

# MaxRT eRTOS 1.0 Runtime

INSTALLATION GUIDE

**IntervalZero**

**MaxRT**  
eRTOS

MaxRT eRTOS 1.0 Runtime Installation Guide

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# 1

## Target System Requirements

This section describes eRTOS Runtime target system requirements.

### Hardware Requirements

This section lists hardware requirements for eRTOS Runtime.

Category	Requirement
Hardware and connectivity	<ul style="list-style-type: none"><li>• SATA drive</li><li>• Monitor</li><li>• USB 2.0 and above keyboard</li></ul>
Processor	<p>can run on any of the following Intel® multi-core and Xeon processors:</p> <ul style="list-style-type: none"><li>• Raptor Lake (13<sup>th</sup>/14<sup>th</sup> Gen)</li><li>• Alder Lake (12<sup>th</sup> Gen)</li><li>• Tiger Lake (11<sup>th</sup> Gen)</li><li>• Rocket Lake (11<sup>th</sup> Gen)</li><li>• Comet Lake (10<sup>th</sup> Gen)</li><li>• Coffee Lake Refresh (8<sup>th</sup>/9<sup>th</sup> Gen)</li><li>• Coffee Lake (8<sup>th</sup> Gen)</li><li>• Kaby Lake (7<sup>th</sup> Gen)</li><li>• Skylake (6<sup>th</sup> Gen)</li><li>• Intel Xeon</li><li>• Intel Xeon Scalable</li></ul>

Category	Requirement
RAM	At least 4 GB
Storage	Local SATA drive with at least one partition formatted as FAT32 file system.  <div data-bbox="428 485 1406 562"><b>Note:</b> The Windows Disk Management Utility will not allow a partition to be formatted as FAT32 if it exceeds 32 GB.</div> <div data-bbox="428 674 984 711"><b>Note:</b> RAID file systems are not supported.</div> <div data-bbox="428 823 928 861"><b>Note:</b> NVME drives are not supported.</div>

# Software Requirements

This section lists software requirements for eRTOS Runtime.

Category	Requirement	Notes / Instructions
BIOS	Secure Boot - Disabled	<p>To disable Secure Boot:</p> <p><b>Note:</b> Instructions may differ depending on BIOS.</p> <ol style="list-style-type: none"><li>1. Boot the system to BIOS.</li><li>2. From the <b>System Utilities</b> screen, select <b>System Configuration &gt; BIOS/Platform Configuration (RBSU) &gt; Server Security &gt; Secure Boot Settings &gt; Secure Boot Enforcement</b> and press <b>Enter</b>.</li><li>3. Select <b>Disabled</b> and press <b>Enter</b>.</li><li>4. <b>Save</b> and exit BIOS.</li></ol>
	Enable Memory Mapped IO > 4GB - Disabled	<p>To disable Enable Memory Mapped IO &gt; 4GB:</p> <p><b>Note:</b> Instructions may differ depending on BIOS.</p> <ol style="list-style-type: none"><li>1. Boot the system to BIOS.</li><li>2. Select <b>Configuration/Setup &gt; Advanced Settings &gt; System Management Settings</b>.</li><li>3. Select <b>Access MMIO &gt; 4 GB</b>.</li><li>4. Select <b>Disable</b>.</li><li>5. <b>Save</b> and exit BIOS.</li></ol>

Category	Requirement	Notes / Instructions
	AHCI (Advanced Host Controller Interface) Mode - Enabled	<p><b>Note:</b> Changing from RAID mode to AHCI mode will prevent current Windows installations from booting on SATA disks on the machine. However, it will not affect NVME disks.</p> <p>To enable AHCI Mode:</p> <p><b>Note:</b> Instructions may differ depending on BIOS.</p> <ol style="list-style-type: none"> <li>1. Boot the system to BIOS.</li> <li>2. From the <b>System Utilities</b> screen, select <b>System</b> or <b>Hardware Configuration</b> (this will differ based on BIOS).</li> <li>3. Look for <b>AHCI</b> or <b>SATA mode</b>.</li> <li>4. Enable <b>AHCI</b> or set <b>SATA mode</b> to <b>AHCI</b>.</li> <li>5. <b>Save</b> and exit BIOS.</li> </ol>
GRUB boot loader	GRUB 2.04-2.06 or later, installed on a USB or target system hard disk	See <a href="#">Installing GRUB Boot Loader</a>

# 2

## Installing GRUB Boot Loader

This section walks you through the steps to install GRUB boot loader.

