**IntervalZero**

# Product Release Notice

# RTX64 3.0

## General Availability Release Date

September 9, 2016

## Product Overview

RTX64 3.0 is the latest 64-bit version of IntervalZero's market-leading hard real-time software products. This release provides a number of new features, usability improvements and resolved issues. RTX64 3.0 can be downloaded here.

## Release Highlights

- Support for the Windows 10 operating system. (4598)
- Tracealyzer for RTX64 - a diagnostics tool from Percepio for viewing monitoring session data. (4692)

## Features and Resolved Issues

RTX64 3.0 includes new functionality and resolves a number of previously reported issues. See the product Release Notes for a full list of new features and resolved issues.

### Activation and Configuration

- Adds user notification pop-ups when an IntervalZero-provided dongle is plugged in and is available for use. (4599)
- Resolves an issue regarding the RTX64 licensing system not starting on RAID systems, which prohibits the Subsystem from starting. (4629)
- Resolves an issue that occurs when a dongle was not plugged in at system start. (4642)
- Resolves a timeout issue that causes the RTX64 Activation and Configuration utility to report the error message *Read error from network*. (4838)

- Resolves an issue that causes the RTX64 Activation and Configuration utility not to run unless Visual Studio was installed. (4492)
- Resolves an issue regarding a license erroneously being reported as expired, when its corresponding dongle was disconnected from the machine. (4625)

## Subsystem

- Resolves an issue regarding the Subsystem not starting on hardware that has more than 64 MSIX message entries. (4731, 4593)
- Resolves an issue regarding RtMapMemory not being able to map to the upper memory area in an executable (.EXE) file. (4562)
- Resolves a significant time difference between the results of GetSystemTimeAsFileTime and RtGetRtssTimeAsFileTime. (4710)
- Resolves an issue regarding multiple LoadLibrary calls from a RTSS application to multiple RTDLLs with identical names but different paths always loading the first RTDLL. (4249)
- Resolves an issue regarding RemoveDirectory returning an incorrect value when the directory was empty. (4218)
- Resolves an issue regarding a program's main function parameters *argc* and *argv* being off by 8 bytes when a project was built without Microsoft C Runtime support. (3589)

## Tools and Utilities

- New Monitoring features and resolved issues:
    - Improves monitor event MonitorEventSemaphoreRelease to include the handle of the semaphore. (4314)
    - Improves monitor events MonitorEventWFSOReturned and MonitorEventWFMOReturned to return a pointer to the objects they act upon. (4315)
    - Expands monitor events to include handles for Release events. (4312)
    - Improves Critical Section monitor events to include the mutex handle of the critical section object. (4701)
    - Adds new monitor events to determine when resource requests are made to Windows. (4904, 4432)
    - Resolves an issue regarding monitor event WFMOEX_RETURN not being generated when RtWaitForMultipleObjects returns without blocking. (4901)
    - Resolves an issue regarding monitor events that result from calls to SetThreadAffinityMask or RtSetProcessAffinityMask not being parsed correctly. (4890)

- o Resolves an issue regarding the incorrect reference count of a Subsystem event object in monitor event HANDLE_CLOSE. (4896)
  - o Resolves an issue regarding monitoring erroneously generating PROCESS_CREATE events on the Windows core. (4893)
  - o Resolves an issue regarding some proxy Thread Create events showing the spawned Thread ID (TID) as 0 (zero). (4138)
  - o Resolves an issue where some Thread Create events have a *Handle* field value of 0 (zero). (4694)
- Improves the Latency View tool to allow each graph view to be scaled independently and to log the duration of the test run. (4414, 1668, 3548)
- Resolves an issue regarding RtssRun not accepting arguments that contain spaces. (4276)
- Resolves an issue regarding error dialogs appearing behind the main visible window. (4586)
- Resolves this issues with RTX64 Analyzer:
  - o Resolves an issue regarding output not being displayed correctly in Notepad. (4804)
  - o Resolves several issues with how Analyzer displays licensing information. (4664)
- Resolves these issues with the Control Panel:
  - o Resolves an issue regarding attempts to delete an interface via the Control Panel failing with an error message that the RT-TCP/IP Stack was not licensed. (4762)
  - o Resolves an issue regarding the Control Panel not always displaying the correct start/stop status of the RT-TCP/IP Stack. (4506)
  - o Resolves an issue regarding search path folder names not expanding beyond the RTX64_MAX_PATH character limit when the folder name was entered via copy/paste instead of being typed. (4311)

## RT-TCP/IP Stack and Drivers

- Adds support for the RTX64 RtI10GB driver, which was developed for the Intel x540 10Gb/s network adapter (0x1528) but includes untested support for several other Intel network adapters in the same family. (4567)
- Incorporates the RtBCM driver, which was previously released as a standalone. (4566)
- Adds support for the Intel I210 Flash-less Copper-only Ethernet Controller (device ID 0x157B) to the RtIGB driver. (4531)
- Adds support for the Intel PRO/1000 PF Dual Port Server Adapter (device ID 0x105F) to the RtE1000 driver. (4880)
- Resolves an issue regarding link status not working with the Intel CT card (82574) in the RtE1000 driver in MSI-X mode. (4684)

