Release Note

CodeWarrior Development Studio for Power Architecture Processors v10.4

Table of Contents

1 Revision History

Based on feedback, in some cases modifications to this document are done after its initial release as part of the CodeWarrior Development Studio for Power Architecture Processors v10.4 package.

Users are strongly encouraged to download the latest version of this document from Freescale Website.

Date	Description
July 07th , 2014	Version provided with CodeWarrior Development Studio for Power Architecture Processors v10.4.
July 11th, 2014	Version posted on Freescale website with minor updates and typo corrections.
October 31st,2014	Updated all the links to align with new location of the project on Freescale Official Website.

2 About This Release

The new features described in this document are new relative to the last general availability release, CodeWarrior Development Studio for Power Architecture Processors v10.3.3.

2.1 Version Information

This document provides information regarding the content of CodeWarrior Development Studio for Power Architecture v10.4. Areas covered include newly supported targets, most relevant new features and errata with workarounds.

2.2 Getting Help

2.2.1 Updates to Release Notes

Any updates to this document after the release date will be posted on Freescale Website.

2.2.2 Application Notes

As a reminder, several Application Notes are available describing how to accomplish some of the commonly needed development tasks. Please check the Documentation tab regularly for new Application Notes. The currently available set of Application Notes includes the following:

2.2.3 Getting Started Guides

Use these documents to quickly get started with setting up boards, creating & debugging projects, collecting the trace data, or installing a service pack.

- **CodeWarrior for Power Architecture Processors - Getting Started** (Updated)
  Explains how to install the CodeWarrior software, prepare the boards supported by the current release, and then create, build, and debug a simple project.

- **CodeWarrior for Power Architecture Processors - Quick Start** (Updated)
  Explains how to install CodeWarrior Development Studio for Power Architecture Processors and how to create and debug a simple project.
- **Using the Ethernet TAP Probe - Quick Start**
  Explains how to set up the Ethernet TAP probe and create, build, and debug a simple project that uses this device.
- **Installing Service Pack for CodeWarrior Tools - Quick Start**
  Explains how to install a service pack or an update for your CodeWarrior software running on the Windows platform.
- **CodeWarrior IDE - Quick Reference Card** (Updated)
  Lists keyboard shortcuts and defines the purpose of major CodeWarrior IDE user interface elements.

2.2.4 Comprehensive User Guides

Use these documents to learn how to perform what to perform, solve the most common problems using the FAQs guide, or simply learn more about the built-in features.

- **Targeting Power Architecture Processors** (Updated)
  Explains how to use the CodeWarrior development tools to develop software that targets the Power Architecture processors; includes examples, definition of target-settings panel options, and a debugging tutorial.
- **CodeWarrior for Power Architecture Processors - Frequently Asked Questions** (Updated)
  Provides answers to the most frequently asked questions about the CodeWarrior IDE and the Power Architecture tools.
- **CodeWarrior Common Features Guide** (Updated)
  Describes the CodeWarrior IDE and debugger features that are common across all the CodeWarrior products.
- **Power Architecture Simulator User Guide** (Updated)
  Describes the software simulation models released with CodeWarrior Development Studio for Power Architecture Processors.
- **CodeWarrior TRK Reference** (Updated)
  Describes CodeWarrior TRK and explains how to customize it for use with different hardware configurations.
- **Power Architecture Build Tools Reference** (Updated)
  Explains how to use CodeWarrior tools to build programs.
- **Tracing and Analysis Tools User Guide** (Updated)
  Explains how to use the tracing and analysis tools to analyze the performance of your programs.
- **EWL C Reference**
  Documents the CodeWarrior implementation of the C standard library.
- **EWL C++ Reference**
  Documents the CodeWarrior implementation of the C++ standard library.
- **MSL C Reference**
  Explains how to use the MSL C standard library. Use this library with the GCC build tools.
- **MSL C++ Reference**
  Explains how to use the MSL C++ standard library. Use this library with the GCC build tools.

- **CodeWarrior TAP Users Guide**
  Explains how to set up the CodeWarrior TAP debug probe so it can communicate with the debugger and the target hardware.
- **Gigabit TAP Users Guide**
  Explains how to set up the Gigabit TAP debug probe so it can communicate with the debugger and the target hardware.
- **USB TAP Probe Users Guide**
  Explains how to set up the USB TAP debug probe so it can communicate with the debugger and the target hardware.
- **Ethernet TAP Probe Users Guide**
  Explains how to set up the Ethernet TAP debug probe so it can communicate with the debugger and the target hardware.

2.2.5 Cheat Sheets

Use these cheat sheets to complete moderate-to-complex tasks by following instructions that you execute real-time within the CodeWarrior IDE.

Select **Help > Cheat Sheets** in CodeWarrior IDE to run a cheat sheet.