1. Download the *GRUB for Windows* zip package (for example, `grub-2.04-for-windows.zip`) from <https://ftp.gnu.org/gnu/grub/>. Alternatively, you can download the zip package from the eRTOS download site.

**Note:** MaxRT eRTOS Runtime supports GRUB 2.04-2.06 and later.

2. Extract (unzip) the zip file contents to your Windows desktop. You should now have a *GRUB-<version>-for-windows* folder (for example, *grub-2.04-for-windows*) that contains several files, including `grub-install.exe`
3. Open a Command Prompt as administrator.
4. Navigate to the *grub-<version>-for-windows* directory. To do this, enter the following command and then press **Enter**:

```
cd %UserProfile%\Desktop\grub*for-windows
```

5. Open the Windows Disk Management Tool, which will allow you to determine your storage device drive letter and related disk number. To do this, enter the following command and then press **Enter**:

```
diskmgmt.msc
```

6. In the Disk Management window, find and note the drive letter and disk number of the volume where you will install eRTOS for your storage device .
7. Using the Command Prompt, install the GRUB components:

**Note:** If you are unsure which option to use, try both.

## To Install GRUB2 for BIOS (not for GPT disks)

Type or copy the following command, replacing the **x** with the drive letter and **#** with the disk number noted in **Step 6** above.

```
grub-install.exe --force --no-floppy --target=i386-pc --boot-  
directory=x:\boot //./PHYSICALDRIVE#
```

**Note:** If you install GRUB2 on a BIOS/MBR disk that also contains a Windows installation, GRUB2 may become the default boot option selected by the BIOS at boot, causing the Windows Boot Manager to load. To prevent boot issues, follow the steps outlined in our TechNote *Setting up GRUB to chainload to Windows*.

## To Install GRUB2 For UEFI (not for MBR disks)

- a. To install GRUB2 for UEFI 32-bit, type or copy the following command, replacing the **x** with the drive letter noted in **Step 6** above.

```
grub-install.exe --force --removable --no-floppy --target=i386-efi --boot-  
directory=x:\boot --efi-directory=x:\
```

- b. To install GRUB2 for UEFI 64-bit, type or copy the following command, replacing the **x** with the drive letter noted in **Step 6** above.

```
grub-install.exe --force --removable --no-floppy --target=x86_64-efi --  
boot-directory=x:\boot --efi-directory=x:\
```

# 3

## Installing and Activating eRTOS Runtime

### Before You Begin

Please ensure the target system meets the [hardware requirements](#) and [software requirements](#) noted earlier in this guide.

The MaxRT eRTOS Runtime installer requires the following components to be in place before installation can move forward:

- GRUB must be installed. See [Installing GRUB Boot Loader](#).

**Note:** It is recommended to install GRUB on your primary boot drive. Installation on a flash drive is not required unless you have a specific use case.

- The system must have a free FAT32 partition on SATA drive available for eRTOS Runtime
- The system must be booted up with Windows operating system to run the eRTOS installer.
- If you have previously installed the Mando/eRTOS Runtime Beta, please uninstall it first.

# Installing eRTOS Runtime

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## Steps:

1. Download the zip file `MaxRT_eRTOS_1.0_Runtime_Setup.zip` from the Customer Center.
2. Extract the contents of the zip file.
3. Double-click the self-extracting executable `MaxRT_eRTOS_1.0_Runtime_Setup.exe`.
4. Click **Next** in the IntervalZero eRTOS Runtime installation Welcome window.
5. Read and accept the terms in the End User License Agreement, and then click **Next**.

