

Application Note – Eclipse Environment Setup

1. Version

v0.1	Initial version
v0.2	More details added to Project Import & Compilation
v0.3	Typos corrections.
v1.0	Release with AmbiqSuite SDK

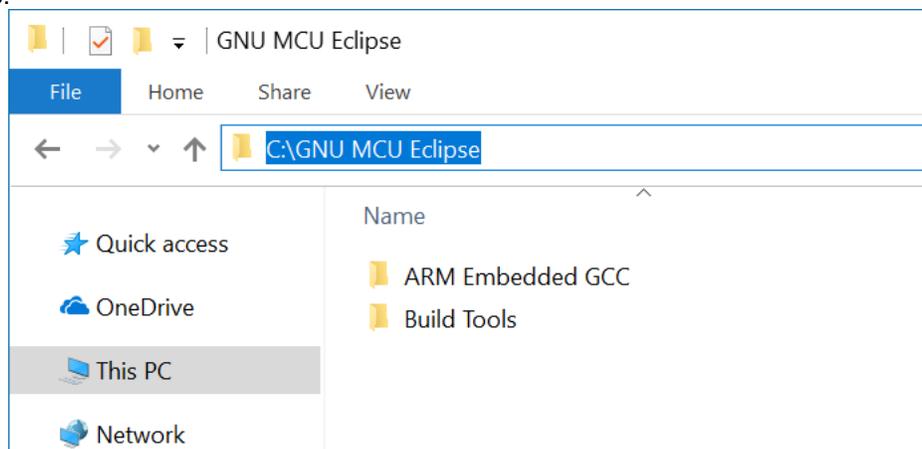
2. Scope

The open source Eclipse IDE is not formally supported in AmbiqSuite SDK and only limited tests are performed. AmbiqSuite does support GCC makefiles and all examples compiled and tested in the environment. This application note provides a step-by-step procedure to setup Eclipse development and debugging environment on machines running Windows operating systems. In this document, Windows 10 64-bit is used as an example. It outlines the open source tools that need to be downloaded, but the user should keep in mind that these tools change quite rapidly and some research may be required to get the latest versions.

3. Installation

1. Java Runtime Environment (JRE) or Java Development Kit (JDK)
 - JRE is sufficient for our usage.
 - <https://www.oracle.com/technetwork/java/javase/downloads/jre8-downloads-2133155.html>
 - Make sure JRE is in Windows environment variable *Path*.
2. GNU MCU Eclipse ARM Embedded GCC
 - Download from <https://github.com/gnu-mcu-eclipse/arm-none-eabi-gcc/releases/>
 - Extract and place it to a proper location and add this path to Windows environment variable *Path*.
3. GNU MCU Eclipse Windows Build Tools
 - Download from <https://github.com/gnu-mcu-eclipse/windows-build-tools/releases>
 - Extract and place it to a proper location.