- **Create a Linux AppTRK Remote System**
  Shows you how to create a Linux AppTRK Remote System.
- **Making C/C++ the IDE's Default Perspective**
  Shows you how to make the C/C++ perspective the CodeWarrior IDE's default perspective. The default perspective is the one the IDE displays each time it starts.
- **Target Management via RSE**
  Shows you how to perform target management via remote system explorer. It provides data models and frameworks to configure and manage remote systems, their connections, and their services.
- **Using the Flash Programmer**
  Shows you how to create, configure, and run a flash programmer target task.
- **Using the Import Wizard**
  Shows you how to create a project from a previously exported project set file by fetching the project contents from the appropriate repositories.
- **Creating and Debugging a Power Architecture Project**
  Shows you how to create and debug a Power Architecture project using the New Project Wizard.
- **Modifying Build Properties**
  Shows you how to modify project build properties to suit your needs.
- **Burning U-Boot to Flash**
  Shows you how to burn U-Boot to the flash memory of a target board.
- **Creating and Configuring Performance Analysis Project**
  Shows you how to create and configure a Performance Analysis project.
- **Creating, Debugging, Collecting, and Viewing Trace Data**
  Shows you how to create, debug, collect, and view trace data on the P4080/P4040 target.
- **Importing a Trace Data File**
  Describes the process of importing trace data from an existing project into another project and viewing the data in the Trace Events Viewer.

2.2.6 Further Help

If you have questions, issues, or want to provide feedback, please use the Freescale online support web page. To use this page, follow these steps:

1. In a web browser, go to http://www.freescale.com/TechSupport
   Freescale's **Technical Support** web page appears.
2. On this page, click the Submit a service request online link.
   The **New Service Request — Category/Topic** page appears.
3. From the Category dropdown menu, select Technical Request.
4. From the Topic dropdown menu, select CodeWarrior (or other appropriate topic).
5. Click **Next**.
   The **New Service Request — SR Details** page appears.
6. In this page, enter the requested information.
   At a minimum, enter information in each field marked by an *.
7. Click **Submit**.
   If you are already logged in, the **Service Request Confirmation** page appears. Go to the last step.
   If you are not already logged in, the **Log-in** page appears.
8. If you are a registered member, login with your user name and password.
   The **Service Request Confirmation** page appears. Go to the last step.
9. If you have not yet registered,
   a. If you want to become registered member, click **Register Now** and complete the registration process.
      The **Service Request Confirmation** page appears.
   b. If you do not want to register, supply your contact information in the **I do not want to register - Provide contact information** form and click **Submit**.
      The **Service Request Confirmation** page appears.
10. Click **Done**.
    Your service request is submitted.

3 New In This Release

3.1 Licensing

This release is distributed under a new End-User License Agreement. The EULA is displayed during product installation and a copy is located in the PA/License folder. Please read the contents of the document carefully before using this product.

This version of release, v10.4 has a new license. A license upgrade is required when transitioning from v10.3.3 or earlier tool versions.

Customers can obtain a license, if needed, by exercising the options listed in the Software Licensing section of the Freescale account.

Please consult http://www.freescale.com/cwregister for additional information regarding license registration and activation, or enter a service request with Category = “Software Product and Topic = “License Issue”.

3.2 Documentation

CodeWarrior Development Studio for Power Architecture Processors v10.4 documentation is now live on Freescale Infocenter !

One can also visit the Information Center using the following links on the PSP page:

- Featured Documentation section CODEWARRIOR_PA_IC: QorIQ Processors (Eclipse IDE) Infocenter - Online Documentation in the Documentation tab.

One can also download the PDFs for the respective documentation from the Documentation tab on the PSP page.

Below is a summary of the most relevant updates done on the documentation:

Targeting Power Architecture Processors

- On page 31, Section 2.1.2, “Processor Page,” updated Figure 2-2, “Processor Page,” to show QorIQ_T2 device family
- On page 60, Section 3.3, “Build Properties for Power Architecture,” updated Table 3-1, “Build Tools for Power Architecture Processor Families,” to include QorIQ_T2 device family
- On page 82, updated Section 3.3.2, “GCC Build Tool Settings,” to add GCC PowerPC toolchain information
- On pages 152 and 153, updated Section 5.5, “Memory Translations,” to mention “e500v2”
- On page 197, Section 5.10.1, “Adding Memory Monitor,” added a new item to the bulleted list at the end of the section
- On page 440, Section 13.2, “PowerQUICC II Pro Processors:”
    - Specified “8377” target under “e300c4” core category
    - Removed subsection, “Debugging Interrupt Handlers”
    - Removed a note mentioning “e300c1 cores” from subsection, “Working with Watchpoints”
- On page 442, Section 13.3, “PowerQUICC III Processors,” added a new subsection, “Using memory configuration files for bareboard debugging”
- On page 443, Section 13.4, “QorIQ Communications Processors,” removed “T1040” target
- On page 445, Section 13.5, “T-Series Processors,” added “T1040” and “T2080” targets
- On page 448, Section 13.6, “QorIQ Qonverge Processors,” added a new subsection, “Preventing debug halt requests caused by cross triggering cores”
- Performed IDE updates on entire document
- Added support for T1042, T1020, and T1022 devices
- Updated GCC Build Tool Settings

