

# Product Comparison

USER GUIDE

**IntervalZero**

**MaxRT**  
wRTOS

Product Comparison User Guide

IZ-DOC-MaxRT-wRTOS-0008

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## **IntervalZero**

200 Fifth Avenue, FL 6, STE 6020

Waltham, MA 02451

Phone: 781-996-4481

[www.intervalzero.com](http://www.intervalzero.com)

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# About this Guide

This guide compares MaxRT wRTOS<sup>®</sup> 1.0 with RTX64 4.5 and RTX 2016 and highlights the major differences between them. It also contains information on default program setup and functionality.

**IMPORTANT:** RTX is no longer supported as of March 2021.

# 1

## Functionality

This chapter describes functionality similarities and differences between MaxRT wRTOS (64-bit), RTX64 (64-bit), and RTX (32-bit).

### Operating System Support for Runtime

Feature	wRTOS 1.0	RTX64 4.5	RTX 2016
Windows 11	Yes  See the <a href="#">Support for Windows 11 Updates</a> web page for the latest supported Windows 11 Updates.	Yes  See the <a href="#">Support for Windows 11 Updates</a> web page for the latest supported Windows 11 Updates.	No
Windows 10	Yes  See the <a href="#">Support for Windows 10 Updates</a> web page for the latest supported Windows 10 Updates.	Yes  See the <a href="#">Support for Windows 10 Updates</a> web page for the latest supported Windows 10 Updates.	No

# Microsoft Visual Studio Support

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Visual Studio 2022	Yes	Yes (4.3 and later)	No
Visual Studio 2019	Yes	Yes (3.7 and later)	No
Visual Studio 2017	Yes	Yes (UP8)	No
Visual Studio 2015	No	Yes	Yes (UP1)
Visual Studio 2013	No	No	No
		Existing projects should work. You cannot create new projects or debug projects.	Existing projects should work. You cannot create new projects or debug projects.

# Microsoft C Runtime Support

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Visual Studio 2022	Yes	Yes (4.3 and later)	No

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Visual Studio 2019	Yes	Yes (3.7 and later)  See the latest RTX64 SDK Release Notes for information on known issues with the latest Visual Studio 2019 version.	No
Visual Studio 2017	Yes	Yes	No
Visual Studio 2015	No	No	Yes
Visual Studio 2013	No	No	Yes (UP1)

## Microsoft User Group Support

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Users	Yes	Yes	Yes
Administrators	Yes	Yes	Yes

# Device Support

Feature	wRTOS 1.0	RTX64 4.5	RTX 2016
ISA-based Device Support	No	No	Yes
PCI-based Device Support	Yes	Yes	Yes
	wRTOS supports Line-based, MSI, and multiple vector interrupts for MSI-X.	RTX64 supports Line-based, MSI, and multiple vector interrupts for MSI-X.	RTX supports Line-based and MSI only.

# Real-Time Subsystem

Feature	wRTOS 1.0	RTX64 4.5	RTX 2016
Shared Mode	No	No	No
Dedicated Mode	Yes (64 total, 63 maximum RTSS processors)	Yes (64 total, 63 maximum RTSS processors)	Yes (32 total, 31 maximum RTSS processors)  You can assign a maximum of 4 processors to Windows on clustered systems.

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Thread Priority Levels	128	128	128
Available priorities are 0 to 127.			
RTSS DLLs	No	No	Yes
RTDLLs	Yes (explicit and implicit)  In wRTOS, RTDLLs are private data.	Yes (explicit and implicit)  In RTX64, RTDLLs are private data.	Yes (explicit)  In RTX, RTDLLs are public data.
Image Loader	RTSS	RTSS	Windows (RTSS for debugging)
Automatic Subsystem start	Yes  RTSS applications can be scheduled to start with the Subsystem using the Scheduled Tasks feature in the wRTOS Task Manager.	Yes  RTSS applications can be scheduled to start with the Subsystem using the Scheduled Tasks feature in the RTX64 Task Manager.	Yes

