

# RTX

## DEPLOYMENT GUIDE

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RTX Deployment Guide

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# Overview

This document includes information on installing, activating and configuring RTX 2016, based on the common deployment scenarios described below. If the scenarios outlined in this document do not resolve your deployment requirements, contact IntervalZero Sales.

## Scenario 1: End User

The end user installs, activates and configures RTX. The method used to activate and configure will depend on whether or not the user has network connectivity and .NET 4.0 installed.

[View chapter](#)

## Scenario 2: Installing RTX Silently Within Your Product

RTX is wrapped within your product installation. Installation, activation and configuration of RTX is done silently, but allows for end users to uninstall RTX without uninstalling your product.

[View chapter](#)

## Scenario 3: Including RTX Merge Modules Within Your Installation

RTX features - available as Merged Modules - are included with your product installation. Activation and configuration of RTX is done silently after installation of your product, which includes RTX. RTX can only be removed when your product is uninstalled.

[View chapter](#)

## Scenario 4: Deploying RTX on Windows Embedded Standard 7

Installation of RTX is done through the Windows Image Build Wizard and the Image Creation Editor. Activation and configuration of RTX is done silently after the first boot of the WES 7 Operating System that includes RTX.

[View chapter](#)

## Scenario 5: Deploying RTX in an Image for Auto Activation

RTX is installed and configured for auto activation before an image is created for deployment.

[View chapter](#)

# License Types

Below are the two license types supported for RTX deployment. Throughout this guide, the recommended license type is listed under each scenario.

## **Node Locked**

A node-locked license ties RTX to a particular system or IntervalZero-provided dongle during product activation. This license type supports:

- Single activation – a single activation key licenses a single system
- Pool activation – a single activation key licenses multiple systems

# 1

## Scenario 1: End User

In this scenario, a single end user installs RTX on their development machine, and activates and configures RTX through the Activation and Configuration utility.

### Product Installation

#### Before Installing

Before beginning the installation, do the following:

- Review the *RTX 2016*, and verify that your configuration meets the system requirements.
- You must have administrator privileges on your system. Log on with administrator privileges or start the RTX installation using **Run as Administrator**.
- IntervalZero recommends that you de-select the Windows “Automatically reboot” option for Startup and Recovery from the Advanced tab of the System Properties page of the Windows Control Panel. De-selecting this parameter allows you to view blue screen information.
- Exit all Windows programs.
- If a previous version of RTX older than RTX 2016 is already installed on the system, you must uninstall it and reboot the system before you can install RTX. If an update was applied to that previous version, you must also manually uninstall the update.
- RTX requires Microsoft .NET 4.0 to be installed on the system. If it is not already installed, you will be prompted during install to have RTX install it for you.
- If you have installed the standalone RTX Virtual Network Add-On, and you want to upgrade, you must uninstall the standalone RTX Virtual Network Add-On and reboot the system before installing RTX.

**NOTE: When you upgrade your operating system, you must uninstall and then reinstall RTX after the OS upgrade.**

# Performing the Install

---

## To install RTX:

1. Download the self-extracting executable, `RTX_2016_Setup.exe`, from the IntervalZero web site:

<http://www.intervalzero.com/products/rtx-downloads/>

**NOTE:** The download page also includes:

- The RTX Merge Module installer:

`RTX_2016_MM_Setup.exe`

For access to evaluation kits, visit the Evaluation page available at <http://www.intervalzero.com/>.

In the form that appears, select RTX 2016 from the drop-down list, fill out the contact information, and click **Submit**.

2. Double-click the file `RTX_2016_Setup.exe`.

**NOTE: If Microsoft .NET 4.0 is not already installed on your machine, it will now be installed for you. Click Install to continue.**

3. On Windows 7 machines, if necessary, click **Continue** in the User Account Control dialog box.

**NOTE: If you are not a member of the Administrators group, this prompt requires you to enter the password for the Administrators account.**

4. Click **Next** in the IntervalZero RTX installation Welcome window.
5. Read the End User License Agreement, select **I accept the terms in the license agreement** and then click **Next**.
6. Enter your user name, organization, and e-mail address, and then click **Next**.