- Resolves an issue regarding memory misaligned in the RtRtl8168 driver. (4415, 4682)
- Resolves performance issues that occur when socket applications are run on gigabit connections and on different cores. (4663)
- Resolves an issue regarding RTX64 accepting Requested IRQ interrupt values that contained non-numeric characters. (4383)
- Resolves an issue regarding the RTX64 Virtual Network failing to retrieve the receive buffer. (4594)
- Resolves an issue regarding the RTX64 Virtual Network interface losing packets in some scenarios. (4585)
- Resolves a logic error in the function RtEnumPciCards which causes the RT-TCP/IP Stack to not recognize some installed Network Interface Cards (NICs). This issue appears when NICs are installed in PCI locations that had a non-sequential PCI function number. (4355)

## SDK

- Adds custom error codes that can be returned by Real-Time APIs. (4601, 4459)
- Adds a new Real-Time function RtGetModuleFileNameEx, which retrieves the fully-qualified path for the file that contains the specified module. (4470)
- Adds new Real-Time API functions for setting and retrieving the frequency of the flushing of a RTSS processor's TLB cache. By default, a processor's TLB cache is flushed when the processor is idle. (4690)
- Adds new Real-Time API functions for setting and retrieving the time quantum value for a specified thread in microseconds. (4714)
- Adds a new Real-Time API function, RtEnumProcessEx, which retrieves the process identifier for each RTSS process object using data specified by new structure RTPROCESS_INFORMATION. (4775)
- Adds support for the Windows-supported API function GetModuleHandleEx, which retrieves a module handle for the specified module in a specified process. (3176)
- Adds support for these C-Runtime functions _beginthread, _endthread, _beginthreadex, and _endthreadex. (4541)
- Adds new RTK API functions that verify whether a specified RTX64 Runtime or RT-TCP/IP Stack version is installed and licensed. (4660)
- Adds new API functions that return whether the provided RTSS application binary can be run, which means it has been built to run with the provided license feature and that there is a valid license for the feature on the system. (4643)
- Adds new API functions that return the version of the installed RTX64 Runtime. (3151)

- Resolves performance issues with the Real-Time Network Driver function RtndRequest and RtndFrameTransmit. (4377, 4688)
- Adds support for the IPPROTO_TCP socket option TCP_MAXRT, which controls the retransmission timeout for a TCP socket. (5058)
- Resolves an issue with RtSetThreadPriority which prevents the thread priority of a given thread from being decreased for as long as it owns a mutex. (4418)
- Resolves an issue regarding the function RtSetClockTime always returning FALSE, even when the function succeeds. (4479)
- Resolves an issue regarding an access violation occurring when function RtAllocateContiguousMemory fails. (4508)
- Resolves an issue regarding ReadFile returning an incorrect number of bytes transferred. (4964)
- Adds the ability to configure the RTX64 Server from a managed code application.
- Expands functionality for monitoring from within a managed code application.
- Resolves a race condition with the Managed Code function RTTimerCallback, where the timer being canceled and then reset in quick succession causes the timer thread to run once and never continue. (4364)
- Resolves an issue regarding some Managed Code classes assuming pointers to be 32 bits, which causes exceptions in user applications. (4720, 4403)
- Resolves an issue regarding the exit status of a process created by RTProcess.Start() to always be zero, even when the application was explicitly set to exit with a non-zero value. (4349)

## Application Development

- Integrates in the standalone Visual Studio 2015 build and debug support. (4844, 4530)
- Resolves an issue where the Visual Studio 2015 Debugging Modules window did not display implicit DLLs linked to explicitly-loaded DLLs. (4699)
- Resolves an issue regarding C Runtime error R6016 appearing when ntop calls were executed in a CreateThread routine. (4439)
- Resolves an issue regarding the RtCreateTimer and RtCreateProcess Visual Studio snippet not building in a C++ project. (4456, 4454)
- Resolves an issue regarding C++ RTDLL projects built with the RTX64 RTDLL template in Visual Studio 2015 not building successfully if the *Microsoft C Runtime support* option was not selected. (4387)

## Installation

- Adds a Start Menu entry and Welcome screen link that opens the location of the installed Samples source. (3579, 4564)
- Resolves an issue regarding a Blue Screen occurring during installation of RTX64 when a standard dongle was connected to the machine. (4595)
- Resolves an issue regarding WIX installations failing when incorporating the RTX64 Runtime merge modules. (4436)
- Adds logic to the RTX64 installer to detect whether the supported version of Windows 8.1 with Update is installed on the system, and to display the appropriate error when the supported version is not installed. (4485)

# Activation & Licensing

The IntervalZero product licensing system allows for flexibility in how features are activated and deployed. Please click here for an overview of IntervalZero product licensing.

For additional information on deployment, please refer to the *RTX64 Deployment Guide*.

# Availability

RTX64 3.0 is available beginning September 9, 2016 through Partners and by contacting Sales: sales@intervalzero.com or (781) 996-4481.

We look forward to any comments and feedback. If you have any recommendations, or wish to suggest any product enhancements, please contact Product Management at: productmanagement@intervalzero.com.