

Release Notes for Linux Add-in 1.3.1

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2 Release Note for Linux Add-In 1.3.1

3 Introduction

This document describes the changes for CrossCore Embedded Studio (CCES) Linux Add-In 1.3.1.

This release of the Linux Add-In provides improved support for the latest releases of the Analog Devices EZ-KIT hardware.

3.1 Supported Linux Distributions

This release of CCES is supported on the following Linux distributions:

- Ubuntu 14.04 32-bit

The package may install on other versions of Ubuntu but it has only been tested and support will only be provided for issues that are reproducible on a supported distribution.

3.2 Supported Versions of CrossCore Embedded Studio

This version of the Linux Add-in has been tested and validated using version 2.8.3 of CrossCore Embedded Studio.

Please note that CrossCore Embedded Studio version 2.9.0 and later is not compatible with this add-in due to the upgraded GCC compiler in CrossCore Embedded Studio 2.9.0.

3.3 System Requirements

Verify that your PC has these minimum requirements for the CCES installation:

- 2 GHz single core processor; 3.3GHz dual core or better recommended
- 1 GB RAM; 4GB or more recommended
- 2 GB available disk space
- Two open USB ports

A faster disk drive or SSD decreases the build time, especially for a large amount of source files. 4GB of RAM or more will substantially increase the performance of the IDE.

3.4 Obtaining Technical Support

You can reach Analog Devices software and tools technical support in the following ways:

- Post your questions in the [software and development tools support community](#) at [EngineerZone](#)[®]
- E-mail your questions about software and development tools directly from CrossCore Embedded Studio by choosing Help > Email Support or directly to processor.tools.support@analog.com
- E-mail your questions about processors and processor applications to processor.support@analog.com
- Submit your questions to technical support directly via <http://www.analog.com/support>
- Contact your [Analog Devices sales office](#) or authorized distributor

3.5 Supported processors and EZ-Kits

The following processors and EZ-Kits are supported by this release of the Linux Add-In

ADSP-SC58x	ADSP-SC582, ADSP-SC583, ADSP-SC584, ADSP-SC587, ADSP-SC589	ADSP-SC584 EZ-Kit, ADSP-SC589 EZ-Kit, ADSP-SC589-MINI
ADSP-SC57x	ADSP-SC570, ADSP-SC571, ADSP-SC572, ADSP-SC573	ADSP-SC573 EZ-Kit (BOM version 1.8 or greater. See below)

* Only the ARM core of these processors is supported by the Linux Add-In.

3.6 New Features and Changes

3.6.1 Improved support for EZ-KITs

The 1.3.1 release of the Linux add-in contains auto-detection for certain components on the ADSP-SC5xx EZ-KITs.

When booting both the U-Boot bootloader and the Linux kernel will detect the flash memory and ethernet PHY that are installed on the EZ-KIT hardware.

The flash memory and ethernet PHY components were updated with previous revisions of the EZ-KIT, and were supported via a software patch for Linux in earlier versions of the Linux Add-In.

The 1.3.1 release of the add-in means that all supported versions of the EZ-KITs will not function correctly with the pre-built binaries provided in the Linux Add-In.

3.6.2 Support for ADSP-SC573 EZ-KITs

The ADSP-SC573 EZ-KIT is only supported for EZ-KITs with BOM version ≥ 1.8 . Earlier versions of the ADSP-SC573 are no longer supported by the Linux Add-In.

3.7 Known Issues

The following issues are known for this release of the Linux Add-In for CrossCore Embedded Studio:

- **Limited MCAPI support:** MCAPI supports communication using the **message** transaction type. Packet and Scalar types are not supported in this release. It was found that although the previous release supported these data types, the support was faulty. For more information on supported MCAPI functionality please refer to the MCAPI section of the Linux Add-In User Guide
- **SHARC core control:** An issue exists where by attempting to halt the SHARC cores from Linux, the SHARC core may end in a hung state and will not be able to be restarted again from Linux.
- **ADSP-SC584 EZ-Kit does not support the Video Decoder and Encoder EI3 Extender Board.** This is a limitation of the EZ-Kit. Driver support is provided and this extender board may be used with custom hardware which can support the board.

