

GNU Toolchain/Release Notes 2.4.2

Product Name

AVR32 GNU Toolchain

Release Version

2.4.2

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Contents

- 1 Overview
 - 1.1 Modules
- 2 Known Issues
- 3 System Requirements
 - 3.1 Hardware requirements
 - 3.2 Software requirements
- 4 Downloading and Installing
 - 4.1 Windows
 - 4.2 GNU/Linux
 - 4.3 Installation with yum
 - 4.4 Installation with YaST
 - 4.5 Installation with apt-get
 - 4.6 AVR32 GNU Toolchain and Buildroot
- 5 News
 - 5.1 New Features since 2.2.1
 - 5.2 Notable Bugs Fixed
 - 5.3 Packaging
- 6 Contact Information
- 7 Disclaimer and Credits

Overview

AVR32 GNU Toolchain is a development environment for compiling, debugging and deploying AVR32 applications. AVR32 GNU Toolchain is distributed by Atmel® free of charge, and runs on both Windows® and Linux®. Some parts of AVR32 GNU Toolchain is built on tools from the GNU Project made available by Free Software Foundation (FSF).

This is release 2.4.2 of AVR32 GNU Toolchain. The list of changes since version 2.2.1 is available later in this document.

Modules

The AVR32 Tools consists of the following main parts:

NB! -Future version will probably be split into 'AVR32 GNU Toolchain' and 'AVR32 Utils', so below this is reflected.

- The 'AVR32 GNU Toolchain' consists of:

Part	Version
avr32-binutils	2.19.atmel.1.2.0
avr32-gcc with Newlib	4.3.2-atmel.1.2.0
avr32-newlib	1.16.0.atmel.1.1.0
avr32-gdb	6.7.1.atmel.1.0.4
avr32headers	2.3.4

- The 'AVR32 Utils' consists of:

Part	Version
avr32program	4.1.0
avr32gdbproxy	4.1.0
avr32trace	2.2.0
avr32parts	2.4.0
avr32fwupgrade	2.0.0
libavrtools	4.1.0
libavr32ocd	4.1.0
libavr32sim	0.3.0
libelfdwarfparser	3.0.3

- 3. party libraries that are used by AVR32 Utils

Library	Version (or newer)	Home page
libdwarf	20090716	http://reality.sgiweb.org/davea/dwarf.html
xerces-c	2.8.0	http://xerces.apache.org/xerces-c/
libelf	0.8.12	http://directory.fsf.org/project/libelf/
libboost	1.33.1	http://www.boost.org/
GMP	4.1	http://gmplib.org/
MPFR	2.2.1	http://www.mpfr.org/

Known Issues

The following issues are known at the time of release.

Bug #4400

.debug_line section isn't updated when relaxing

Bug #4539

avr32program's 'verify' command fails when verifying ELF object files

Bug #4653

When using avr32program to program flash, the internal RAM will be overwritten with temporary data.

Bug #4887

UC3 Newlib formatted text functions require a huge amount of stack

Bug #5038

Programming segments which cross memory borders won't work

Bug #5890

avr32program verify does not support ihex format

Bug #6004

Programming the general-purpose fuses with the value 0x0FFFFFFF renders EVK1100 useless. It enables the BOD in reset mode with the maximal threshold.

Bug #7792

Missing support for x8 or x32 flash types.

Bug #9068

The `_data_lma` symbol get wrong address when `--gc-sections` is used

Bug #9676

Using `-fnon-call-exceptions` flag makes c++ compilation ICE

System Requirements

AVR32 GNU Toolchain is supported under the following configurations.

Hardware requirements

- Minimum processor Pentium 4, 1GHz
- Minimum 512 MB RAM
- Minimum 250 MB free disk space

AVR32 GNU Toolchain has not been tested on computers with less resources, but may run satisfactorily under lesser requirements.

Software requirements

- Windows 2000 or Windows XP
- Windows Vista
- Fedora 11, Fedora 12, Ubuntu Linux 8.04 (Hardy), Ubuntu Linux 9.10 (Karmic), openSUSE Linux 11.0, openSUSE Linux 11.1

Support for 64-bit operating systems is not available at time of release. AVR32 GNU Toolchain does not support Windows 95, 98, NT or ME.

Downloading and Installing

The software can be found on the AVR32 Technical Library CD, or downloaded from Atmel's website at <http://www.atmel.com/products/AVR32/> under the "Tools & Software" menu.

