Migration Guide

DS-5 to Arm Development Studio Migration Guide

Version 1.2

Migration Guide

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Release Information

Document History

Version	Date	Confidentiality	Change
1.0	02 January 2020	Non-Confidential	First PDF release
1.1	18 August 2020	Non-Confidential	Update for Arm® Development Studio 2020.0
1.2	23 March 2021	Non-Confidential	Update for Arm® Development Studio 2021.0

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LES-PRE-20349

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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

1 Overview

This guide is to help users of DS-5 Development Studio (DS-5) migrate to using the Arm Development Studio. Many aspects of the development environments remain the same, so many features and aspects will be familiar.

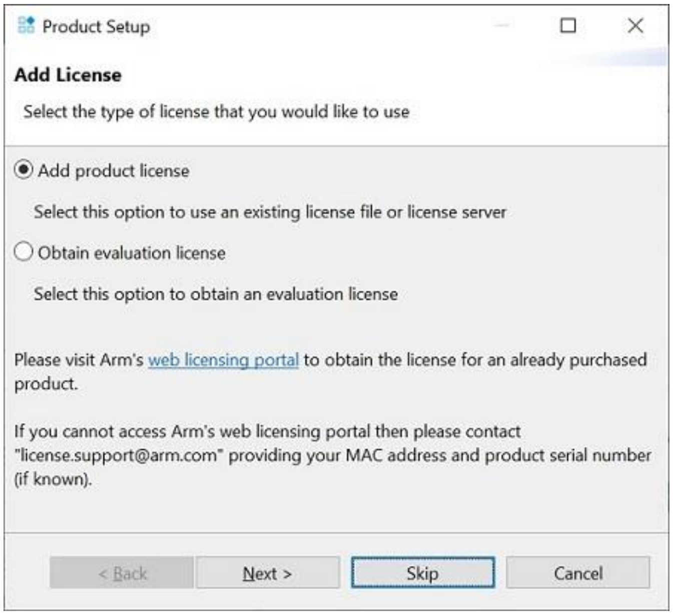
This guide will cover some of the differences a user will see when working with Arm Development Studio by prompting users to perform specific activities.

2 License Manager

Unlike DS-5, before the IDE opens, if no license file information exists, Arm Development Studio prompts you to get or enter a license file, and select a tools edition. This activity describes how to add an existing license server.

Add a license to Arm Development Studio:

1. Open **Arm DS IDE <version>**.
   If no product license information exists for Arm Development Studio, you see the following dialog:



Product Setup

Add License

Select the type of license that you would like to use

● Add product license

Select this option to use an existing license file or license server

○ Obtain evaluation license

Select this option to obtain an evaluation license

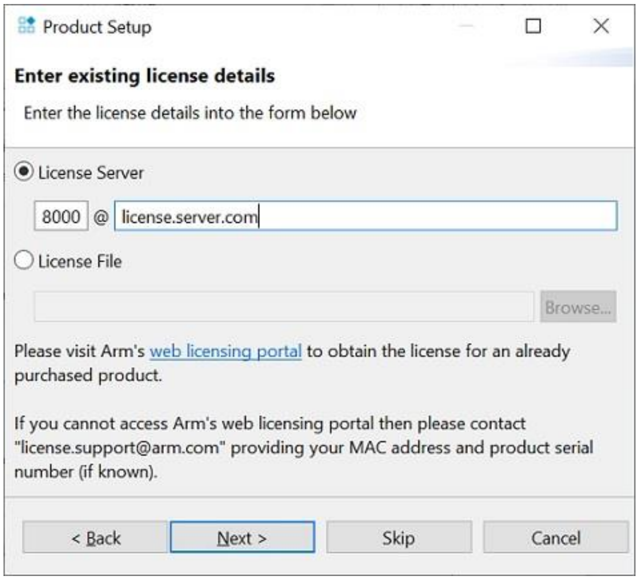
Please visit Arm's web licensing portal to obtain the license for an already purchased product.

If you cannot access Arm's web licensing portal then please contact "license.support@arm.com" providing your MAC address and product serial number (if known).

Note: You can skip adding a license to Arm Development Studio by clicking **Skip**. If you do so, some of the Arm Development Studio IDE functionality will be unavailable. You can add a license to Arm Development Studio in the future by navigating to **the Arm License Manager (Window > Preferences > Arm DS > Product Licenses)**. This activity assumes adding a license to Arm Development Studio is not skipped.

2. Select **Add product license** and click **Next**.

3. Under **License Server**, enter the license server port and address.



Product Setup

Enter existing license details

Enter the license details into the form below

● License Server

8000 @ license.server.com

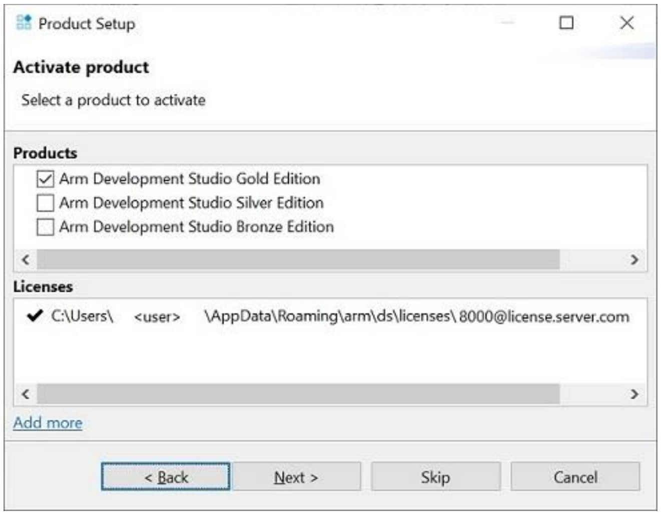
○ License File

Please visit Arm's web licensing portal to obtain the license for an already purchased product.

If you cannot access Arm's web licensing portal then please contact "license.support@arm.com" providing your MAC address and product serial number (if known).

4. Click **Next**.

5. Select the appropriate Arm Development Studio edition from the provided list.
   Note: Only editions enabled by the license file will be made available.



Product Setup

Activate product

Select a product to activate

Products

☑ Arm Development Studio Gold Edition
☐ Arm Development Studio Silver Edition
☐ Arm Development Studio Bronze Edition

Licenses

✓ C:\Users\ <user> \AppData\Roaming\arm\ds\licenses\ 8000@license.server.com

6. Click **Next** and then **Finish**.

Changes to Arm Development Studio license(s) are done through **Help > Arm License Manager** or **Window** > **Preferences** > **Arm DS** > **Product Licenses**.

Note: Consult the **Arm Compiler Licensing Configuration** page for details on how to configure your Arm Compiler license.

3 Default Workspace Location

When DS-5 is launched, you are prompted to choose a workspace, unless the **Prompt for workspace on startup** in the **Preferences** view was unticked. By contrast, Arm Development Studio opens without prompting you to provide the workspace location. It automatically opens the last used workspace. When Arm Development Studio is opened for the first time, it uses a default workspace in your home directory.

The default location is:

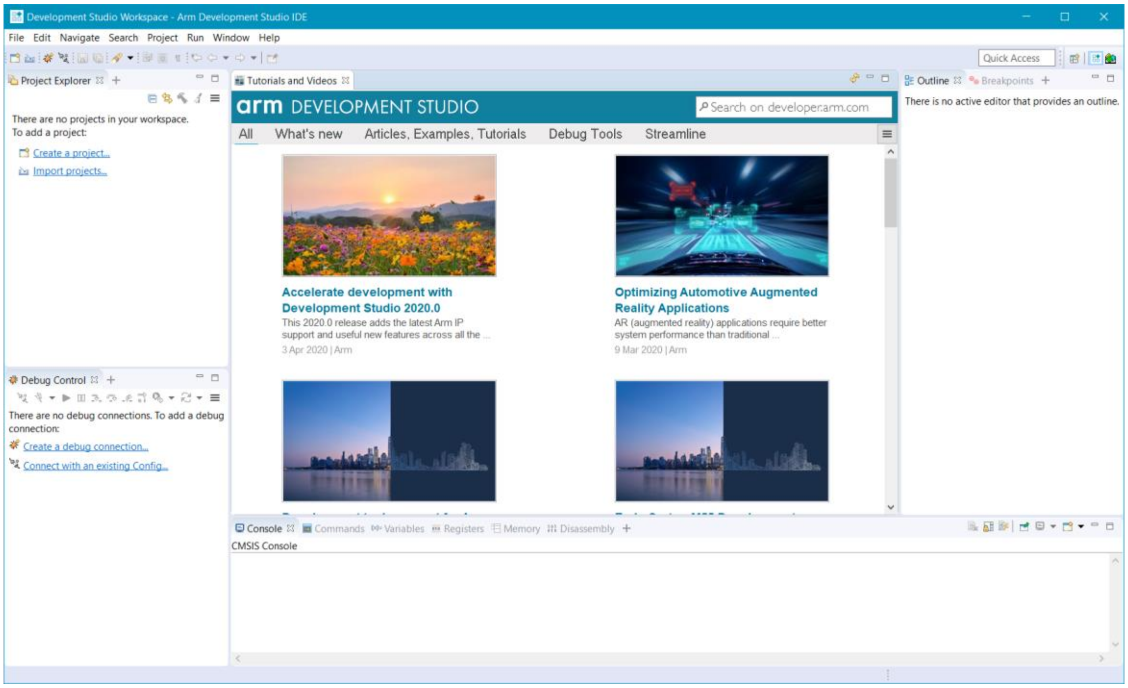
- Windows: <user directory>\Development Studio Workspace
- Linux: <home>/developmentstudio-workspace

To change to a different workspace directory in Arm Development Studio, select **File > Switch Workspace**.

The previous DS-5 behaviour, where you can specify a workspace on startup, can be done in Arm Development Studio by ticking **Prompt for workspace on startup** in **Window** > **Preferences** > **General** > **Startup and Shutdown** > **Workspaces**.

4 Combined C/C++ and Debug Perspectives

Arm Development Studio comes with a new IDE perspective, called **Development Studio**. This is the default view when Arm Development Studio opens.



There are no projects in your workspace.
To add a project:

Create a project...
Import projects...

There is no active editor that provides an outline.

Accelerate development with Development Studio 2020.0
This 2020.0 release adds the latest Arm IP support and useful new features across all the ...
3 Apr 2020 | Arm

Optimizing Automotive Augmented Reality Applications
AR (augmented reality) applications require better system performance than traditional ...
9 Mar 2020 | Arm

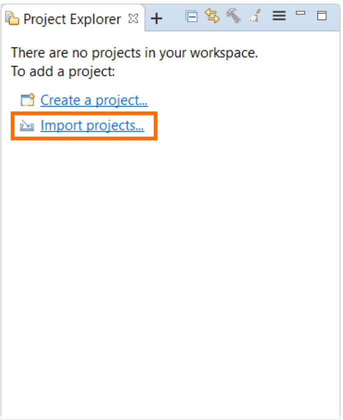
There are no debug connections. To add a debug connection:

Create a debug connection...
Connect with an existing Config...

This perspective combines the views of the DS-5 C/C++ and the DS-5 Debugger perspectives.

Explore the **Development Studio** perspective:

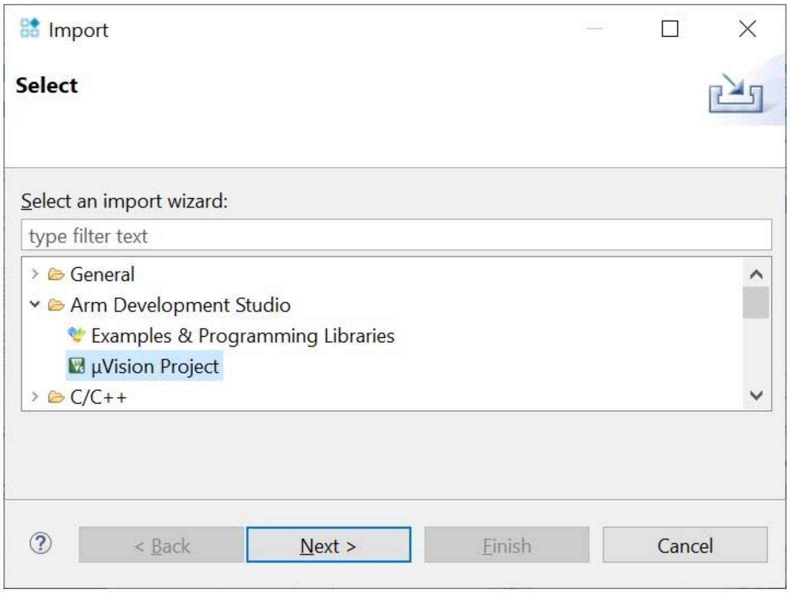
1. Click on the **Import Project** icon in the **Project Explorer**.
   Note: The **Import Project** icon is only present if no projects are listed in the **Project Explorer** view.



There are no projects in your workspace.
To add a project:

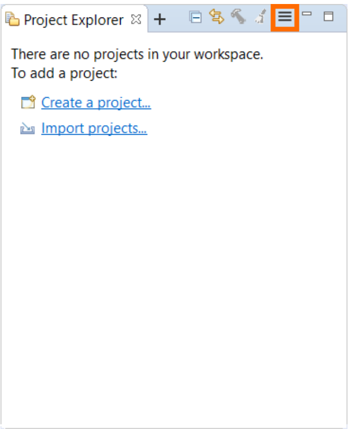
Create a project...
Import projects...

2. Expand **Arm Development Studio**.
   Arm Development Studio allows you to convert and import existing uVision projects. There is more information on this topic later.



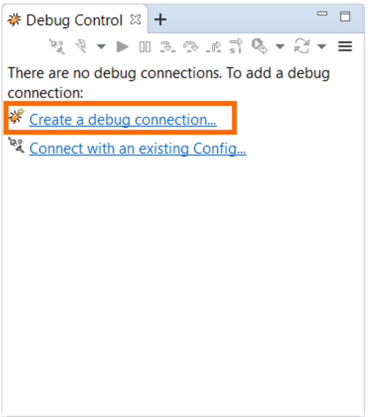
3. Click **Cancel** to exit the **Import Project** view.

4. Click **View Menu** (three line icon) at the top of the **Project Explorer** view.
   Note: To display menu items for the view, Arm Development Studio uses a three line icon instead of the inverted triangle used in DS-5.



