

APPLICATION NOTE

Eclipse Environment Setup

A-SOCAP3-ANGA03EN v1.2



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Revision History

Revision	Date	Description
1.0	2019	Released with AmbiqSuite SDK
1.1	April 11, 2022	Updated template
1.2	December 1, 2022	Processed branding updates

Reference Documents

Document ID	Description

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Introduction

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 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.



Installation

Use the following procedure to install:

- 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:

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← → • ↑ 📕 C:\G	NU MCU Eclipse
📌 Quick access 🌰 OneDrive	Name ARM Embedded GCC Build Tools
🧢 This PC	
学 Network	

- 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.



Eclipse Setup

Use the following procedure to setup Eclipse:

- 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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Project Import and Compilation

Use the following procedure to import and compile projects:

 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.

D Import			\times
Select Creates a new Makefile project in a directory containing existing code	2		Ľ
Select an import wizard:			
type filter text			
 > General > C/C++ C/C++ Executable C/C++ Project Settings Existing code as Autotools project Existing Code as Makefile Project > Git > Install > Oomph > RPM > Run/Debug > Tasks > Team > TextMate > Tracing > XML 			
? < Back Next > Finish		Cance	el

- 2. Select the targeting project. Take the project clkout of R2.0 for Apollo3 as an example.
 - Change the project name (optional).
 - Select ARM Cross GCC in Toolchain for Indexer Settings.

New Project			\times
Import Existing Code			
Create a new Makefile project from existing code in that same directory			
Project Name			
clkout_eclipse_gcc			
Existing Code Location			
pace\ambiqsuite-rel1.2.12\boards\apollo2_evb\examples	clkout\	gcd Bro	wse
Languages ✓ C ✓ C++			
Toolchain for Indexer Settings			
<none></none>			
ARM Cross GCC			
Cross GCC			
Cygwin GCC			
GNU Autotools Toolchain RISC-V Cross GCC			
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Show only available toolchains that support this platform			
? < Back Next > Finish		Cancel	

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**.

type filter text	Build Variable	es				$(\neg \bullet \circ \circ \bullet \bullet$
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> Validation WikiText				used for string substitution when definir e parameter in form of \${VAR}, internal I R	5	

5. Right click on the project and select **Clean Project**.

6. 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 bin/clkout.axf
Copying gcc bin/clkout.bin...

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



Project Debugging

Use the following procedure to debug a project:

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

Debug Configurations	-		\times
Create, manage, and run configur	manage, and run configurations Image, and run configuration button to create a configuration prototype of the selected type. Image, and run configuration button to copy the selected configuration. Image, Post the 'Duplicate' button to copy the selected configuration. Image, Post the 'Duplicate' button to copy the selected configuration. Image, Post the 'Filter' button to configuration by selecting it. Image, Post the 'Debugging Image, Post the 'Duplication's and then select' 'Unlink Prototype' menu item to unlink a prototype. Image, Post the 'Duplication's) and then select' 'Unlink Pr		Ś
Image: Second Secon	 Press the 'New Configuration' button to create a configuration of the selected type. Press the 'New Prototype' button to create a launch configuration prototype of the selected type. Press the 'Export' button to export the selected configurations. Press the 'Duplicate' button to copy the selected configuration. Press the 'Delete' button to remove the selected configuration. Press the 'Filter' button to configure filtering options. Edit or view an existing configuration by selecting it. Select launch configuration(s) and then select 'Link Prototype' menu item to link a prototype. Select launch configuration(s) and then select 'Reset with Prototype Values' menu item to reset with prototype values 		
Filter matched 14 of 14 items			
(?)	Debug	Clos	e

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.

reate, manage, and run configurations Win Name Cout_eclipse.gcc Cout_eclipse.gcc C/C++ Application Project: Ioott_eclipse.gcc Ioott_eclipse.gcc C/C++ C/C++ Application Project: Ioott_eclipse.gcc Ioott_eclipse.gcc C/C++ C/C++ Application Project: Ioott_eclipse.gcc Ioott_eclipse.gcc C/C++ C++ Application Ioott_eclipse.gcc Ioott_eclipse.gcc Ioott_eclipse.gcc C/C++ Application Ioott_eclipse.gcc Ioott_eclipse.gcc Ioott_eclipse.gcc C/C++ Application Ioott_eclipse.gcc Ioott_eclipse.gcc Ioott_eclipse.gcc C/C++ Application Ioott_eclipse.gcc Build Configuration: Select Automatically Ioott_eclipse.gcc Debugging In COB Ioott_eclipse.gcc Debugging Ioott_eclipse.gcc Debugging Ioott_eclipse.gcc Debugging Ioott_eclipse.gcc Debugging In COB Ioott_eclipse.gcc Debugging Ioott_eclipse.gcc Debugging Ioott_eclipse.gcc Debugging Ioott_eclipse.gcc Debugging In CoB Ioott_eclipse.gcc Debugging Ioott_eclipse.gcc Debugging Ioott_eclipse.gcc Debugging Ioott_eclipse.gcc Debugging Ioott_eclipse.gcc Ioott_eclipse.gcc Ioott_eclipse.gcc Ioott_eclipse.gcc Ioott_eclipse.gcc </th <th>Debug Configurations</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Debug Configurations						
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Liopiud Liose)				Debug	Close	

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

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	Actual executable: C:/Program Files (x86)/SEGGER/JLink_V640//JLinkGDBServerCL.exe (to change it use the <u>global</u> or <u>workspace</u> preferences pages or the <u>project</u> properties page)					
	Device name:	AMAPH1KK-KBR	<u>Si</u>	upported d	levice name	
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	Log file:				Browse	
	Other options:	-singlerun -strict -timeout 0 -nogui				
	Allocate console for the GDB server					
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	Executable name:	{cross_prefix}gdb\${cross_suffix}		Browse	Variables.	
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	Other options:					
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	Port number:	2331				
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5. 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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Troubleshooting

- 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, and check the variable Path.
- 2. Contact regional Ambiq Field Application Engineers if you encounter further questions.



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