Arm® Socrates™

Version 1.5

Installation Guide

arm

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Arm® Socrates™

Installation Guide

Release Information

Document History

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0100-00	20 July 2018	Confidential	First release
0102-00	23 November 2018	Confidential	Second release
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Product Status

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

Web Address

developer.arm.com

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Arm® Socrates™ Installation Guide

Appendix A Revisions

Preface

This preface introduces the *Arm® Socrates™ Installation Guide*.

It contains the following:

About this book

Use this guide to install the Socrates™ IP Tooling Platform and enable the appropriate functionality for your license.

Product revision status

The r*x*p*y* identifier indicates the revision status of the product described in this book, for example, r*1*p*2*, where:

r*x* Identifies the major revision of the product, for example, r1.

p*y* Identifies the minor revision or modification status of the product, for example, p2.

Intended audience

This Installation Guide is intended for users who are installing the Arm Socrates™ IP Tooling platform.

Using this book

This book is organized into the following chapters:

Chapter 1 Introduction
Familiarize yourself with the Socrates IP Tooling platform, and the installation and setup procedures.

Chapter 2 Setting up your environment
Check and implement the installation environment and software requirements.

Chapter 3 Installing and starting the software
Install and run the Socrates IP Tooling platform.

Chapter 4 Setting up licensing
Set up the license server on a Linux platform. This enables runtime functionality.

Appendix A Revisions
This appendix describes the changes between released issues of this book.

Glossary

The Arm® Glossary is a list of terms used in Arm documentation, together with definitions for those terms. The Arm Glossary does not contain terms that are industry standard unless the Arm meaning differs from the generally accepted meaning.

See the *Arm® Glossary* for more information.

Typographic conventions

italic
Introduces special terminology, denotes cross-references, and citations.

bold
Highlights interface elements, such as menu names. Denotes signal names. Also used for terms in descriptive lists, where appropriate.

`monospace`
Denotes text that you can enter at the keyboard, such as commands, file and program names, and source code.

`mono`space
Denotes a permitted abbreviation for a command or option. You can enter the underlined text instead of the full command or option name.

`monospace italic`
Denotes arguments to monospace text where the argument is to be replaced by a specific value.

`monospace bold`
: Denotes language keywords when used outside example code.

`<and>`
: Encloses replaceable terms for assembler syntax where they appear in code or code fragments. For example:

```
MRC p15, 0, <Rd>, <CRn>, <CRm>, <Opcode_2>
```

SMALL CAPITALS
: Used in body text for a few terms that have specific technical meanings, that are defined in the *Arm® Glossary*. For example, IMPLEMENTATION DEFINED, IMPLEMENTATION SPECIFIC, UNKNOWN, and UNPREDICTABLE.

Additional reading

This book contains information that is specific to this product. See the following documents for other relevant information.

Arm publications

- *Arm® Socrates™ User Guide* (101399).
- *Arm® Socrates™ Release Note* (PJDOC-1779577084-32899).

Feedback

Feedback on this product

If you have any comments or suggestions about this product, contact your supplier and give:

- The product name.
- The product revision or version.
- An explanation with as much information as you can provide. Include symptoms and diagnostic procedures if appropriate.

Feedback on content

If you have comments on content then send an e-mail to *errata@arm.com*. Give:

- The title *Arm Socrates Installation Guide*.
- The number 101400_0105_00_en.
- If applicable, the page number(s) to which your comments refer.
- A concise explanation of your comments.

Arm also welcomes general suggestions for additions and improvements.

Note

Arm tests the PDF only in Adobe Acrobat and Acrobat Reader, and cannot guarantee the quality of the represented document when used with any other PDF reader.

Chapter 1
Introduction

Familiarize yourself with the Socrates IP Tooling platform, and the installation and setup procedures.

It contains the following sections:

1.1 About Socrates

Socrates IP Tooling platform is an environment for exploring, configuring, and building Arm IP ready for integration into a *System on Chip* (SoC).

The following examples show you some of the ways you can use Socrates.