- Added a new section on JTAG diagnostics tests
- Manual updated to support SDK 1.6

CodeWarrior for Power Architecture Processors - Getting Started

- On page 6, Section 1.1, “System Requirements,” updated Table 1-1, “System Requirements,” to mention “Ubuntu 13.10” operating system
- On page 8, Section 1.3, “Supported Devices,” updated Table 1-2, “Supported Device Families and Targets,” to include QorIQ_T2 device family
- Performed IDE updates on all the documents
- Added support for T1042, T1020 and T1022 devices

CodeWarrior for Power Architecture Processors - Quick Start

- On page 1, updated “System Requirements” table to mention “Ubuntu 13.10” operating system
- On page 4, updated path to default installation directory
- On page 7, updated “Processor Page” image to show QorIQ_T2 device family
- Performed IDE updates on all the documents
- Added support for T1042, T1020 and T1022 devices

Tracing and Analysis Tools User Guide

- Configuration the EPU counters (Section 2.1.2.1, page no. 36)
- Excluding symbols from data results (Section 2.3.5 and 2.3.1.7, page 89 and 84)
- Source line level coverage in Critical Code view (Section 2.3.1.3, page 72)
  In addition to the support of above features:
  - LTTng User Guide removed
  - Support of User-Space tracing removed
  - Latest FSL Style guidelines were applied to the document

- Performed IDE updates on the entire document
- Added T2080, T1040 and T1042 to the list of supported devices
- Added a new section 1.1 Limitations, which describes limitations of performance analysis and Trace.

3.3 Build Tools

This release version includes GNU GCC for Power Architecture version 4.8.2-r963.

New features added:

- Ported all patches and Freescale optimizations to gcc-4.8.x
- Added builtin-isel documentation
- Fixed an issue that builtin_iselXX would not be recognized on targets that also support Altivec builtins (e6500).
- Optimized memcpy for e6500 32 and 64 bits, using Altivec instructions when possible.

- All optimized memcpy implementations (e500v2, e500mc, e5500, e6500) has been ported to newlib.
- Optimized ‘strlen’ for e500mc and e5500 (64-bits only).
- Optimized ‘memset’ for e6500 32 and 64 bits, using Altivec instructions when possible.
- Updated e6500 32-bit ‘memcpy’ to use ‘ld’ instead of ‘lwz’ to improve performance.

Following issues were fixed:

- Fixed Internal Compiler Error on e500v2 target.
- Fixed an issue with sign extended elimination optimization which was limiting Coremarks performance.
- Improve Coremark & EEMBC automotive [matrix01 program] performance numbers: SSA coalesce fix to generate proper coalesce info for typedefs.
- Improve EEMBC consumer [cjpeg & djpeg program] performance numbers: C11 standard was restricting gimplifier to optimize self modifying expressions. Added this change under a flag '-fdisable-c11-self-mod-expr'.
- ENGR00296060: Wrong macro definition for e6500 32bit target prevents gcc 4.8.1 building projects correctly.
- ENGR00292364: Cannot display local variables stored relative to frame base for C++ Linux Apps built with gcc 4.8.1 default DWARF4
- ENGR00298583: Verify vector registers

Complete details on the new features and other updates done by transitioning to gcc 4.8.1 with details on some of the features are available at: http://gcc.gnu.org/gcc-4.8/changes.html

gcc 4.8.2 comes with DWARF4 as default when generating DWARF debug information:

- DWARF4 is now the default when generating DWARF debug information. When `-g` is used on a platform that uses DWARF debugging information, GCC will now default to `-gdwarf-4 -fno-debug-types-section`.
  GDB 7.5, Valgrind 3.8.0 and elfutils 0.154 debug information consumers support DWARF4 by default. Before GCC 4.8 the default version used was DWARF2. To make GCC 4.8 generate an older DWARF version use `-g` together with `-gdwarf-2` or `-gdwarf-3`. The default for Darwin and VxWorks is still `-gdwarf-2 -gstrict-dwarf`.

Note:
GCC 4.7.2, continues to be available as service pack and can be installed:

- via updater (like any previous build tool service pack) selecting:
  - **FSL PA Build Tools - http://freescale.com/lgfiles/updates/Eclipse/PA10_4/com.freescale.pa.buildtools_win**

Switching between version of toolchain feature is available only at project level by changing the default toolchain (Project -> Properties -> Build Tool Versions) after the service pack with the desired version of the build tool was installed.

