

# MaxRT wRTOS 1.0 SDK

**BETA**

INSTALLATION GUIDE

MaxRT wRTOS 1.0 SDK Installation Guide

BETA

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# Requirements

This chapter describes the MaxRT wRTOS Software Development Kit (SDK) system requirements.

**Note:** This SDK installation does not include wRTOS Runtime. To run RTSS applications, you must install the separate Runtime component. See the *wRTOS Runtime Installation Guide* for information on installing wRTOS Runtime.

## Software Requirements

This section lists software requirements for 1.0.

## Operating System Requirements

wRTOS SDK is supported on any 64-bit operating system.

**Note:** wRTOS SDK cannot be installed on a 32-bit operating system.

## Microsoft Visual Studio Requirements

One of these supported Microsoft Visual Studio versions must be installed to build or debug wRTOS programs with the Visual Studio IDE:

**Important:** The wRTOS SDK requires the **Desktop development with C++** Visual Studio workload to build projects and samples created with the wRTOS application templates. If this workload is not installed for Visual Studio version(s) on your system, you must manually install it using the appropriate Visual Studio installer file (`vs_<edition>.exe`). For example, `vs_professional.exe`. See [Appendix B: Installing Visual Studio Workloads](#).

- **Visual Studio 2022 LTSC**(Enterprise, Professional, and Community editions supported)

**Important:** wRTOS application templates require the Windows 10 SDK version 2004 (10.0.19041.0) or later, which is included in the **Desktop development with C++** Visual Studio 2022 workload.

- **Visual Studio 2019**(Enterprise, Professional, and Community editions supported)

**Important:** The wRTOS application templates require the Windows 10 SDK version 1903 (10.0.18362.x) or later, which is not included in the Visual Studio 2019 installation by default. You must manually select Windows 10 version 1903 (10.0.18362.x) or later during installation of Visual Studio 2019.

**Important:** The IntervalZero Real-Time Debugger component requires these Microsoft Visual C++ 2015-2019 Redistributables for Real-Time debugging to work with Visual Studio 2019:

- Microsoft Visual C++ 2015-2019 Redistributable (x64)-14.48.29910
- Microsoft Visual C++ 2015-2019 Redistributable (x86)-14.48.29910

These redistributables are packaged with the **MaxRT\_wRTOS\_1.0\_SDK\_Setup.exe** file.

Alternatively, you can download them from Microsoft at  
<https://visualstudio.microsoft.com/downloads/>

- **Visual Studio 2017**(Enterprise, Professional, and Community editions supported)

**Important:** The wRTOS application templates require the Windows 8.1 SDK, which is not included in the Visual Studio 2017 installation by default. You must manually select the Windows 8.1 SDK option during installation of Visual Studio 2017.

**Important:** The IntervalZero Real-Time Debugger component requires these Microsoft Visual C++ 2015-2019 Redistributables for Real-Time debugging to work with Visual Studio 2017:

- Microsoft Visual C++ 2015-2019 Redistributable (x64)-14.48.29910
- Microsoft Visual C++ 2015-2019 Redistributable (x86)-14.48.29910

These redistributables are packaged with the **MaxRT\_wRTOS\_1.0\_SDK\_Setup.exe** file.

Alternatively, you can download them from Microsoft at  
<https://visualstudio.microsoft.com/downloads/>

See the TechNote *Unable to Debug RTSS Applications using the IntervalZero Real-Time Debugger with Visual Studio 2017* on the Support Site for more information.

# WinDbg Extension Requirements

wRTOS WinDbg Extension requires the following:

- **Windows Driver Kit (WDK) - Debugging Tools for Windows (x64).** You can download WinDbg and related documentation from this website: <https://docs.microsoft.com/en-us/windows-hardware/drivers/debugger/debugger-download-tools>

**Note:** wRTOS supports 64-bit WinDbg version 6.11.001.404 and above.

## Microsoft .NET Support

wRTOS supports the following versions under .NET Standard 2.0:

.NET Implementation	Version Support
.NET and .NET Core	2.0, 2.1, 2.2, 3.0, 3.1, 5.0, 6.0, 7.0, 8.0
.NET Framework	4.6.2, 4.7, 4.7.1, 4.7.2, 4.8, 4.8.1

**Note:** wRTOS does not support implementations of .NET Standard 2.0 that involve multiplatform support.

**Note:** When building an application using .NET 6.0, you must provide `IntervalZero.MaxRT.wRTOS.Internal.dll` and `IntervalZero.MaxRT.wRTOS.MessageBus.dll` in the project. You can find these DLLs at `C:\Program Files\IntervalZero\MaxRT\wRTOS SDK\1.0\bin`

**Note:** When building an application using .NET Framework, you may need to provide `Microsoft.Win32.Registry.dll` in the project. This DLL can be found in the following directory:  
`C:\Program Files\IntervalZero\MaxRT\wRTOS SDK\1.0\bin`

## Administrator Privileges

Administrator privileges are required for installing and uninstalling the wRTOS SDK product.



