
RTA-OS TriCore/WindRiver

Release Note - Version 5.0.7 (29-04-2022)

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Contents

1	Introduction	5
1.1	Version Information	5
1.2	Installation	5
2	Open EHI Calls	6
3	Change History	7
3.1	Version 5.0.7	7
3.2	Version 5.0.6	7
3.3	Version 5.0.5 (Preview Release)	7
3.4	Version 5.0.4	8
3.5	Version 5.0.3	8
3.6	Version 5.0.2	9
3.7	Version 5.0.1 (Preview Release)	9
3.8	Version 5.0.0	10
3.9	Version 0.0.3	10
3.10	Version 0.0.2	11
3.11	Version 0.0.1	11
4	Fixed EHI Calls	13
4.1	Version 5.0.6	13
4.2	Version 5.0.4	13
4.3	Version 5.0.3	14
4.4	Version 5.0.1 (Preview Release)	14
5	Limitations	15
5.1	Installer	15
5.2	TriCoreWR DLL	15
6	Contacting ETAS	16
6.1	Technical Support	16
6.2	General Enquiries	16
6.2.1	ETAS Global Headquarters	16
6.2.2	ETAS Local Sales & Support Offices	16

1 Introduction

RTA-OS is an AUTOSAR compliant Operating System and associated tooling. This document provides release information for the RTA-OS TriCore/WindRiver port plug-in that customizes the RTA-OS development tools for the Infineon TriCore with the WR compiler. It supplements the more general information you can find in the *Release Note*.

1.1 Version Information

This is Version 5.0.7 of the RTA-OS TriCore/WindRiver plug-in.

1.2 Installation

The installation process is covered in detail in the *TriCoreWR Port Guide*.

2 **Open EHI Calls**

Open issues are referred to by their call number in the ETAS Helpdesk International (EHI) system.

No EHI calls are open.

3 Change History

3.1 Version 5.0.7

Additional Features

The following features have been added to this release:

- Added target option 'Use Short Enums'.
- Supports fast compilation by default. Can be disabled using target option 'No fast compile'.

Modified Features

The following features have been modified in this release:

- Adjusted code so that tcasm.h can be included at the same time as Os.h

Removed Features

No features have been removed from this release.

3.2 Version 5.0.6

Additional Features

No features have been added to this release.

Modified Features

No features have been modified in this release.

Removed Features

No features have been removed from this release.

3.3 Version 5.0.5 (Preview Release)

Additional Features

The following features have been added to this release:

- Added support for the 5.9.6.7 compiler
- Added TC33x variant based on data sheets, and not tested on real hardware.
- Added TC33xEXT variant based on data sheets, and not tested on real hardware.
- Added TC3Ex variant based on data sheets, and not tested on real hardware.
- Support up to 3 PSW.PRS bits in the 'Trusted with protection PRS' target option.

Modified Features

The following features have been modified in this release:

- Updated TC35x, TC36x, TC37x, TC38x, TC39xB variants from new chip information.
- Some MemMap section names adjusted for better AUTOSAR compliance.
- The CAT1_ISR macro has been modified slightly to fit Os namespace rules.

Removed Features

No features have been removed from this release.

3.4 Version 5.0.4

Additional Features

The following features have been added to this release:

- Added support for the 5.9.6.6 compiler
- Added support for TC35x.
- Added support for TC36x.
- Added support for TC37x.
- Adds support for the InterruptSource APIs added in RTA-OS 5.6.0

Modified Features

The following features have been modified in this release:

- Updated chip descriptions for TC38x, TC39xB.

Removed Features

No features have been removed from this release.

3.5 Version 5.0.3

Additional Features

The following features have been added to this release:

- The compile option `-Xwhole-program-optim=0` has been added when building the RTA-OS library. (Replaces use of `-Xlto-group=0`.) Due to the huge number of potential RTA-OS codebases that can be generated, it is not possible to test the effects of whole-program-optimization on all of them. Therefore, we take the approach of excluding the RTA-OS library.

Modified Features

No features have been modified in this release.

Removed Features

No features have been removed from this release.

3.6 Version 5.0.2

Additional Features

The following features have been added to this release:

- Added support for TC21x.
- Added support for TC36x.

Modified Features

The following features have been modified in this release:

- TC22x has now been tested on real hardware.
- The compile option `-Xlto-group=0` is used when building the RTA-OS library. Due to the huge number of potential RTA-OS codebases that can be generated, it is not possible to test the effects of whole-program-optimization on all of them. Therefore, we take the approach of excluding the RTA-OS library.

Removed Features

No features have been removed from this release.

3.7 Version 5.0.1 (Preview Release)

Additional Features

The following features have been added to this release:

- Added support for the 5.9.6.2 compiler
- Preliminary support for TC22x based on early data sheets, and not tested on real hardware.
- Added support for TC38x (AA step), based on preliminary datasheets only.
- Added support for TC39x (A step)
- The compile option `-Xlto-group 'RTAOS'` has been added for building the OS kernel. Note that the WR whole-program-optimization mechanism should not be applied to this group because it may affect sensitive code in a way that ETAS can not predict.

Modified Features

No features have been modified in this release.