3.4 IDE

This release is based on Eclipse 3.7.1 (Indigo). Several fixes/improvements were added since previous release v10.3.3.

Some updates and fine tunings were done on the IDE side:

- Increased JVM program memory for Eclipse IDE to avoid some rare cases in which users were seeing sudden IDE crashes with 'Out of memory' error message.
- Added the support to Disassemble/Preprocess multiple files.
- Creation Date information is now visible CodeWarrior Projects View .
- Errors are now sorted by ID in Problems View by default.
- Added Excel-style shortcut (F2) to edit local path in Path Mappings wizard.
- A notification is now sent to the user in the Console View if there are no source files to compile.
- Ability to define 'Clean set' where user selects which objects to clean and use the 'Clean set' instead of 'Clean all'.
- Support to export/import file-specific compilation macros from one project to another using a simple text-based export format.
- Generated disassemble file is now created under the right configuration folder.
- Prevent creating a new project without selecting any core.
- Restrict the Error column of the "Codewarrior projects view" to show errors and ignore warnings.
- Fixed Indexer symbol navigation when working with multiple build configurations in a multicore project.
- Ability to import nested projects into workspace by drag and drop the top level directory into CodeWarrior.
- Automatic switching of the toolchain path in Tool Settings tab in case of a toolchain switch.
- Allow user to fix entered broken paths in Tool Settings tab.
- Make sure the Signals view content is updated in case it is not initially visible.
- Support to use ECD tool in non X-Window mode.

3.5 CCS

Reset cores issues for T1040 rev1 QDS and T4240 rev2 QDS targets were fixed.

Please note that old version of USBTAP and ETHTAP are not supported anymore – starting already with previous general available release v10.3.3. for T1040QDS. CWTAP and GTAP are the probes recommended.

In fact, Freescale has discontinued the support for USBTAP and ETHTAP already 2 years ago but they have continued to be available for older setups. Adding this support now for new products - as T1040QDS – is not possible due to technical limitations and therefore the CWTAP solution (over Ethernet or USB) is the recommended probe.

3.6 Product Independent Debugger

The following Core Debugger features have been added in this release:

- A new Debugger Shell "symbol" command to allow view of the address for global symbols.
- A new command line tool for validating user updates in debugger xml registers and flash programmer configuration files: ***ddd_command.exe***.
- Friendly error message when importing old projects with unsupported target types.

The following fixes were done:

- "Declared Type" for registers in Expressions view is now correct.
- Target tasks are not duplicated after workspace restart and they are not reappearing after restart once removed.
- Path to other executables relative to <<ProjDirPath>> was causing problems when the symbolic information was cached.
- Breakpoints were randomly disabled when debugging – most visible seen during successive verification of the kernel debug.

3.7 Power Architecture Debugger

Probes Supported

The following debug probes are supported in this release:

- External USB TAP (UTAP)
  - Not supported for T1040 QDS, T104x RDB, T102x RDB
- External Ethernet TAP (ETAP)
  - Not supported for T1040 QDS, T104x RDB, T102x RDB
- CodeWarrior TAP / USB
- CodeWarrior TAP / Ethernet
- Gigabit TAP (GTAP)
- Gigabit TAP (JTAG only) + Aurora (trace)

New Devices Supported

All the devices supported in the service packs on top of previous release v10.3.3 are supported and integrated inside 10.4.

The changes comparing to v10.3.3 are highlighted in red.

Device Name	Device Revision	Board Type	Bare Metal Debug	Linux Debug
P5021	2.1	RDB	Yes	N/A
P5040	2.1	RDB	Yes	N/A
P1010	2.0	RDB	Yes	Yes
P1010	2.0.1	RDB-PB	Yes	Yes
P1014	2.0	RDB	Yes	Yes

T4240	2.0	QDS	Yes	Yes
T4160	2.0	QDS	Yes	Yes
T4240	1.0/2.0	RDB	Yes	Yes
T4160	1.0/2.0	RDB	Yes	Yes
T2080	1.0	QDS	Yes	Yes
T2080	1.0	RDB/PCIe	Yes	Yes
T1040	1.0	QDS	Yes	Yes
T1040	1.0	RDB	Yes	Yes
T1042	1.0	RDB	Yes	Yes
T1020	1.0	RDB	Yes	No
T1022	1.0	RDB	Yes	No
C29x	1.0	PCIe	Yes	Yes
8536	1.1	DS	Yes	Yes

Complete list of IC/boards supported is available on: InDepth section of the PSP section of Freescale's Website.

Note:

- "Linux" Support implies Linux kernel debugging and Linux application debugging.

"Bare Metal" Support implies U-Boot debugging out of NOR flash, register and memory access, board initialization and flash programming for the flash device on the board.

Debugger Alignment SDK 1.6 (Linux Kernel 3.12)

The debugger was updated and verified for Linux Kernel Debug and Linux Application debug to work with latest version SDK 1.6.