- **ADSP-SC573 does not support the WVGA/LCD EI3 Extender Board.** This is a limitation of the EZ-Kit. Driver support is provided and the extender may be used with a compatible custom board.
- **ADSP-SC573 EZ-KIT is only supported for BOM versions ≥ 1.8 .** Due to issues with the SD Card support, the ADSP-SC573 port of the Linux Add-In will only be supported on versions of the ADSP-SC573 EZ-KIT whose **BOM version** is at least 1.8. The BOM version is recorded on the underside of the EZ-KIT on a square white sticker.
- **SD Card and Rotary can't work simultaneously on ADSP-SC573 EZ-KIT.** This is a limitation of the multiplexing pin conflict of the EZ-Kit. Rotary is disabled by default out of box on ADSP-SC573 EZ-KIT.

4 Release Note for Linux Add-In 1.3.0

5 Introduction

This document describes the changes for CrossCore Embedded Studio (CCES) Linux Add-In 1.3.0.

This release of the Linux Add-In provides support for the SHARC Audio Module, i.e. the ADSP-SC589-MINI board, with improved support for the ADSP-SC5XX EZ-Kit.

5.1 Supported Linux Distributions

This release of CCES is supported on the following Linux distributions:

- Ubuntu 14.04 32-bit

The package may install on other versions of Ubuntu but it has only been tested and support will only be provided for issues that are reproducible on a supported distribution.

5.2 System Requirements

Verify that your PC has these minimum requirements for the CCES installation:

- 2 GHz single core processor; 3.3GHz dual core or better recommended
- 1 GB RAM; 4GB or more recommended
- 2 GB available disk space
- Two open USB ports

A faster disk drive or SSD decreases the build time, especially for a large amount of source files. 4GB of RAM or more will substantially increase the performance of the IDE.

5.3 Obtaining Technical Support

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- E-mail your questions about processors and processor applications to processor.support@analog.com
- Submit your questions to technical support directly via <http://www.analog.com/support>
- Contact your [Analog Devices sales office](#) or authorized distributor

5.4 Supported processors and EZ-Kits

The following processors and EZ-Kits are supported by this release of the Linux Add-In

ADSP-SC58x	ADSP-SC582, ADSP-SC583, ADSP-SC584, ADSP-SC587, ADSP-SC589	ADSP-SC584 EZ-Kit, ADSP-SC589 EZ-Kit, ADSP-SC589-MINI
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ADSP-SC57x	ADSP-SC570, ADSP-SC571, ADSP-SC572, ADSP-SC573	ADSP-SC573 EZ-Kit (BOM version 1.8 or greater. See below)
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* Only the ARM core of these processors is supported by the Linux Add-In.

5.5 New Features and Changes

5.5.1 SHARC Audio Module support

The SHARC Audio Module (SAM) development board is supported with this release of the Linux Add-In. For more details on developing Linux for the SHARC Audio Module board please refer to the **SC589-MINI Linux Quick Start Guide** in the User Guide.

5.5.2 Improved USB flexibility

The USB driver has been improved for the ADSP-SC5xx EZ-KITs to support different ports on the EZ-KIT running in different modes. This allows for host and device mode devices to be connect simultaneously. This feature is easily configured via the device tree file. For more details please refer to the User Guide.

5.5.3 Support for ADSP-SC589 EZ-KITs

The pre-built binaries provided in the Linux Add-In are for use with ADSP-SC589 EZ-KITs with BOM version < 2.0.

For developers using ADSP-SC589 EZ-KITs with BOM version ≥ 2.0 , a patch is provided within the Linux Add-In product to support the new PHY.

Users will then need to rebuild uBoot and the kernel/filesystem for this to take effect.

Note: The BOM version is located on a sticker on the underside of the EZ-KIT.

5.5.4 Support for ADSP-SC573 EZ-KITs

The ADSP-SC573 EZ-KIT is only supported for EZ-KITs with BOM version ≥ 1.8 . Earlier versions of the ADSP-SC573 are no longer support by the Linux Add-In.

5.6 Known Issues

The following issues are know for this release of the Linux Add-In for CrossCore Embedded Studio:

- ADSP-SC589 EZ-KITs with hardware BOM version greater than or equal to 2.0 have a new Ethernet PHY controller. In order for these EZ-KITs to work with the Linux Add-In 1.3.0, a patch must be applied and the U-Boot, Kernel and file system must be rebuilt. The out-of-the-box pre-built binary images for the ADSP-SC589 EZ-KIT will only work with revisions of the board before 2.0. For more details on applying the patch please refer to the User Guide for more details.