**Note:** The system must contain a FAT32 partition and GRUB must be installed to continue.

6. On the Destination Folders screen, do the following:
  - Browse for the FAT32 partition where MaxRT eRTOS Runtime will be installed.
7. Click **Next**.
8. In the Custom Setup screen, optionally select the features you want to install or remove from the installation. Click **Install** when finished.

**Note:** If you want to remote debug eRTOS applications in Visual Studio, you must install the eRTOS Remote Debugger feature.

9. Click **Finish** in the Installation Complete screen.
10. Reboot your computer and then choose the boot device where GRUB is installed, using the BIOS One Time Boot Menu. Alternatively, you can configure the BIOS to change the boot order. Select eRTOS configuration in the GRUB boot menu:

**IntervalZero eRTOS - Standard Mode (Tick Period = 100  $\mu$ s)**

## Activating eRTOS Runtime

Follow the steps below to activate eRTOS Runtime following installation.

**Note:** See *Licensing and Activation* in the eRTOS Help for more information on licensing concepts.

## To activate eRTOS Runtime:

1. Log in to your IntervalZero Customer Center account and download your eRTOS Runtime License.
2. Place the downloaded license file, `eRTOS.lic`, in the eRTOS Runtime installation directory. By default, this path is `<eRTOS Volume Letter>:\Program Files\IntervalZero\MaxRT\eRTOS\`

**Note:** If there is already an eRTOS license in the eRTOS install directory, you can replace it, if the old license is no longer needed, or add the contents of the new license to the existing license file. The first license found in the file will be prioritized by eRTOS Runtime, so the new license content should be added to the top of the file, above the old license content.

**Important:** Changing the actual license string invalidates the license.

## Ideal Runtime License

The ideal Runtime license is the first valid Runtime license in the Runtime license file, `eRTOS.lic`. That license will be used when eRTOS Runtime is next started. It is possible for multiple Runtime licenses to be present for the same Runtime version. For instance, there might be an Evaluation Runtime license and a non-Evaluation Runtime license. To determine which license is used by eRTOS Runtime, change the order of the licenses in the license file such that the preferred license is at the top.

**Note:** To avoid potential mistakes when modifying the license file, it is good practice to leave whitespace between the license sections.

# Deleting a License

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## To delete an eRTOS Runtime license:

1. Copy the eRTOS Runtime license file, `eRTOS.lic`, and place the copy on a different system than the eRTOS Runtime system.
2. Open the eRTOS Runtime license file copy in a text editor.
3. Select the license content you want to remove, and then delete it.
4. Save the license file.
5. Copy the modified eRTOS Runtime license file to the eRTOS Runtime system.

# Uninstalling eRTOS Runtime

## Uninstall Considerations

Keep the following in mind when removing MaxRT eRTOS Runtime from your target system:

- The system must be booted up with the Windows operating system to run the eRTOS installer.

## Uninstalling

Follow the instructions below to remove MaxRT eRTOS Runtime from the system.

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### Steps:

1. Navigate to the **Windows Control Panel**.
2. Under *Programs*, click **Uninstall a Program**.
3. Select the **MaxRT eRTOS Runtime** program and click **Uninstall**.
4. Click **Yes** to confirm.
5. Click **Finish** once the installation is complete.

# Support

## Third-Party Support

If you are a customer who purchase an IntervalZero product through a third-party reseller, contact the reseller for support.

## Contacting Technical Support by Phone

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 your Support ID ready before calling IntervalZero Technical Support. Customers who purchase direct support receive an e-mail address and password for use when accessing the IntervalZero support website.

## Online Support Resources

Visit our website at [www.intervalzero.com](http://www.intervalzero.com) to log in to the Customer Support Portal (with valid credentials), access online product Help, and view Support and Lifecycle policies and Product Release Notices.

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