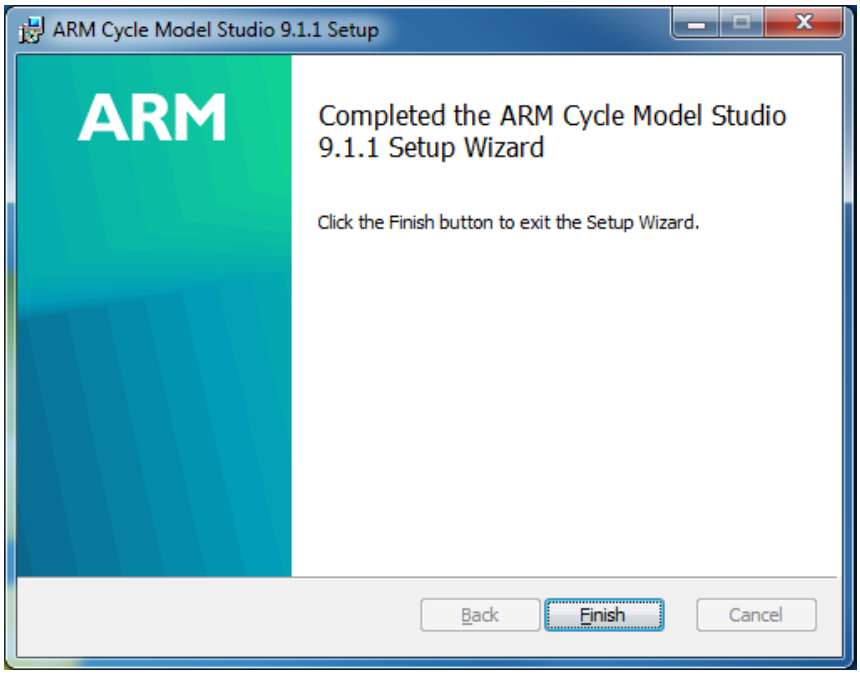
5. Enable or disable the *Set CARBON_HOME, CARBON_ARCH, and PATH environment variables* checkbox. When enabled, the listed environment variables are set during the installation. The path `%CARBON_HOME%\Win\lib` is added close to the beginning of the PATH statement.

   If you do not want this to occur automatically, disable the checkbox. Later you can set these variables as described in "Setting additional required environment variables" on page 16.

6. Click **Next**. The *Ready to Install* dialog appears.



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



8. Click **Finish**.

Proceeed to Setting the License Environment Variable on Windows; this is required before you can run Cycle Model Studio.

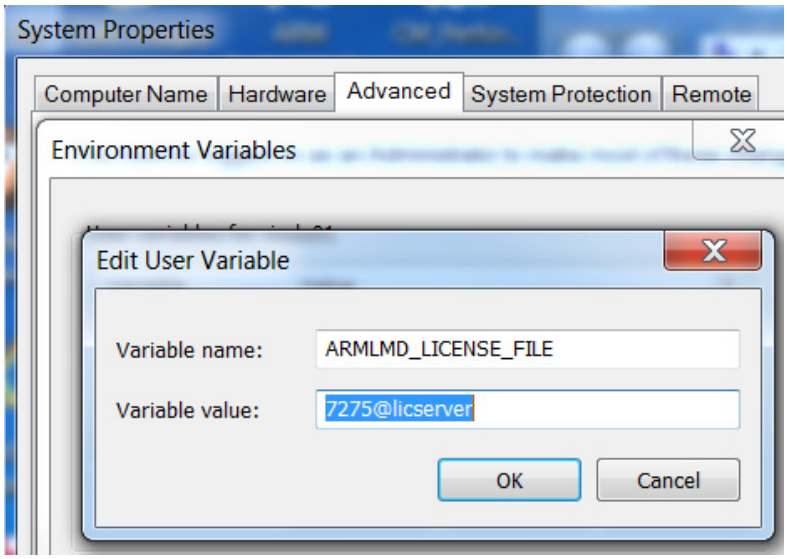
1.5.2.2 Setting the License Environment Variable on Windows

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:

```
> set 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:

  ```
  > set CARBON_HOME=C:\Program Files (x86)\ARM\ARM Cycle Model Studio
  v<version_number>\
  ```

- 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 "Validating on Linux" 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 (*e.g.*, 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 Validating the Installation

This section describes how to ensure that the installation of Cycle Model Studio has been successful.

1.6.1 Validating on Linux

To test the Cycle Model Studio Linux 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.

1.6.2 Validating on Windows

To test the Cycle Model Studio Windows installation:

1. Ensure that the Linux system you are using for remote compilation is properly configured (see Configuring for Remote Linux Compilation).
2. On the Windows system, launch Cycle Model Studio.
3. Add Verilog or SystemVerilog RTL files and run a test compile.

Appendix A

Installing ARM License Files

This section describes the licensing requirements for Cycle Model Studio.

A.1 Licensing Overview

ARM Cycle Model products are licensed via the FlexNet license manager Version 11.13. Licenses are available on the ARM Self-Service Portal (http://silver.arm.com). Registration and login are required.

A license server must be available on your network. The license server platform is not required to be the same as the tools platform. For example, you might have your development tools installed on Windows and use a Linux license server.

Contact ARM Techical Support (*support-esl@arm.com*) if you have any questions.

A.2 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`