# 2

## Installing

### Before You Begin

Before you begin the installation, do the following:

- Verify that your configuration meets the **requirements** described earlier in this document.
- Ensure that you have administrator privileges on the system.
- Install Microsoft Visual Studio (see **Software Requirements** for supported versions) if you plan to use supported features.

**Important:** A *Typical* installation of Visual Studio 2022, 2019, or 2017 does not include the Visual C++ programming language required by the wRTOS project wizard. If the Visual C++ feature is not installed, the wRTOS project wizard fails with an exception. You can add the Visual C++ feature to Visual Studio 2022/2019/2017 via Programs and Features in the Windows Control Panel.

- Exit all Windows programs, including any open instances of Visual Studio.

# Installation Instructions

**Note:** This installer will check for and install .NET 8.0 if it is not already on the system.

**Note:** wRTOS SDK can optionally install the VSIX packages for Visual Studio 2022, 2019, and 2017. The installation of these packages can take a considerable amount of time. See [VSIX Packages Installed with the wRTOS SDK](#) for more information.

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## To install wRTOS SDK:

1. Download the zip file `MaxRT_wRTOS_1.0_BETA_SDK_Setup.zip`.
2. Extract the contents of the zip file.
3. Double-click the self-extracting executable .
4. The MaxRT wRTOS SDK Installer Wizard appears. Click **Next** on the Welcome screen.
5. Read the End User License Agreement, select **I accept the terms of the license agreement** and then click **Next**.
6. On the Destination Folder screen, optionally browse for a different destination location or accept the default location: `C:\Program Files\IntervalZero\MaxRT\wRTOS SDK\1.0`. Click **Next** to continue.
7. On the Custom Setup screen, select the features and components you want to install. Clear selection of the features and components you don't want to install. Click **Next** to continue.
8. On the Ready to Install the Program screen, click **Install**.
9. Once wRTOS SDK has been successfully installed, click **Finish** to exit the Installer Wizard and open wRTOS Settings, where you can activate components and configure the RTSS core configuration. See [Product Activation](#). If you plan to also install wRTOS Runtime, you can skip this step and activate the SDK later when you activate the Runtime.

# Product Activation

MaxRT wRTOS SDK product must be activated with a valid license. You can activate your product components and lock them to a specific machine or IntervalZero-provided dongle.

If you choose to install the wRTOS Settings feature, which is selected to be installed by default, the wRTOS Settings Licensing and Activation page appears immediately after a successful program installation. If wRTOS Settings is not installed, you can use the `MaxRTActivationUtil.exe` command line utility to activate wRTOS SDK components.

**Note:** wRTOS 1.0 does not support standard dongles. Only small form factor dongles can be used.

You can activate your wRTOS product components to a specific machine or IntervalZero-provided dongle.

## Activating with wRTOS Settings

If you install the wRTOS Settings feature with wRTOS SDK, you can activate wRTOS components on the Licensing and Activation page. If wRTOS Settings is not installed, you can use the `MaxRTActivationUtil.exe` **command line utility** to activate wRTOS components.

## Activation Options

You can activate a wRTOS SDK product feature with a key or license file.

**Note:** The steps required to activate the features depend on whether the machine is connected to the Internet.

Option	Description
Activate with a key	Activate using a valid activation key. You can activate immediately over the network (this option requires a network connection with access to the IntervalZero License Server) or generate a fingerprint file with a valid activation key which you can then convert to a license file and import using the <b>Activate with a license file</b> option.
Activate with a license file	Activate by importing a valid license file.

## Activate with a key

Use this option to activate your product feature with a valid activation key. You can activate immediately over the network (this option requires a network connection with access to the IntervalZero License Server) or generate a fingerprint file with a valid activation key which you can then convert to a license file and import using the **Activate with a license file** option.

### To activate with a key:

1. Click **Activate with a key**.
2. Determine whether your machine is connected to the Internet with access to the IntervalZero License Server:

Status	Meaning
Connection established	The machine is connected to the network.
Unable to establish a network connection	<p>A network connection could not be established.</p> <p>Make sure all network cables are plugged in and click the Network icon to refresh. If a network connection cannot be established, you can do one of the following:</p> <ul style="list-style-type: none"> <li>• Follow the steps under <b>Configuring a Proxy Server</b>.</li> <li>• Generate a fingerprint file.</li> </ul>

3. Enter a valid activation key.

**Note:** You can find your activation key in the email you received from IntervalZero Sales upon purchase of wRTOS. If you can't locate your key, click **Don't have an activation key?** to contact Sales.