5. Click anywhere outside the **View Menu** list to exit the menu.

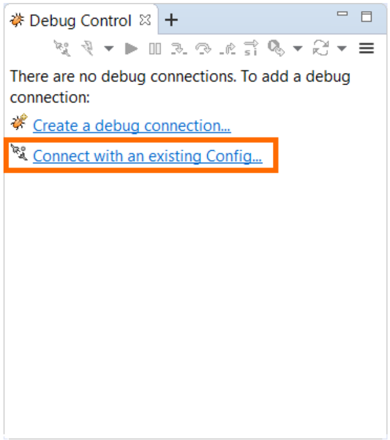
6. Click the **New Debug Connection** icon in the **Debug Control** view.
   Note: The **New Debug Connection** icon is only present if no launch configurations exist in Arm Development Studio workspace.
   Arm Development Studio provides new methods to create Hardware, Linux Application, and Model connections. These new methods are discussed in the connection creation sections of this guide.


Debug Control
Create a debug connection...
Connect with an existing Config...

There are no debug connections. To add a debug connection:

7. Click **Cancel** to exit the **New Debug Connection** view.

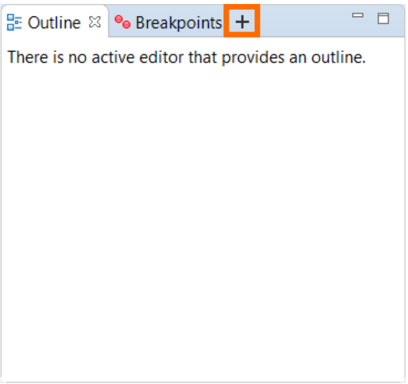
8. Click the **Connect with Existing Config** icon.
Note: The **Connect to Existing Config** icon is only present if no launch configurations exist in Arm Development Studio workspace.
The **Connect with Existing Config** view is empty, unless you have already created launch configurations with Arm Development Studio.


Debug Control
Create a debug connection...
Connect with an existing Config...

There are no debug connections. To add a debug connection:

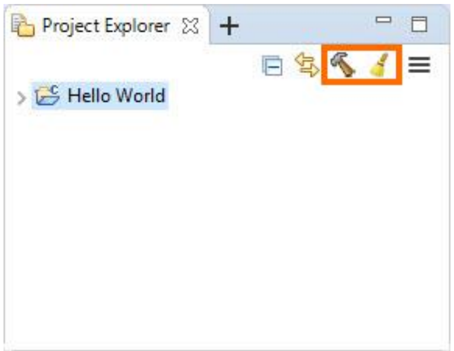
9. Click on the **Cancel** button to exit the **Connect with Existing Config** view.

Click the '+' to add other views to the Development Studio perspective, or select **Window** > **Show View** and choose your view.



There is no active editor that provides an outline.

Unlike DS-5, Arm Development Studio has **Builds the selected project** (hammer) and **Cleans the selected project** (broom) icons in the **Project Explorer** view to build and clean the selected project respectively.



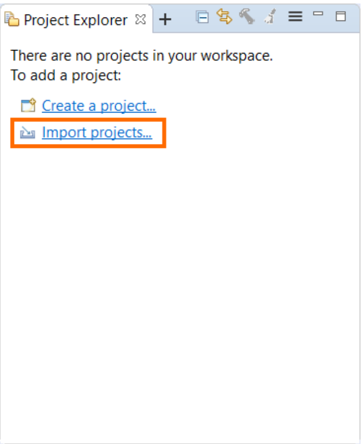
5 Migrating Existing DS-5 Projects

Existing DS-5 projects and launch configurations (.launch files) can be imported into Arm Development Studio. The projects and launch configurations imported into Arm Development Studio are not backward-compatible with DS-5.

Import existing DS-5 projects into Arm Development Studio:

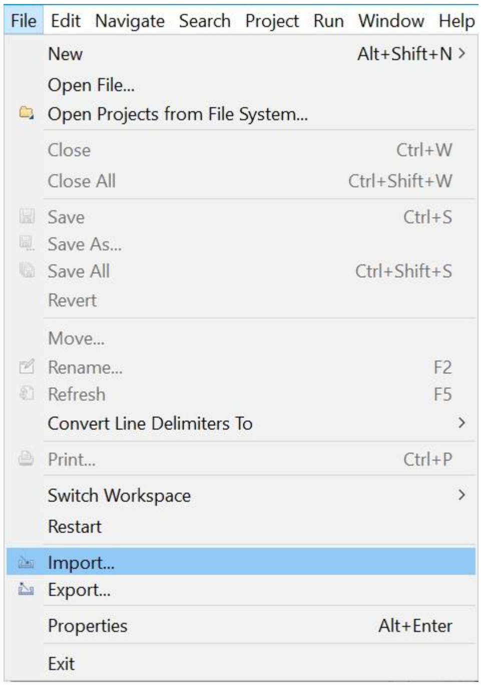
1. Choose one of the project import methods below:

   a. Click on the **Import Project** icon in the **Project Explorer** view.
   Note: The **Import Project** icon will only appear if no projects exist.

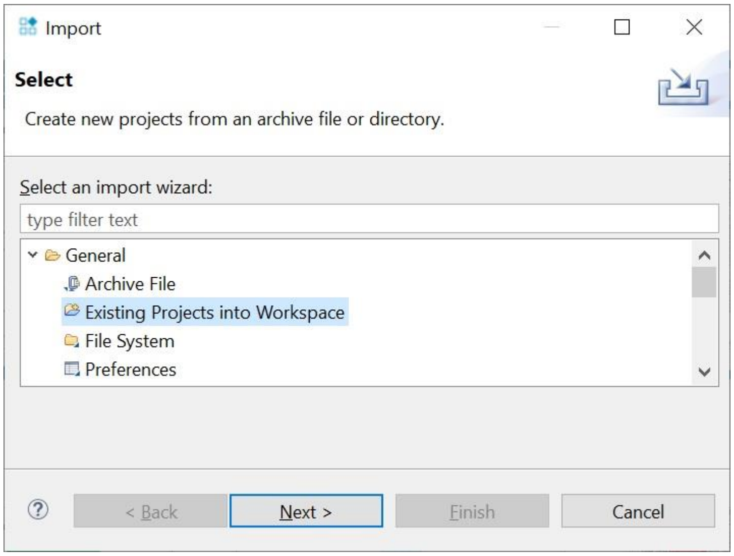


There are no projects in your workspace.
To add a project:

   b. Select **File** > **Import...**.



2. Select **General** > **Existing Projects into Workspace**.



Import

Select

Create new projects from an archive file or directory.

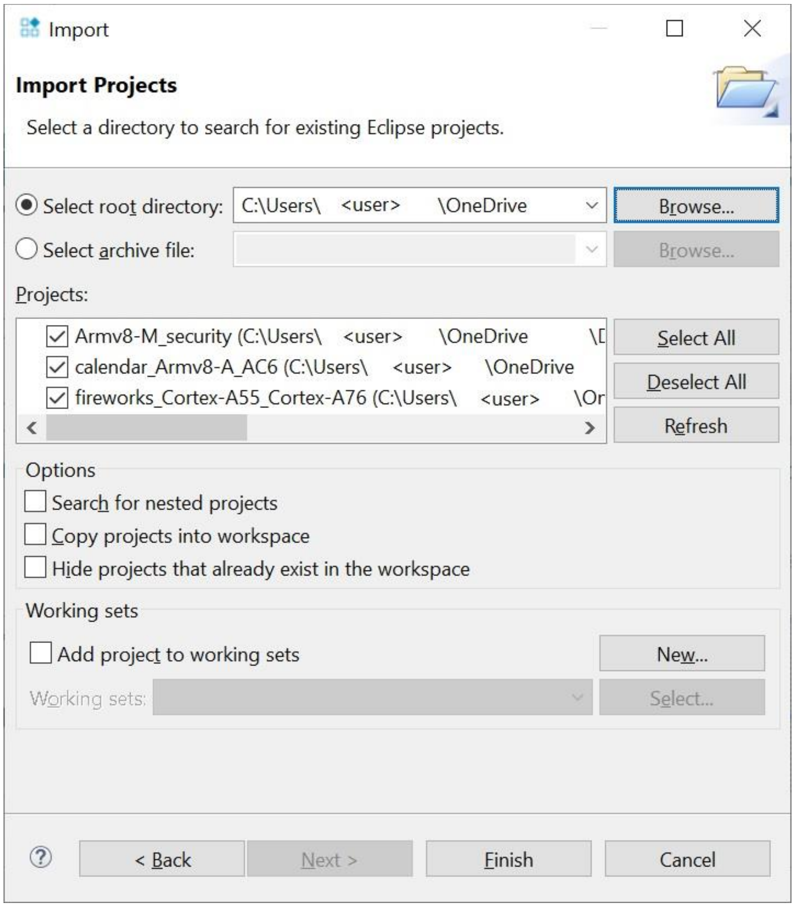
Select an import wizard:

type filter text

- General
  - Archive File
  - Existing Projects into Workspace
  - File System
  - Preferences

3. Click **Next**.

4. Click **Browse**... to locate the existing DS-5 projects to import, and ensure the boxes are ticked next to the appropriate projects.



Import

Import Projects

Select a directory to search for existing Eclipse projects.

● Select root directory: C:\Users\ <user> \OneDrive

○ Select archive file:

Projects:

☑ Armv8-M_security (C:\Users\ <user> \OneDrive \[
☑ calendar_Armv8-A_AC6 (C:\Users\ <user> \OneDrive
☑ fireworks_Cortex-A55_Cortex-A76 (C:\Users\ <user> \Or

Options

☐ Search for nested projects
☐ Copy projects into workspace
☐ Hide projects that already exist in the workspace

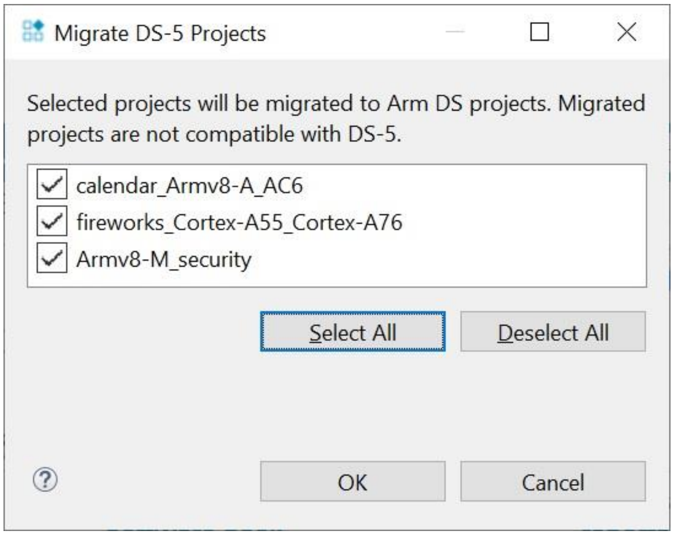
Working sets

☐ Add project to working sets

Working sets:

5. Click **Finish**.

6. Click **Select All** to import all the existing DS-5 projects or tick the box next to the project(s) to import.



Migrate DS-5 Projects

Selected projects will be migrated to Arm DS projects. Migrated projects are not compatible with DS-5.

- ☑ calendar_Armv8-A_AC6
- ☑ fireworks_Cortex-A55_Cortex-A76
- ☑ Armv8-M_security

7. Click **OK**.

The imported projects appear in the **Project Explorer** view.

Note: Consult the **Arm Compiler Licensing Configuration** page for details on how to configure your Arm Compiler license.

6 CMSIS Packs

Arm Development Studio includes support for CMSIS Packs. "CMSIS" stands for "Cortex Microcontroller Software Interface Standard". The Packs offer the user a quick and easy way to create, build, and debug embedded software applications for Arm Cortex-M based microcontrollers and Cortex-A5/A7/A9 based processors.

CMSIS Packs are a delivery mechanism for software components, device parameters, and board support. A Pack is a file collection that might include:

- Source code, header files, and software libraries – for example for an RTOS, DSP libraries, or generic middleware.
- Device parameters (such as the memory layout or debug settings) along with startup code and Flash programming algorithms.
- Board support (drivers, board parameters, and debug connections).
- Documentation and source code templates.
- Example projects that show how components can be assembled into complete working systems.

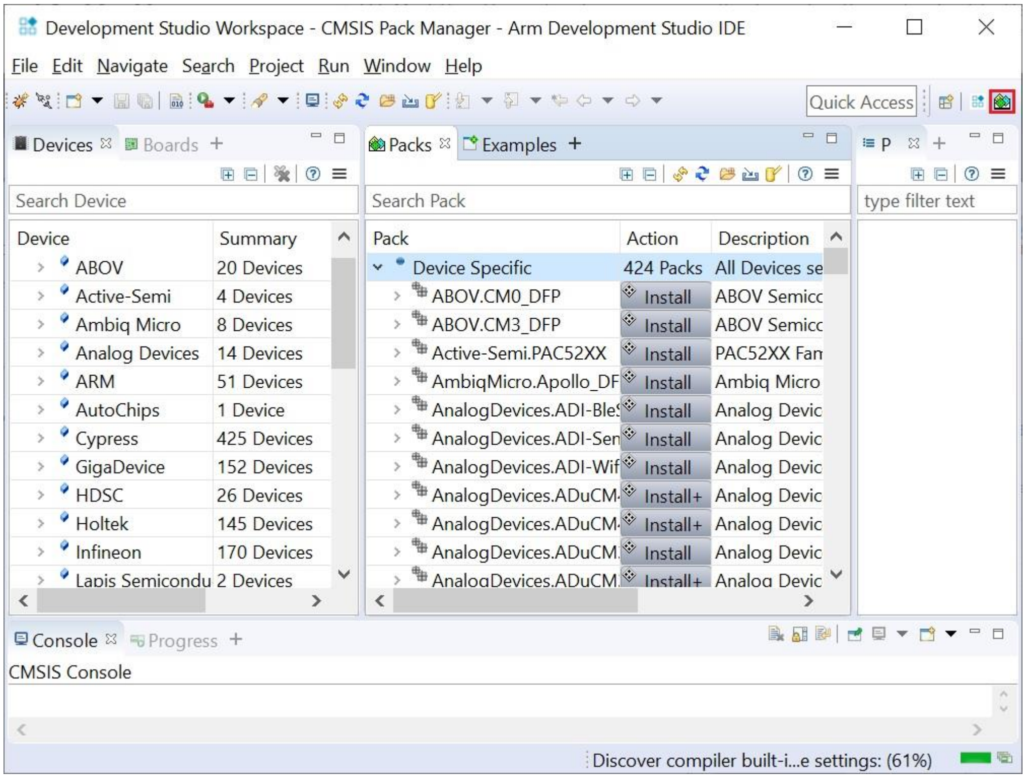
Packs are developed by various silicon and software vendors, covering thousands of different boards and devices. They can also be used to enable life-cycle management of in-house software components. For more information see **CMSIS-Pack Documentation**.