Designing a SoC

If you want to:

- Investigate Arm IP features, properties, and configuration options
- Use this information to decide which IP to use in your system or subsystem design
- See which IP you already have licenses for
- Provide your procurement team with a detailed list of part numbers for the IP that you want to license

You can:

- Browse the **IP Catalog** and view information in **Socrates Help**
- Filter the **IP Catalog** by IP name or supported protocols
- Export information from the **Bill of Materials** about required and alternative part numbers

Managing IP bundles

If you want to:

- Ensure that the IP Catalog stays up-to-date with the latest release information
- Make finding the location of downloaded IP easier
- Update the **IP Catalog** entries so they are correctly associated with the latest IP bundles

You can:

- View notifications for product and **IP Catalog** updates
- Enter shared download locations for all licensed IP bundles
- Enable automatic refreshing of associations

Develop a system with Arm IP

If you want to:

- Understand IP configuration options, interfaces, and protocols
- Integrate IP into a system
- Build IP-XACT and Verilog output
- Automate the configuration and build procedures

You can:

- Browse the **IP Catalog** and view technical documentation in **Socrates Help**
- Organize and configure IP in the **Project Explorer**
- See validation and configuration errors in the **Create Configured IP** window
- Automatically build simple IP as part of the configuration procedure
- Use the *Command Line Interface* (CLI), and script-based API, for script-based solutions

Creating a high-level view of a SoC design

If you want to:

- Create a high-level view of your SoC design, containing configured IP instances and their high-level connections
- Choose the most suitable interconnect IP for your design, based on the high-level connectivity requirements of the other IP in your design
- Use this high-level view for further refinement and development of your design

You can:

- Use the **System Specification**, from the **Generators** group in the **IP Catalog**, to create an empty System Specification
- Add instances of your required non-interconnect IP to the System Specification
- Use **Interconnect Assistant** to select, configure, and add the most suitable interconnect IP to the System Specification, automatically creating all the required high-level connections

1.2 Installation overview

Follow the installation checklist steps:

Procedure

1. Clean your environment if you have a previous Socrates installation, or a previous installation of any of the Socrates System Builder, Socrates DE, CoreLink™ Creator, or CoreSight™ Creator tools. Ensure that your environment meets the installation requirements, and install any missing prerequisite software. See *Chapter 2 Setting up your environment* on page 2-14
2. Run and follow the installation wizard. See *Chapter 3 Installing and starting the software* on page 3-19.
3. Set up the server daemons and licenses. See *Chapter 4 Setting up licensing* on page 4-25. You only need to do this if this is the first time that you have installed a Socrates product, or if you want to change your licensing setup.

Chapter 2
Setting up your environment

Check and implement the installation environment and software requirements.

It contains the following sections:

2.1 Cleaning your environment

You can remove previous installations of Socrates software.

Remove any previous installation of Socrates, or the prior products Socrates System Builder, Socrates DE, CoreLink Creator, or CoreSight Creator before installing the latest version.

To uninstall, go to the installation location and run the following commands:

```
$ cd <install location>
$ ./uninstall
```

If you receive a prompt requesting permission to delete leftover files, click **Yes**.

Ensure that the installation directory is empty. You can then restore the backed-up workspace, if applicable.

See the *Arm Socrates™ Release Note* for more information on updating the tool version.

2.2 Installation requirements

Ensure that your software environment complies with the installation requirements.

An environment health check feature is provided with the installer. Use the health check to see the status of dependencies, and troubleshoot runtime issues. See *3.3 Installation Health Check script* on page 3-22.

The installation requirements are as follows:

- Enterprise Linux Red Hat operating system:
  - Version 6, 64-bit.
  - Version 7, 64-bit.
- At least 2.5GB of RAM.
- At least 4GB of free disk space for the installation.

  Note

  If the installation fails due to a lack of available disk space, follow the steps in *2.1 Cleaning your environment* on page 2-15 before you restart the installation procedure.

- Additional disk space depending on the number of user projects, and the size of the projects.
- Certain libraries are necessary to successfully run and complete the installation. Use a package manager, for example `yum`, to find and install libraries. The required libraries are:
  - `redhat-lsb-core.i686`.

    Note

    Depending on your Linux setup, you might require this library to allow the license manager to start automatically.

  - `glibc.i686`.
  - RHEL6: `compat-libstdc++.i686`, both 33 and 296 packages.
  - RHEL7: `compat-libstdc++` 33 package, both `i686` and `x86_64` versions.
  - `libxml2.i686`.
  - `libXrandr.i686`.
  - `libXcursor.i686`.
  - `libSM.i686`.
  - `libICE.i686`.
  - `libstdc++.i686`.
  - `zlib.x86_64` for 64-bit installations.
  - `libxml2.x86_64`.

  Missing libraries prompt an error message at installation or runtime, for example:

```
Xalan: error while loading shared libraries: libstdc++.so.5: cannot open shared object
file: No such file or directory
```

  To free disk space after Linux library installations, run:

```
yum clean all
```

For more information about installing and using packages, see the Known Issues section of the *Arm Socrates™ Release Note*.