** For example:

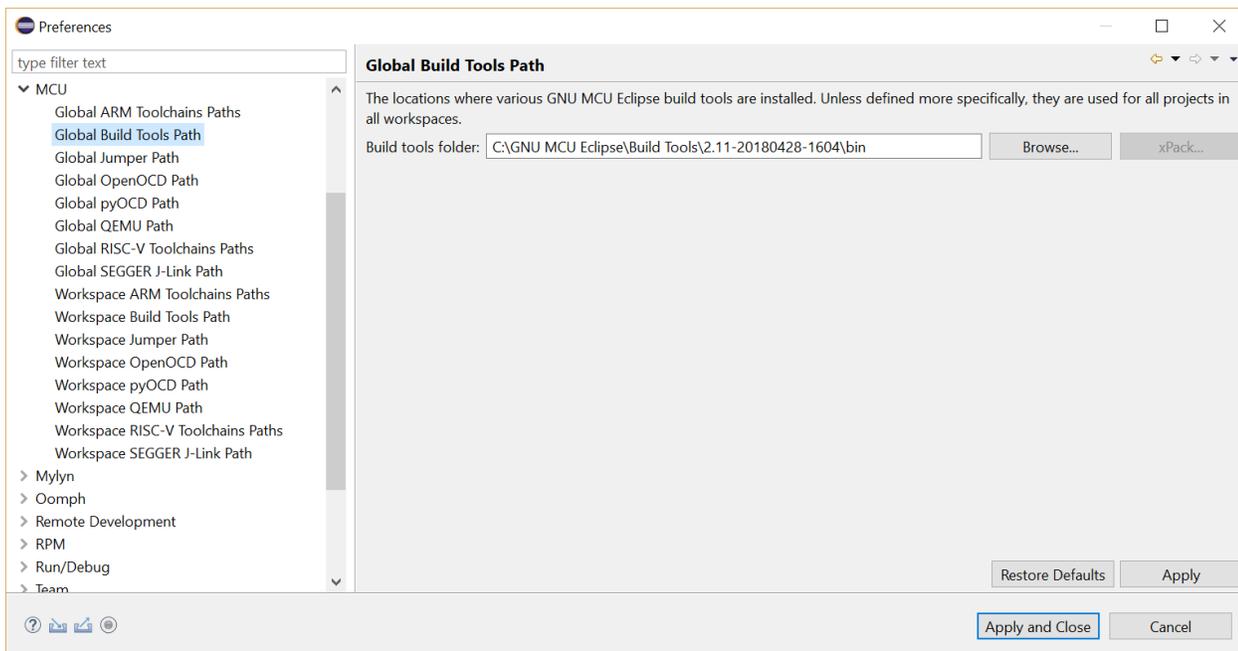
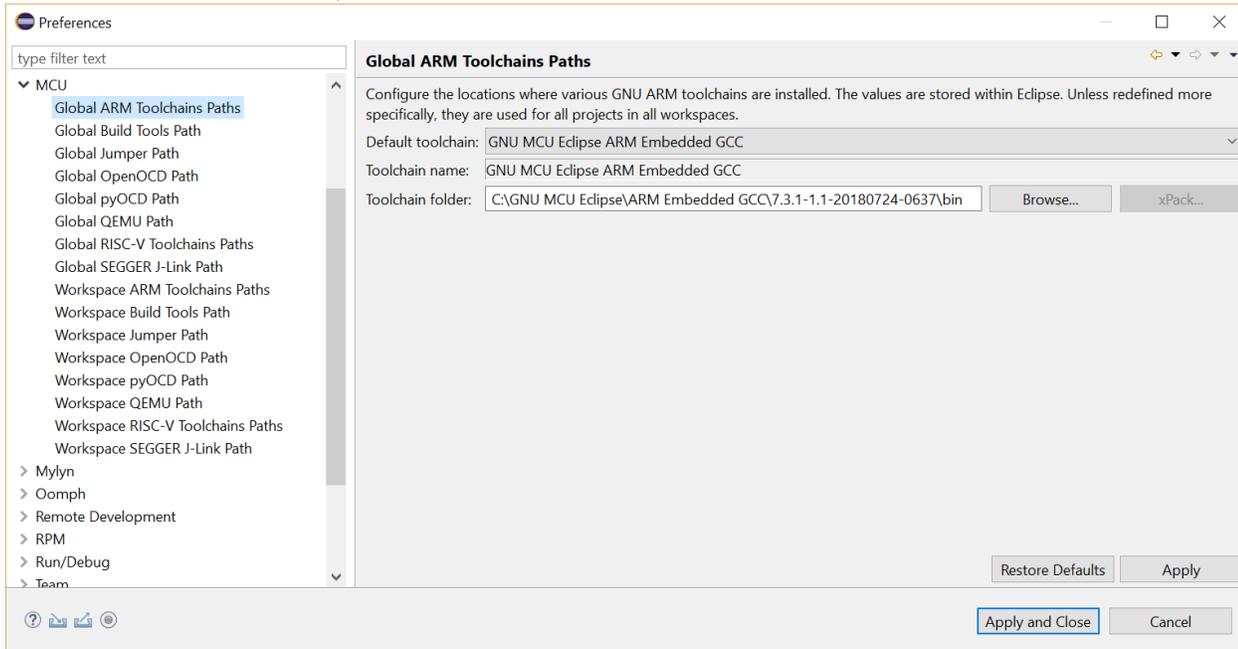


4. GNU MCU Eclipse IDE for C/C++ Developers
 - Download from <https://github.com/gnu-mcu-eclipse/org.eclipse.epp.packages/releases>. Make sure the version matches the installed JRE, both 32-bit version or 64-bit.
 - Extract and place it to a proper location.
5. J-Link Software and Documentation pack for Windows