Removed Features

The following features have been removed from this release:

- Removed support for TC2Dx chip

3.8 Version 5.0.0

Additional Features

The following features have been added to this release:

- Supports 'Enable stack repositioning' option
- Support winIDEA signalling
- Add target option to emit ORTI according to the ORTI_SMP_Proposal_v4.pdf (multi-core only).
- Add target option to set the minimum structure alignment.
- The target option 'ORTI/winIDEA' has been added to support generating ORTI that is compatible with the winIDEA debugger.
- The target option 'Support winIDEA Analyzer' has been added to support the winIDEA debugger Analyzer features.
- The target option 'ORTI Stack Fill' has been added to support debugger calculation of application stack usage using the ORTI details.

Modified Features

The following features have been modified in this release:

- Switch to using 5.9.4.6 compiler. Do not use earlier 5.9.4.x versions because they have bugs that might mean that the OS will not compile.

Removed Features

No features have been removed from this release.

3.9 Version 0.0.3

Additional Features

The following features have been added to this release:

- Tested on Aurix devices and TC1387.
- Synchronized with other RTA TriCore ports.

Modified Features

The following features have been modified in this release:

- Switch to using 5.9.4.4 compiler.
- Updates compiler options.

Removed Features

No features have been removed from this release.

3.10 Version 0.0.2

Additional Features

The following features have been added to this release:

- A target option has been added to add extra security checks to the syscall(0) trap handler to validate that the caller is the OS. Use `'-target_option:Guard supervisor access=true'`
- Information about unhandled traps can be obtained by calling the new `Os_GetTrapInfo()` API from `ProtectionHook`.
- The new target option `'Interrupt vector matches priority'` can be used to override the default `SRC.SRPN` allocation strategy for interrupts. When this is `'true'`, `SRC.SRPN` values match the declared interrupt priority.

Modified Features

The following features have been modified in this release:

- Switch to using 5.9.4.0 compiler.
- The OS only intercepts the System Call Trap Handler if it is called with `TIN=0`. Otherwise it processes it like the other traps.

Removed Features

No features have been removed from this release.

3.11 Version 0.0.1

Additional Features

The following features have been added to this release:

- Initial implementation from preliminary requirements, using 5.9.3.2 compiler with workarounds.

Modified Features

No features have been modified in this release.

Removed Features

No features have been removed from this release.

4 Fixed EHI Calls

Bugs that have been fixed are referred to by their call number in the ETAS Helpdesk International (EHI) system.

4.1 Version 5.0.6

EHI 636284

Status: Fixed

Title: Possible data write reordering involving spinlocks and data updates.

Description: Infineon have released application hint CPU_TC.H019 in the Errata Sheet for the TC39x that suggests that reordering of data writes can occur in configurations where 2 data items are located in different memory modules. There is a small possibility that this could affect data protected by OS spinlocks. The effect would be that the data being protected by the spinlock might appear to change immediately after the spinlock release, rather than before. A core could therefore read stale data. This has the potential to affect any TC2xx or TC3xx part. To remove this risk, the OS spinlock release code now has an extra dsync instruction in a position recommended in CPU_TC.H019.

4.2 Version 5.0.4

EHI 596515

Status: Fixed

Title: Compile error with untrusted code where the System Trap is overridden by user code

Description: There was a fault in the code generation of Os_Traps.s that would cause a compilation error if the System Trap handler was being overridden by an application handler AND there was untrusted code in the configuration.

EHI 603382

Status: Fixed

Title: Invalid code in NMI vector

Description: The code generated for the Os_syscall_trap was more than 32 bytes long if there was untrusted code and the target option 'Guard supervisor access' was true. The code overflowed into the space in the vector table where the NMI handler should sit, preventing NMIs from being handled.

4.3 Version 5.0.3

EHI 578823

Status: Fixed

Title: -Xwhole-program-optim=0 should be used to exclude WPO

Description: Previously -Xlto-group=0 was used for OS code. This did not fully disable WPO for the OS code.

4.4 Version 5.0.1 (Preview Release)

EHI 498312

Status: Fixed

Title: Change to disabling of interrupts

Description: The macros in Os_DisableInterrupts.h that disable interrupt sources now manipulate the SRE bit instead of changing the interrupt priority.

EHI 547677

Status: Fixed

Title: Library name change when using "Optimize for size" option

Description: The name of the generated OS library was RTAOS, rather than RTAOS.a if the "Optimize for size" target option was set to either "true" or "false". When the option was omitted (defaulting to "true"), the correct name was used.

5 Limitations

5.1 Installer

There are the following limitations for the installer:

Limitation	None.
Workaround	None.

5.2 TriCoreWR DLL

There are the following limitations for this tool:

Limitation	None.
Workaround	None.

6 Contacting ETAS

6.1 Technical Support

Technical support is available to all users with a valid support contract. If you do not have a valid support contract, please contact your regional sales office (see below).

The best way to get technical support is by email. Any problems or questions about the use of the product should be sent to:

rta.hotline@etas.com

If you prefer to discuss your problem with the technical support team, you call the support hotline on:

+44 (0)1904 562624.

The hotline is available during normal office hours (0900-1730 GMT/BST).

In either case, it is helpful if you can provide technical support with the following information:

- Your support contract number
- The version of the ETAS tools you are using
- The version of the compiler tool chain you are using
- The command line (or reproduction of steps) that result in an error message
- The error messages or return codes you received (if any)
- Your .xml, .arxml and .rtaos files
- The file Diagnostic.dmp if it was generated

6.2 General Enquiries

6.2.1 ETAS Global Headquarters

ETAS GmbH

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6.2.2 ETAS Local Sales & Support Offices

Contact details for your local sales office and local technical support team (where available) can be found on the ETAS web site:

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