2.3 Memory settings

To ensure that your Socrates installation runs correctly, you can change the default settings for Java heap space.

By default Socrates uses an initial heap size (`-Xms`) of 512MB and a maximum heap size (`-Xmx`) of 2048MB.

Increasing the initial heap size can improve start up performance. Increasing the maximum heap size enables you to configure large configurations, such as those possible with CoreLink CMN-600.

To update the heap sizes:

1. Open `<install location>/ARM-Socrates.ini`.
2. Edit the following lines, where m stands for megabytes.

```
-Xms512m
-Xmx2048m
```

2.4 GTK3 support

Socrates uses GTK2 graphics toolkit by default.

If you are using RHEL7, changing the version of GTK that Socrates uses can help avoid issues on some Linux machines.

Known Issues are described in the *Arm Socrates™ Release Note*.

If you experience any other issues, you can set Socrates to use GTK3 on RHEL7:

1. Locate the `<install location>/Arm-Socrates.ini` file.
2. Delete or comment out the following lines:

```
--launcher.GTK_version
2
```

To ensure that the browser widget is correctly working:

1. Locate the `<home directory>/armSocrates/configuration/config.ini file`.
2. Delete or comment out the following line:

```
org.eclipse.swt.browser.DefaultType=mozilla
```

Chapter 3
Installing and starting the software

Install and run the Socrates IP Tooling platform.

It contains the following sections:

3.1 Product bundles

Socrates is delivered as part of a download bundle. Socrates functionality is enabled with licenses.

Socrates is delivered through:

- The Arm IP delivery server (*https://connect.arm.com*) under the part number `SYSOC-BN-00001` Socrates 64-Bit Installer.
- Arm Flexible Access using *http://developer.arm.com/downloads-beta*.

3.2 Installing Socrates

There is a wizard to guide you through the installation process.

If you have an earlier installation of any Socrates tool, uninstall it before installing the current version. See *2.1 Cleaning your environment* on page 2-15 for more information.

To prepare for installation and start the installation wizard:

Procedure

1. Change to the directory of the unpacked installer bundle:

   ```
   $ cd <path to ARM-Socrates-1.5.0-Linux-x86-64-Install>
   ```

2. You must have execute permissions to run the installer. To make the installer executable, run:

   ```
   $ chmod +x ARM-Socrates-1.5.0-Linux-x86-64-Install
   ```

3. Start the installer:

   ```
   $ ./ARM-Socrates-1.5.0-Linux-x86-64-Install
   ```

   Note

   During the installation procedure, you are pronpted for an installation location. This location must be either an empty directory or a non-existent- directory. If no directory exists, Socrates creates one. When the installation is complete, do not move the installation directory location.

4. The installation wizard opens. Follow the on-screen instruction to install.

3.3 Installation Health Check script

Arm provides an Installation Health Check script. This script is run as part of the standard installation.

The script uses your current environment settings to check required dependencies, and to identify common installation problems. The script can be found in your installation directory, in `<install location>/etc/install/health_check`, named `checkInstallation.sh`.

The results of the Installation Health Check are presented as the final step of the installation wizard.

3.4 Starting Socrates

Use the `socrates.sh` command or double-click the Socrates icon to start Socrates.

You can run `socrates.sh` directly from the installation location, through an alias to the installation location, or you can add the installation location to your path variable.

The Installation Health Check script runs the first time that you start the software, or the first time that you run a new version.

Depending on the licenses available to you, you might be asked to select a license.

When you restart Socrates, select a workspace for your projects. The default Workspace area is created in `/<home directory>/armSocrates/workspace`.

3.5 Troubleshooting

Identify and resolve troubleshooting issues that are associated with setting up licensing, and installing or running the software using the following information.

Note

As a first step in troubleshooting issues, Arm recommends that you run the Installation Health Check script. See *3.3 Installation Health Check script* on page 3-22 for more instructions.

This section contains the following subsections:

3.5.1 Cannot restore segment prot after reloc error

This error occurs when starting Socrates:

```
home/arm/ARM-Socrates/jre/bin/../lib/i386/client/libjvm.so: cannot restore segment prot
after reloc: Permission denied
```

A file permissions conflict due to a Linux security feature causes this error. The following actions might resolve this issue:

- Turn off the security feature by navigating to `/etc/selinux/config` and using the following command:

  ```
  SELINUX=disabled
  ```

- Allow libraries to be relocated in memory using the following command:

  ```
  chcon -t texrel_shlib_t /opt/cubrid/lib/libcubridsa.so.8
  ```

3.5.2 Java runtime environment fatal error

This error causes the tool to crash while using the GUI:

```
# A fatal error has been detected by the Java Runtime Environment:
#
# SIGSEGV (0xb) at pc=0x00000036a6e471d0,pid=1958, tid=139794478638848
#...
```

This error represents a memory access violation that is caused by a conflict between some versions of Eclipse and RealVNC. Update to RealVNC Server version 5.0.5 to resolve this issue.