A **CMSIS-Pack Manager** perspective is provided in Arm Development Studio for loading and managing Packs, and the **New Project** wizard allows you to easily create a new project based on selected Pack(s). To create a new Pack-based project, first install the Packs needed for your target board/device from the Pack Manager, then use **File** > **New** > **Project** to create a new CMSIS C project. For more details see **Arm Development Studio Documentation page**.

Note:
If you already have some CMSIS Packs installed in a specific directory, such as the one created by MDK's Pack Installer, the CMSIS-Pack Manager can be redirected to the existing CMSIS Packs by setting **Window > Preferences > CMSIS Packs > CMSIS Pack root folder** to the location of the installation folder.

Work with the CMSIS-Pack Manager:

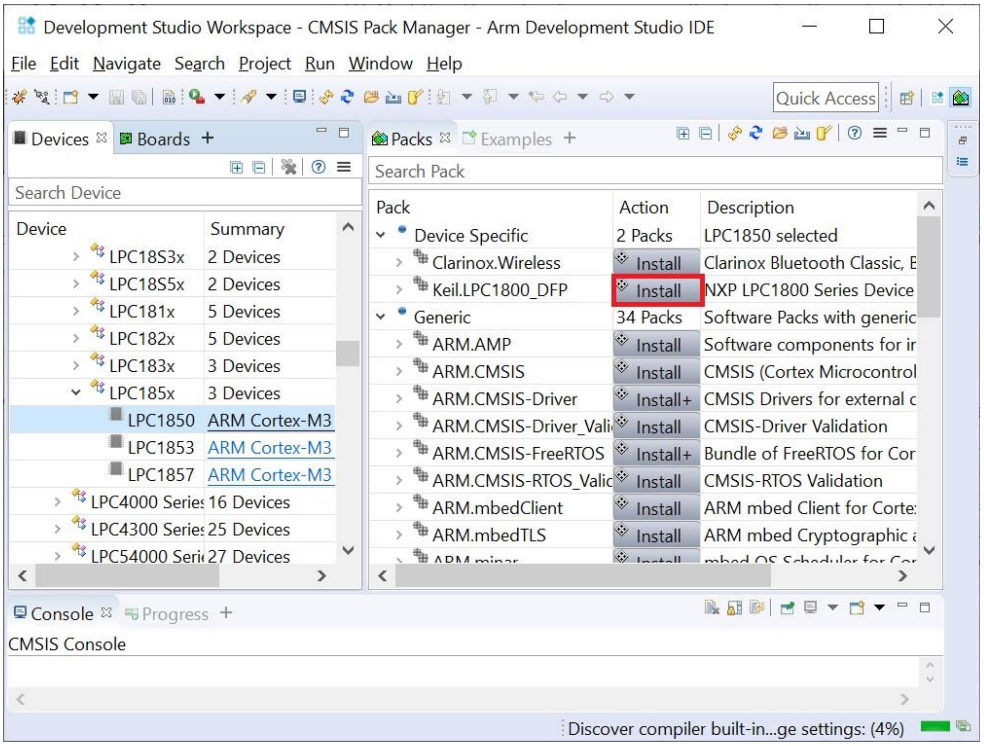
1. Open the **CMSIS-Pack Manager** perspective.


Development Studio Workspace - CMSIS Pack Manager - Arm Development Studio IDE
File Edit Navigate Search Project Run Window Help
Quick Access
Devices
Boards
Packs
Examples
P
Search Device
Search Pack
type filter text
Console
Progress
CMSIS Console
Discover compiler built-i...e settings: (61%)

Device	Summary
ABOV	20 Devices
Active-Semi	4 Devices
Ambiq Micro	8 Devices
Analog Devices	14 Devices
ARM	51 Devices
AutoChips	1 Device
Cypress	425 Devices
GigaDevice	152 Devices
HDSC	26 Devices
Holtek	145 Devices
Infineon	170 Devices
Lapis Semicondu	2 Devices

Pack	Action	Description
Device Specific	424 Packs	All Devices se
ABOV.CM0_DFP	Install	ABOV Semicc
ABOV.CM3_DFP	Install	ABOV Semicc
Active-Semi.PAC52XX	Install	PAC52XX Fan
AmbiqMicro.Apollo_DF	Install	Ambiq Micro
AnalogDevices.ADI-Ble	Install	Analog Devic
AnalogDevices.ADI-Sen	Install	Analog Devic
AnalogDevices.ADI-Wif	Install	Analog Devic
AnalogDevices.ADuCM	Install+	Analog Devic
AnalogDevices.ADuCM	Install+	Analog Devic
AnalogDevices.ADuCM	Install	Analog Devic
AnalogDevices.ADuCM	Install+	Analog Devic

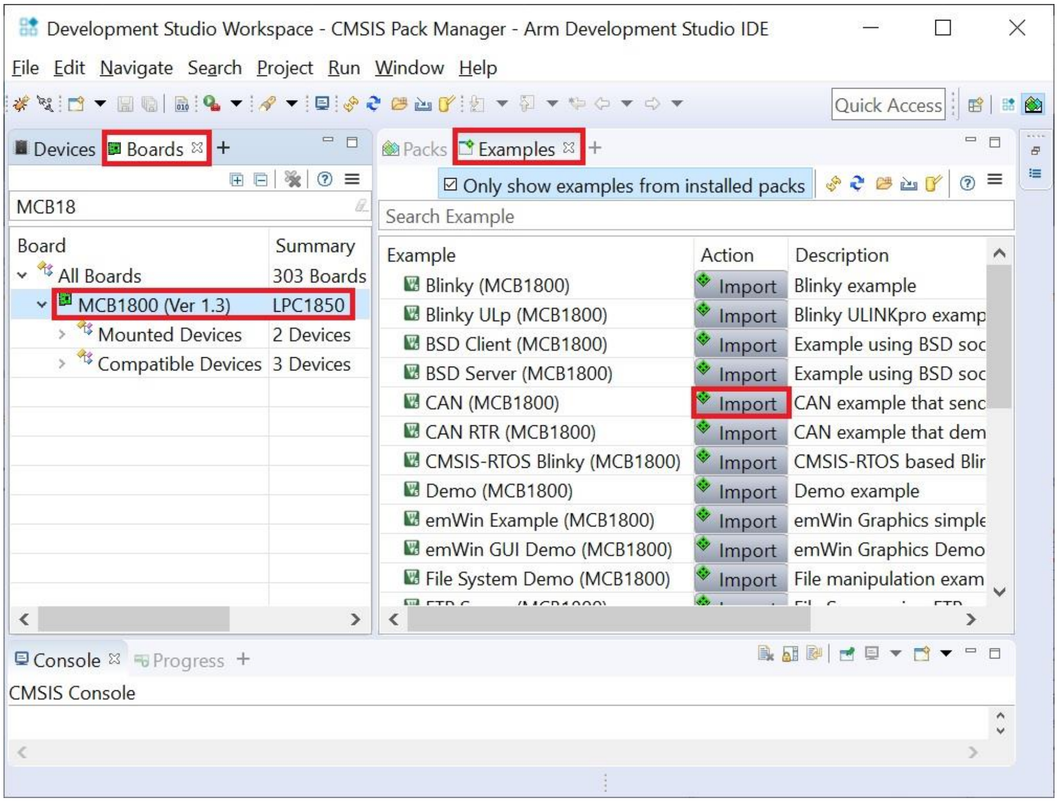
2. Install the desired CMSIS pack(s); select the device manufacturer and board in the **Devices** view, and click the appropriate **Install(+)** in the **Packs** view.
   Note: Boards/devices which have CMSIS pack(s) installed are available as selectable targets when creating a **New Project** or a **Hardware Connection**. Creating a Hardware Connection with Arm Development Studio is described later.


Development Studio Workspace - CMSIS Pack Manager - Arm Development Studio IDE
File Edit Navigate Search Project Run Window Help
Quick Access
Devices
Boards
Packs
Examples
Search Device
Search Pack
Console
Progress
CMSIS Console
Discover compiler built-in...ge settings: (4%)

Device	Summary
LPC18S3x	2 Devices
LPC18S5x	2 Devices
LPC181x	5 Devices
LPC182x	5 Devices
LPC183x	3 Devices
LPC185x	3 Devices
LPC1850	ARM Cortex-M3
LPC1853	ARM Cortex-M3
LPC1857	ARM Cortex-M3
LPC4000 Series	16 Devices
LPC4300 Series	25 Devices
LPC54000 Seri	27 Devices

Pack	Action	Description
Device Specific	2 Packs	LPC1850 selected
Clarinox.Wireless	Install	Clarinox Bluetooth Classic, E
Keil.LPC1800_DFP	Install	NXP LPC1800 Series Device
Generic	34 Packs	Software Packs with generic
ARM.AMP	Install	Software components for ir
ARM.CMSIS	Install	CMSIS (Cortex Microcontrol
ARM.CMSIS-Driver	Install+	CMSIS Drivers for external c
ARM.CMSIS-Driver_Vali	Install	CMSIS-Driver Validation
ARM.CMSIS-FreeRTOS	Install+	Bundle of FreeRTOS for Cor
ARM.CMSIS-RTOS_Valic	Install	CMSIS-RTOS Validation
ARM.mbedClient	Install	ARM mbed Client for Corte:
ARM.mbedTLS	Install	ARM mbed Cryptographic a
ARM.minar	Install	mbed OS Scheduler for Cor

3. Copy an example into the current Workspace; select the desired board in the **Boards** view and click the appropriate **Import** in the **Examples** view.
   Note: Only examples for installed CMSIS Packs are visible by default. Untick **Only show examples from installed packs** to see examples from packs which have not been installed.


Development Studio Workspace - CMSIS Pack Manager - Arm Development Studio IDE
File Edit Navigate Search Project Run Window Help
Quick Access
Devices
Boards
Packs
Examples
Console
Progress

MCB18

Board	Summary
All Boards	303 Boards
MCB1800 (Ver 1.3)	LPC1850
Mounted Devices	2 Devices
Compatible Devices	3 Devices

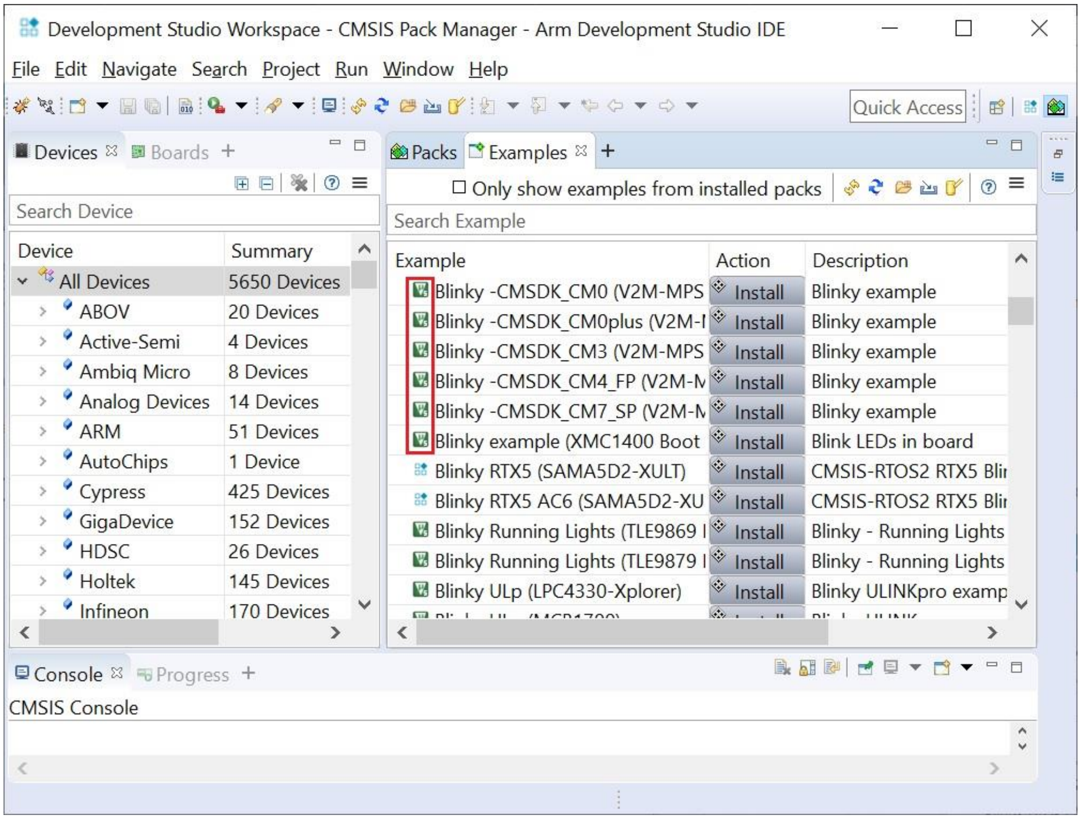
☑ Only show examples from installed packs

Search Example

Example	Action	Description
Blinky (MCB1800)	Import	Blinky example
Blinky ULp (MCB1800)	Import	Blinky ULINKpro examp
BSD Client (MCB1800)	Import	Example using BSD soc
BSD Server (MCB1800)	Import	Example using BSD soc
CAN (MCB1800)	Import	CAN example that senc
CAN RTR (MCB1800)	Import	CAN example that dem
CMSIS-RTOS Blinky (MCB1800)	Import	CMSIS-RTOS based Blir
Demo (MCB1800)	Import	Demo example
emWin Example (MCB1800)	Import	emWin Graphics simple
emWin GUI Demo (MCB1800)	Import	emWin Graphics Demo
File System Demo (MCB1800)	Import	File manipulation exam

CMSIS Console

The pack manager shows a uVision icon if the example is a uVision project and requires conversion. This will help you to identify whether the example are affected by the limitations listed below.