SRAM configuration (e500v1/v2, e500mc, e5500, e6500)

New project wizard is available to enter in debug using the SRAM. This can be used when encountering problems with DDR or an initialization of DDR. The initialization is done only for what is vital for a debug session and for the flash devices on the board and it can be used for small applications.

Note that SMP debug is not recommended to be used in SRAM configuration as usual SMP applications are larger than SRAM size. The use case is however present but it is into the user's responsibility to make sure SRAM size is not overrun.

MMU Awareness

The debugger can now actively monitor the target MMU and read the currently active translations. This MMU awareness feature is activated only if there are no translate directives defined in the memory configuration file or if the memory configuration file is not specified at all. The MMU awareness for bare metal is supported for processors based on e500mc, e5500,e6500 and starting this release also on e500v2 cores. The debugger can now also automatically detect MMU changes and re-resolve affected breakpoints.

Note that during testing we have noticed a performance penalty when resolving software breakpoints/stepping during Linux module debug operations. Occasionally we have noticed a delay of several seconds between successive steps depending on the probe/setup.

As that might be annoying when debugging, a solution is to define a mem file with the following configuration:

<filename>.mem

```
AutoEnableTranslations true
translate v:0x0 i:0x0       0x0
```

Note that this issue is visible only for Linux Module Debug.

Cache way locking/unlocking support

Debugger now supports cache lock/unlock operation on several way configurations (the user can choose any desired configuration from a list) for e500mc, e5500, e6500 cores.

Flash Programmer improvement

A Flash Programmer improvement was obtained for Flash Programmer operations by increasing the target memory buffer size of each target. This improvement is available for e500v1/v2, e500mc, e5500 and e6500 cores.

Thread names for Linux Kernel Debugging

For Linux Kernel debugging, the debug view shows now the real name of each thread. The old *Thread [ID: <id>]* was replaced with *Thread [<name>:<id>]*.

More information in Debug view for Linux Application Debugging

For Linux Application debugging, the title line for each thread in Debug view contains now information about the name and the lwpid of the thread, apart from the CW number. The pattern for the title line is *Thread [<cwnumber>:<lwpid>:<name>] (<stateinfo>)*.
The information about the state of a thread was modified in case a signal is received such that the real signal name and description is shown. For SIGSEGV case *Signal "Exception 11" received. Description PowerPC Exception* is replaced with *Signal "SIGSEGV"* received and *Description: Invalid memory segment access*.

Unstripped library path for AppTrk

In order to avoid overwriting stripped libraries with their unstripped version, AppTrk can be run with '-p' parameter followed by the path where to look first for unstripped libraries.
The AppTrk usage is now:

- *apptrk [-v] [-p library_path] [:tcpport | serialdevice | '']*.

3.8 B4/T4 Instruction Set Simulators

No significant updates were done on the simulators.

3.9 Trace, Profiling and Performance Analysis

New Devices Supported

Device Name	Device Revision	Board Type	Nexus Trace	Performance Analysis
P5021	2.1	RDB	Yes(Aurora)	Yes
P5040	2.1	RDB	Yes(Aurora)	Yes
T4240	2.0	QDS	Yes(Aurora)	Yes
T4160	2.0	QDS	Yes(Aurora)	Yes
T2080	1.0	QDS	Yes	Yes
T2080	1.0	RDB/PCIe	Yes	Yes
T1040	1.0	QDS	Yes	N/A
T104x	1.0	RDB	Yes	N/A

Please see below complete details on how T2080 QDS can be configured:

1. RCW on board must have Aurora enabled (SERDES port #2) and the speed set to 2.5 Gbit/s (RCW bit 180 must be set to 1)
2. DIP switches on the board must be configured for Aurora lanes routed to Aurora connector on the board:
   - SW4.[5:6]=11[Default]
   - SW4.[7:8]=11[Default]
   - (SERDES2 Clock1 and SERDES2 Clock2 -> 100 MHz)
   - SW8.[4:5]=11 (SERDES2 Protocol muxed to Aurora)

Additional SA updates:

- Also the issue regarding PA10 decoding of P4080 trace, which was showing wrong Timestamp values was fixed. This was done by adding an option in the Trace and Profile tab to enable accurate timestamps when the trace was not fully decoded (i.e. on-the-fly decoding in the trace viewer).

- Fixed the issue with Nexus messages remaining stranded in the NPC (e.g. trace collection until the program reaches a breakpoint). Flushing the NPC buffer before collecting fixed this issue.

