Arm® Performance Models Library (Early Access)

Product revision: 1.2

Release Note

Non-Confidential

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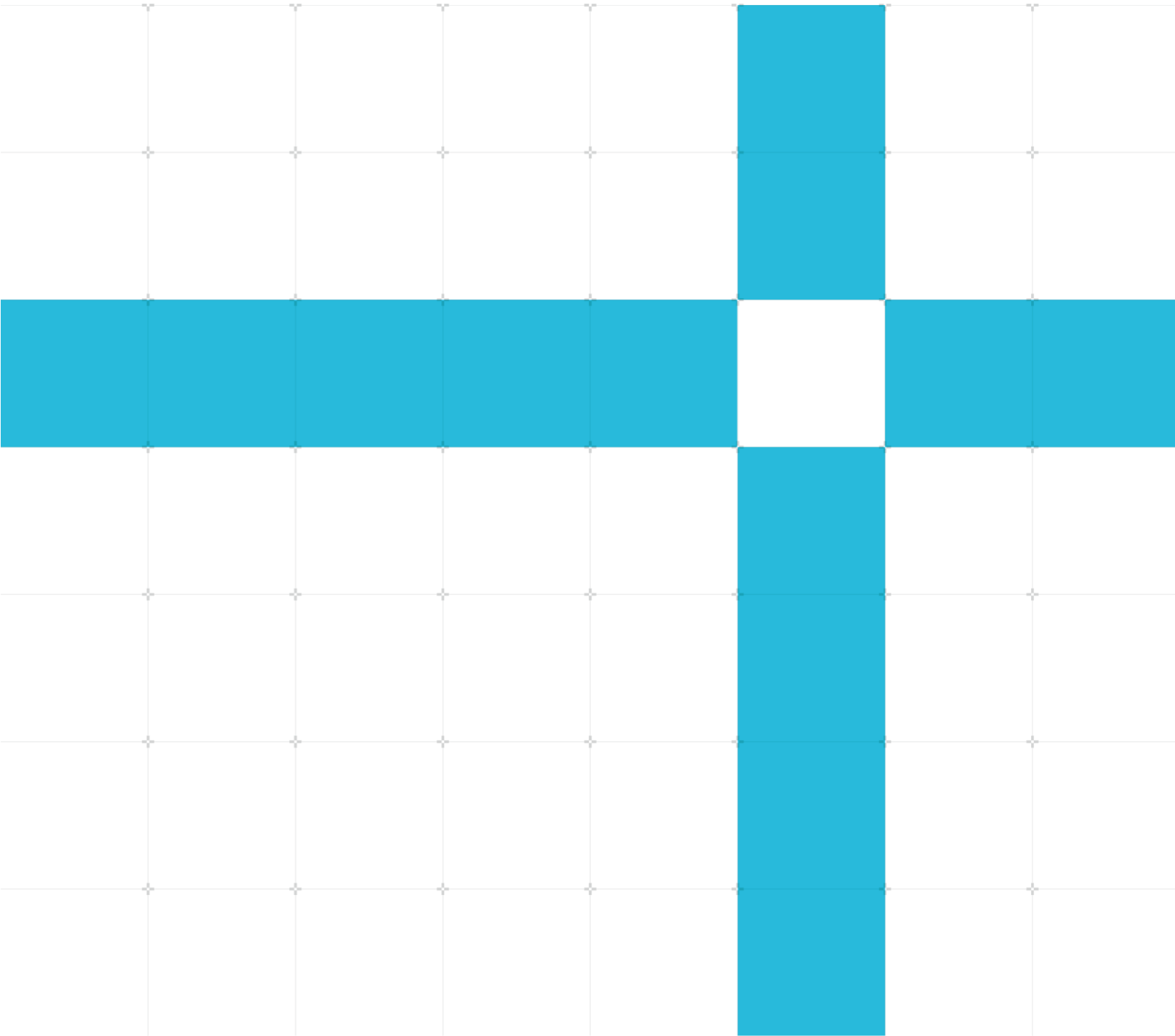

Arm® Performance Models Library (Early Access)

Release Note

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Product status

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

Feedback

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To provide feedback on the document, fill the following survey:
https://developer.arm.com/documentation-feedback-survey.