Development Studio Workspace - CMSIS Pack Manager - Arm Development Studio IDE
File Edit Navigate Search Project Run Window Help
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Devices
Boards
Search Device
Packs
Examples
Search Example
Console
Progress

Device	Summary
All Devices	5650 Devices
ABOV	20 Devices
Active-Semi	4 Devices
Ambiq Micro	8 Devices
Analog Devices	14 Devices
ARM	51 Devices
AutoChips	1 Device
Cypress	425 Devices
GigaDevice	152 Devices
HDSC	26 Devices
Holtek	145 Devices
Infineon	170 Devices

☐ Only show examples from installed packs

Example	Action	Description
Blinky -CMSDK_CM0 (V2M-MPS	Install	Blinky example
Blinky -CMSDK_CM0plus (V2M-I	Install	Blinky example
Blinky -CMSDK_CM3 (V2M-MPS	Install	Blinky example
Blinky -CMSDK_CM4_FP (V2M-M	Install	Blinky example
Blinky -CMSDK_CM7_SP (V2M-M	Install	Blinky example
Blinky example (XMC1400 Boot	Install	Blink LEDs in board
Blinky RTX5 (SAMA5D2-XULT)	Install	CMSIS-RTOS2 RTX5 Blir
Blinky RTX5 AC6 (SAMA5D2-XU	Install	CMSIS-RTOS2 RTX5 Blir
Blinky Running Lights (TLE9869 I	Install	Blinky - Running Lights
Blinky Running Lights (TLE9879 I	Install	Blinky - Running Lights
Blinky ULp (LPC4330-Xplorer)	Install	Blinky ULINKpro examp

CMSIS Console

Below is a set of limitations that apply to imported uVision projects:

- uVision project settings affecting debugging of the target are not migrated to Arm Development Studio debug configurations but are limited to the project build.

- uVision projects can have multiple project targets with variations in the Run Time Environment (RTE) setting. In Arm Development Studio, each project is limited to exactly one RTE configuration and Eclipse's C/C++ Development Tooling (CDT) concept of project "configurations" is not supported. Therefore, each uVision project target is imported as an individual Arm Development Studio project with its own copy of the project files.

- The conversion and import of uVision projects always results in a copy of the project files.

- uVision Multi-Project-Workspaces files (*.uvmpw) are not supported. Instead, the projects included in the workspace need to be imported individually and project interdependencies setup manually.

- uVision project targets which have a fixed version of the compiler configured cannot be imported if the specified version is not installed (see **Register a compiler toolchain**). This is because the compiler version is configured per project target.

- **User commands** in uVision projects are not converted into the corresponding Arm Development Studio **Build Steps** located in the project's **Properties > C/C++ Build > Settings > Build Steps**.

- **uVision Key Sequence for Tool Parameters** need to be translated to corresponding variables in Arm Development Studio.

- **Signature Creator for NXP Cortex-M Devices** **(elfdwt)** needs to be manually setup as an Arm Development Studio **Post-build step** in the project's **Properties > C/C++ Build > Settings > Build Steps**. The **elfdwt** utility is not included in the Arm Development Studio installation.

- The **fcarm** utility is not included in the Arm Development Studio installation.

- The conversion and import of uVision projects requires that all files and include folders specified in the project are in the same folder as the project file or in a subdirectory structure. Files outside of the project folder are required to be copied into the project folder and relative dependencies need to be manually resolved.

- In uVision source groups, software components and individual files can have specific assignments to memory regions which are evaluated when the linker script is generated by the tools. Since this feature is not available in Arm Development Studio, you need to manually edit the linker script file.

- uVision projects that are not contained in a CMSIS Pack can be converted and imported using **File** > **Import** > **Arm Development Studio** > **uVision Project**. The same limitations listed above apply.

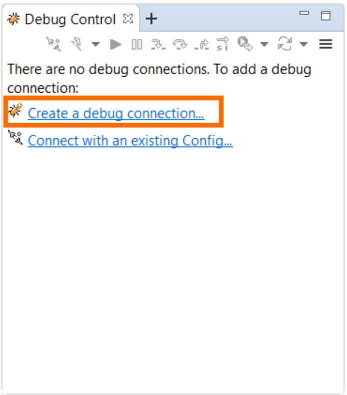
7 Creating a new Hardware Connection

Arm Development Studio provides a method to connect to and debug hardware targets. Unlike DS-5, Arm Development Studio provides connection via CMSIS Packs as well as Configuration Database platform configurations.

Arm Development Studio adds a new Hardware Connection wizard to help you create connections to hardware targets. This activity describes how to connect to a hardware target with the new Hardware Connection wizard using a CMSIS Pack. Adding a new configuration database hardware platform using the same wizard is described later.

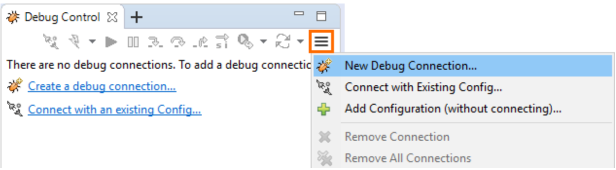
Establish a Hardware Connection:

1. Click on the **New Debug Connection** icon in the **Debug Control** view, in the **View Menu** listing of the **Debug Control** view, or at the top of the **Development Studio** perspective and select **Hardware Connection**.
   Note: The **New Debug Connection** icon only appears in the **Debug Control** view if no launch configurations have been used.


Debug Control
Create a debug connection...
Connect with an existing Config...

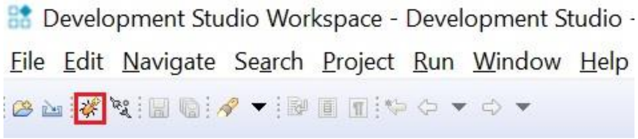
There are no debug connections. To add a debug connection:

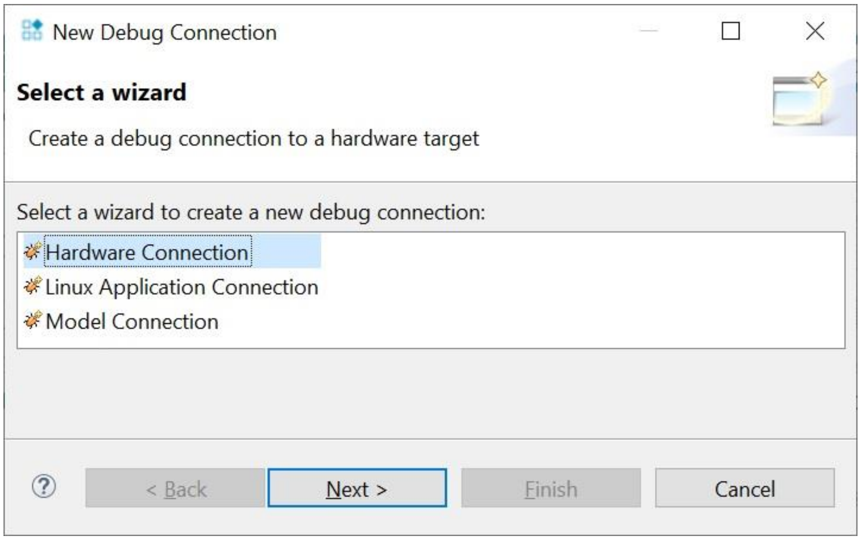
OR


Debug Control
Create a debug connection...
Connect with an existing Config...
New Debug Connection...
Connect with Existing Config...
Add Configuration (without connecting)...
Remove Connection
Remove All Connections

There are no debug connections. To add a debug connectic

OR





New Debug Connection

Select a wizard

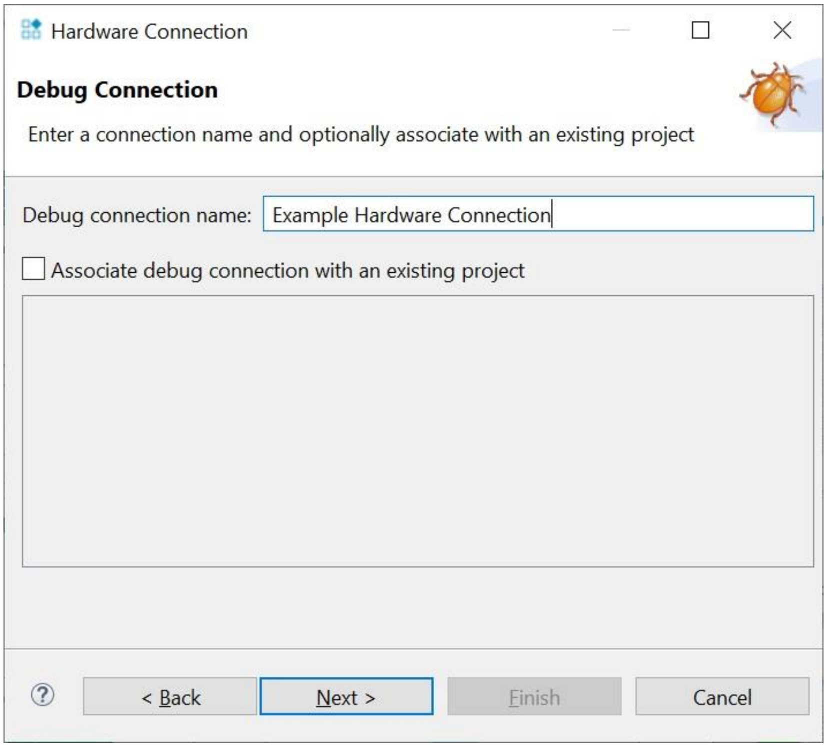
Create a debug connection to a hardware target

Select a wizard to create a new debug connection:

- Hardware Connection
- Linux Application Connection
- Model Connection

The Hardware Connection wizard can also be opened by selecting **File > New > Hardware Connection**.

2. Enter a connection name in the **Debug connection name** field.
   Note: A new Hardware connection can be associated with an existing project by ticking **Associate debug connection with an existing project** and selecting a project from the list provided. This option is not used in this activity.



Hardware Connection

Debug Connection

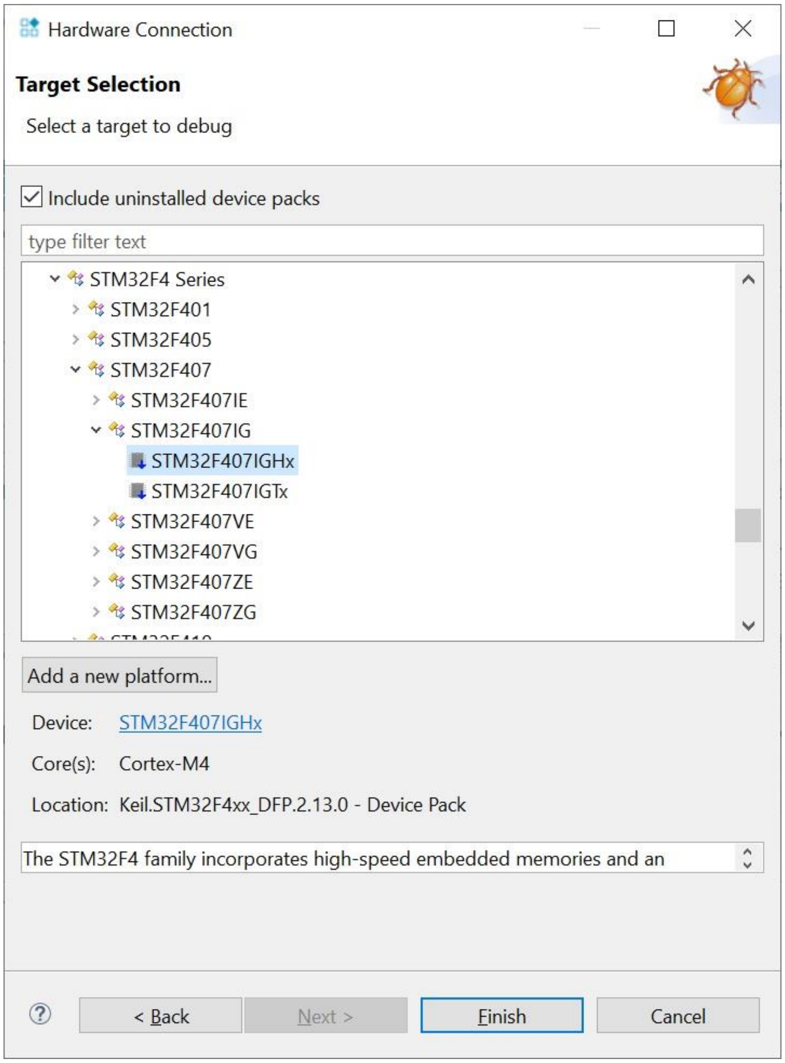
Enter a connection name and optionally associate with an existing project

Debug connection name: Example Hardware Connection

□ Associate debug connection with an existing project

3. Click **Next**.

4. Select a hardware target to connect to from the available list.
   Note: The **Location** entry of the selected target tells you whether the device support comes from a CMSIS Pack or a Configuration Database (configdb).