 - Download from <https://www.segger.com/downloads/jlink/#J-LinkSoftwareAndDocumentationPack> and install it.

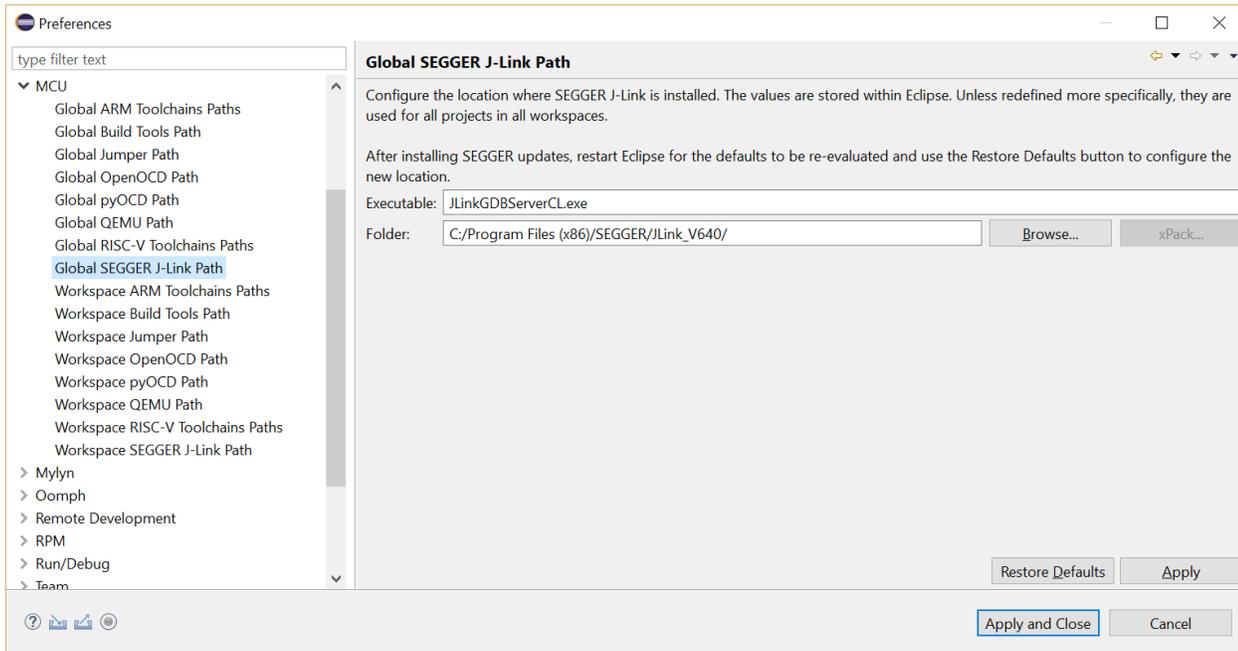
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4. Eclipse Setup

1. Launch Eclipse and you will be asked to setup a workspace which can be anywhere.
2. In Eclipse, navigate to **Window>Preferences**. In the left panel, unfold **MCU** and configure **Global ARM Toolchains Paths**, **Global Build Tools Path** and **Global SEGGER J-Link Path**.