- **Limited MCAPI support:** MCAPI supports communication using the **message** transaction type. Packet and Scalar types are not supported in this release. It was found that although the previous release supported these data types, the support was faulty. For more information on supported MCAPI functionality please refer to the MCAPI section of the Linux Add-In User Guide
- **SHARC core control:** An issue exists where by attempting to halt the SHARC cores from Linux, the SHARC core may end in a hung state and will not be able to be restarted again from Linux.
- **ADSP-SC584 EZ-Kit does not support the Video Decoder and Encoder EI3 Extender Board.** This is a limitation of the EZ-Kit. Driver support is provided and this extender board may be used with custom hardware which can support the board.
- **ADSP-SC573 does not support the WVGA/LCD EI3 Extender Board.** This is a limitation of the EZ-Kit. Driver support is provided and the extender may be used with a compatible custom board.
- **ADSP-SC573 EZ-KIT is only supported for BOM versions >= 1.8.** Due to issues with the SD Card support, the ADSP-SC573 port of the Linux Add-In will only be supported on versions of the ADSP-SC573 EZ-KIT whose **BOM version** is at least 1.8. The BOM version is recorded on the underside of the EZ-KIT on a square white sticker.
- **SD Card and Rotary can't work simultaneously on ADSP-SC573 EZ-KIT.** This is a limitation of the multiplexing pin conflict of the EZ-Kit. Rotary is disabled by default out of box on ADSP-SC573 EZ-KIT.

6 Release Note for Linux Add-In 1.2.0

7 Introduction

This document describes the changes for CrossCore Embedded Studio (CCES) Linux Add-In 1.2.0.

This release of the Linux Add-In provides support for the ADSP-SC57x family of processors along with improved support for the ADSP-SC584 EZ-Kit.

7.1 Supported Linux Distributions

This release of CCES is supported on the following Linux distributions:

- Ubuntu 14.04 32-bit

The package may install on other versions of Ubuntu but it has only been tested and support will only be provided for issues that are reproducible on a supported distribution.

7.2 System Requirements

Verify that your PC has these minimum requirements for the CCES installation:

- 2 GHz single core processor; 3.3GHz dual core or better recommended
- 1 GB RAM; 4GB or more recommended
- 2 GB available disk space
- Two open USB ports

A faster disk drive or SSD decreases the build time, especially for a large amount of source files. 4GB of RAM or more will substantially increase the performance of the IDE.

7.3 Obtaining Technical Support

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- Contact your [Analog Devices sales office](#) or authorized distributor

7.4 Supported processors and EZ-Kits

The following processors and EZ-Kits are supported by this release of the Linux Add-In

ADSP-SC58x	ADSP-SC582, ADSP-SC583, ADSP-SC584, ADSP-SC587, ADSP-SC589	ADSP-SC584 EZ-Kit, ADSP-SC589 EZ-Kit
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ADSP-SC57x	ADSP-SC570, ADSP-SC571, ADSP-SC572, ADSP-SC573	ADSP-SC573 EZ-Kit
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* Only the ARM core of these processors is supported by the Linux Add-In.

7.5 New Features and Changes

- The Multi-core MCAPI support has been significantly revised since the previous version. MCAPI communication is only supported using the **message** data type. Packet and Scalar data types are not supported.
Message passing is supported in both blocking and non-blocking modes.
For more information please refer to the **MCAPI** section of the **Linux Add-In User Guide**.
- USB hotplug not stable issue has been fixed.
- Several of the pre-built executables and source directories within the product have been renamed.
Files previously named with the **hpc** prefix or suffix are now named with the **sc589** prefix or suffix.
Files previously named with the **lpc** prefix or suffix are now named with the **sc584** prefix or suffix.
- Support for the ADSP-SC584 EZ-Kit now contains a complete set of device drivers in support of the EZ-Kit.
- Include general SRU configuration API for audio device drivers programming.
- The ASOC audio driver has been re-written to provide easy porting from device tree.
- The DDR clock has been reconfigured to run at 450Mhz. The previous release of the Linux Add-In configured the DDR clock to 225Mhz.