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Contents

1. Release overview

The following sections describe the product that this release note describes and its quality status at time of release.

1.1. Product description

The Arm® Performance Models Library is a package that contains the supported Arm Performance Models to dynamically model and simulate the performance of configured Arm IP. You can adjust your IP configuration based on the model's performance data, thereby improving the performance of the IP in your SoC design.

Different releases of the Arm® Performance Models Library can let you deploy the Performance Models in one or more methods. This release lets you deploy the provided IP Performance Models using the following platforms:

- Associating the Performance Models Library in the Arm® Socrates™ Performance Application in the Arm Socrates™ IP Tooling platform. Socrates enables you to browse, configure, and build Arm IP, including Arm Interconnect IP. For more information about installing and using Socrates, see the Arm Socrates Installation Guide and Arm Socrates User Guide respectively.
- Through the supported releases of Synopsys® Platform Architect™. You can import the Performance Model Library into Synopsys® Platform Architect™. Current support is for T-2022.06. Use an export of a configured instance of your IP from your Socrates Performance Application project as input into the Performance Model in Synopsys® Platform Architect™.

Different releases of the Arm® Performance Models Library can contain one or more IP Performance Models. This release contains:

- Arm® CoreLink™ NI-700 Performance Model REL

  You can associate the Performance Models Library in the Performance Application of Socrates v1.7.4. For more information about its association, see the *Arm® Socrates™ for CoreLink™ NI-700 Network-on-Chip Interconnect User Guide* that is provided only with Socrates.
- Arm® Neoverse™ CMN-700 Performance Model EAC

  You can associate the Performance Models Library in the Performance Application of Socrates v1.7.4. For more information about its association, see the Arm® *Socrates™ for Neoverse™ CMN-700 Coherent Mesh Network Performance Flow User Guide* that is provided only with Socrates.

The Coherent Multichip Links (CML) feature is BET quality only. If required, contact Arm Support to confirm that you are entitled to use the feature.

Different releases of the Arm® Performance Models Library are available in different editions of the Arm Hardware Success Kits depending on the quality status of the associated IP. This release is available in the Arm Hardware Success Kit (Early Access) edition (`EA-HSK` suffix in the library release folder name) and the associated license variants for full User-Based Licenses (UBL) and older floating (FL) technology licenses. For more information, see the Arm Hardware Success Kit (Early Access) edition Release Note.

1.2. Release status

This is the EAC release of r1p2 Arm® Performance Models Library.

Early Access release status has a particular meaning to Arm of which the recipient must be aware. It should be noted that Support for the Early Access release of the deliverable will only be provided by Arm to a recipient who has a current support and maintenance contract for the deliverable.

Significant additional verification has been completed on complex products as planned.

However, there remain some elements of uncertainty, which cannot finally be validated until the deliverable has been successfully deployed by Partners. Accordingly, the recipient of a deliverable with Early Access (EAC) status may be directly contributing to the final stage of validation of that deliverable.

Partners may enter at-risk production with IP at EAC status. In due course, the product deliverables will be released at Full Release (REL) status after final IP and silicon verification/validation is completed.

There is still errata risk on complex products. Arm recommends full production use with SW at REL status.

2. Release contents

Arm releases can contain documentation and source files such as RTL, testbenches, or software.

The following sections describe:

- Downloading and unpacking the product.
- The contents of this release.
- Any changes since the previous release.
- Any known issues and limitations that exist at the time of this release.

2.1. Downloading and unpacking

The Arm® Performance Models Library is one of the deliverables in the Arm Hardware Success Kit (Early Access) package. You must download the Arm Hardware Success Kit (Early Access) for Linux artifact to obtain the Arm® Performance Models Library deliverables from the Arm delivery server, Product Download Hub (PDH), and then unpack the contents.

Prerequisites

- You must have the necessary access rights for PDH.
- Ensure you have sufficient space in your download area. Check the file size stated in PDH.