Windows

There are one installer for AVR32 GNU Toolchain version 2.4.2 available. It installs the AVR32 GNU Toolchain only, and is called `avr32-gnu-toolchain-2.4.2-setup.exe`.

GNU/Linux

On Linux, the AVR32 GNU Toolchain can be installed as RPM or Debian packages depending on the distribution. The AVR32 Studio IDE is distributed separately.

Currently there are packages available for the following GNU/Linux distribution:

- Fedora 11
- Fedora 12
- RedHat Enterprise Linux 5
- openSUSE Linux 11.0
- openSUSE Linux 11.1
- Ubuntu 8.04
- Ubuntu 9.10

Installation with yum

Fedora and Redhat uses yum as the primary tool for software installation. To use yum with the AVR32 GNU Toolchain, yum must first be made aware of the location of AVR32 GNU Toolchain software repository. Make a file in the folder `/etc/yum.repos.d` called `avr32.repo` and add the following lines:

```
[AVR32 GNU Toolchain]
name=AVR32 GNU Toolchain
baseurl=http://distribute.atmel.no/tools/avr32/release/fedora/$releasever/$basearch
enabled=1
```

For Redhat Enterprise Linux 5 use

```
[AVR32 GNU Toolchain]
name=AVR32 GNU Toolchain
baseurl=http://distribute.atmel.no/tools/avr32/release/epel/$releasever/$basearch
enabled=1
```

For RHEL 5 also add a file (if You do not already have it in Your list of repositories) called `epel.repo` with the following lines:

```
[epel]
name=epel
mirrorlist=http://mirrors.fedoraproject.org/mirrorlist?repo=epel-$releasever&arch=$basearch
```

Install the metapackage 'avr32-gnu-toolchain' to install all packages for AVR32 development using command:

```
yum install avr32-gnu-toolchain
```

See <http://docs.fedoraproject.org/yum/en/sn-using-repositories.html> for more info about adding repositories to yum.

Installation with YaST

For SUSE the AVR32 Tools can be installed using YaST.

- Open the *YaST Control Center*
- Chose *Installation Source*, and add the AVR32 Tools repository with the following settings:
- for openSUSE 11.0

```
Protocol: HTTP
Server name: distribute.atmel.no
Directory on server: /tools/avr32/release/suse/11.0/i586
```

- for openSUSE 11.1

```
Protocol: HTTP
Server name: distribute.atmel.no
Directory on server: /tools/avr32/release/suse/11.1/i586
```

- Accept the AVR Tools PGP Key
- Close the *Installation Source* by pressing *Finish*
- Open *Software Management*
- Set *Filter* to *Installation Sources*, select the AVR32 Tools repository and then select the *avr32-gnu-toolchain* package.
- Alternatively set *Filter* to *Search*, search for AVR32, and then select the packages you need.
- Select the packages you need and install them by pressing *Accept*

See http://en.opensuse.org/Add_Package_Repositories_to_YaST for more info about adding repositories.

Installation with apt-get

For Ubuntu, Apt is the default package management system. To make Apt aware of the AVR32 GNU Toolchain, you must add one of the following lines (depending on your Ubuntu version) to the end of the file `/etc/apt/sources.list`. The line must be exactly as shown above, including the trailing slash.

Ubuntu 8.04 Hardy Heron (LTS)

```
deb http://distribute.atmel.no/tools/avr32/release/ubuntu/ hardy main
```

See <https://help.ubuntu.com/8.04/add-applications/C/index.html> for more info.

Ubuntu 9.10 Karmic Koala

```
deb http://distribute.atmel.no/tools/avr32/release/ubuntu/ karmic main
```

See <http://help.ubuntu.com/9.10/add-applications/C/index.html> for more info.

To refresh the list of available packages, execute the command

```
sudo apt-get update
```

There is a meta package called `avr32-gnu-toolchain` that have dependencies to all other packages. It should be enough to install that package to get the rest. So if you write:

```
sudo apt-get install avr32-gnu-toolchain
```

you should get all packages.

You should install all packages from the repository to get a complete AVR32 GNU Toolchain.

AVR32 GNU Toolchain and Buildroot

Buildroot users should note that they are not required to install the AVR32 GNU Toolchain locally on their computer. Buildroot will download and build a suitable toolchain by itself. See <http://www.atmel.no/buildroot> for more details.

News

This section describes the changes between the 2.2.1 and the 2.4.2 release.