7.6 Known Issues

The following issues are known for this release of the Linux Add-In for CrossCore Embedded Studio:

- **Limited MCAPI support:** MCAPI supports communication using the **message** transaction type.
Packet and Scalar types are not supported in this release. It was found that although the previous release supported these data types, the support was faulty. For more information on supported MCAPI functionality please refer to the MCAPI section of the Linux Add-In User Guide
- **SHARC core control:** An issue exists where by attempting to halt the SHARC cores from Linux, the SHARC core may end in a hung state and will not be able to be restarted again from Linux.
- **ADSP-SC584 EZ-Kit does not support the Video Decoder and Encoder EI3 Extender Board.** This is a limitation of the EZ-Kit.
Driver support is provided and this extender board may be used with custom hardware which can support the board.
- **ADSP-SC573 does not support the WVGA/LCD EI3 Extender Board.**
This is a limitation of the EZ-Kit. Driver support is provided and the extender may be used with a compatible custom board.

8 Release Note for Linux Add-In 1.1.0

8.1 Introduction

This document describes the changes for CrossCore Embedded Studio (CCES) Linux Add-In 1.1.0.

CrossCore Embedded Studio 2.3.0 for Linux supports Linux application development on the ARM Cortex-A5 cores of the ADSP-SC5xx family of Digital Signal Processors from Analog Devices using the Linux Add-In.

8.2 Supported Linux Distributions

This release of CCES is supported on the following Linux distributions:

- Ubuntu 14.04 32-bit

8.3 System Requirements

Verify that your PC has these minimum requirements for the CCES installation:

- 2 GHz single core processor; 3.3GHz dual core or better recommended
- 1 GB RAM; 4GB or more recommended
- 2 GB available disk space
- One open USB port



A faster disk drive or SSD decreases the build time, especially for a large amount of source files. 4GB of RAM or more will substantially increase the performance of the IDE.

8.4 Obtaining Technical Support

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- E-mail your questions about processors and processor applications to processor.support@analog.com
- Submit your questions to technical support directly via <http://www.analog.com/support>
- Contact your [Analog Devices sales office](#) or authorized distributor

8.5 Installation



It is strongly recommended to use the command prompt to install Linux Add-In. Some post-install configuration may fail when installing via Ubuntu Software Center.

8.5.1 Installing Linux Add-In

To install Linux Add-In, run the following command from the command prompt:

```
sudo dpkg -i adi-LinuxAddinForCCES-linux-x86-1.1.0.deb
```

8.5.2 Uninstalling Linux Add-In

To uninstall Linux Add-in, run the following commands from the command prompt:

```
sudo dpkg -P adi-cces-linux-add-in-1.1.0  
sudo rm -rf /opt/analog/cces-linux-add-in/1.1.0 (to clean up any leftover files)
```

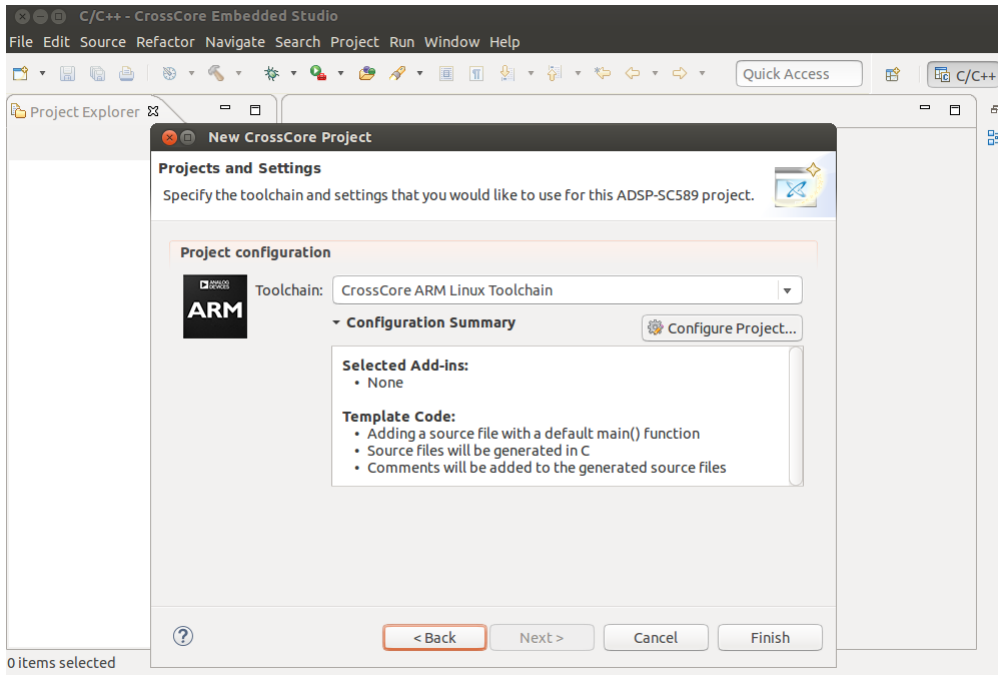
8.6 Integrated Linux Application development and debug within the CCES IDE