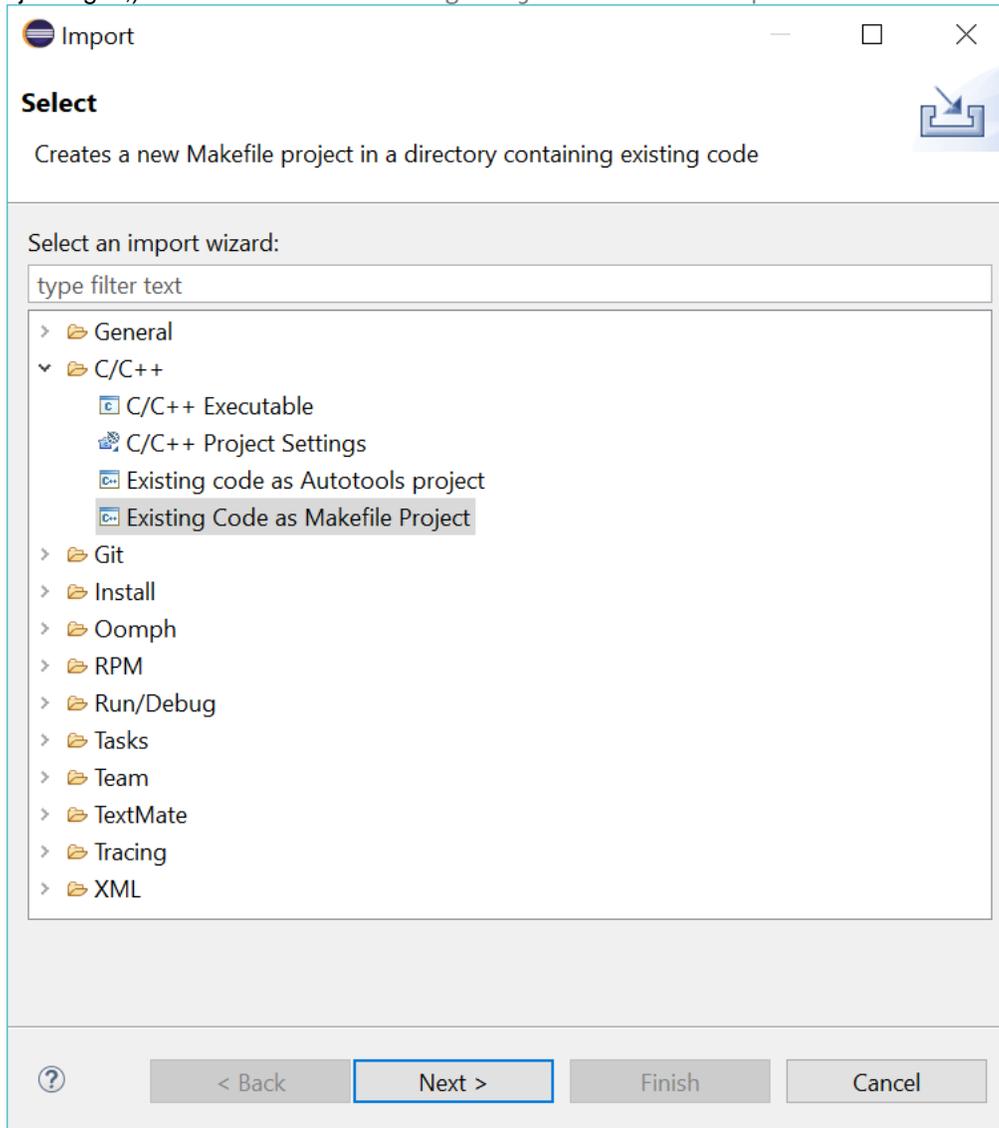
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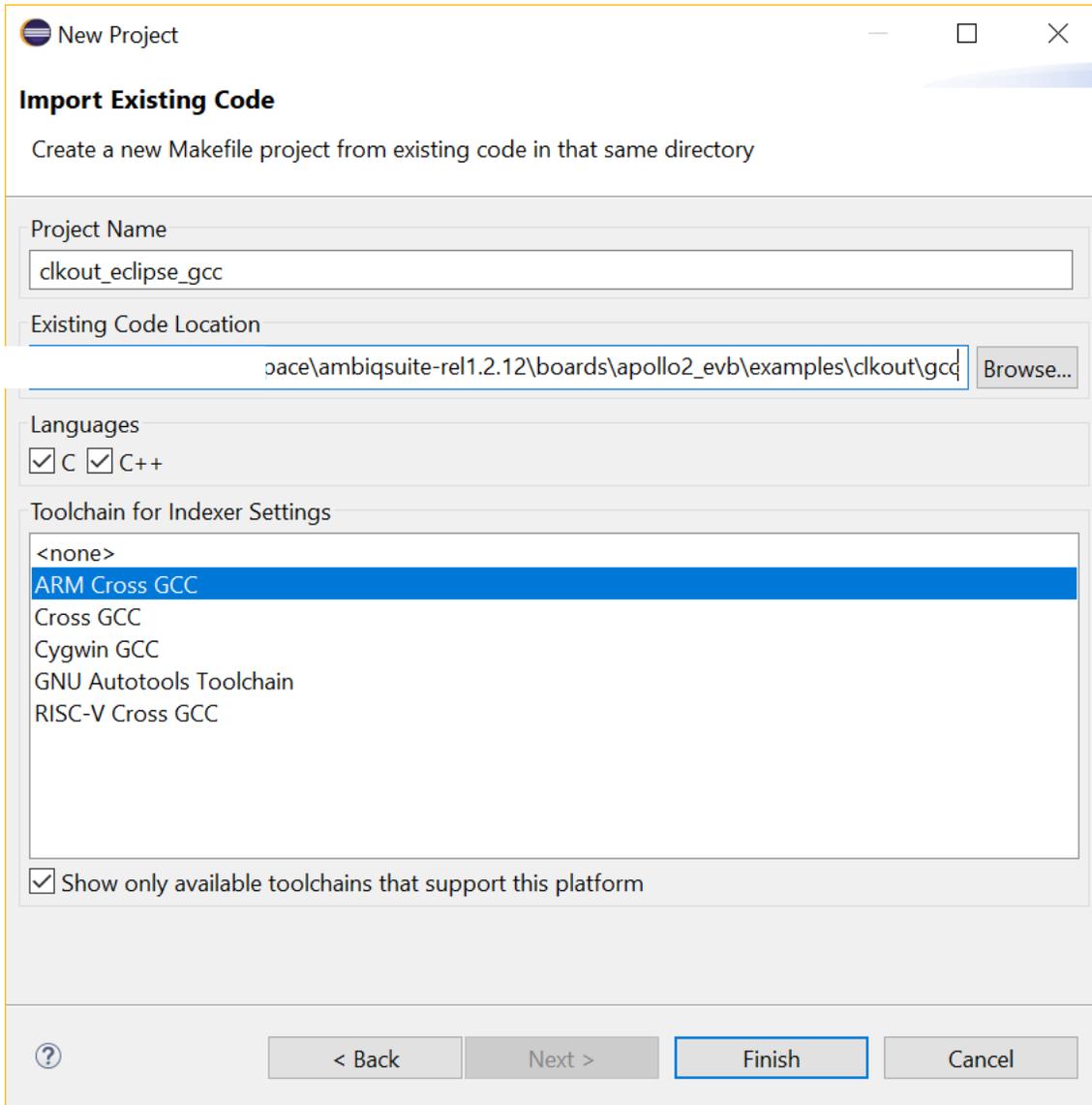
5. Project Import & Compilation