7. Optionally, change to a destination other than the default:

`C:\Program Files\IntervalZero\RTX.`

Click **Next** in the Destination Folder screen.

8. In the Custom Setup screen, select the components and features you want to install, then click **Next**.

**NOTE: If you select the Win32 Enabled Managed Code Support feature during installation, the Managed Code DLL will be registered by default.**

**NOTE: The Custom Setup screen only displays features in Visual Studio versions that are currently installed. If you install Visual Studio after installing RTX, you can add support for new functionality by changing the RTX installation through Add/Remove Programs.**

9. In the Ready to Install the Program screen, select whether you want Desktop Icons and/or Start Menu Icons and then click **Install**.
10. If prompted, click **Install** to install the RTX Plug and Play driver.
11. Click **Finish** in the installation Completed screen.
12. Activate your product.

## Product Activation and Configuration

The Activation and Configuration dialog appears once RTX has been successfully installed. You must activate your RTX product and configure the boot configuration through this dialog.

### **NOTE:**

When this symbol appears in the Activation and Configuration dialog, it indicates one of the following scenarios:



- The RTX Runtime component is installed and activated but not yet configured. To resolve this, configure system processors through the Configuration screen.
- A component was licensed by an Evaluation license which has since expired. To resolve this, purchase a full license for the RTX component(s) you want to use.

### **Recommended License Type:**

*Node Locked – Single Activation.* For more information, see [License Types](#).

## Activating your Product

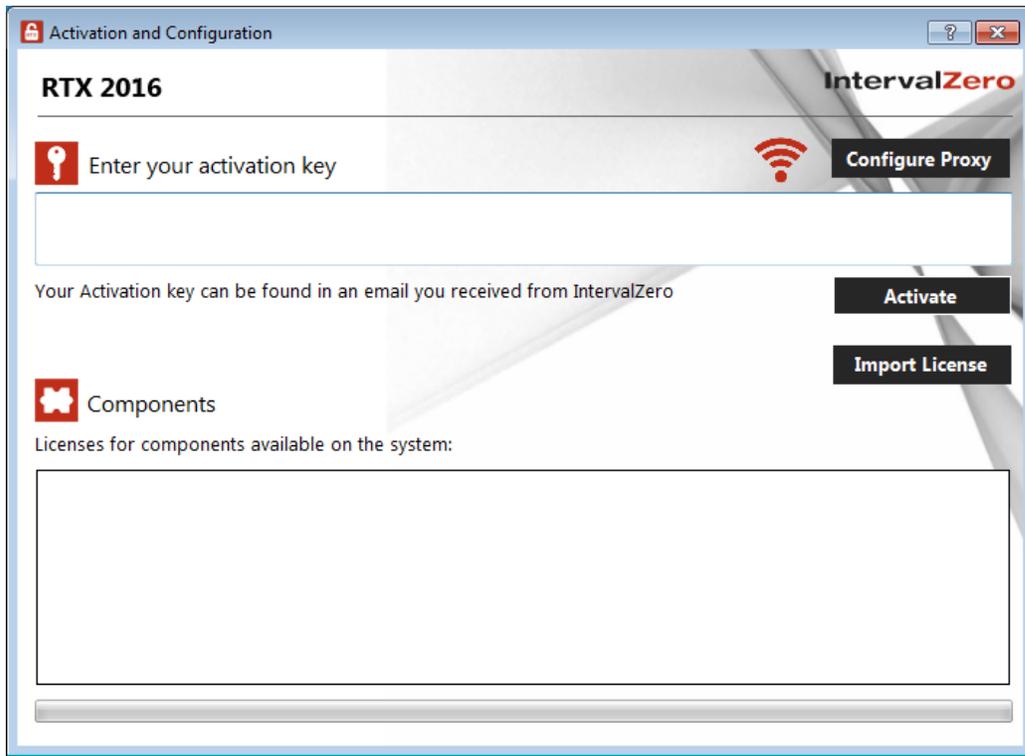
You can activate and lock your product to a specific machine or IntervalZero-provided dongle. The steps required to activate your product will depend on whether or not the machine is connected to the Internet.