4. Do one of the following:

- If your machine is connected to the network, click **Activate Over the Network**. The product features activated by this key are added to the **Licensed components** list.
- If your machine is not connected to the network, click **Generate a Fingerprint File**. This creates a fingerprint file with a valid activation key which you can then convert to a license file and import using the **Activate with a license file** option. See **Generating a Fingerprint File** for more information on this step.

## Configuring a Proxy Server

You can try configuring a proxy server if a network connection cannot be established,

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### To configure a proxy server:

1. Click **Configure proxy server**. The **Configure proxy server** dialog appears.
2. Enter the requested settings:
  - Server
  - Port
  - Username
  - Password

**Note:** This information can be provided by your IT department.

3. Click **Apply**.

## Generating a Fingerprint File

Use this option to create a fingerprint file with a valid activation key which you can then import using the **Activate with a license file** option.

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### To generate a fingerprint file:

1. Under **Activate with a key**, enter a valid activation key, and then click **Generate a fingerprint file**.
2. In the **Save As** dialog, name the file `fingerprint.rfp`. By default, the file will be saved to the desktop.
3. Navigate to the desktop and then copy and paste the file `fingerprint.rfp` to an external device.
4. Connect the device to a machine with Internet connectivity.
5. Launch a web browser and navigate to <https://Activation.IntervalZero.com>.
6. Browse for and open the file `fingerprint.rfp`.
7. Click **Activate** to generate a license (`.lic`) file.
8. Click **Save** if your browser prompts you to save the license file. Some browsers automatically save the downloaded license file without prompting.
9. Copy the file `License.lic` to the external device and transfer it to the machine on which wRTOS is installed.
10. Follow the steps under **Activate with a license file**.

## Activate with a license file

Use this option to activate a product feature by importing a valid license file, such as a license file created from a fingerprint file.

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### To activate with a license file:

1. Click **Activate with a license file**.
2. Click **Import...** and then browse for and open the `License.lic` file.

## Activating Product Components to a Dongle

You have three options when purchasing an IntervalZero-provided dongle and a product license at the same time:

- **Option 1 (default)** – IntervalZero activates the dongle for you when you purchase the software and a small form factor dongle. Connect the dongle to use wRTOS. See [Using a Pre-Activated Dongle](#) below.
- **Option 2** – Request that IntervalZero not activate the dongle for you when you purchase the software and a small form factor dongle. You will then need to activate the product to the dongle yourself, following the steps above. See [Using a Non-Activated Dongle](#) below.
- **Option 3**– Use an existing small form factor dongle. You will need to activate the product the dongle yourself, following the steps above. See [Using a Non-Activated Dongle](#) below.

**Note:** You can also license wRTOS features to an IntervalZero-provided dongle using the MaxRT Dongle Activation Utility. This allows you to activate licensed features on other machines similar to the pre-activation service you can request from IntervalZero. You can download the MaxRT Dongle Activation Utility from the Customer Center.

If you have a dongle that has already been activated, jump to step [To use a dongle that has already been activated](#).

**Important:** You cannot license wRTOS features to a dongle when more than one dongle is connected to the machine.

**Important:** You cannot license wRTOS features to a dongle from a remote connection.

## Using a Non-Activated Dongle

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### To activate product features to a non-activated dongle:

1. Make sure wRTOS Settings detects the dongle:

### Dongle connected and active

Choose the appropriate activation option to lock the wRTOS feature(s) to the dongle.

### Dongle not connected / not active

Make sure it is securely connected to your machine. If the dongle still isn't recognized, the wRTOS feature(s) will be locked to the machine.

Choose the appropriate activation option only if you want to license to the machine.

### Multiple dongles detected

You cannot license wRTOS features to a dongle when more than one dongle is connected to the machine.

Remove all additional dongles until only one IntervalZero-provided dongle is connected.

**Important:** Once features are locked to a dongle, that dongle must be connected to use wRTOS features on that machine.

2. Choose the appropriate activation option. See [Activation Options](#) above.

## Using a Pre-Activated Dongle

A pre-activated dongle already contains a license file. Follow the steps below to use a pre-activated dongle.

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### To use a dongle that has already been activated:

1. Connect the dongle to a USB port on the machine.
2. Make sure wRTOS Settings detects the dongle:



### Dongle connected and active

Choose the appropriate activation option to lock the wRTOS feature(s) to the dongle.

### Dongle not connected / not active

Make sure it is securely connected to your machine. If the dongle still isn't recognized, the wRTOS feature(s) will be locked to the machine.

Choose the appropriate activation option only if you want to license to the machine.

### Multiple dongles detected

You cannot license wRTOS features to a dongle when more than one dongle is connected to the machine.

Remove all additional dongles until there is only one connected to the machine.

Once the dongle is detected, the product features activated by its key are added to the **Licensed features** list.