Hardware Connection

Target Selection

Select a target to debug

☑ Include uninstalled device packs

type filter text

- STM32F4 Series
  - STM32F401
  - STM32F405
  - STM32F407
    - STM32F407IE
    - STM32F407IG
      - STM32F407IGHx
      - STM32F407IGTx
    - STM32F407VE
    - STM32F407VG
    - STM32F407ZE
    - STM32F407ZG

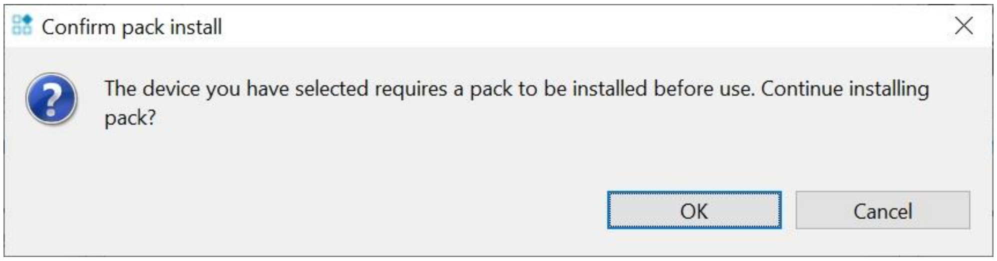
Device: STM32F407IGHx

Core(s): Cortex-M4

Location: Keil.STM32F4xx_DFP.2.13.0 - Device Pack

The STM32F4 family incorporates high-speed embedded memories and an

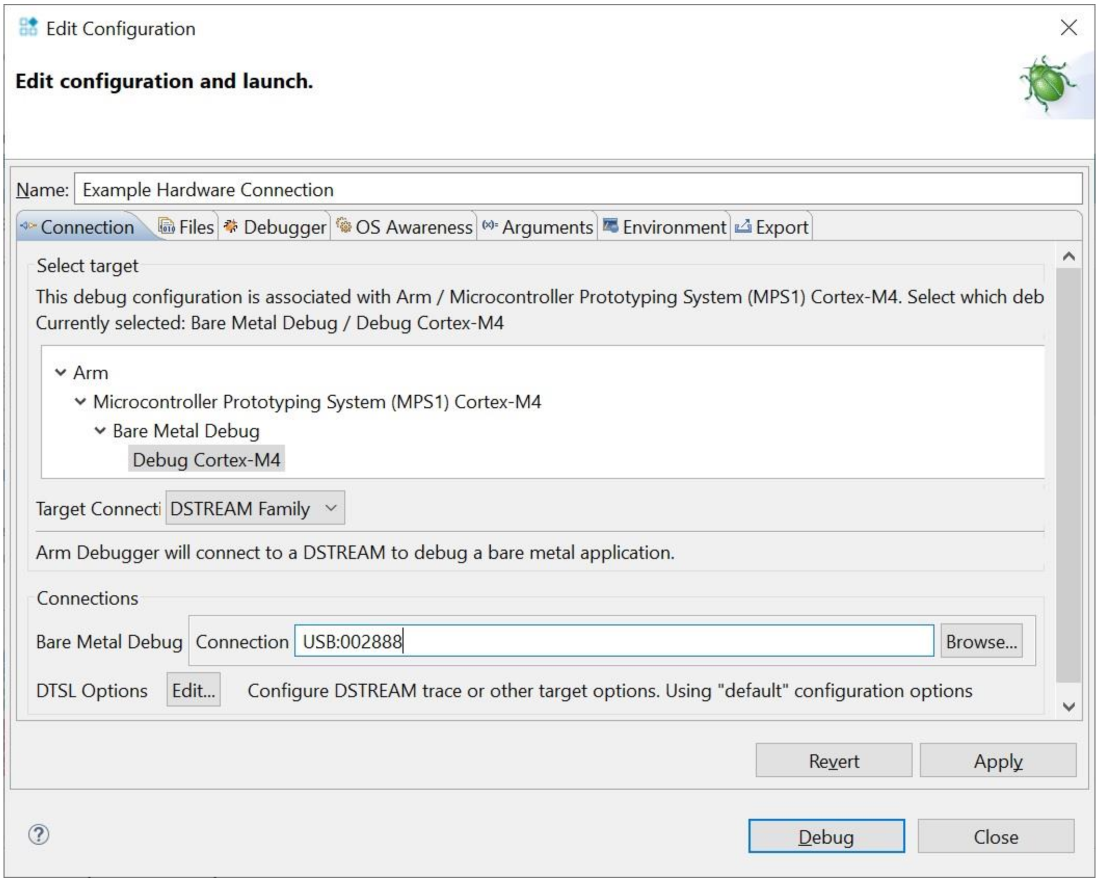
5. Click **Finish**.
   Note: If the selected target uses a CMSIS Pack that has not been installed, the below message appears. Confirm the pack installation by clicking **OK**.



Confirm pack install

The device you have selected requires a pack to be installed before use. Continue installing pack?

If the device support for the selected target comes from a Configuration Database, the Hardware Connection wizard opens an Arm Development Studio **Edit Configuration** view which functions the same as the DS-5 **Debug Configurations** view.



Edit Configuration

Edit configuration and launch.

Name: Example Hardware Connection

Select target

This debug configuration is associated with Arm / Microcontroller Prototyping System (MPS1) Cortex-M4. Select which deb
Currently selected: Bare Metal Debug / Debug Cortex-M4

- Arm
  - Microcontroller Prototyping System (MPS1) Cortex-M4
    - Bare Metal Debug
      - Debug Cortex-M4

Target Connecti: DSTREAM Family

Arm Debugger will connect to a DSTREAM to debug a bare metal application.

Connections

Bare Metal Debug: Connection: USB:002888

DTSL Options: Configure DSTREAM trace or other target options. Using "default" configuration options

If the device support for the selected target comes from a CMSIS Pack, the Arm Development Studio **Edit Configuration** view is different from the DS-5 **Debug Configurations** view. The activity sets up and makes a connection to a target with this version of the **Edit Configuration** view.

Setup and connect to a target using the **Edit Configuration** view:

1. In the **Connection** tab:

   a. Select a debug adapter from the **Connection Type** drop-down list.

   b. Select a debug connection method (JTAG or SWD) from the **Debug Port** drop-down list.

   c. Enter a connection address for the debug adapter or browse for the debug adapter; click **Browse...**.

   d. Click **Target Configuration...** to set the trace connection options.
   Note: If the CMSIS-Pack does not contain trace information, Platform Configuration Editor (PCE) autodetection runs to determine the trace devices and topology. Once autodetect is complete, the Arm Development Studio **Debug and Trace Services Layer (DTSL) Configuration** view has the same function as DS-5's **DTSL Configuration** view.

2. In the **Advanced** tab:

   a. If appropriate, add an image file to download to the target; click **Add an image** under **File Settings**.

   b. Select the appropriate **Run Control**, **Select and reset**, **Reset control**, and **Scripts** options.

3. In the **Flash** tab, if appropriate, add a flash programming algorithm to the connection by clicking **Add a flash programming algorithm** under **Programming Algorithms**.
   Note: A flash programming algorithm might already be present if the CMSIS Pack includes one.

4. In the **OS Awareness** tab, if appropriate, select an OS from the **Select OS awareness** drop-down list.

5. In the **Connection** tab, click **Apply** and then click **Debug**.

The debug connection status appears in the **Debug Control** view and the created launch configuration appears in the **Project Explorer** view.

8 Connecting to new or custom Hardware

Like DS-5, Arm Development Studio provides a method to add new hardware target configurations for connection and debug purposes. The Arm Development Studio provides a different way to add hardware configurations to the configuration database. In DS-5, hardware configurations were added using a separate perspective, **Platform Configuration Editor** (PCE). In Arm Development Studio, adding a hardware configuration is part of the new Hardware Connection wizard.

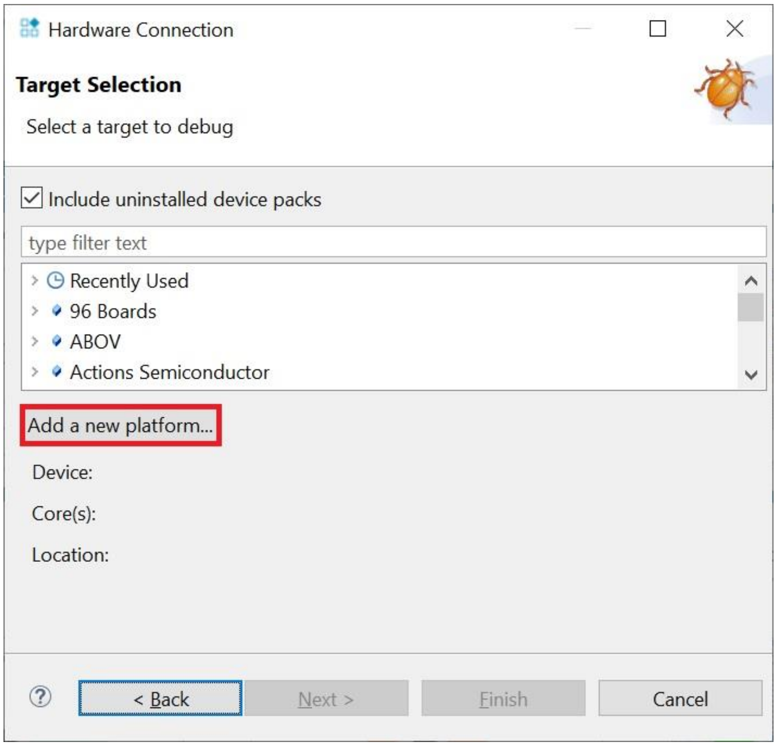
Add a hardware configuration:

1. Click on the **New Debug Connection** icon in the **Debug Control** view, in the **View Menu** listing of the **Debug Control** view, or at the top of the **Development Studio** perspective and select **Hardware Connection**.

2. Enter a connection name in the **Debug connection name** field.

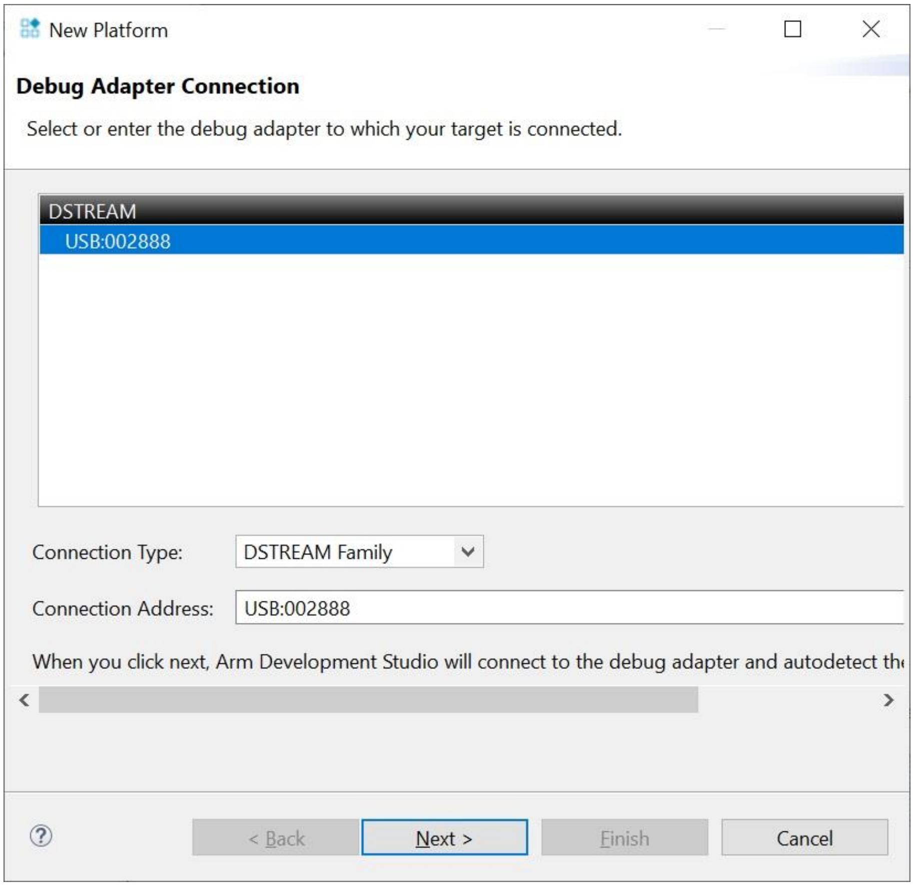
3. Click **Next**.

4. Click **Add a new platform...**.



If it is not already present, a configuration database, **ExtensionDB**, is created automatically to store the new hardware configurations.

5. Select the appropriate debug adapter connection in the **Connection Type** drop-down list.
The **Debug Adapter Connection** view automatically discovers any debug adapters of the selected type. Unlike DS-5, Arm Development Studio can use ULINK devices for autodetection purposes.
If the debug adapter is not discovered, enter the debug adapter connection information in the **Connection Address** field.



New Platform

Debug Adapter Connection

Select or enter the debug adapter to which your target is connected.

DSTREAM
USB:002888

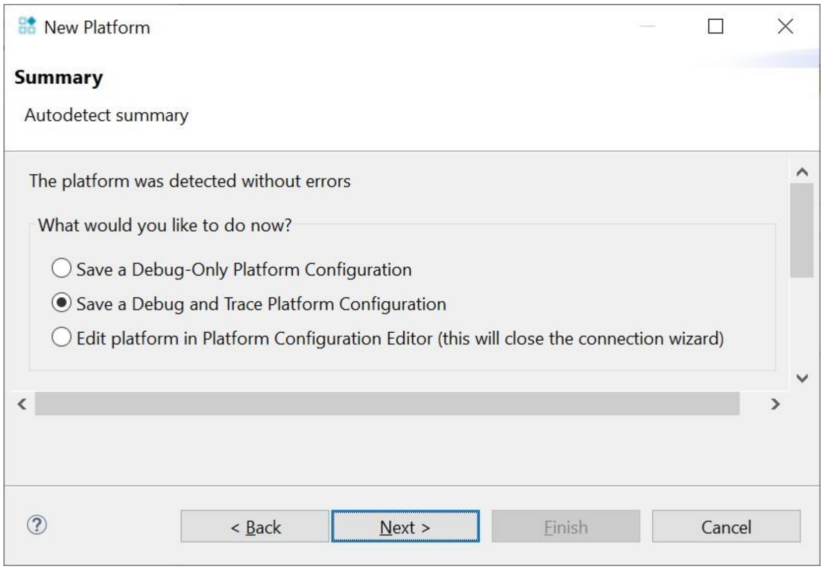
Connection Type: DSTREAM Family

Connection Address: USB:002888

When you click next, Arm Development Studio will connect to the debug adapter and autodetect th

6. Click **Next**.
   The hardware target autodetection process starts to create a platform configuration for the attached target.
   You may be prompted to update the debug adaptor firmware before the autodetection process begins. The debug adaptor firmware update process is the same as it is for DS-5.

7. When the autodetection process completes, choose the type of platform configuration to create.



New Platform

Summary

Autodetect summary

The platform was detected without errors

What would you like to do now?

○ Save a Debug-Only Platform Configuration
● Save a Debug and Trace Platform Configuration
○ Edit platform in Platform Configuration Editor (this will close the connection wizard)

To exit the Hardware Connection wizard and enter Arm Development Studio's **Platform Configuration Editor (PCE)** perspective, select the **Edit Platform in Arm DS Platform Configuration Editor** option. Arm Development Studio's **PCE** functions the same as DS-5's **PCE**.