8.6.1 Creating a new project using CrossCore Embedded Studui (CCES)

If you install the Linux Add-in and you have CCES on Linux already installed, then you are able to create a new project using the Linux targeting toolchain that is supplied with the Linux Add-in.

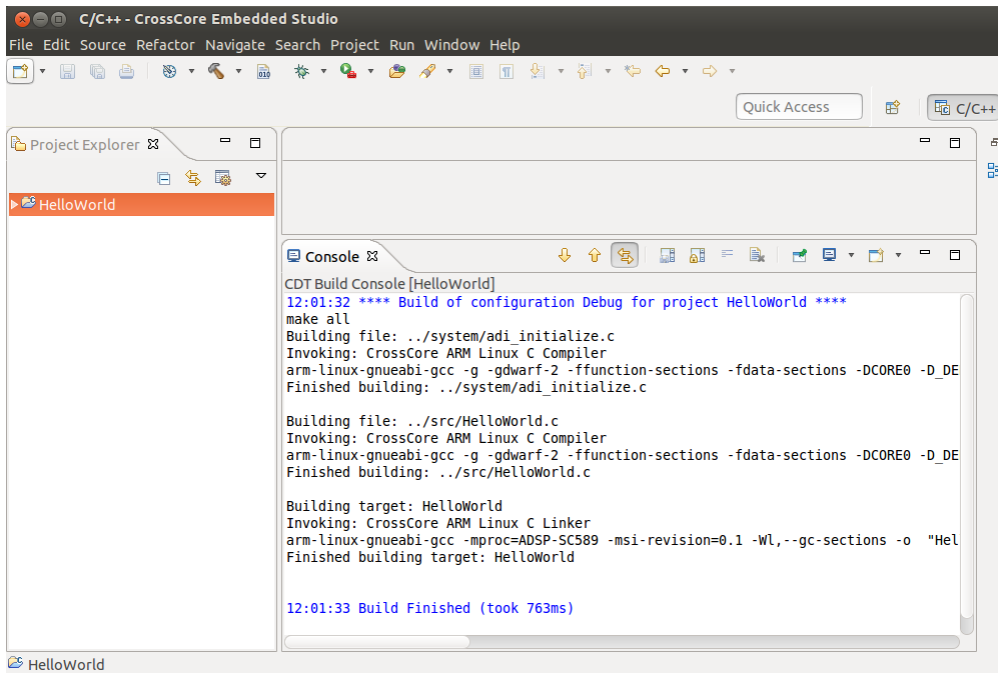
To create a new project:

1. Select File | New | CrossCore Project from the main menu.
2. Give your project a name (e.g. HelloWorld). Click Next.
3. Choose your Processor family, Processor type and Silicon revision. Click Next.
4. Choose the "CrossCore ARM Linux Toolchain" from the Toolchain drop-down selection and click Finish.



To build your new project:

1. Select Project | Build All from the main menu.
2. or Click the hammer icon on the toolbar.

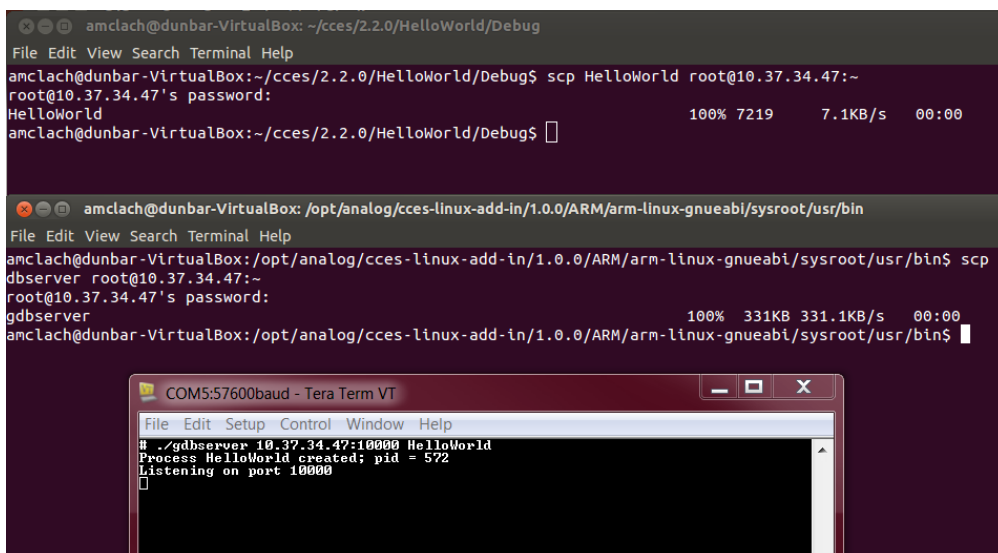


8.6.2 Debugging your new project using CCES

Copy your newly built application to your Linux target and set-up debugging

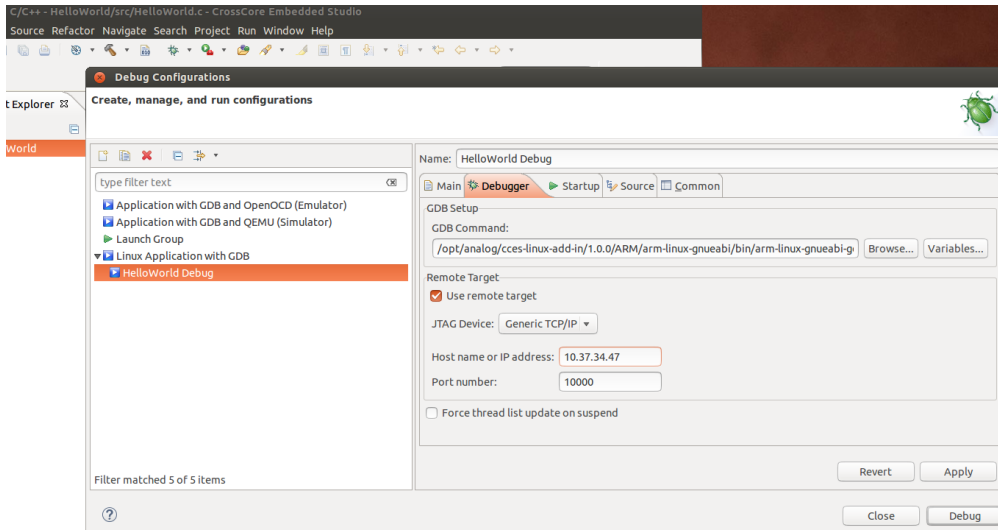
To debug your newly built application, you need to copy the binary to your Linux target.

1. scp (Secure Copy) you HelloWorld application to your Linux target.
 - a. `scp ~/cces/2.2.0/HelloWorld/Debug/HelloWorld root@10.37.34.47:~`
2. If you did not opt to build your Linux Image with gdbserver included, then you can copy it from the Linux Add-in installation directory (`/opt/analog/cces-linux-add-in/1.0.2/ARM/arm-linux-gnueabi/sysroot/usr/bin`) to your Linux target.
 - a. `scp /opt/analog/cces-linux-add-in/1.0.2/ARM/arm-linux-gnueabi/sysroot/usr/bin/gdbserver root@10.37.34.47:~`
3. In order to debug using CCES, you should run gdbserver and listen on a IP and port.
 - a. `gdbserver 10.37.34.47:10000 HelloWorld`
4. You're now set-up to connect to gdbserver via the CCES IDE.