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Local Memory	Yes  Local memory is the only option in wRTOS.	Yes  Local memory was re-architected for RTX64 4.0. See the Help for more information.	Yes
Structured Exception Handling	Yes	Yes	Yes
MMX/SSE/SSE2/SSE3/SSE4/AVX/AMX support	Yes (AVX-512)	Yes (AVX-512)	Yes
Priority Inversion protection	Yes  wRTOS does not support limited demotion.	Yes  RTX64 does not support limited demotion.	Yes
Internal Tracing	Yes	Yes	Yes

Feature	wRTOS 1.0	RTX64 4.5	RTX 2016
Shutdown Handling	Yes  wRTOS implements shutdown handling differently from RTX. Handlers may not be called at the same point in the shutdown sequence as in RTX.	Yes  RTX64 implements shutdown handling differently from RTX. Handlers may not be called at the same point in the shutdown sequence as in RTX.	Yes
Starvation/Watchdog Timer	Yes  The wRTOS SDK includes a Real-time function <b>RtResetWatchdog</b> which resets the watchdog timer counter on the specified RTSS core(s).	Yes  The RTX64 SDK includes a Real-time function <b>RtResetWatchdog</b> which resets the watchdog timer counter on the specified RTSS core(s).	Yes
RTAPI support for Windows Native applications	Yes (32-bit and 64-bit)	Yes (32-bit and 64-bit)	Yes (32-bit)
RTAPI support for Windows Managed applications	Yes	Yes	Yes

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Real-Time Kernel (RTK) support	Yes	Yes	Yes
WinDbg Debugging support	Yes	Yes	Yes
	The wRTOS WinDbg Extension requires the 64-bit WinDbg version.	The RTX64 WinDbg Extension requires the 64-bit WinDbg version. RTX64 also has additional commands to provide loaded modules and other functionality.	The RTX WinDbg Extension requires the 32-bit version of WinDbg.
Performance optimization with Intel® Resource Director Technology (RDT)	Yes	Yes	No
	wRTOS provides a <i>Priority-based CLOS performance</i> mode for Cache Allocation Technology (CAT) and Memory Bandwidth Allocation (MBA), and the ability to disable the Intel RDT feature altogether.	RTX64 provides a <i>Priority-based CLOS performance</i> mode for Cache Allocation Technology (CAT) and Memory Bandwidth Allocation (MBA), and the ability to disable the Intel RDT feature altogether.	

# Network

Feature	wRTOS 1.0	RTX64 4.5	RTX 2016
TCP/IP Stack	<p>Yes (optional TCP/IP component by Treck)</p> <p>The TCP/IP Stack component requires the Network Link Layer (NL2) and the wRTOS Basic Networking product package.</p>	<p>Yes (Treck)</p> <p>The TCP/IP Stack requires the Network Abstraction Layer (NAL).</p>	Yes (Fusion)
SMP Aware	Yes	Yes	No
RAW Socket support	<p>Yes</p> <p>wRTOS uses socket options to create a RAW Socket.</p>	<p>Yes</p> <p>RTX64 uses socket options to create a RAW Socket.</p>	Yes
MAC layer Filter support through a common interface	Yes	Yes	Yes
Network Interface device support through a common interface	Yes	Yes	Yes

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Support for CANopen over EtherCAT and EtherCAT configuration	Yes (optional E-CAT component)  The E-CAT component requires the wRTOS Fieldbus product package.	No	No
Virtual IP	Yes (up to 12 addresses called multi-homing)  You can configure multiple IPv4 Address/Netmask pairings in wRTOS Settings	Yes (up to 12 addresses called multi-homing)  Support for multiple IPv4 Addresses and Netmasks for a single physical interface was added in RTX64 3.2.  You can configure multiple IPv4 Address/Netmask pairings in the RTX64 Control Panel on the <i>Manage Interfaces and Filters</i> page.	Yes (up to 32 addresses)
Virtual Network	Yes	Yes  The Virtual Network was re-architected in RTX64 4.0.	Yes

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Functionality for using GigE Vision Cameras within the real-time wRTOS environment	Yes (optional GigE Vision component)  The GigE Vision component requires the wRTOS GigE Vision and wRTOS Basic Networking product packages.	Yes (separate Vision add-on)	No