- **EPU performance counters are now configurable from SA GUI for P4.**
  Added the options to configure EPU performance counter registers in the Trace Configurations UI. The configurable registers are:
  - EPCCR0-31 (Event Processor Counter Control Register 0–31)
  - EPCMPR0-31 (Event Processor Counter Compare Register 0–31)
  - EPCTR0-31 (Event Processor Counters 0–31)
  - EPCAPR0-31 (Event Processor Counter Capture Register 0–31)

3.10 Wizard

The wizard has been updated to include all the newly supported platforms:

- Bare Metal - T1040QDS, T104x RDB, T102x RDB, T2080QDS, T4160RDB, T4240RDB, P1010/14 RDB-PB
- Linux/Application Debug: T1040QDS, T104x RDB, T102x RDB, T2080QDS and C29x

Two small updates to increase clarity were added:

- For Simulator projects made using the New Project Wizard the connection type field now displays the connection used by the simulator (e.g. CCSSIM2 ISS) instead of None
- Welcome screen improved with links directly to the Project Importer on the Examples tab

3.11 Installer

Ubuntu 13.10 64bit is now supported by the installer.

The installer must be run as root due to the CW dependency install mechanism. However, if the installer is not started as root it will inform the user about this requirement.

The installer now tries to automatically install the dependencies required by CodeWarrior to run. In case of a failure the user is directed to the README.txt file which describes the steps needed to manually install the dependencies.

The installer now automatically starts in console mode instead of failing in case the GTK2 32bit libraries are missing (this was a common issue occurring on 64bit host operating systems) and it tries to install them during the dependency install phase.
The GUI installer is now mapped 1 to 1 with the console mode. This means that all the screens present in the GUI installer are also present in the Linux installer.

4 Important Usage Notes and Known Limitations

This section describes some issues that are more likely to be encountered, and how to avoid or work around them. Additional information on errata and work-arounds can be found in the Errata section of this document.

4.1 General

Installer Path on Linux

A limitation in the InstallShield technology prevents the installer from running if the path to the setuplinux.bin executable contains a space.

Using CodeWarrior on 64-bit Linux Hosts

To run the installer in graphical mode on 64-bit Linux Hosts the 32-bit GNU libc and Xorg libraries must be installed, otherwise the setup will start in console mode. Please consult the README file accompanying the installer for per-distribution instructions

New Project Wizard and Fedora 18

The New Project Wizard has occasionally been found not to display connection related controls in the user interface. To work around this limitation please proceed with project generation and adjust the probe information in the RSE Connection panel.

SELinux

CodeWarrior will not run on SELinux as this configuration prevents the IDE from loading needed libraries. The following are possible work-arounds:

- Avoid using SELinux, if this is a possibility
- In the SELinux configuration, allow the loading of so's with writable and executable segments (e.g., on RedHat 5, see SELinux Management, Boolean-Memory Protection-Allow all unconfined executables to use libraries requiring text relocations)

Project Resource Removal and Ubuntu

The IDE has a limitation related to removing resources (files, folders) from CodeWarrior Projects view on Ubuntu 11.04 hosts. This limitation has not been observed with Ubuntu 12.x.

Ubuntu Themes

CodeWarrior UI (Flash Programmer in particular) may display incorrectly if the host OS is Ubuntu 10.x/12.x accessed over a remote connection (ie. VNC). Changing the host OS desktop theme to anything but Ambiance or Radiance has been found to alleviate the issue.

OpenJDK incompatibility

OpenJDK is not supported by CodeWarrior. Users are advised to either install an Oracle Java Virtual Machine, or use the one bundled with CW.

Fedora 18/19/20

The New Project Wizard has a known limitation related to the inability to display some controls in the probe configuration panels. Users are advised to proceed with the project generation, then manually adjust probe specific details from the debugger connection panels.

4.2 Debugger

4.2.1 General Limitations

For kernel module debugging, the software breakpoints which are set in a module are not always enabled for all cores the second time the module is inserted. As a workaround check the disabled breakpoint entry or remove and set again the breakpoint.

After debugging several times a SMP project, debug operation might fail with the following error: “Invalid input value.”. The workaround would be to restart CW.

For e6500 cores any cache operation on L2 Cache from Cache Viewer window works only for the cluster that includes the current selected core. The workaround is to select from Debug View a core from the L2 cluster on which you want to perform a cache operation.

An error occurs at reading cache data on shared caches from a secondary core when the first core is running. The workaround is to stop all the cores that share the same cache before performing any cache operation on that cache.

The initialization and memory files for u-boot provided with CodeWarrior are not kept in sync with the latest SDKs and some variations on the initializations (values of RCW usually) might be present. The user needs to update those files in order to debug u-boot successfully on latest SDK versions.

SMP debug is not recommended to be used in SRAM configuration as usual SMP applications are larger than SRAM size. The use case is however present but it is totally into the user responsibility to make sure SRAM size is not overrun.

During testing we have noticed a performance penalty when resolving software breakpoints or stepping during Linux module debug operations. Occasionally we have noticed a delay of several seconds between successive steps depending on the probe/setup.

As that might be annoying when debugging, a solution is to define and use a mem file with the following configuration:

<filename>.mem

```
AutoEnableTranslations true
translate v:0x0 i:0x0       0x0
```

Note that this issue is visible only for Linux Module Debug.