- In Eclipse, navigate to `File>Import`. Select `C/C++>Existing Code as Makefile Project`. Click `Next`. For projects which are to be imported for the first time use this option. For those projects which have previously been imported to Eclipse (check if the files, `.project` and `.cproject`, and the folder `.settings` exist in `<project>/gcc`.) select `General>Existing Projects into Workspace`.

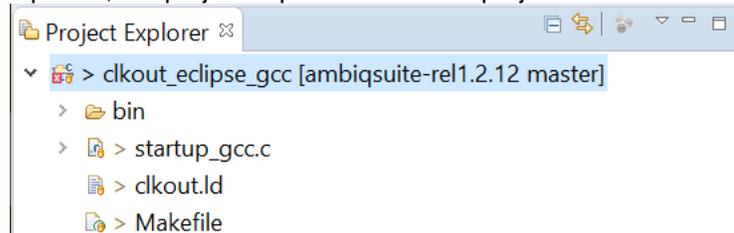


- Select the targeting project. Take the project `clkout` of R2.0 for Apollo3 as an example.
 - [Optional] Change the project name.
 - Select `ARM Cross GCC` in `Toolchain for Indexer Settings`.

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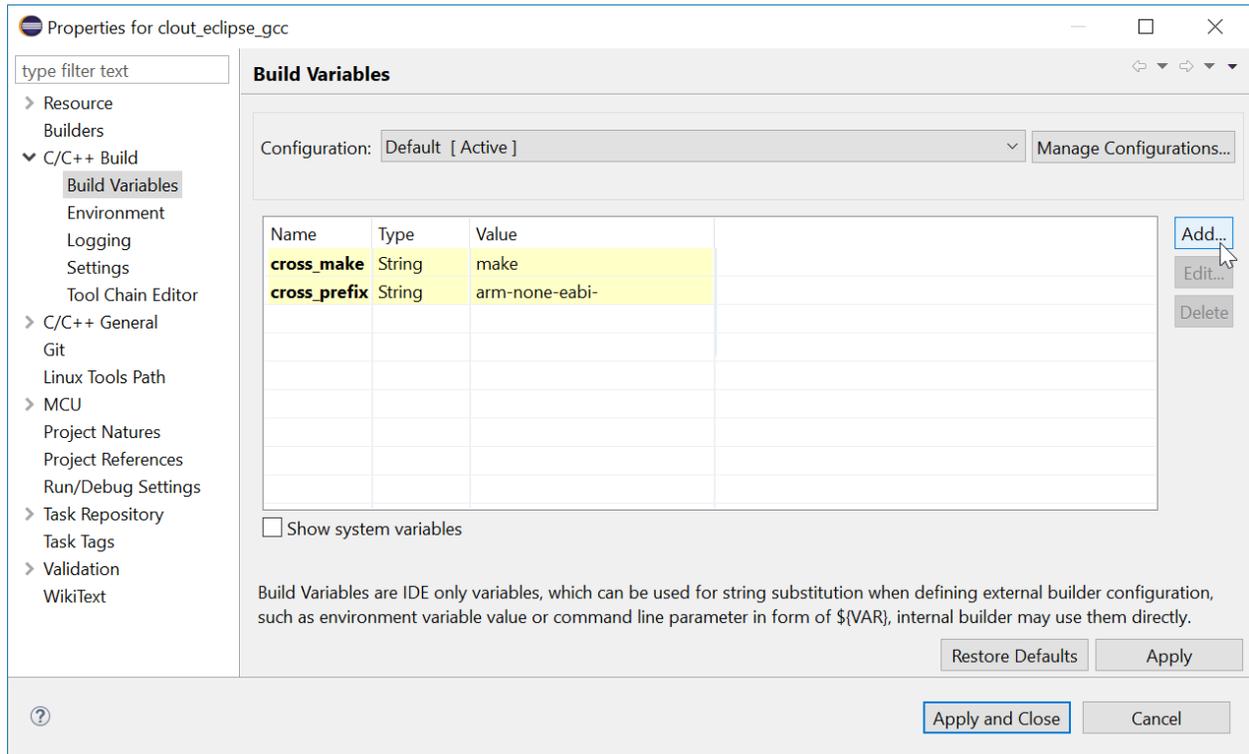


3. After the project is imported, the project explorer shows the project like the following screenshot.



4. Right click on the project and go to **Properties>C/C++ Builds>Build Variables**. Add two variables as highlighted in below. Click **Apply** and **Close**.

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- Right click on the project and select Clean Project.

```

Problems Tasks Console Properties
CDT Build Console [clout_eclipse_gcc]
17:14:13 **** Clean-only build of configuration Default for project clout_eclipse_gcc ****
make clean
Cleaning...

17:14:13 Build Finished. 0 errors, 0 warnings. (took 317ms)

```

- Right click on the project and select Build Project.

```

Problems Tasks Console Properties
CDT Build Console [clout_eclipse_gcc]
17:22:10 **** Build of configuration Default for project clout_eclipse_gcc ****
make all
Compiling gcc ../src/clkout.c
Compiling gcc ../../../../../../utils/am_util_delay.c
Compiling gcc ../../../../../../utils/am_util_faultisr.c
Compiling gcc ../../../../../../utils/am_util_stdio.c
Compiling gcc ../../../../../../devices/am_devices_led.c
Compiling gcc startup_gcc.c
Linking gcc bin/clkout.axf
Copying gcc bin/clkout.bin...

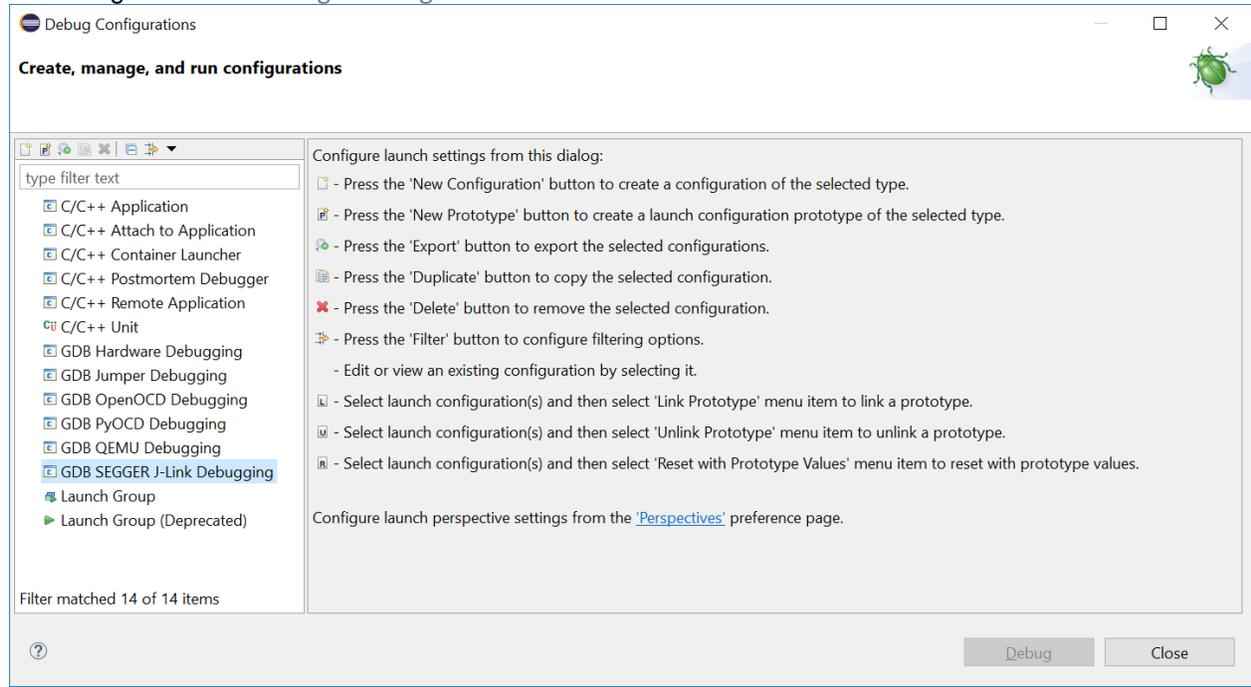
17:22:11 Build Finished. 0 errors, 0 warnings. (took 1s.376ms)