## Layer 2 Network Functionality

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Ethernet Layer 2 Interface	Yes (NL2 - Network Link Layer)	Yes (NAL - Network Abstraction Layer)	No
Access to NIC Timestamping	Yes	Yes	No
Access to NIC Queues	Yes	Yes	No
Layer 2 support for common INTEL IGB, 10GB, PCH, and E1000 NICs	Yes  See the <i>wRTOS Supported NICs</i> document, available from the Customer Center, for details.	Yes  See the <i>RTX64 Supported NICs</i> document, available from the Customer Center, for details.	No

# Network Drivers

Feature	wRTOS 1.0	RTX64 4.5	RTX 2016
Intel 2.5 Gigabit Ethernet Controller I225/I226	Yes (Rtndlgc)  The Rtndlgc driver supports a larger maximum packet size (9724) than the RtNallGC driver in RTX64.	Yes (RtNallGC)  This driver was incorporated in RTX64 4.3	No
10GB Network Driver	Yes (Rtndl10gb)	Yes (Rtl10GB)	No
Intel i210, i211, and i350	Yes (Rtndlgb)	Yes (RtlGB)	Yes - RtlGB Driver (RTX 2012 with Update 1)
Intel 82576	Yes (Rtndlpch)	Yes (Rt82579)  These NICs were moved into the RtNallPCH driver for RTX64 4.0	Yes - Rt82579
Intel 82580	Yes (Rtndlgb)	Yes (Rt82580)  These NICs were moved into the RtNallPCH driver for RTX64 4.0	Yes - Rt82580

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Intel 82540/1/2/3/4/5/6/7, 82571/2/3/4	No (End of life)	Yes (RTE1000)	Yes - RTE1000
Realtek Network Driver	Yes (RtndRtl)	Yes (RtNaIRtl)  This driver was incorporated in RTX64 4.4	No
Realtek 8168/8111	Yes (RtndRtl)	No	Yes (limited revisions only)
Intel 52557/8/9/0/1, 82559	No (End of life)	No	Yes
Rt82543 Network Driver	No (End of life)	No	Yes
Intel I217LM, I217V, I218LM, I218V	Yes (RtndIpch)	Yes (Rtl217)	No
Intel Peripheral Controller Hub (PCH) Driver	Yes (RtndIpch)	Yes  Full support was added in RTX64 3.2	No

NIC drivers in RTX64 4.0 and later belong to the Network Abstraction Layer (NAL), not the TCP/IP Stack.

For information on supported devices, see the product-specific Supported NICs documents available from the Customer Center.

# Tools and Utilities

Feature	wRTOS 1.0	RTX64 4.5	RTX 2016
Subsystem configuration	Yes (wRTOS Settings)	Yes (RTX64 Control Panel)	Yes (RTX Properties)
Analyzer	Yes  wRTOS Analyzer includes a dialog window that allows you to choose what to collect.	Yes  RTX64 Analyzer collects additional information than RTX Analyzer.	Yes
RtssRun	Yes  Command line only. User Interface functionality is provided through the wRTOS Task Manager.	Yes  Command line only. User Interface functionality is provided through the RTX64 Task Manager.	Yes
RtssKill	Yes  Command line only. User Interface functionality is provided through the wRTOS Task Manager.	Yes  Command line only. User Interface functionality is provided through the RTX64 Task Manager.	Yes

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
RtssView	No	No	Yes
Task Manager	Yes	Yes  RTX64 Task Manager was updated to include CPU usage information in RTX64 3.5 and support for Scheduled Tasks in RTX64 3.4.	Yes
System Tray  System Tray displays the current state of the Subsystem and provides links to tools through a right-click menu.	Yes	Yes	No
Server Console (displays print messages)	Yes	Yes	Yes
TCP/IP Utilities	Yes  RtArp, RtIpConfig, RtPing, RtRoute	Yes  RtssArp, RtsslPConfig, RtssPing, RtssRoute	Yes  RtssArp, RtsslPConfig, RtssPing, RtssRoute