Debugger Limitations for G4/B4 device families

The following features are not supported for the B4 device families:

- Breakpoint cross-triggering

- Reset Configuration Word override

Debugger Limitations for T4 device families

If using the FPGA image version 6 on PROTO4 the debug operation fails with the error -> "T4240: HRESET occurred during transaction" when doing the ***reset_to_debug*** command. Changing the FPGA firmware to previous versions unblocks the debugger operation.

The following features are not supported for the T4 device families:

- Breakpoint cross-triggering

For the T4240 rev. 1 QDS in particular, please note that the Reset Configuration Word cannot be fetched from NOR flash. This is a hardware limitation.

The factory FPGA image shipped with T4240 Proto3 boards is incompatible with CodeWarrior (ENGR00234909). Symptoms of the incompatibility include:

- A faulted core immediately after reset
- Inability to stop the platform immediately after reset
- Stepping failures immediately after reset
- Inability to use the Flash Programmer

Proto4 boards do not exhibit any of these issues. Proto3 users are advised to upgrade the FPGA image to a version later than T4240QDS_1011_1755_release.

Secure Debug (P4080)

If you provide a wrong key and an unlock sequence is run by the debugger with the erroneous key, the associated part will be locked permanently and you will need to reset the target to connect again.

Stepping limitations in low-power states on P4080

The Doze and Nap core states are reported by CW while target is in one of the two power management states. When resuming (either run or step) the core will get back in the same state. While the debugger is able to detect and display the low-power state of the target even if running, it is not recommended to use step operation while being in any of these two states. Please note that on P4080 Rev 1 low power states don't work reliably.

E500v2 ISS simulator limitations

[e500v2 ISS] Execute reset option is not supported on e500v2 ISS simulator [MTWX42060]

Debugger compatibility with TightVNC

* Debugger fails to start in Linux machine if Tight VNC is running. You can workaround this problem by downloading rgb.txt from http://cvsweb.xfree86.org/cvsweb/xc/programs/rgb/rgb.txt and copying it to /etc/X11/rgb.txt.

Additional information here: https://lists.ubuntu.com/archives/ubuntu-uk/2007-April/004337.html.

Hypervisor Guest Application Debug

The download scenario for SMP/AMP guest Linux kernels is not supported [189274]. For debugging guest Linux kernels from entry point use an Attach Launch Configuration to attach to the target, set a HW breakpoint at 0x0 and then restart the partition.

Debug over Aurora

The GigabitTAP probe can be reliably used with CodeWarrior in the following scenarios:

- Run control over the JTAG interface
- Trace extraction over JTAG interface
- Trace extraction over Aurora interface

Although partially functional on B4860 targets, debugging over Aurora interface has known stability issues and is therefore not supported.

Import Elf Wizard Limitations

A dtb file cannot be imported within the wizard and the user has to do this from GUI. Also SMP cores cannot be selected.

P2041RDB Kernel Debug:

When executing Kernel Attach to a running u-boot after already ran Linux Kernel on the board and executed a soft reset, CW shows that Linux Kernel is running on target instead of displaying a warning which states that a different executable is executed on target.

Workaround:

I. Run a hard reset.

II. Configure u-boot to initialize the DDR with DEADBEAF.
1. Append P2041RDB:ECC_INIT_VIA_DDRCONTROLLER,MEM_INIT_VALUE to the line corresponding to P2041 board
from build_p2041rdb_release/tmp/work/p2041rdb-fsl-linux/u-boot-git-r27/git/boards.cfg
The line must look like this:
P2041RDB powerpc mpc85xx p2041rdb freescale - P2041RDB:ECC_INIT_VIA_DDRCONTROLLER,MEM_INIT_VALUE
2. Compile the u-boot: bitbake -c compile u-boot -f
3. Run: bitbake u-boot. The new u-boot image will be located in build_p2041rdb_release/tmp/deploy/images.

4.3 Software Analysis

4.3.1 General Limitations

Trace collection over Aurora is not functional yet for B4420. Work is in progress to figure out the root cause for the failure of collection. An initialization issue is suspected.

Performance Analysis is not yet available for T104x.

P2040/P2041 Aurora Trace Collection

Currently due to an issue while training Aurora probe the collection of trace over Aurora does not work for P2040/P2041 without a workaround.

Following steps must be taken to train correctly the Aurora probe and be able to collect the trace:

1. Start a debug session using JTAG and select the train_aurora.tcl init file in the connection settings. Make sure that you select the correct jtag config file.
2. After the board stops at the start of main file, open the **Debugger Shell** window by selecting **Window > Show View > Debugger Shell**, and run the following command (similar to the reset_to_user command run from CCS console: protocol ccs::reset_to_user
3. Reset the probe from telnet and wait for the CCS connection to re-establish.
4. Terminate the current session from CodeWarrior and debug again.

