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Note: Attention: Work in progress - page under construction

UHSDR development - toolchain for Debian

Preconditions, Assumptions, Scope

- Using Debian version buster/sid
- Install on Win10 PC with Virtualbox
  - ARM toolchain for Linux
  - GDB
  - Eclipse
  - Check installation with test project

GNU ARM toolchain for Linux

Note: Important: use latest version of tool chain from web sites below. DO NOT use the ARM toolchain that comes with your Linux distribution

See https://gnu-mcu-eclipse.github.io/toolchain/arm/install/ for general explanations

Install Arm toolchain for Linux

- Download the latest Linux install tarball file from ARMDeveloper
- Link to download: https://developer.arm.com/open-source/gnu-toolchain/gnu-rm/downloads
- Assuming downloaded file is in /home/gerd/Downloads, open terminal with user gerd:

```
$ mkdir -p ${HOME}/opt
$ cd ${HOME}/opt
$ tar xjf ~/Downloads/gcc-arm-none-eabi-7-2017-q4-major-linux.tar.bz2
$ chmod -R -w /home/gerd/opt/gcc-arm-none-eabi-7-2017-q4-major/
```

- Test if the compiler is functional; use the actual install path:

```
$ /home/gerd/opt/gcc-arm-none-eabi-7-2017-q4-major/bin/arm-none-eabi-
gcc-7.2.1 --version
```

- Output should be like this:

```
arm-none-eabi-gcc-7.2.1 (GNU Tools for Arm Embedded Processors 7-2017-q4-
major) 7.2.1 20170904 (release) [ARM/embedded-7-branch revision 255204]
```

```
Copyright (C) 2017 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
```

The complete toolchain documentation is available in the …/share/doc/pdf/ folder.

GDB - GNU Debugger & OpenOCD

Check that GDB is installed in your Linux distribution by entering

```
$ gdb
```

The output should look like this:

```
GNU gdb (Debian 7.12-6+b1) 7.12.0.20161007-git
Copyright (C) 2016 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later
<http://gnu.org/licenses/gpl.html>
[...]
```

If missing install with

```
apt-get install gdb
```

- Latest GNU MCU OpenOCD binaries can be found here.
- This leads e.g. to these binary files

Installation:

```
$ cd ${HOME}/opt
$ tar xvf ~/Downloads/gnu-mcu-eclipse-openocd-0.10.0-7-20180123-1217-
centos64.tgz
$ chmod -R -w gnu-mcu-eclipse/openocd/0.10.0-7-20180123-1217
```

Check OpenOCD installation:

```
$ ${HOME}/opt/gnu-mcu-eclipse/openocd/0.10.0-7-20180123-1217/bin/openocd --
version
```

Output should be something like this:

```
GNU MCU Eclipse 64-bits Open On-Chip Debugger 0.10.0+dev-00404-g20463c28
(2018-01-23-12:24)
Licensed under GNU GPL v2
For bug reports, read
    http://openocd.org/doc/doxygen/bugs.html
```

Install UDEV rules for USB OpenOCD probes:

```
# cp ${HOME}/opt/gnu-mcu-eclipse/openocd/0.10.0-7-20180123-1217/contrib/60-openocd.rules /etc/udev/rules.d/
# udevadm control --reload-rules
# usermod -aG plugdev $USER
```

Install OpenOCD Debugging plugin, see here

Update OpenOCD path, see here

OpeOCD manual from sourceforge

eclipse & st-link/v2 tutorial

In Virtualbox make sure the STM-link/V2 adapter is connected through to virtual machine (check machine settings→USB)

In Eclipse hit green „Debug“ button.

GNU MCU Eclipse and CDT

- Install Eclipse and CDT
- Download GNU MCU Eclipse IDE for C/C++ Developers from GitHub Releases
- Releases are archived here: See https://github.com/gnu-mcu-eclipse/org.eclipse.epp.packages/releases/
- Download latest release. At time of writing this is https://github.com/gnu-mcu-eclipse/org.eclipse.epp.packages/releases/download/v4.3.2-20180125-o2/20180125-1917-gnumcueclipse-4.3.2-oxygen-2-linux.gtk.x86_64.tar.gz
- Release Notes for latest release here: https://gnu-mcu-eclipse.github.io/blog/2018/01/25/plugins-v4.3.2-201801250917-released/

```
$ cd /home/gerd/opt/
$ mkdir GnuMcuEclipse
$ cd GnuMcuEclipse/
$ tar xvf /home/gerd/Downloads/20180125-1917-gnumcueclipse-4.3.2-oxygen-2-linux.gtk.x86_64.tar.gz
```

Make the GNU Arm toolchain location known to Eclipse in Project→Properties→C/C++ Build→Environment→PATH. add the path to GCC here (in this example we would add /home/gerd/opt/gcc-arm-none-eabi-7-2017-q4-major/bin).

Launch Eclipse to test installation

- Launch eclipse to test installation

```
/home/gerd/opt/GnuMcuEclipse/eclipse/eclipse
```

Build Test Project to check all is ok

- Build a test project to see if all ok https://gnu-mcu-eclipse.github.io/tutorials/blinky-arm/

Next step: import UHSDR into gnu arm eclipse

UHSDR development - import UHSDR into gnu arm eclipse