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Activation and Configuration	Yes  Through wRTOS Settings or the <code>MaxRTActivationUtil.exe</code> command line utility (silent activation)	Yes  The RTX64 Activation and Configuration Utility contains more functionality than the RTX version, such as the option to disable licenses.	Yes
StampTool	Yes	Yes	Yes
Event Monitoring	Yes (wRTOS Monitor)	Yes (RTX64 Monitor)  Support for associating events with stop triggers was added in RTX64 4.3  Support for collecting pre-trigger events was added in RTX64 4.2	Yes (TimeView)
View debug and log messages generated during the execution of real-time applications	Yes (Message Viewer)	No	No

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Configure the EtherCAT devices (SubDevices) connected to the E-CAT MainDevice within an E-CAT component instance	Yes (E-CAT Configuration)	No	No
Import EtherCAT SubDevice Information (ESI) files for your EtherCAT hardware devices and save the ESI data into the E-CAT component database	Yes (E-CAT ESI Import)	No	No
Optimize Intel performance hybrid architecture	Yes (integrated wRTOSProcHybridInfo utility)	Yes (Standalone Processor HybridInfo utility)	No

## Developer Tools

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
View internal objects	Yes (command line tool)	Yes (command line tool)	Yes
System Response Time Measurement (SRTM)	Yes	Yes	Yes

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Kernel System Response Time Measurement (KSRTM)	Yes	Yes	Yes
Network Response Time Measurement (NRTM)	Yes	No	No
Visual Latency Tool	Yes (Latency View)	Yes (Latency View)	Yes (RTX Demo)
View CPU usage	Yes (via wRTOS Task Manager)	Yes (via RTX64 Task Manager)	Yes (RTSS Performance View)
Platform Evaluator	Yes (standalone tool that can be used with wRTOS)	Yes (standalone tool that can be used with RTX64)	Yes
Profiling	Yes (wRTOS Monitor)	Yes (Tracealyzer, RTX64 Monitor)  RTX64 4.3 includes support for creating stop triggers, which is not available in RTX.	Yes (RTX Time View)

# Visual Studio Developer Tools

Feature	wRTOS 1.0	RTX64 4.5	RTX 2016
Wizards/Templates for Creating Applications and RTDLLs	Yes	Yes	Yes
Code Snippets	Yes	Yes	Yes
Local Debugging	Yes	Yes	Yes
Remote Debugging	Yes	Yes	Yes
		RTX64 4.1 and later versions include Control Panel options for configuring Remote Debugging.	
Attach to Running RTSS Process	Yes	Yes	No
		Support for attaching the Visual Studio debugger to an RTSS process running on a remote system, outside of the Visual Studio IDE, was added in RTX64 4.1. All versions support local attach.	

<b>Feature</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Set main thread affinity	Yes	Yes	Yes
Set use local memory	Yes	Yes	Yes
	System memory is always used in wRTOS.		

# 2

## Default Subsystem Setup

### General System Settings

The table below compares default system settings.

Setting	wRTOS 1.0	RTX64 4.5	RTX 2016
RTX64 Subsystem startup	Manual  You must be a member of the <i>wRTOSAdministrators</i> group to start and stop the Subsystem.	Manual  You must be a member of the <i>RTX64Administrators</i> group to start and stop the Subsystem.	Manual
Process Slots	N/A  The concept of Process Slots does not exist in wRTOS.	N/A  The concept of Process Slots does not exist in RTX64.	10
HAL Timer Period	100 microseconds	100 microseconds	100 microseconds

<b>Setting</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Time Quantum	0 microseconds	0 microseconds	0 milliseconds
Threads will run to completion, or are preempted by a higher priority thread, or yield to another thread of the same priority.	wRTOS has microsecond granularity.	RTX64 has microsecond granularity.	
Shutdown print handling	N/A	<i>Deprecated</i>	HANDLE_PRINT_ALWAYS
Free stack on TerminateThread calls	Enabled	Disabled	Disabled
By default, the thread stack is not released upon thread termination.			
Delay full cache flush while RTSS applications are running	N/A	<i>Deprecated</i>	Enabled
Priority Inversion Protocol	Priority promotion with tiered demotion	Priority promotion with tiered demotion	Priority promotion with tiered demotion
	The concept of limited demotion is not applicable in wRTOS.	The concept of limited demotion is not applicable in RTX64.	