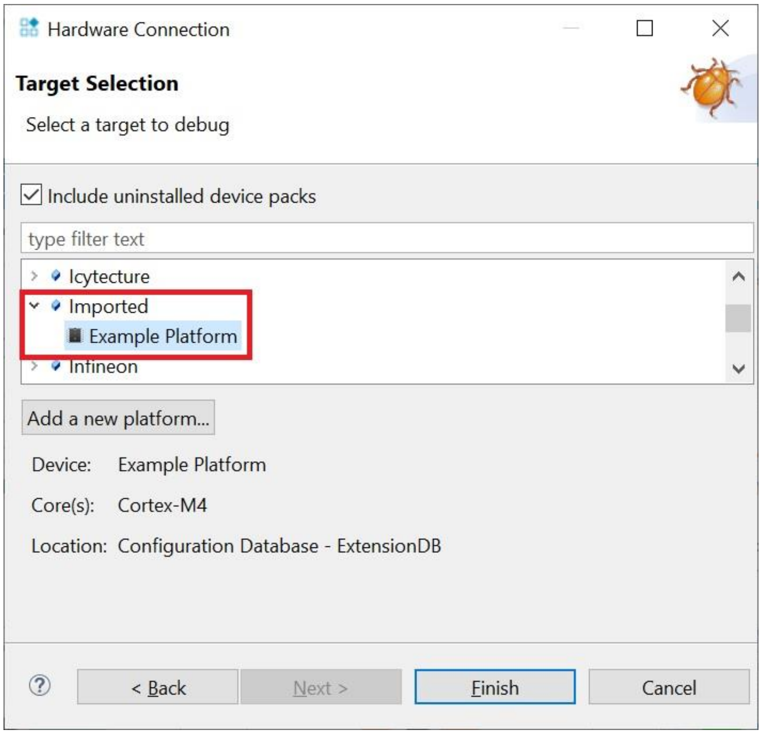
Select either the **Save a Debug-only Arm DS Platform Configuration** or **Save a Debug and Trace Arm DS Platform Configuration** options to continue using the Hardware Connection wizard. This route is taken for this activity.

8. Click **Next**.

9. Enter the target information into the **Platform** fields.

10. Click **Finish**.

11. Select the new hardware configuration in the Hardware Connection **Target Selection** view.



Hardware Connection

Target Selection

Select a target to debug

☑ Include uninstalled device packs

type filter text

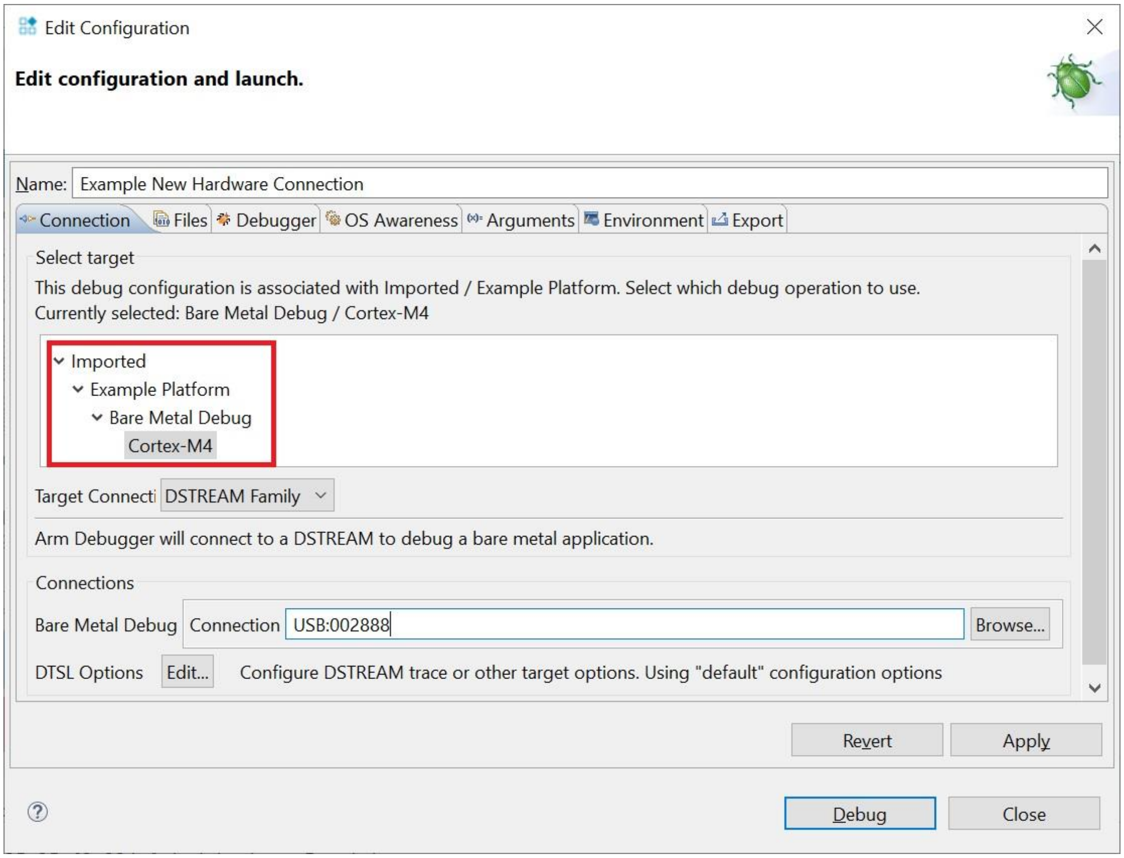
Device: Example Platform

Core(s): Cortex-M4

Location: Configuration Database - ExtensionDB

12. Click **Finish**.

The new hardware target configuration appears in the **Edit Configuration** view.



Edit Configuration

Edit configuration and launch.

Name: Example New Hardware Connection

Select target

This debug configuration is associated with Imported / Example Platform. Select which debug operation to use.
Currently selected: Bare Metal Debug / Cortex-M4

- Imported
  - Example Platform
    - Bare Metal Debug
      - Cortex-M4

Target Connecti DSTREAM Family

Arm Debugger will connect to a DSTREAM to debug a bare metal application.

Connections

Bare Metal Debug Connection USB:002888

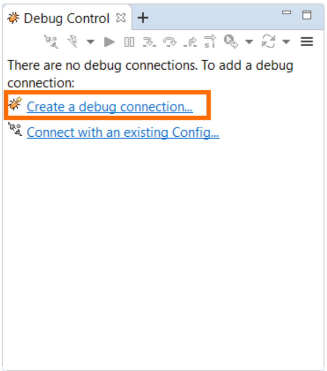
DTSL Options Edit... Configure DSTREAM trace or other target options. Using "default" configuration options

9 Creating a new Linux Application Connection

Like DS-5, Arm Development Studio provides a method to connect to and debug Linux applications using gdbserver. Arm Development Studio adds a new Linux Application Connection wizard to help you create connections to a Linux application running on a target. This activity describes how to connect to a Linux application using the new Linux Application Connection wizard.

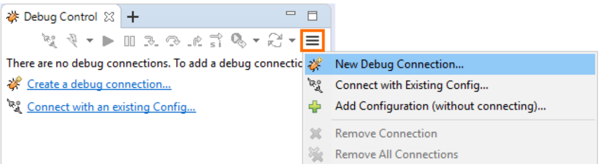
Establish a Linux Application Connection:

1. Click on the **New Debug Connection** icon in the **Debug Control** view, in the **View Menu** listing of the **Debug Control** view, or at the top of the **Development Studio** perspective and select **Linux Application Connection**.
   Note: The **New Debug Connection** icon only appears in the **Debug Control** view if no launch configurations have been used.


Debug Control
Create a debug connection...
Connect with an existing Config...

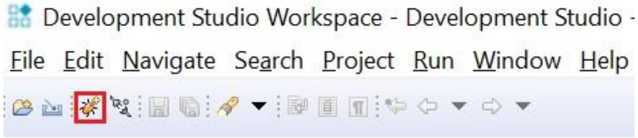
There are no debug connections. To add a debug connection:

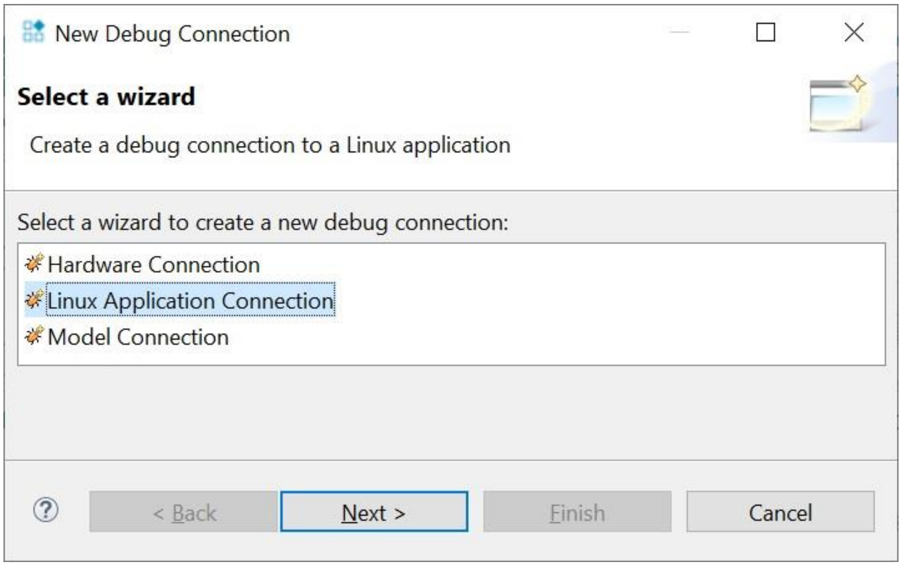
OR


Debug Control
Create a debug connection...
Connect with an existing Config...
New Debug Connection...
Connect with Existing Config...
Add Configuration (without connecting)...
Remove Connection
Remove All Connections

There are no debug connections. To add a debug connectic

OR


Development Studio Workspace - Development Studio -
File Edit Navigate Search Project Run Window Help



New Debug Connection

Select a wizard

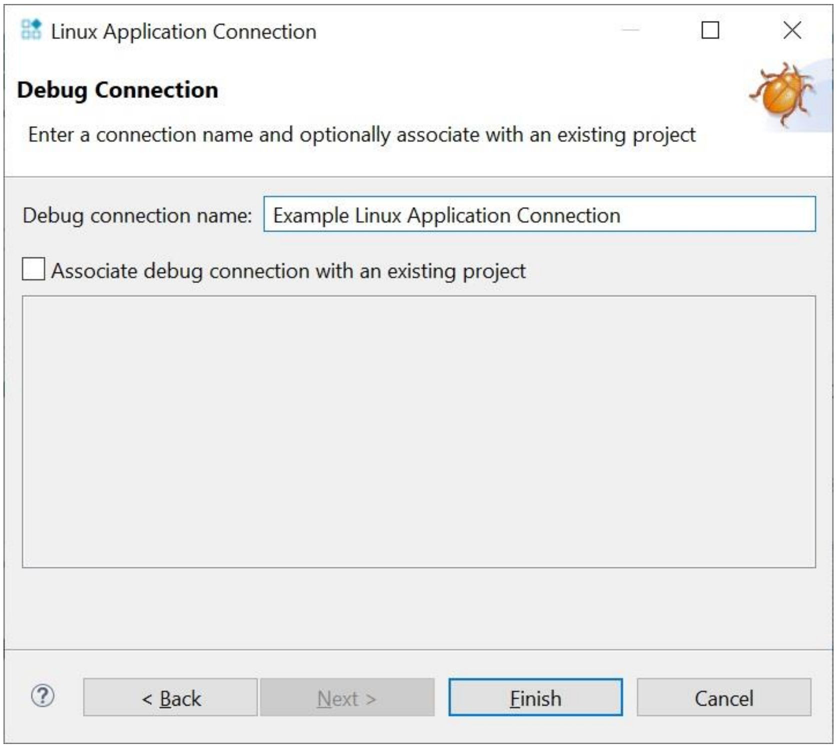
Create a debug connection to a Linux application

Select a wizard to create a new debug connection:

- Hardware Connection
- Linux Application Connection
- Model Connection

The Linux Application Connection wizard can also be opened by selecting **File > New > Linux Application Connection**.

2. Enter a connection name in the **Debug connection name** field.
   Note: A new Linux Application connection can be associated with an existing project by ticking **Associate debug connection with an existing project** and selecting a project from the list provided. This option is not used in this activity.