```

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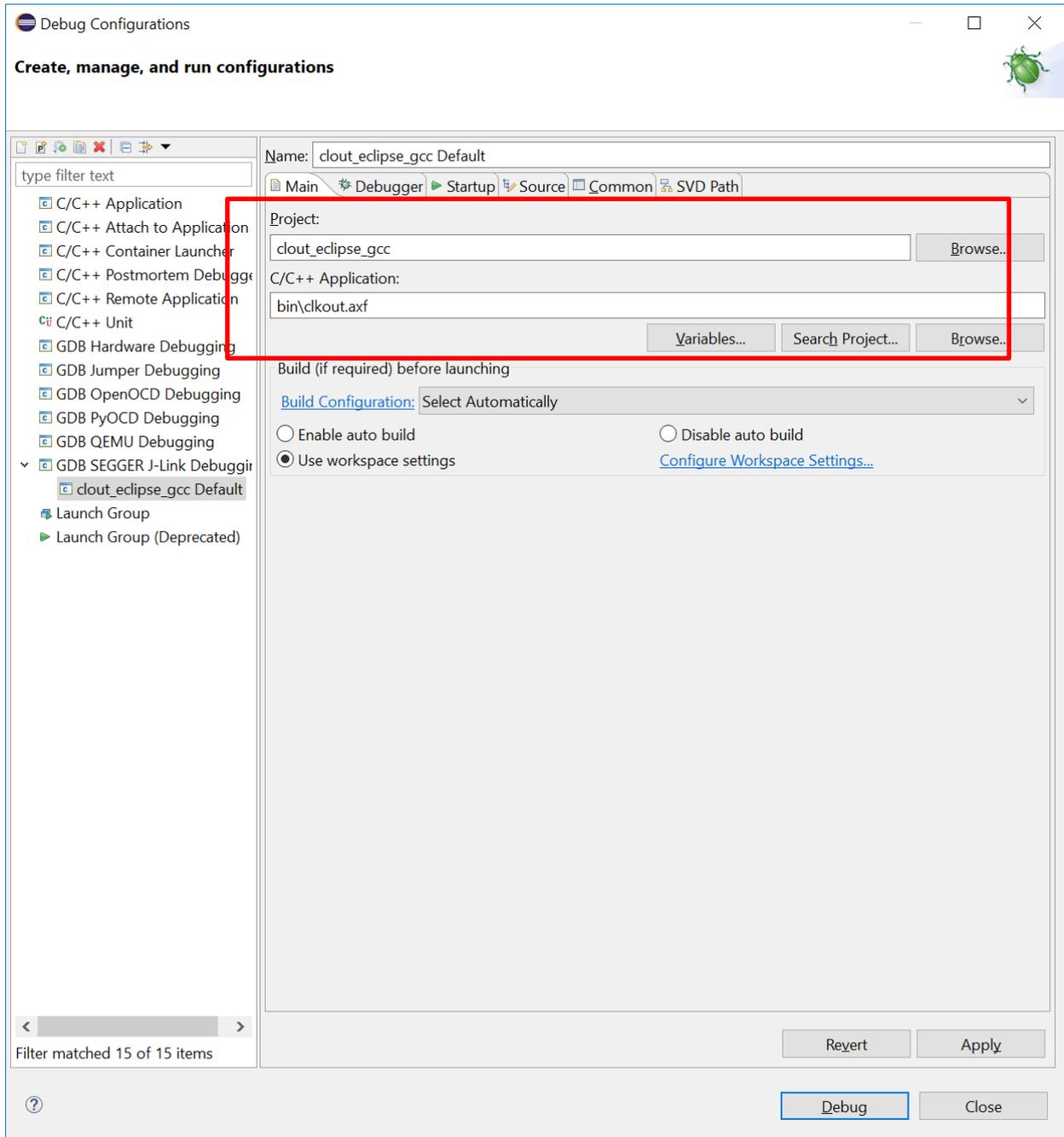
6. Project Debugging