<b>Setting</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Trace/Monitor	Disabled on Subsystem startup	Disabled on Subsystem startup	Enabled on Subsystem startup

## TCP/IP Stack Settings

The table below compares default TCP/IP Stack settings.

<b>Setting</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Maximum Sockets	64	64	30  The limit was increased from 1024 (RTX64) to 32765.
Memory Allocation	2048 kilobytes	2048 kilobytes	256 kilobytes
Stack Timer Interval	100 milliseconds	100 milliseconds	200 milliseconds
MTU	1500 bytes	1500 bytes	1500 bytes
Stack Timer Execute Priority	60	60	N/A

# Real-Time Layer 2 Network Functionality

The table below compares layer 2 network support.

<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
<p data-bbox="88 479 420 511">Network Link Layer (NL2)</p> <p data-bbox="88 560 693 803">The Network Link Layer (NL2) software component provides real-time applications with abstract APIs to access network services at the Layer 2 of the OSI model, independent of the underlying hardware. This typically includes:</p> <ul data-bbox="126 852 588 1161" style="list-style-type: none"><li>• Transmit and receive raw Ethernet packets</li><li>• Configure and get the link status</li><li>• Configure hardware timestamping</li><li>• Configure hardware filters</li><li>• Configure QoS</li></ul> <p data-bbox="88 1209 693 1274">The NL2 is included with the wRTOS Runtime and does not require a separate license.</p>	<p data-bbox="693 479 1155 511">Network Abstraction Layer (NAL)</p> <p data-bbox="693 560 1344 852">The NAL is a network layer add-on that abstracts the network hardware and driver functions from the upper-level protocol stacks and provides management interfaces for those upper layers to easily query for and use available network assets. It is a separate protocol layer from the TCP/IP Stack.</p>	<p data-bbox="1344 479 1428 511">N/A</p>

# Debug Support

The table below compares default Debug settings.

Setting	wRTOS 1.0	RTX64 4.5	RTX 2016
Write Debug Information on System Failure	N/A  Information is always added to the Windows memory dump file.	<i>Deprecated</i>  Information is always added to the Windows memory dump file.	Enabled
Allow remote debugging connections on this computer	Disabled  See the <i>Remote Connections</i> page in wRTOS Settings.	Disabled  See the <i>Configure remote debugging</i> page in the RTX64 Control Panel.	N/A

# Memory Settings

The table below compares default memory settings.

- In RTX, local memory is a global pool.
- In RTX64, there are separate pools for the Subsystem, processes, TCP/IP Stack and Network Abstraction Layer (NAL).
- In wRTOS, there are separate pools for the Subsystem, processes, TCP/IP Stack and Network Link Layer (NL2).

<b>Setting</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Local Memory Pool - Pool size	4194296 bytes (Minimum size for MSpace)	4194296 bytes (Minimum size for MSpace)  Local Memory was re-architected for RTX64 4.0. See the Help for more information.	131072 bytes
Local Memory Pool - Automatically expand local memory pool	Enabled (Auto expand MSpaces)	Enabled (Auto expand MSpaces)  Local Memory was re-architected for RTX64 4.0. See the Help for more information.	Enabled
Local Memory Pool - Automatically shrink local memory pool	Enabled (Auto shrink MSpaces)	Enabled (Auto shrink MSpaces)  Local Memory was re-architected for RTX64 4.0. See the Help for more information.	N/A
Local Memory Pool - Expansion size	4194296 bytes	4194296 bytes  Local Memory was re-architected for RTX64 4.0. See the Help for more information.	65536 bytes

Setting	wRTOS 1.0	RTX64 4.5	RTX 2016
Allocation	Local memory is the only option in wRTOS.	Request from Local Memory  Local Memory was re-architected for RTX64 4.0. See the Help for more information.	Request from Windows

## Starvation Setup

The table below compares default Starvation settings.