Launch CCES and create a Debug configuration

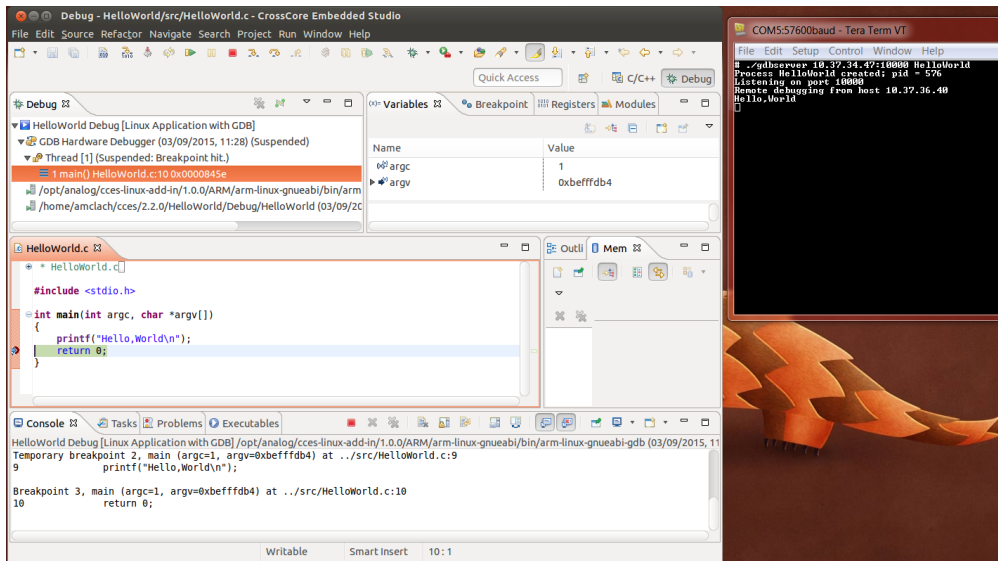
1. Select Run | Debug configurations... from the main menu.
2. or click the Debug Beetle icon on the toolbar
3. Create a new Linux Application with GDB.
4. On the Main tab, select the project and application that you would like to debug. For example, project is HelloWorld and the C/C++ application is called Debug/HelloWorld.
5. Switch to the Debugger tab
 - a. Enter the Host name or IP address for your Linux target. For example, 10.37.34.47.
 - b. Enter the Port number on which gdbserver is listening. For example, 10000.
6. Click Apply and then Debug



Debugging your application with CCES

1. After clicking Debug, CCES will launch GDB and connect to your gdbserver.
2. You are now able to debug your Linux application from within the CCES IDE. Output from your application will in your Linux console.

When you terminate your debug session, gdbserver on the Linux target will also terminate. To relaunch a debug session, you will also need to relaunch gdbserver on the Linux target.



8.7 Documentation

Documentation for the release is located within the CCES IDE Help system. To view the help specific to the Linux Add-In:

- Run the following command:

- `/opt/analog/cces/2.2.0/Eclipse/cces -application com.analog.crosscore.ui.standaloneHelp -noSplash`
- or choose *Help > Help Contents* from the CrossCore Embedded Studio IDE main menu.

8.8 Known Issues

8.8.1 Unsupported Devices

The following drivers are missing from the 1.1.0 release:

- Linux ALSA SPDIF sound driver
- Linux Thermal monitor driver
- Linux PCIe driver

8.8.2 Known Problems

The following issues are known about with the Linux Add-In. Due to the limited distribution of the Linux Add-In for CrossCore Embedded Studio these issues are not publicly visible on the Analog Devices website.

- When creating a CCES project to develop an application for ADSP-SC58x processors the SRU, PinMux and MCAPi plugins will be pre-selected for your project. Linux applications do not support these Recommended Add-ins; select *Configure Project...* and de-select the Recommended Add-ins. Alternatively, you can remove the Recommended Add-ins once your project is created.
- The ADAU 1962 Audio driver for Linux fails to play audio that is recorded using the ALSA S24_LE format.
- The ADAU 1962 Audio driver for Linux does not currently support sample rates of 44,100hz and 8000hz.
- The ADAU 1962 Audio driver for Linux can encounter buffer underrun when playing a mono sample. To avoid this use a stereo sample.
- When using the CAN bus, tests have shown that using a bitrate of 1000000hz has shown an error rate of ~0.4%. This issue does not occur when using a bitrate of 125000hz.

8.8.3 Other Known Issues

For the latest anomalies please consult our [Software and Tools Anomalies Search](#) page.