New Features since 2.2.1

General

- Support for devices AT32UC3L, AT32UC3C, ATUC3B0512 and AT32UC3B1512.
- aWire support on JTAGICE mkII, AVRONE!, AVR Dragon. **NB!** An updated firmware on these tools might be necessary.
- AP7 support for AVR Dragon
- Support debugging with AVR Dragon

avr32-gcc

- Support for FlashVault®.

avr32-binutils

- Support for FlashVault®.

avr32headers

- Added header files for UC3C and UC3Bx512 devices.

avr32program

- Support for FlashVault®. FlashVault® is on UC3L and UC3C devices.
- Support for Macronix NOR flash- MX29LV320
- Support Flash device-Numonyx-M29EW
- Added option to set and get aWire maximum baud rate.

avr32gdbproxy

- Added option to support for different trace pin mapping IO configuration with OCD AXS register.

Notable Bugs Fixed

avr32program

- **bug #10136:** Problem doing Chip erase with EVK1100 - AVR Studio 2.2 and AVRONE/ JTAG ICE mkII
- **bug #10573:** Reading illegal memory causes exception when it should just return error reading
- **bug #10873:** AVR DRAGON does not support UC3C in JTAG mode
- **bug #10874:** AVR DRAGON does not fully support UC3C in aWire mode

- **bug #10998:** chiperase gives message "Unable to initialize unknown chip. Resuming in good faith." with Bx512

avr32gdbproxy

- **bug #8668:** Reads to non-existent memory should not fail

avr32headers

- **bug #10441:** uc3c*.h and iouc3c*.h missing flashc defines
- **bug #10442:** core_sc0_210.h missing SR_M_x defines
- **bug #10443:** wdt_401.h wrong defines, AVR32_WDT_KEY_CONST removed.
- **bug #10444:** intc_102.h Missing defines for AVR32_INTC_IPR...
- **bug #10503:** Missing AWEN struct in PM_410.h
- **bug #10522:** AVR32_USART_WPMR_WPKEY_VALUE Bad Key Definition in usart_4.40.h
- **bug #10525:** ADCIFA IRQ non standard definitions
- **bug #10561:** Multiple and wrong declarations in uc3c[01]512c.h
- **bug #10562:** Incomplete type in pwm_410.h
- **bug #10563:** Missing declaration for AVR32_PM_UNLOCK_KEY_VALUE in pm_410.h.
- **bug #10565:** Several missing declaration of AVR32_SCIF_OSCCTRLx... in scif_101.h
- **bug #10592:** Missing declaration of AVR32_MPUAPRy_APx_PRIV... in core_sc0_210.h
- **bug #10602:** Missing delcarations of AWEN register in pm_410.h
- **bug #10689:** AVR32_SCIF_AGC_xxx definitions typo in scif_101.h
- **bug #10729:** AVR32_FLASHC_FWS_0_MAX_FREQ in uc3c0512c.h is wrong
- **bug #10730:** Missing declaration of AVR32_WDT_KEY_VALUE in wdt_401.h
- **bug #10805:** ssc_330.h Missing declaration of AVR32_SSC_TCMR... and AVR32_SSC_RCMR...

Since 2.4.1:

- **bug #9565:** Issues in uc3l0xx.h. Several corrections and missing defines added
- **bug #11076:** sau_110.h added #if AVR32_SAU_CHANNELS!=16 to work with IAR
- **bug #11077:** pm_411.h removed AVR32_PM_PPCR_MASK and AVR32_PM_PPCR_RESETVALUE
- **bug #11078:** acifb_202.h rename _CONFi_EVENTF* to _CONFi_EVENTP* and _CONFi_EVENTR* to _CONFi_EVENTN*
- **bug #11080:** uc3l064revb.h: AVR32_SCIF_RC32OUT_0_PIN should be 36
- **bug #11081:** uc3l064revb.h: ADCIFB pins 6 to 8 defines should be removed
- **bug #11086:** pm_231.h pllmul and plldiv must be 4bits size each

Packaging

- Development of AVR32 with Linux should be done using AVR32 Buildroot.

Contact Information

For support on AVR32 GNU Toolchain please contact <mailto:avr32@atmel.com>.

Users of AVR32 GNU Toolchain are also welcome to discuss on the AVRFreaks website (<http://www.avrfreaks.net/>) forum for AVR32 Software Tools.

Disclaimer and Credits

AVR32 GNU Toolchain is distributed free of charge for the purpose of developing applications for

AVR32 processors. Use for other purposes are not permitted; see the software license agreement for details. AVR32 GNU Toolchain comes without any warranty.

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