Linux Application Connection

Debug Connection

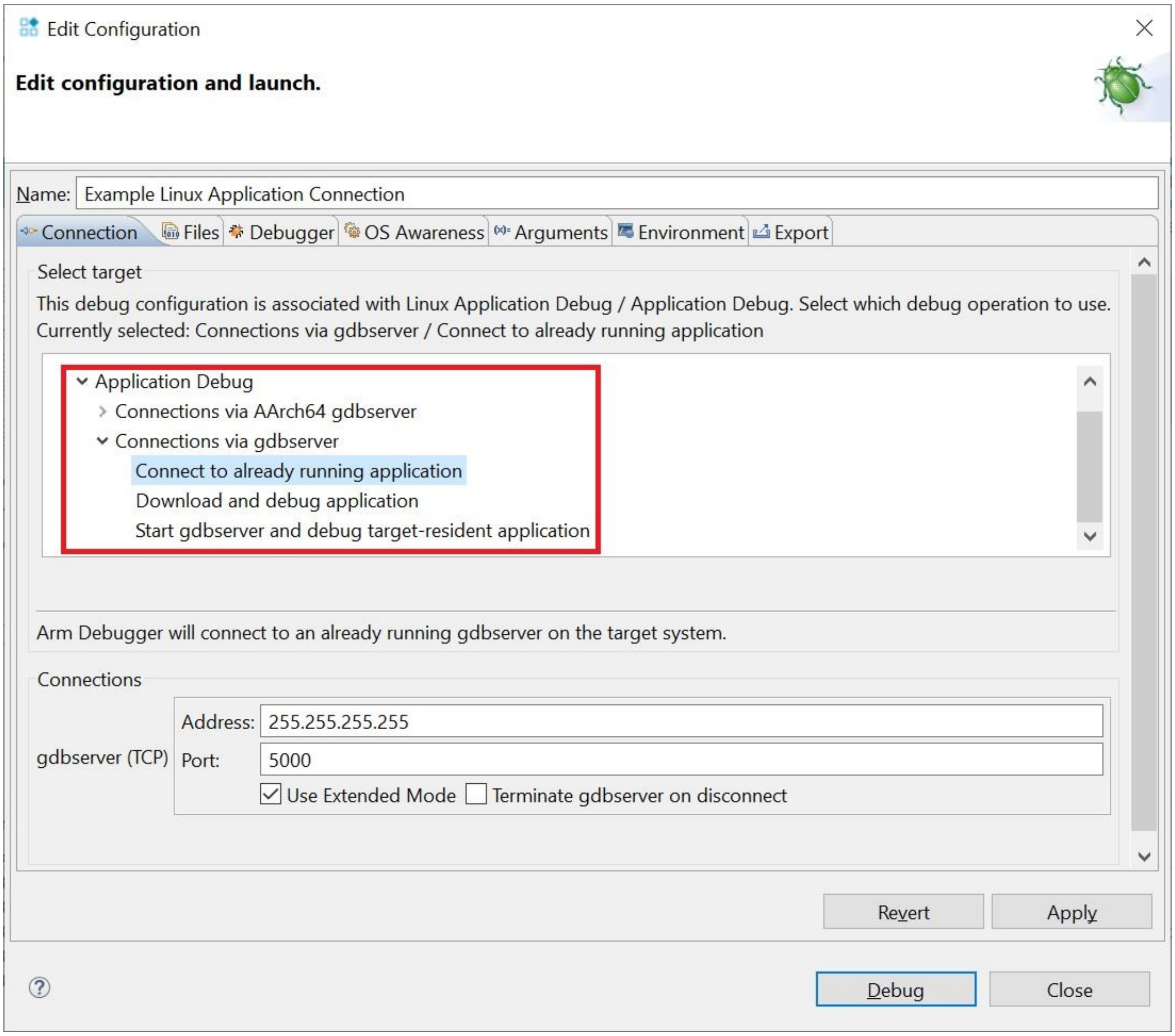
Enter a connection name and optionally associate with an existing project

Debug connection name: Example Linux Application Connection

□ Associate debug connection with an existing project

3. Click **Finish**.

The Arm Development Studio **Edit Configuration** view provides the same functions as the DS-5 **Debug Configurations** view. The main difference is that the Arm Development Studio **Edit Configuration** view only shows the **Linux Application Debug** options under the **Connection Select target** field.



Edit Configuration

Edit configuration and launch.

Name: Example Linux Application Connection

Select target

This debug configuration is associated with Linux Application Debug / Application Debug. Select which debug operation to use.
Currently selected: Connections via gdbserver / Connect to already running application

- Application Debug
  - Connections via AArch64 gdbserver
  - Connections via gdbserver
    - Connect to already running application
    - Download and debug application
    - Start gdbserver and debug target-resident application

Arm Debugger will connect to an already running gdbserver on the target system.

Connections

gdbserver (TCP)

Address: 255.255.255.255
Port: 5000
☑ Use Extended Mode □ Terminate gdbserver on disconnect

The remaining steps to establish the Linux Application Connection are the same as they are in DS-5.

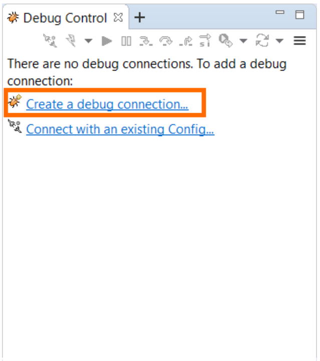
The created launch configuration will appear in the **Project Explorer** view.

10 Creating a new Model Connection

Like DS-5, Arm Development Studio provides a method to connect to and debug models. Arm Development Studio adds a new Model Connection wizard to help you create connections to models. This activity describes how to connect to a model that is shipped with Arm Development Studio, using the new Model Connection wizard. Adding a new model configuration using the same wizard is described later.

Establish a Model Connection:

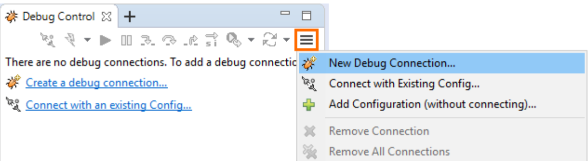
1. Click on the **New Debug Connection** icon in the **Debug Control** view, in the **View Menu** listing of the **Debug Control** view, or at the top of the **Development Studio** perspective and select **Model Connection**.
   Note: The **New Debug Connection** icon only appears in the **Debug Control** view if no launch configurations have been used.



There are no debug connections. To add a debug connection:

Create a debug connection...
Connect with an existing Config...

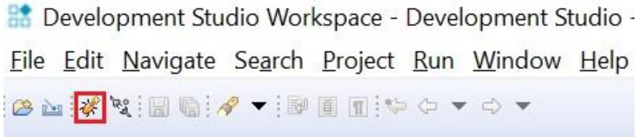
OR

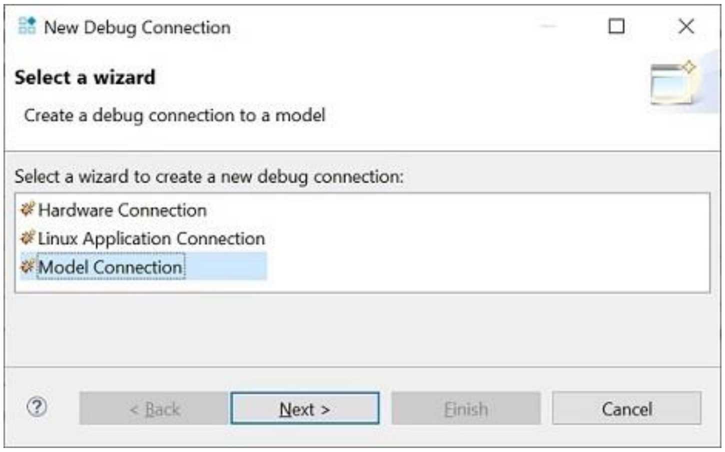


There are no debug connections. To add a debug connectic

Create a debug connection...
Connect with an existing Config...
New Debug Connection...
Connect with Existing Config...
Add Configuration (without connecting)...
Remove Connection
Remove All Connections

OR


Development Studio Workspace - Development Studio -
File Edit Navigate Search Project Run Window Help



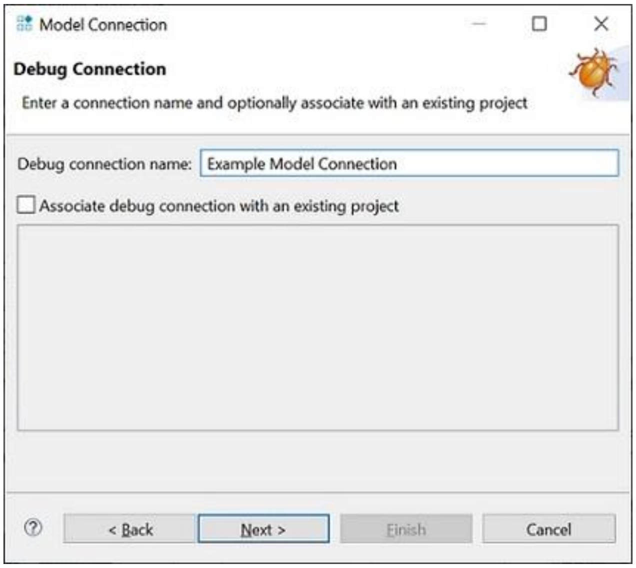
Select a wizard

Create a debug connection to a model

Select a wizard to create a new debug connection:

The Model Connection wizard can also be opened by selecting **File > New > Model Connection**.

2. Enter a connection name in the **Debug connection name** field.
   Note: A new Model connection can be associated with an existing project by ticking **Associate debug connection with an existing project** and selecting a project from the list provided. This option is not used in this activity.



Model Connection

Debug Connection

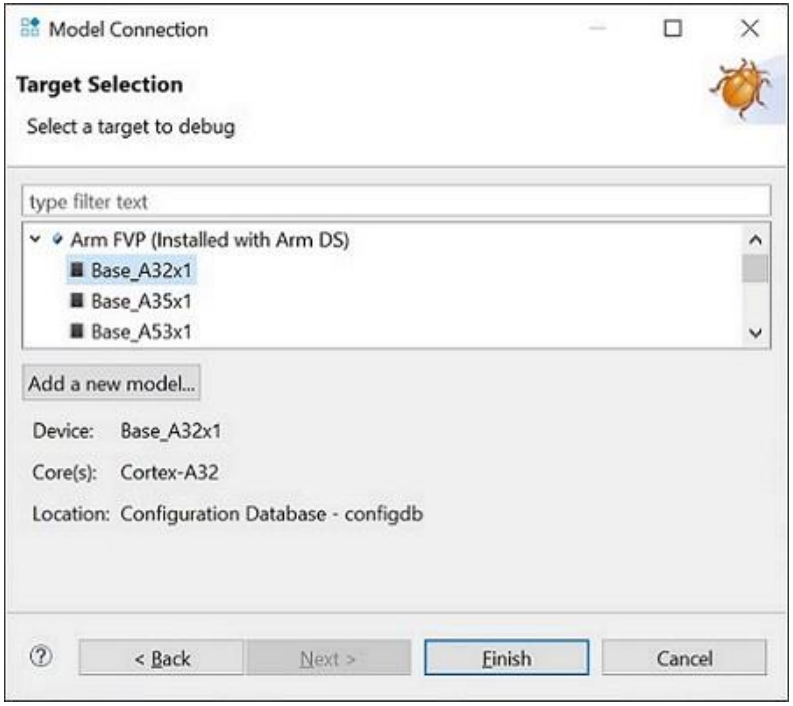
Enter a connection name and optionally associate with an existing project

Debug connection name: Example Model Connection

☐ Associate debug connection with an existing project

3. Click **Next**.

4. Select a model to connect to from the available list or click **Add a new model...** to add a new model configuration to Arm Development Studio.



Model Connection

Target Selection

Select a target to debug

type filter text

- Arm FVP (Installed with Arm DS)
  - Base_A32x1
  - Base_A35x1
  - Base_A53x1

Device: Base_A32x1

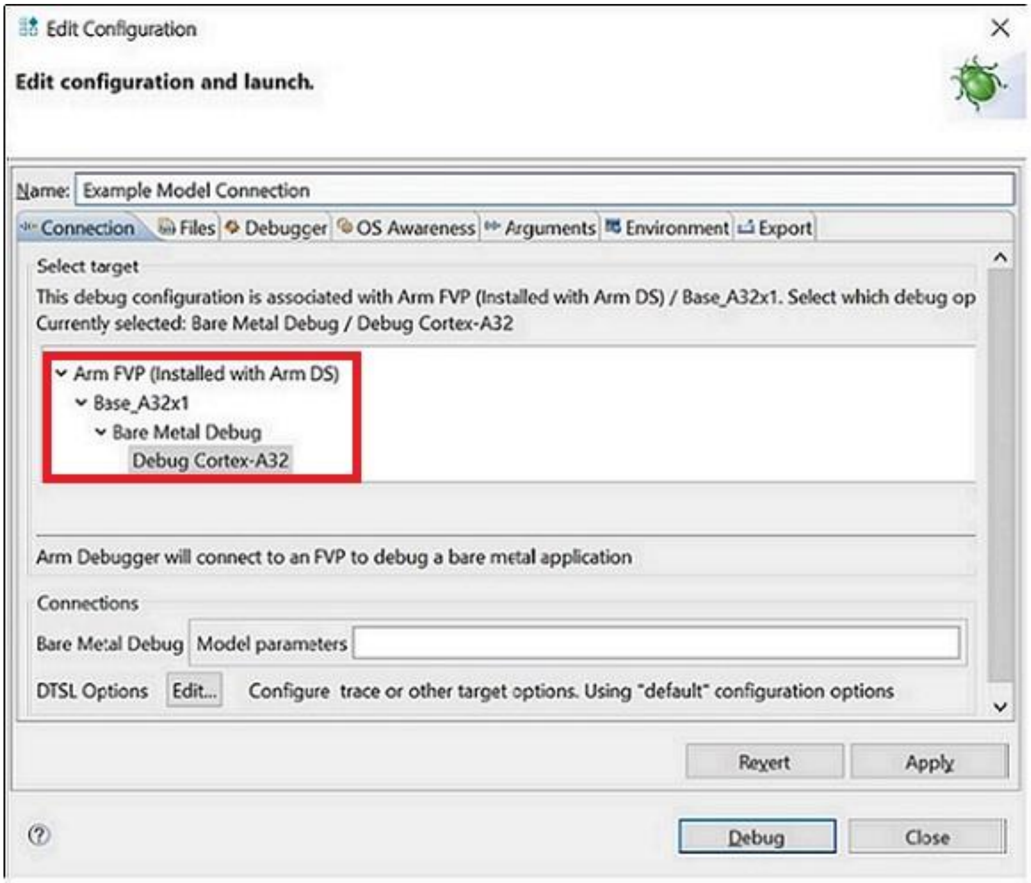
Core(s): Cortex-A32

Location: Configuration Database - configdb

Adding a new model configuration is described later.

5. Click **Finish**.

The Arm Development Studio **Edit Configuration** dialog has the same function as the DS-5 **Debug Configurations** view. The main difference is that the Arm Development Studio **Edit Configuration** view only shows the configuration details for the selected model under the **Connection Select target** field.



Edit Configuration

Edit configuration and launch.

Name: Example Model Connection

Select target

This debug configuration is associated with Arm FVP (Installed with Arm DS) / Base_A32x1. Select which debug op

Currently selected: Bare Metal Debug / Debug Cortex-A32

- Arm FVP (Installed with Arm DS)
  - Base_A32x1
    - Bare Metal Debug
      - Debug Cortex-A32

Arm Debugger will connect to an FVP to debug a bare metal application

Connections

Bare Metal Debug | Model parameters

DTSL Options Edit... Configure trace or other target options. Using "default" configuration options

The remaining steps to establish the Model Connection are the same as they are in DS-5.

The created launch configuration will appear in the **Project Explorer** view.