Complete description of the Aurora training sequence for P2040/P2041 is available in **Tracing and Analysis Tools User** chapter *2.4 Preparing Aurora Interface for Collecting Aurora Nexus Trace.*

4.4 B4/T4 Instruction Set Simulators

4.4.1 General Limitations

Following limitations are currently known:

1. B4860ISS: LAW configuration can be done only via configuration file, at initialization time, not at runtime
2. B4860ISS: The PA side is implemented but not fully verified.
3. T4240ISS is supported currently only in Linux64
4. The Linux images were not updated to the latest available by Freescale
5. B4860 SoC reset - not supported, need to restart the simulation

   ENGR00237053 - [SC10.4.4] B4860ISS cores are not able to restart separately in multicore debug scenario
6. B4860 e6500 core reset - not supported
7. T4240 hardware breakpoints not supported (ENGR00232437)
8. Watchpoints issues with the CW for PA:

   MTWX52001 - [B4860ISS/e6500] Watchpoints with Read or Read/Write attributes don't trigger

   MTWX52700 - [B4860ISS] Only watchpoints of thread#1 are hit in a multicore scenario

   MTWX52836 - [B4860ISS] Watchpoints on float variables are not hit
9. Other known issues:

   ENGR00236321 [Multicore] crcpe test on multi-core fail

ENGR00274258 [SDOS Use Cases] [multicore, iterations=1, debug/release] maple_eTVPE demos get stuck

5 System Requirements

Hardware

- *Windows® OS*: Intel® Pentium® 4 processor, 2 GHz or faster, Intel® Xeon™, Intel® Core™, AMD Athlon™ 64, AMD Opteron™, or later
- *Linux® OS*: 1.8 GHz Intel® Pentium® class processor (or better)
- At least 2 GB of RAM.
- At least 3 GB of free disk space.
- Free USB port for use with installation media.
- Internet connectivity for web downloads and update access.

Operating Systems

Ubuntu 13.10/64 bit support was newly added in this release.

Windows			
Host OS	**SP Level**	**32-bit**	**64-bit**
Windows 7	SP1	x	x
Windows Vista	SP2	x	x
Windows XP	SP3	x	x
Windows 8		x	x

Linux			
Host OS	**Version**	**32-bit**	**64-bit**
RedHat Enterprise Linux	5.4	x	x
Ubuntu	13.10		x
Ubuntu	12.04	x	x
Ubuntu	11.04		x
Ubuntu	10.10	x	x
Ubuntu	10.04		x
SuSE 11 Server	11	x	
Fedora	18		x
RedHat Enterprise Linux	6.3		x
OpenSUSE 12.3	12.3		x
Debian 7.1	7.1		X

Note: Some other Linux distributions may be used, but would require some manual identification and installation of the missing, required libraries.

6 Errata

As this is an internal release the complete list of known issues is available along with the complete list of issues fixed in this release.

6.1 Issues fixed in this release

ID	Component	Headline
ENGR00282877	CCS	CCS is not support Lock cache for L3 cache Bank 2
ENGR00276877	CCS	B4860 QDS rev2 L3 bank 1 - Lock/Unlock is not working
ENGR00266060	PA-DEBUGGER	CW crash - intermitent on a particular setup on one machine only.
ENGR00284107	PA-DEBUGGER	[B4460QDS][B4860QDS][REV2][Kernel] At some point CW might crash when selecting bp break point windows after remove module
ENGR00234410	PA-DEBUGGER	The ROM target hanged in SPI flash in the usr_init1 function

Note: In the above listing are only the exceptions from the previous release. Real number of defects fixed is considerably higher.

6.2 Known Issues For This Release

ID	Component	Headline	Details/Workaround
ENGR00274128	CCS	B4 full RCW override is not working	RCW can be written in the flash.
ENGR00316804	DEBUGGER-CORE-ECLIPSE	[Linux App debug][Exec project] Error when adding global variable.	No workaround.
ENGR00300406	PA-DEBUGGER	[PA 10.3.4][T4240QDS][L2Cache] Debugger shown data of L2 Kibo caches of all clusters are as well as data of the cluster that Debug view is foscusing	A cluster can be disabled if a core for that cluster is selected and the disable operation is performed. In debug view selection of the current core has to be done to be able to perform the operation.
ENGR00291107	PA-DEBUGGER	[PA10.3.3][T4240QDS rev 2]Error after debug SMP several times	Workaround is to restart CodeWarrior.
ENGR00321938	PA-DOCS	[PA10.4.0]Help system can not display some webpages	Issue is not always present but in case it shows up the workaround is to open the link into a new window.
ENGR00303713	PA-SA	[PA 10.4.0][GUI] Exclude Symbols tab is empty in Ubuntu	Issue only on Ubuntu. No workaround available.