Setting	wRTOS 1.0	RTX64 4.5	RTX 2016
Monitor for Windows starvation	Enabled (Timeout: 5000000 us)  This is known as <b>Watchdog Timeout</b> in wRTOS.	Enabled (Timeout: 5000000 us)  This is known as <b>Watchdog Timeout</b> in RTX64.	Disabled

# Exceptions Settings

The table below compares default Exceptions settings.

Setting	wRTOS 1.0	RTX64 4.5	RTX 2016
Process Exception Disposition	Terminate the faulting process	Terminate the faulting process	Terminate the faulting process
Structured Exception Handling	Enabled	Enabled	Enabled

In RTX, you can configure individual exception types.

# General Hardware Settings

The table below compares default Hardware settings.

**Note:** See the *MaxRT wRTOS Tested Processor Compatibility* document, available from the Customer Center, for details on compatibility between supported wRTOS versions and the system processors that were available for testing as part of the IntervalZero QA test lab.

Setting	wRTOS 1.0	RTX64 4.5	RTX 2016
SpeedStep®	Enable Windows idle detection (disabled)	Enable Windows idle detection (disabled)	Prevent Windows idle state
Windows Energy/Performance Bias	Override Windows	Override Windows	N/A
Optimize performance with Intel® Resource Director Technology (RDT)	<p>Enabled</p> <p><i>Cache Allocation Technology (CAT) default mode:</i></p> <ul style="list-style-type: none"> <li><i>Flat performance mode</i> – All RTSS logical processors are equally configured with all RTSS L3/L2 caches.</li> </ul> <p><i>Memory Bandwidth Allocation (MBA) default mode:</i></p> <ul style="list-style-type: none"> <li><i>Flat performance mode</i> – All RTSS cores are configured with minimum memory delay.</li> </ul> <p><b>Note:</b> This functionality is hardware dependent.</p>	<p>Enabled</p> <p><i>Cache Allocation Technology (CAT) default mode:</i></p> <ul style="list-style-type: none"> <li><i>Flat performance mode</i> – All RTSS logical processors are equally configured with all RTSS L3/L2 caches.</li> </ul> <p><i>Memory Bandwidth Allocation (MBA) default mode:</i></p> <ul style="list-style-type: none"> <li><i>Flat performance mode</i> – All RTSS cores are configured with minimum memory delay.</li> </ul> <p><b>Note:</b> This functionality is hardware dependent.</p>	N/A

# Console and Logging Settings

The table below lists the default Hardware settings.

<b>Setting</b>	<b>wRTOS 1.0</b>	<b>RTX64 4.5</b>	<b>RTX 2016</b>
Display real-time process output in console windows	Enabled	Enabled	N/A
Display a separate console window for each real-time process	Enabled	Enabled	N/A
Set the buffer size (lines)	1000	1000	N/A
Log real-time process output	Disabled	Disabled	N/A

# Support

For help with MaxRT wRTOS, contact IntervalZero Technical Support by phone or access the online support resources available at <https://www.intervalzero.com/en-support/en-customer-service/>

## Contacting Technical Support by Phone

**Note:** If you purchased an IntervalZero product through a third-party reseller, please contact the reseller for support.

Location	Number	Hours
United States	1-781-996-4481  At the prompt, press 3 for Support.	Monday - Friday, 8:30 a.m. – 5:30 p.m. US Eastern Time (GMT-500), excluding holidays.
R.O.C. Taiwan	+ 886-2-2556-8117	Monday - Friday, 9:00 a.m. – 5:00 p.m. Taipei Standard Time (GMT+8), excluding holidays.

## Before Calling Technical Support

Please have this information ready when you contact IntervalZero Technical Support:

- Your Support ID

Customers who purchase direct support receive an e-mail address and password for accessing the IntervalZero Customer Support Portal.

- Your MaxRT wRTOS version number

**Note:** You must have a valid maintenance contract to receive product support.

## Online Resources

Visit <https://www.intervalzero.com/en-support/en-customer-service/> to log in to the Customer Support Portal (valid credentials are required), access online product Help, and view Support and Lifecycle policies and Product Release Notices.

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