3.5.3 IP Catalog association I/O error

This error occurs when associating IP in the IP Catalog:

```
An IO error was encountered when walking the file tree starting at: ...
```

The behavior can occur when long paths are required to reference IP Bundles in shared Windows and Linux locations. It can be resolved by shortening these paths.

3.5.4 Workspace name cannot contain space character

If the workspace name contains the space character, for example `my workspace`, then it is shown in the **Data Explorer** with a red cross, and must be modified.

Chapter 4
Setting up licensing

Set up the license server on a Linux platform. This enables runtime functionality.

It contains the following sections:

4.1 Setting up the license environment

Socrates uses FlexNet License Management from Flexera Software. The license setup depends on the product licenses that you have. Set up your licensing environment using the following steps.

Generate and download the license files

1. Log in to the Arm licensing portal *https://developer.arm.com/support/licensing*.
2. Enter your product serial number. If you have more than one product, enter the serial numbers individually. Contact your Arm account manager to obtain the appropriate serial numbers.
3. Enter machine host ID and other requested information.
4. Click **Save** to download a `license.dat` file.

Install the license daemon

The license daemon `armlmd` is required to host the licenses used by Socrates IP Tooling Platform. Download `armlmd` from *https://silver.arm.com/browse/BX002*. Use the search term **BX002 - FLEXnet binaries and utilities**.

Check the license daemon

Ensure that `armlmd` is correctly installed. Run:

```
cd BX002-PT-00004-r11p15-00rel0
./lmutil lmver armlmd
```

Check that the output is the `armlmd` information, as follows. Take particular note of the version:

```
lmutil - Copyright (c) 1989-2017 Flexera Software LLC. All Rights Reserved.
FlexNet Licensing v11.15.0.0 build 215548 (ipv6) x64_lsb (liblmgr.a), Copyright (c)
1988-2017 Flexera Software LLC. All Rights Reserved.
```

Edit the license files

Edit the license files for your application to enter the path to the `armlmd` license server daemon. Set the daemon ports, and the server hostname and host ID.

Set the environment variables on client workstations

Set the environment variable `ARMLMD_LICENSE_FILE` to the location of the `armlmd` license files, for example `27001@testserver.com`.

Start the license daemons on the server

To start the license daemon for the Socrates IP Tooling Platform, run:

```
/home/arm/Licensing/lmgrd -c /home/arm/Licensing/armlmd_lic.dat
-l /home/arm/armlmd_lic_log.log
```

This command invokes the `armlmd` daemon, and saves the daemon log to `/home/arm/armlmd_lic_log.log`.

4.2 Required licenses

There are several different licenses that are used by Socrates. The specific licenses that you have determine which IP you are able to configure and build.

Socrates licenses

To start Socrates, and configure most IP, you must have at least one of the following Socrates licenses:

- A full **Socrates** license.
- A **Socrates** configuration only license, which enables you to configure Arm IP, but not build.
- A legacy **Socrates** `system_builder` license, which gives the same functionality as the full license.
- A **Socrates Arm Flexible Access Mainstream** license, which enables you to configure Flexible Access IP.

IP licenses

You can configure most IP without having a license for it. However, to build IP-XACT and Verilog output you must download a licensed IP bundle to your system and associate it with the corresponding entry in the **IP catalog**. For more information, see the *Arm® Socrates™ User Guide*.

Configuration licenses

To configure some IP you need additional licenses.

For CoreLink network interconnect IP: NIC-450, NIC-400, NIC-400-Lite, or the NIC-400 add-ons, the following licenses are required:

- `nic-400_network_ic` to configure and build a CoreLink™ NIC-400 Network Interconnect, and any of its add-ons.
- `nic-400-lite_network_ic` to configure and build a CoreLink NIC-400-Lite Network Interconnect.
- `TLX-400_Option` to enable TLX-400 Network Interconnect Thin Links functionality.
- `QoS-400_Option` to enable QoS-400 Network Interconnect Advanced Quality of Service functionality.
- `QVN-400_Option` to enable QVN-400 Network Interconnect Advanced QoS for Virtual Networks functionality.
- `DPE-400_Option` to enable DPE-400 Data Parity Extensions for NIC-400 functionality.
- ———— **Note** ————

  The NIC-400 add-ons are only compatible with NIC-400, they cannot be used with NIC-400-Lite.

