GigaDevice Semiconductor Inc.

GD32 MCU Eclipse development environment setup tutorial for Windows

Application Note
AN068
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1. **Introduction**

This guide introduces how to set up the GD32 Eclipse development environment. Applicable to all GD32 MCUs.
2. Development environment preparation

- Operating system: WIN7 / WIN10 64-bit OS
- IDE: Eclipse IDE for GNU ARM & RISC-V C/C++ Developers
- Cross toolchains: arm-none-eabi-gcc / riscv-none-embed-gcc
- Build Tools: GNU MCU Eclipse build tools
- GDB server: OpenOCD / J-Link GDB Server
3. Tool installation instructions

3.1. Cross toolchains installation

3.1.1. ARM cross toolchains installation

- Download the xpack-arm-none-eabi-gcc-10.2.1-1.1-win32-x64.zip


In this guide, choose to download xpack-arm-none-eabi-gcc-10.2.1-1.1-win32-x64.zip and the download address is: [https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/tags](https://github.com/xpack-dev-tools/arm-none-eabi-gcc-xpack/tags)

Figure 3-1. Download ARM cross toolchains

3.1.2. RISC-V cross toolchains installation

- Download the xpack-riscv-none-embed-gcc-10.1.0-1.1-win32-x64.zip

In this guide, choose to download xpack-riscv-none-embed-gcc-10.1.0-1.1-win32-x64.zip and the download address is: https://github.com/xpack-dev-tools/riscv-none-embed-gcc-xpack/releases/tag/v10.1.0-1.1/

Figure 3-2. Download RISC-V cross toolchains-1

Figure 3-3. Download RISC-V cross toolchains-2

3.2. Build Tools installation

- Download the xpack-windows-build-tools-4.2.1.2-win32-x64.zip

Visit https://xpack.github.io/windows-build-tools/releases/ to choose to download different versions of the Build tools.
In this guide, choose to download xpack-windows-build-tools-4.2.1.2-win32-x64.zip and the download address is: https://github.com/xpack-dev-tools/windows-build-tools-xpack/releases/tag/v4.2.1-2/

Figure 3-4. Download Build Tools-1

![The xPack Windows Build Tools releases](image)

- xPack Windows Build Tools v4.2.1-2 released (download)
- xPack Windows Build Tools v4.2.1-1 released (download)
- xPack Windows Build Tools v2.12.2 released (download)
- GNU MCU Eclipse Windows Build Tools v2.12.20190422 released (download)
- GNU MCU Eclipse Windows Build Tools v2.11.20180428 released (download)
- GNU MCU Eclipse Windows Build Tools v2.10.20180103 released (download)
- GNU MCU Eclipse Windows Build Tools v2.9.20170620 released (download)
- GNU ARM Eclipse Windows Build Tools v2.8.20161122 released (download)
- GNU ARM Eclipse Windows Build Tools v2.7.20161028 released (download)
- GNU ARM Eclipse Windows Build Tools v2.6.20150715 released (download)
- GNU ARM Eclipse Windows Build Tools v2.4.20150321 released (download)
- GNU ARM Eclipse Windows Build Tools v2.3.20150124 released (download)
- GNU ARM Eclipse Windows Build Tools v2.2.20150123 released (download)
- GNU ARM Eclipse Windows Build Tools v2.1.20150122 released (download)
- Build Tools repacked as Setup (download)

Figure 3-5. Download Build Tools-2

![Assets](image)

3.3. Eclipse IDE installation

3.3.1. JDK installation

- Download the jdk-8u202-windows-x64.exe


In this guide, choose to download and install jdk-8u202-windows-x64.exe.
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#### 3.3.2. Eclipse IDE for GNU ARM & RISC-V C/C++ Developers installation

- **Download the eclipse-embedcpp-2021-03-R-win32-x86_64.zip**

Visit [https://eclipse-embed-cdt.github.io/packages/releases/](https://eclipse-embed-cdt.github.io/packages/releases/) to download different versions of Eclipse IDE.

In this guide, choose to download and install eclipse-embedcpp-2021-03-R-win32-x86_64.zip.

The download address is:

3.4. Debug Tools driver installation

3.4.1. OpenOCD installation

- Download the OpenOCD.exe

OpenOCD software does not need to be installed, just open and use. The OpenOCD software for GD32 MCU can be obtained from the original GD factory.

3.4.2. Segger J-Link installation

- Download the J-Link software

In this guide, choose to download and install J-LinkV7.54b.

Figure 3-12. Download J-Link driver

After the download is completed, just install it directly.
4. **Eclipse startup and configurations**

4.1. **Create workspace**

The Eclipse software itself is a green software and does not need to be installed. Just double-click the eclipse.exe in the eclipse folder to start Eclipse, as shown in *Figure 4-1. Eclipse IDE Launcher*.

*Figure 4-1. Eclipse IDE Launcher*

![Eclipse IDE Launcher](image)

As shown in *Figure 4-1. Eclipse IDE Launcher*, select the local English path to create a workspace. Click Launch. (Note: the path depth can not be too deep)

After entering the welcome interface, user can choose to close the welcome in the upper left corner or open the workbench icon in the upper right corner to enter the main interface.
Multiple projects can be contained in the same workspace.

4.2. **Set Build Tools path**

Create an eclipse_toolchain folder under the eclipse installation path. Decompress the ARM/RISCV cross-compilation chain, Build tool and OpenOCD downloaded in Tool installation instructions and place them in this folder.

**Figure 4-3. eclipse_toolchain folder**

Open “Winodow->Preferences” option.
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Figure 4-4. Eclipse Window Perferences option

Select “MCU->Global Build Tools Path” option to set the global build tool path:
${eclipse_home}\eclipse_toolchain\xpack-windows-build-tools-4.2.1-2\bin

Figure 4-5. Set Build Tools path

Note: The path configured here is configured as a relative path.

4.3. Set ARM Toolchains path

Select “MCU->Global Arm Toolchains Path” option to set the Arm Toolchains path:
${eclipse_home}\eclipse_toolchain\xpack-arm-none-eabi-gcc-10.2.1-1.1\bin
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Figure 4-6. Set ARM Toolchains path

Note: The path configured here is configured as a relative path.

4.4. Set RISC-V Toolchains path

Select “MCU->Global RISC-V Toolchains Path” option to set the RISC-V Toolchains path:  
${(eclipse_home)/eclipse_toolchain/xpack-riscv-none-embed-gcc-10.1.0-1.1/bin}$

Figure 4-7. Set RISC-V Toolchains path

Note: The path configured here is configured as a relative path.
4.5. **Set OpenOCD path**

Select “MCU->Global OpenOCD Path” option to set the OpenOCD path: `${eclipse_home}\eclipse_toolchain\OpenOCD\bin`

**Figure 4-8. Set OpenOCD path**

![Set OpenOCD path](image)

**Note:** The path configured here is configured as a relative path.

4.6. **Set SEGGER J-Link path**

Select “MCU->Global SEGGER J-Link Path” option to set the SEGGER J-Link path. Here select the local absolute path, in this paper the path is D:\Program Files\SEGGER\JLink.
At this point, all the configurations of Eclipse IDE have been completed, and user can use the configured Eclipse to develop GD32 ARM/RISC-V projects.
5. Revision history

Table 5-1. Revision history

<table>
<thead>
<tr>
<th>Revision No.</th>
<th>Description</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Initial Release</td>
<td>May.30 2022</td>
</tr>
</tbody>
</table>
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