Procedure

1. Go to https://developer.arm.com/downloads/view/HWSKT-EAC0.
   If you have the older floating (FL) technology license, you can replace the full User-Based Licenses (UBL) product code HWSKT-EAC0 with HWSKT-0001.
2. Check that the revision shown is r2p4-00rel0. If another revision is shown, you can select any release version later than r2p4-00rel0.
3. Click Download Now to download the Arm Hardware Success Kit (Early Access) for Linux artifact.
4. Choose your preferred download method and click Download.
5. Select where to save the artifact and click Save.
6. Navigate to the downloaded file.
7. Copy the downloaded file to the directory where the extracted artifacts are to be saved, that is, `<install_dir>`.
8. Extract the downloaded file contents into this location.
   The Performance Models Library is extracted into its own directory, for example:
   ```
   <install_dir>/HWSKT-EAC0-r2p4-00rel0-pkg1/PMLIB-BN-EAC01-r1p2-00eac0
   ```

Other products in the Arm Hardware Success Kit (Early Access) for Linux artifact are downloaded to their own directories in:

```
<install_dir>/HWSKT-EAC0-r2p4-00rel0-pkg1
```

For more information on installing, configuring, and rendering, see the product documentation.

2.2. Deliverables and compatibility

The downloaded Arm Hardware Success Kit (Early Access) package includes the Performance Models Library artifact and also the Arm Socrates artifact. Depending on your application, you might also require either Socrates or Synopsys® Platform Architect™, or both.

Table 2.1 lists the deliverables of the Performance Models Library artifact in the Arm Hardware Success Kit (Early Access) for Linux artifact.

Table 2.1: Arm® Performance Models Library deliverables in HWSKT-EAC0-r2p4-00rel0-pkg1

Description	Updated Y/N
PMLIB-BN-EAC01-r1p2-00eac0, Arm® Performance Models Library 1.2 (Early Access)	Updated
arm_performance_models_library_r1p2_00eac0_release_note_107861_01.pdf, Arm® Performance Models Library 1.2 (Early Access) Release Note	New

You must ensure that the downloaded release of Socrates is compatible with this release of the Performance Models Library. You must also download the compatible releases of the Arm CoreLink NI-700 and Arm Neoverse CMN-700, which are separate packages. For more information about compatible releases, see Table 2.2.

The Performance Models Library (Early Access) Release Note is available as a deliverable in the Performance Models Library artifact. It is also available directly on Arm Developer https://developer.arm.com/documentation/107861/latest and the version of the Release Note can change between PDH releases of the product.

For Synopsys® Platform Architect™ deployment, you must ensure that you download the compatible release of Synopsys® Platform Architect™, which is a separate package available for download from Synopsys®.

Table 2.2 lists the compatible releases of Arm Socrates, Synopsys® Platform Architect™, CoreLink NI-700, and Arm Neoverse™ CMN-700 packages for use with this product.

Table 2.2 Required packages for Performance Models Library

Product	PDH/Supported release	Packages
Arm Socrates 1.7.4	r1p7-04rel0	Same Linux artifact as this Performance Models Library version, for example: `<install_dir>/HWSKT-EAC0-r2p4-00rel0-pkg1/SYSOC-BN-00001-r1p7-04rel0`

Product	PDH/Supported release	Packages
Arm CoreLink NI-700 r2p1	r2p1-00rel2 or later	https://developer.arm.com/downloads/view/PL619
Arm Neoverse CMN-700 r3p0	r3p0-00eac0 or later	https://developer.arm.com/downloads/view/PL624
Synopsys® Platform Architect™	T-2022.06	Available from Synopsys®

Refer to the Release Note of each required product for full details of their packages. The version of the Release Note may change between PDH releases of a product.

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Adobe PDF reader products can be downloaded at http://www.adobe.com.

2.3. Directory structure

Figure 2-1 shows the principal directory structure of this release that is created after unpacking the Performance Models Library artifact within the Arm Hardware Success Kit (Early Access) for Linux package, `HWSKT-EAC0-r2p4-00rel0-pkg1.tgz`. In the Library folder file name, `x` refers to the Performance Models Library build number, for example `9`, and the `EA-HSK` suffix refers to the Library's Early Access release in the Arm Hardware Success Kit (Early Access) edition.