  ————————————

For CoreLink CMN-600 Coherent Mesh Network, the following licenses are required:

- `arm_corelink_cmn_600_4` to enable a CMN-600 mesh with up to 8 XPs and up to 4 processor clusters.
- `arm_corelink_cmn_600_12` to enable a CMN-600 mesh with up to 16 XPs and up to 12 processor clusters.
- `arm_corelink_cmn_600_32` to enable a CMN-600 the maximum 8x8 mesh with up to 64 processor clusters.
- `arm_corelink_cmn_600_cml` to enable CMN-600 CML license features.

For CoreLink CMN-600AE, you must have one of the following licenses:

- `arm_corelink_cmn_600ae_2` (PL615-LC-00201) to enable a CMN-600AE mesh with up to 6 XPs and 2 RN-F instances without CAL (4 with CAL).
- `arm_corelink_cmn_600ae_4` (PL615-LC-00401) to enable a CMN-600AE mesh with up to 8 XPs and 4 RN-F instances without CAL (8 with CAL).
- `arm_corelink_cmn_600ae_8` (PL615-LC-00801) to enable a CMN-600AE mesh with up to 16 XPs and 8 RN-F instances without CAL (16 with CAL).

All CMN-600AE licenses include *Coherent Multichip Link* (CML) functionality.

Appendix A
Revisions

This appendix describes the changes between released issues of this book.

It contains the following section:

A.1 Revisions

This appendix describes changes between released issues of this book.

Table A-1 Issue 0101-00

Change	Location	Affects
First release	-	-

Table A-2 Differences between issues 0101-00 and issue 0102-00

Change	Location	Affects
Updated for 1.2 requirements	*3.2 Installing Socrates* on page 3-21	Version 1.2 and onwards

Table A-3 Differences between issues 0102-00 and issue 0103-00

Change	Location	Affects
Updated for 1.3 requirements	*2.2 Installation requirements* on page 2-16	Version 1.3 and onwards
Added information about changing memory setting for Java heap sizes	*2.3 Memory settings* on page 2-17	Version 1.3 and onwards
Added information for changing GTK version	*2.4 GTK3 support* on page 2-18	Version 1.3 and onwards

Table A-4 Differences between issues 0103-00 and issue 010301-00

Change	Location	Affects
Updated FlexNet Licensing version	*4.1 Setting up the license environment* on page 4-26	Version 1.2 and onwards
Updated description of `arm_corelink_cmn_600_cml`	*4.2 Required licenses* on page 4-27	Version 1.2 and onwards

Table A-5 Differences between issue 010301-00 and issue 010302-00

Change	Location	Affects
Updated to 1.3.2 release	-	-

Table A-6 Differences between issue 010302-00 and issue 010303-00

Change	Location	Affects
Added new Arm Flexible Access license information	*4.2 Required licenses* on page 4-27	Version 1.3.3 and onwards

Table A-7 Differences between issue 010303-00 and issue 010304-00

Change	Location	Affects
Added new license information for CMN products	*4.2 Required licenses* on page 4-27	Version 1.3.4 and onwards

Table A-8 Differences between issue 010304-00 and 0104-00

Change	Location	Affects
Updated information for product bundle downloading	*3.1 Product bundles* on page 3-20	Version 1.4 and onwards
Clarified third-party requirements `compat-libstdc++` for RHEL6 and RHEL7	*2.2 Installation requirements* on page 2-16	Version 1.4 and onwards
Added new information regarding starting Socrates	*3.4 Starting Socrates* on page 3-23	Version 1.4 and onwards
Added configuration only license information	*4.2 Required licenses* on page 4-27	Version 1.4 and onwards
Updated information for Socrates supporting GTK3	*2.4 GTK3 support* on page 2-18	Version 1.4 and onwards

Table A-9 Differences between issue 0104-00 and 010401-00

Change	Location	Affects
Updated installation instructions to version 1.4.1 and reworded for clarity	*3.2 Installing Socrates* on page 3-21	Version 1.4.1 and onwards
Updated licenses for CMN-600AE	*4.2 Required licenses* on page 4-27	Version 1.4.1 and onwards

Table A-10 Differences between issue 010401-00 and 0105-00

Change	Location	Affects
First Non-Confidential release	-	Version 1.5 and onwards