## Activating with MaxRTActivationUtil.exe (Command Line)

If **wRTOS Settings** is not installed, you can use the `MaxRTActivationUtil.exe` command line utility to activate wRTOS components and configure system processors.

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### To activate your product (Internet connection required):

1. Navigate to the `C:\Program Files\IntervalZero\MaxRT\Common\bin` directory and run `MaxRTActivationUtil.exe` as Administrator.
2. Type the `-a` flag, and then provide your activation key. For example:

```
MaxRTActivationUtil.exe -a WSDK64-111-2222-3333-4444-5555-WBLD64-111-2222-3333-4444-5555
```

**Note:** You can find your activation key in the email you received from IntervalZero Sales.

If running from a command prompt, the activated components are displayed.

## Force-Activating to a Dongle or Machine

You can use the `-dongle` flag to force activation to an IntervalZero-provided dongle. If you want to force activation to ignore a dongle, use the `-nodongle` flag.

To force activation to a dongle:

```
MaxRTActivationUtil.exe -a WSDK64-111-2222-3333-4444-5555-WBLD64-111-2222-3333-4444-5555 -dongle
```

To force activation to ignore a dongle:

```
MaxRTActivationUtil.exe -a WSDK64-111-2222-3333-4444-5555 -nodongle
```

To look for an IntervalZero-provided dongle and activate to the machine if a dongle is not found:

```
MaxRTActivationUtil.exe -a WSDK64-111-2222-3333-4444-5555
```

# VSIX Packages Installed with wRTOS SDK

wRTOS SDK installs the following VSIX packages to the folder `%wRTOSSDKDir1%\VSExtensions` when the corresponding Visual Studio feature is selected in the installer:

- `wRTOSVSSupport2022.vsix` – MaxRT wRTOS Debugger and templates for creating RTSS applications and RTDLLs for Visual Studio 2022 (requires Visual Studio 2022 to be selected in the SDK installer)
- `wRTOSVSSupport.vsix` – MaxRT wRTOS Debugger and templates for creating RTSS applications and RTDLLs for Visual Studio 2019 and 2017 (requires Visual Studio 2019 or 2017 to be selected in the SDK installer)

If you choose to install Visual Studio Support 2022, 2019, or 2017, you can run the corresponding wRTOS VSIX package to install its functionality in Visual Studio without having to re-install wRTOS SDK in its entirety. This is typically useful in the scenario where support is needed for a supported version of Visual Studio that was installed after wRTOS SDK was installed.

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## To install the Real-Time Debugger and templates for Visual Studio 2022:

Run the VSIX package `wRTOSVSSupport2022.vsix`.

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## To install the Real-Time Debugger and templates for Visual Studio 2019 and 2017:

Run the VSIX package `wRTOSVSSupport.vsix`.

# Uninstalling

Follow the appropriate steps below based on your version of Windows to uninstall wRTOS SDK.

**Note:** You must close all open instances of Visual Studio before uninstalling wRTOS SDK.

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## Windows 11:

1. Open **Windows Settings** and navigate to **Apps / Installed apps**.
2. Locate **MaxRT wRTOS 1.0 SDK**.
3. Click **More options (...)** and then click **Uninstall**.
4. Click **Yes** to confirm.
5. Click **Finish** once wRTOS SDK has been uninstalled.

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## Windows 10:

1. Open **Windows Settings** and navigate to **Apps & features**.
2. Click **MaxRT wRTOS 1.0 SDK** and then click **Uninstall**.
3. Click **Yes** to confirm.
4. Click **Finish** once wRTOS SDK has been uninstalled.

# Appendix A

## System Modifications during Installation

The following table describes the system modifications that are made during the wRTOS SDK installation.

### System Modifications During Installation

Name	Description
wRTOSSDKDir1	This environment variable contains the path to the directory containing wRTOS 1.x SDK. It is created by wRTOS 1.x and will not exist if the customer does not have wRTOS 1.x SDK installed.

# Appendix B

## Installing Visual Studio Workloads

A **supported Microsoft Visual Studio version** must be installed to build or debug wRTOS programs with the Visual Studio IDE. wRTOS SDK requires the **Desktop development with C++** Visual Studio workload to build projects and samples created with the wRTOS application templates. If this workload is not installed, you must manually install it using the appropriate Visual Studio installer file (`vs_<edition>.exe`). For example, `vs_professional.exe`.

To do this, follow the steps below:

1. Browse for and open the Visual Studio <version> installer file (`vs_<edition>.exe`).
2. Under **Workloads / Windows**, select **Desktop development with C++**.
3. Click **Install**.
4. After the new workload is installed, click **Launch**.

# 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 (requires valid credentials), access online product Help, and view Support and Lifecycle policies and Product Release Notices.



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