11 Connecting to new or custom Models

Like DS-5, Arm Development Studio provides a method to add new model configurations for connection and debug purposes. The Arm Development Studio provides a different way to add model configurations to the configuration database. In DS-5, model configurations are added using a separate perspective, **Platform Configuration Editor** (PCE). Arm Development Studio makes adding a model configuration part of the new Model Connection wizard.

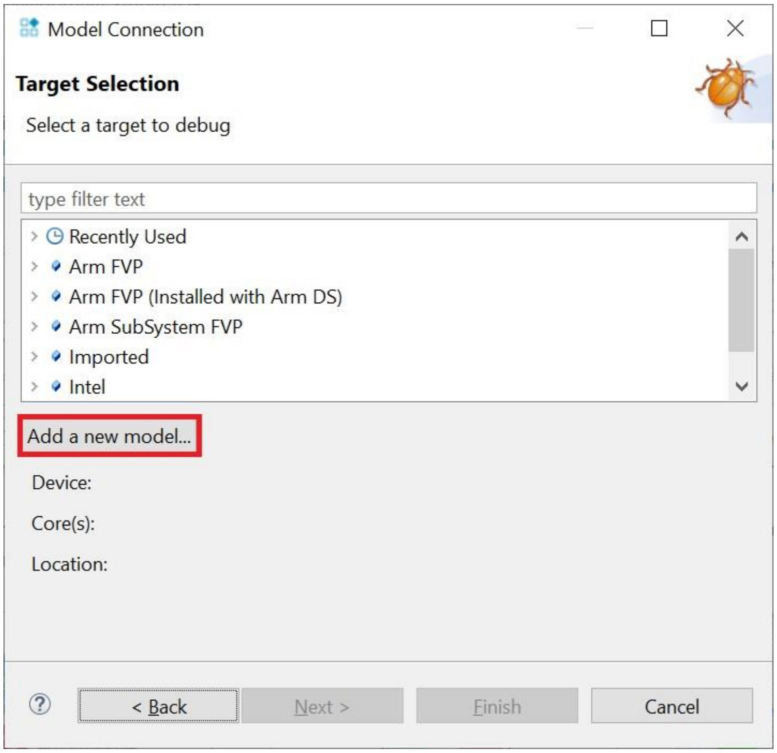
Add a model configuration:

1. Click on the **New Debug Connection** icon in the **Debug Control** view, in the **View Menu** listing of the **Debug Control** view, or at the top of the **Development Studio** perspective and select **Model Connection**.

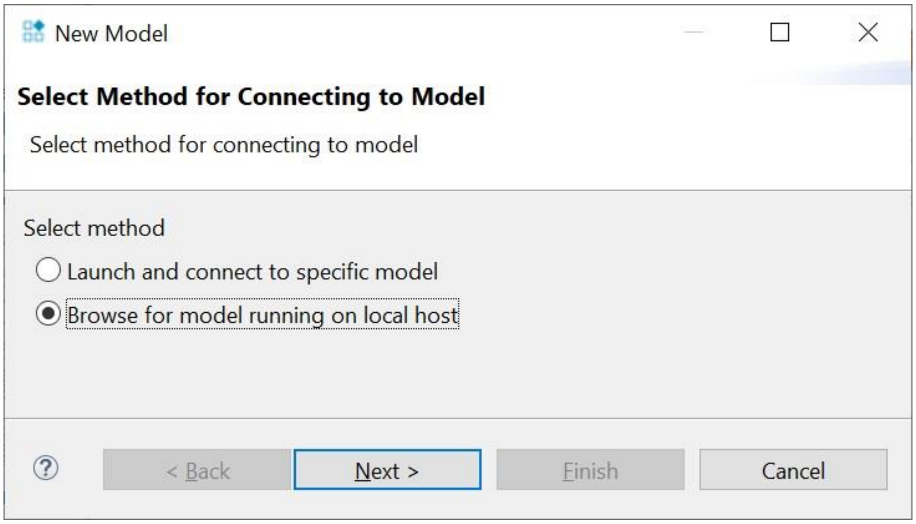
2. Enter a connection name in the **Debug connection name** field.

3. Click **Next**.

4. Click **Add a new model...**.



5. There are two model connection methods available: **Launch and connect to specific model** and **Browse for model running on local host**.



New Model

Select Method for Connecting to Model

Select method for connecting to model

Select method

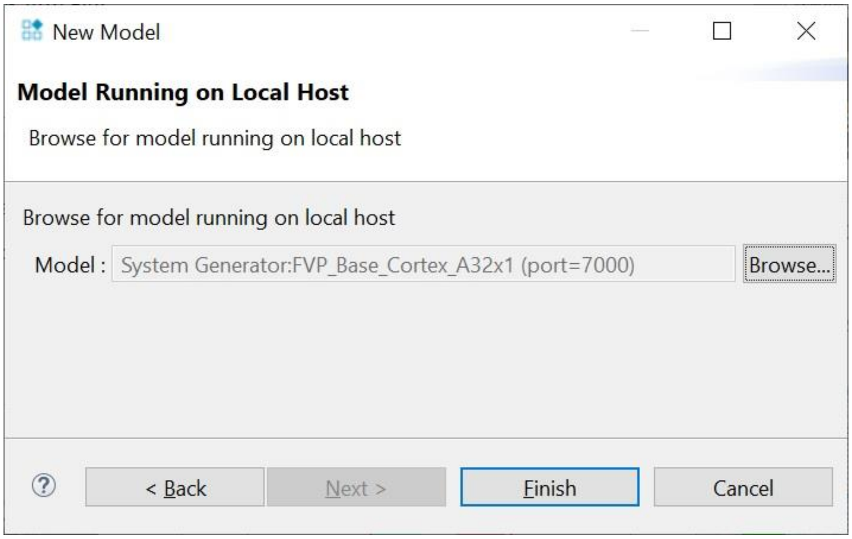
○ Launch and connect to specific model

● Browse for model running on local host

These are the same model connecting methods provided by DS-5. The **Browse for model running on local host** method is selected for illustrative purposes.

6. Click **Next**.

7. Browse for the model by clicking **Browse...**.



New Model

Model Running on Local Host

Browse for model running on local host

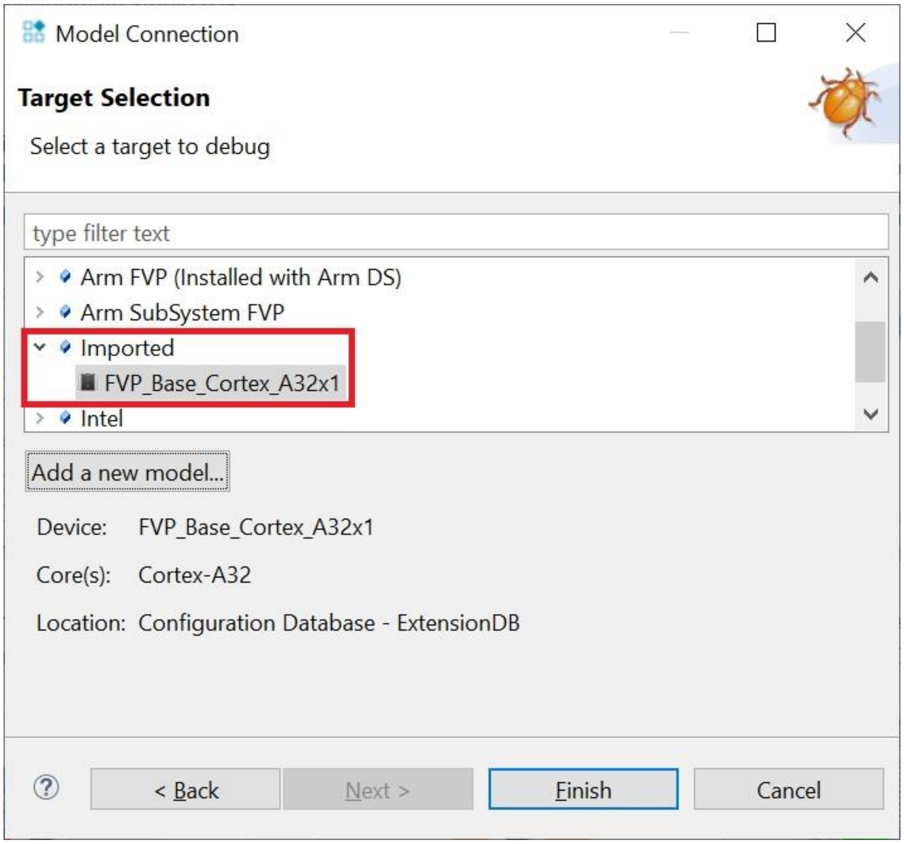
Browse for model running on local host

Model : System Generator:FVP_Base_Cortex_A32x1 (port=7000)

8. Click **Finish**.

If it is not already present, a configuration database, **ExtensionDB**, is created automatically to store the new model configuration.

A new Model configuration appears in the **Model Connection Target Selection** view.



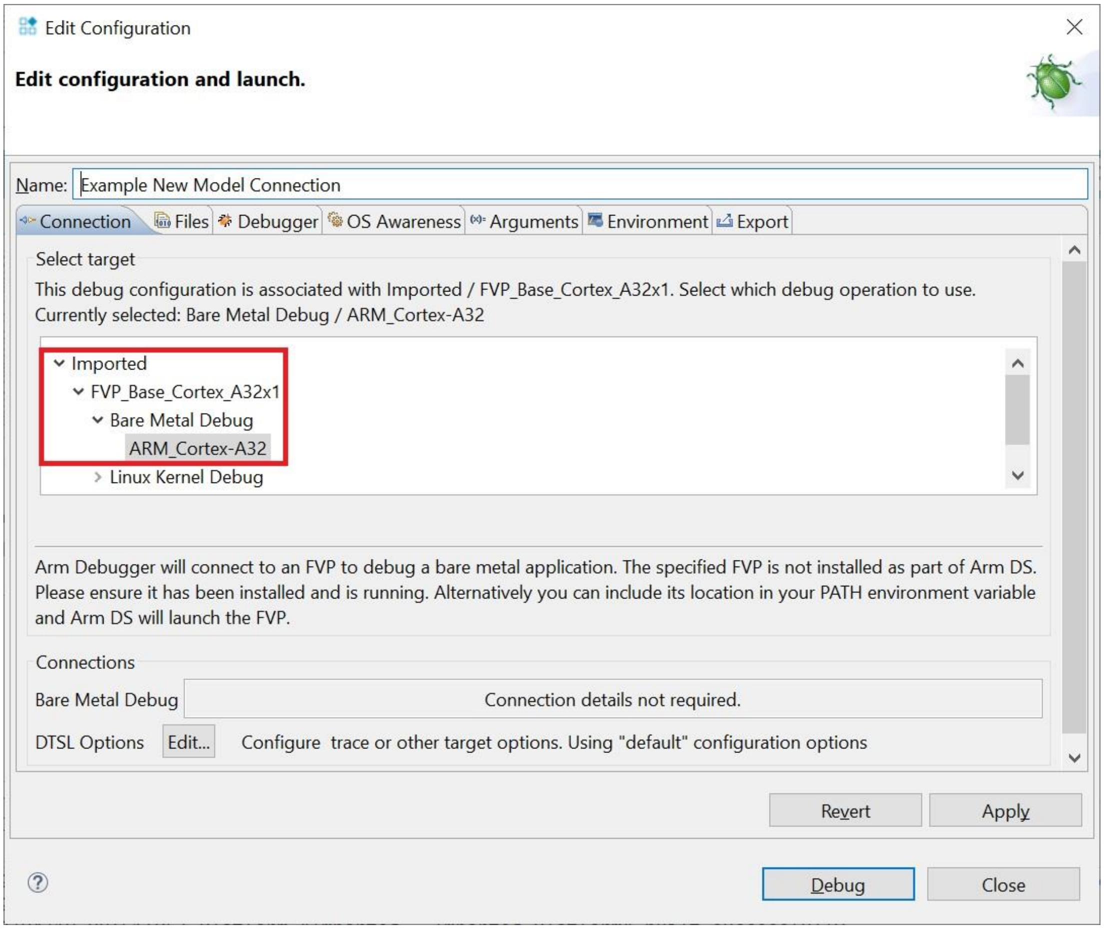
Device: FVP_Base_Cortex_A32x1

Core(s): Cortex-A32

Location: Configuration Database - ExtensionDB

9. Click **Finish**.

The new model configuration will appear in the **Edit Configuration** view.



Edit Configuration

Edit configuration and launch.

Name: Example New Model Connection

Select target

This debug configuration is associated with Imported / FVP_Base_Cortex_A32x1. Select which debug operation to use.
Currently selected: Bare Metal Debug / ARM_Cortex-A32

Arm Debugger will connect to an FVP to debug a bare metal application. The specified FVP is not installed as part of Arm DS. Please ensure it has been installed and is running. Alternatively you can include its location in your PATH environment variable and Arm DS will launch the FVP.

Connections

Bare Metal Debug: Connection details not required.

DTSL Options Edit... Configure trace or other target options. Using "default" configuration options

12 Miscellaneous

This section covers miscellaneous small differences between DS-5 and Arm Development Studio.

- The Linaro GCC 4.8-2014.04 [arm-linux-gnueabihf] compiler is not supplied.
  The old Linaro Linux GCC 4.8 previously supplied in DS-5 has been removed from Arm Development Studio. To use GCC (Linux or bare-metal) within Arm Development Studio, download the version you require from e.g. **Linaro** or **Arm Developer**, then add it as a toolchain (see **Register a compiler toolchain**).

- The Arm Development Studio IDE executable in the installation's **bin** directory is **armds_ide**. In DS-5, the IDE executable is **eclipse**.

- Arm Development Studio's default **Run control** option is **Connect only** in the **Edit Configuration** view's **Debugger** tab. DS-5's default **Run control** option is **Debug from symbol** set to **main**.

- The command-line debugger is renamed from **debugger** in DS-5 to **armdbg** in Arm Development Studio.

- Unlike DS-5, the **Platform Configuration Editor (PCE)** is integrated into the new Arm Development Studio Connection Wizard (see **Connecting to new or custom Hardware**). In DS-5, **PCE** is a separate “Configuration” perspective.

- Ensure **Properties > C/C++ Build > Environment > Append variables to native environment** is selected for any project. If **Replace native environment with specified one** is selected instead, the project might not build successfully.