1. Navigate to **Run>Debug Configurations...**



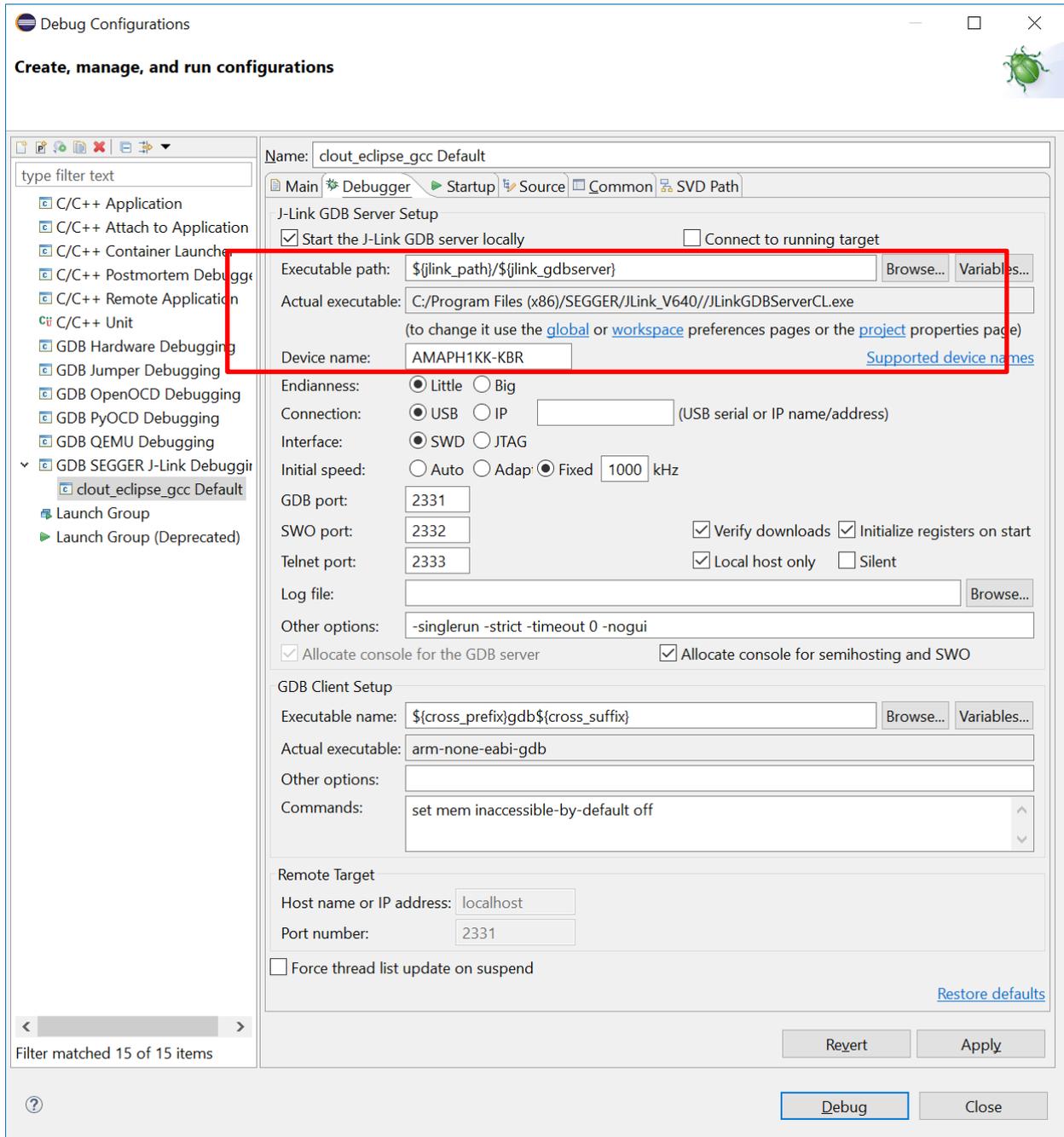
2. Right click on **GDB SEGGER J-Link Debugging** and select **New Configuration**.
3. In **Main** page, make sure **Project** has the name identical to the one set in project import and **C/C++ Application** pointed to the corresponding **.axf** file.

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4. In Debugger page, make sure Actual executable is correctly interpreted and Device name is added.

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Debug Configurations
Create, manage, and run configurations

Name: clout_eclipse_gcc Default

Main Debugger Startup Source Common SVD Path

J-Link GDB Server Setup

Start the J-Link GDB server locally Connect to running target

Executable path: Browse... Variables...

Actual executable: (to change it use the [global](#) or [workspace](#) preferences pages or the [project](#) properties page)

Device name: [Supported device names](#)

Endianness: Little Big

Connection: USB IP (USB serial or IP name/address)

Interface: SWD JTAG

Initial speed: Auto Adap Fixed kHz

GDB port:

SWO port: Verify downloads Initialize registers on start

Telnet port: Local host only Silent

Log file: Browse...

Other options:

Allocate console for the GDB server Allocate console for semihosting and SWO

GDB Client Setup

Executable name: Browse... Variables...

Actual executable:

Other options:

Commands:

Remote Target

Host name or IP address:

Port number:

Force thread list update on suspend

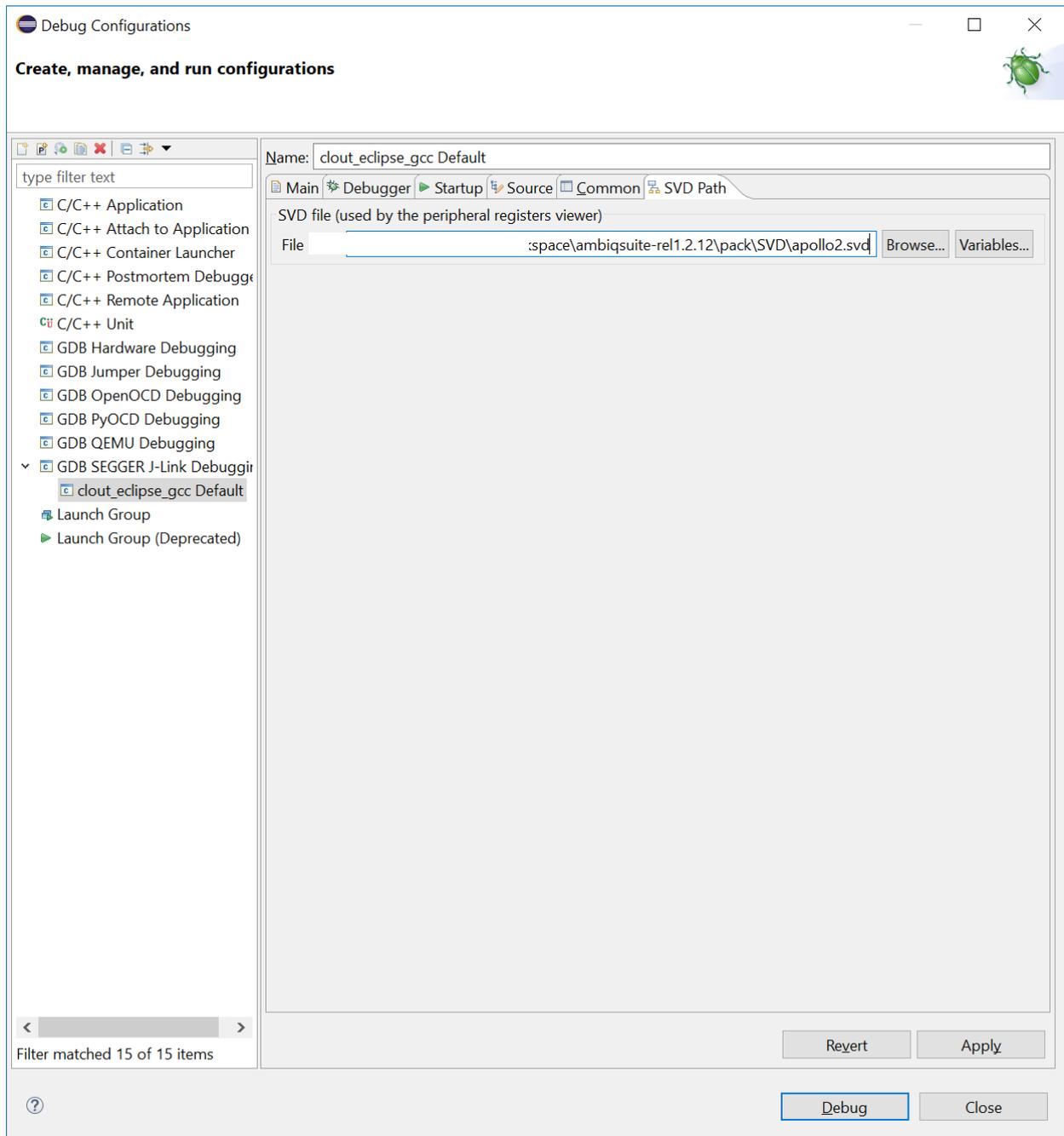
[Restore defaults](#)

Revert Apply

Debug Close

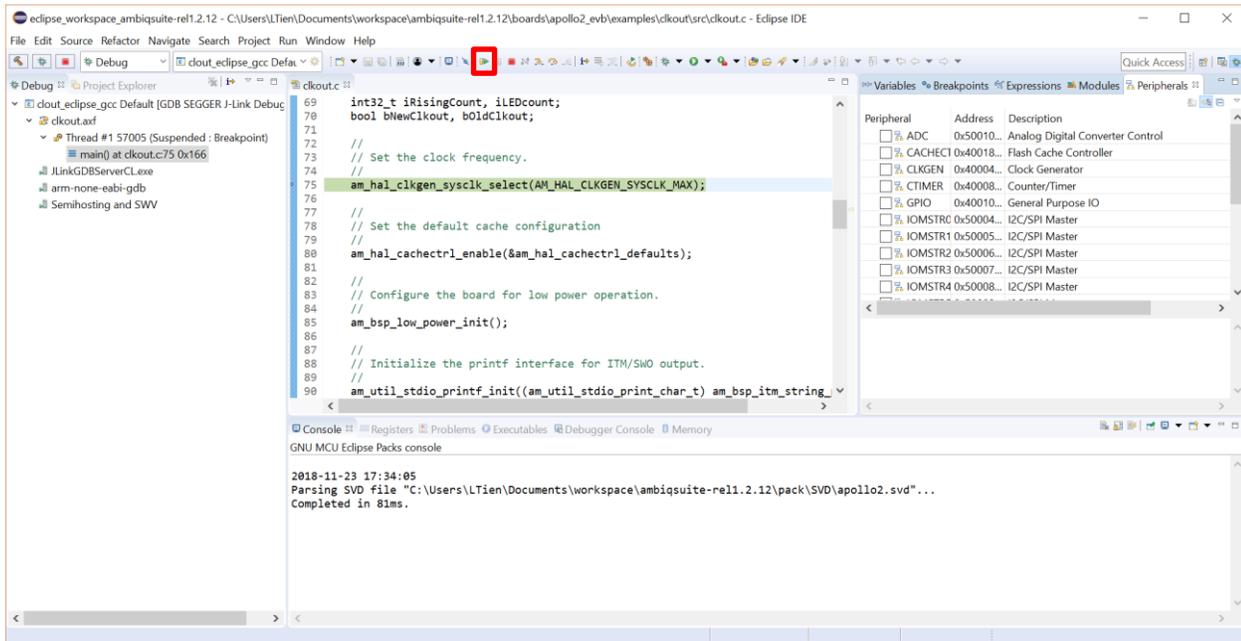
- In SVD page, add the path to the targeting board SVD file located in <SDK>/pack. Click Apply and Debug.

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6. After the debugger is launched, the program stops at the main function. Click the run icon highlighted in the red frame below. The LEDs on EVB shall start to blink.

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7. Trouble Shooting

1. Make sure Windows Environment variable *Path* is configured correctly. For Windows 10, right click on This PC and navigate to Properties>Advanced system settings>Environment Variables.... Check the variable *Path*.
2. Please contact regional Ambiq Micro FAEs if you encounter further questions.

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Contact Information

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