Figure 2-1 Principal directory structure

```
<install_dir>/HWSKT-EAC0-r2p4-00rel0-pkg1/
  |
  |-- PMLIB-BN-EAC01-r1p2-00eac0
    |-- Arm_Performance_Models_Library_1.2.x_EA-HSK
      |-- arm_performance_models_library_r1p2_00eac0_release_note_107861_01.pdf
      |-- linux-x86_64
            |-- .data
            |-- armlm
            |-- license_terms
                  |-- license_agreement.txt
                  |-- redistributables.txt
                  |-- supplementary_terms.txt
                        |-- third_party_licenses
                              |-- arm_license_management_utilities
                              |-- CMN-700_Performance_Model
                              |-- NI-700_Performance_Model
```

```
            |-- models
                  |-- CMN-700_Performance_Model
                        |-- Synopsys
                        |-- Socrates
                  |-- NI-700_Performance_Model
                        |-- Synopsys
                        |-- Socrates
```

2.4. Differences from previous releases

The following subsections describe differences from the previous release of Performance Models Library.

2.4.1. Additions for this release

Table 2.3: New features or components introduced in this release

Component/Feature name	Description of change	Impacted functionality
Arm CoreLink™ NI-700 Performance Model REL	New	Added support for deployment with Synopsys® Platform Architect™.
Arm Neoverse™ CMN-700 Performance Model EAC	New	Added support for deployment with Arm® Socrates™ and Synopsys® Platform Architect™. The Coherent Multichip Links (CML) feature is BET quality only.
Performance Models Library Release Note (Early Access)	New	Created a variant of the existing Performance Models Library Release Note (Document ID: 107623) to support Performance Models Library (Early Access) release in the Arm Hardware Success Kit (Early Access) edition.

2.4.2. Resolved issues

There are no resolved issues that needed to be fixed in this release.

2.4.3. Deprecated features

There are no deprecated features in this release.

2.5. Known limitations

This release has the following limitations:

- To build the CoreLink™ NI-700 Performance Model example in Synopsys® Platform Architect™, users must use the following `make` command:

```
make SNPS_PA=true
```

- Users can create and export performance test cases (PerformanceData project export) for the Neoverse™ CMN-700 Performance Model using CPU trace generators in the Socrates™ Performance Application. However, these test cases do not work as expected in the Synopsys® environment and an error message such as the following example can be issued at runtime:

```
"Unrecognized parameters:
generator.<cpu generator name>.prot_choice=chi
Exiting due to bad parameter settings."
```

  Users need to remove the `prot_choice` parameter for that CPU trace generator in the configuration file `gen.cfg` in the exported Socrates PerformanceData project.

For any known limitations on running the Performance Model Library in the Socrates Performance Application, see the *Arm Socrates Release Note*.

For any known limitations running the Performance Model Library in Synopsys® Platform Architect™ refer to Synopsys® documentation.

3. Support

If you have any issues with the installation, content, or use of this release, create a ticket on **https://support.developer.arm.com**. Arm will respond as soon as possible.

Support for this release of the product is only provided by Arm to partners who have a current support and maintenance contract for the product.

3.1. Tools

For more information about the tools that Socrates v1.7.4 supports, see the *Arm Socrates Release Note*.

3.2. OS

For more information about the operating systems that Socrates has been developed on, see the *Arm Socrates Release Note*.

4. Conventions

The following subsections describe conventions used in Arm documents.

4.1. Glossary

The Arm Glossary is a list of terms that are 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: **https://developer.arm.com/glossary**.

4.2. Typographical conventions

Convention	Use
Italic	Citations.
Bold	Interface elements, such as menu names. Terms in descriptive lists, where appropriate.
`Monospace`	Text that you can enter at the keyboard, such as commands, file and program names, and source code.
`monospace bold`	Language keywords when used outside example code.
`monospace underline`	A permitted abbreviation for a command or option. You can enter the underlined text instead of the full command or option name.
<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	Terms that have specific technical meanings as defined in the Arm® Glossary. For example, IMPLEMENTATION DEFINED, IMPLEMENTATION SPECIFIC, UNKNOWN, and UNPREDICTABLE.
	Recommendations. Not following these recommendations might lead to system failure or damage.
	Requirements for the system. Not following these requirements might result in system failure or damage.
	Requirements for the system. Not following these requirements will result in system failure or damage.

Convention	Use
	An important piece of information that needs your attention.
	A useful tip that might make it easier, better, or faster to perform a task.
	A reminder of something important that relates to the information you are reading.