### **Licensing your Product to a Machine**

Follow the appropriate steps below to license RTX components to a specific machine.

To activate your product (Internet connection):

1. Open the **Activation and Configuration** dialog. This dialog appears once RTX has been installed. You can also launch it from **Start > All Programs > IntervalZero > RTX 2016 > Activation and Configuration**.



If you have a dongle connected to the machine, click the dongle icon to turn off the dongle.

**Icon:**



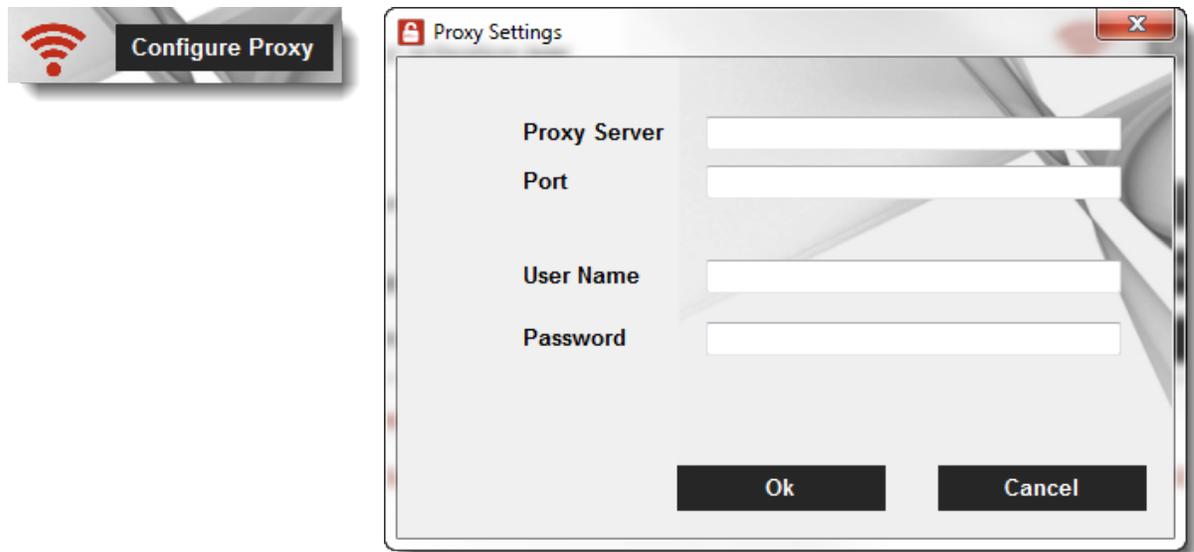
**Status:** Dongle recognized but turned off

**Result:** Locks RTX component(s) to the machine

2. Make sure your machine is connected to the Internet with access to the IntervalZero License Server.

<b>Icon:</b>		
<b>Status:</b>	Network Connection	No Network Connection
<b>Result:</b>	Continue with activation	Configure a Proxy Server

If no network connection is found, make sure all network cables are plugged in and that the firewall allows access, and click the Network icon to refresh. If a network connection still isn't found, you may need to configure a Proxy Server. To do this, click the **Configure Proxy** button and provide the requested settings:



This information should be available from your IT department.

**NOTE: The proxy server must be able to proxy HTTP connections. SOCKS proxies are not supported.**

**NOTE: If no network connection can be established, skip to *To activate your product (no Internet connection)*.**

3. Enter your activation key and then click **Activate**. The product components activated by your key are indicated by a check mark in the Components box. Note that the RT-TCP/IP Stack requires a separate license.

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

4. Click **Configure** to configure system processors. See [Configuring your System](#) below for more information.

**IMPORTANT! You must configure the RTX Subsystem before you can use RTX.**

---

### To activate your product (no Internet connection):

If the computer on which you installed RTX is *not* connected to the Internet, the activation process requires a few additional steps.

1. Open the **Activation and Configuration** dialog. This dialog appears once RTX has been installed. You can also launch it from **Start > All Programs > IntervalZero > RTX 2016 > Activation and Configuration**.

If you have a dongle connected to the machine, click the dongle icon to turn off the dongle.

**Icon:**



---

**Status:** Dongle recognized but turned off

---

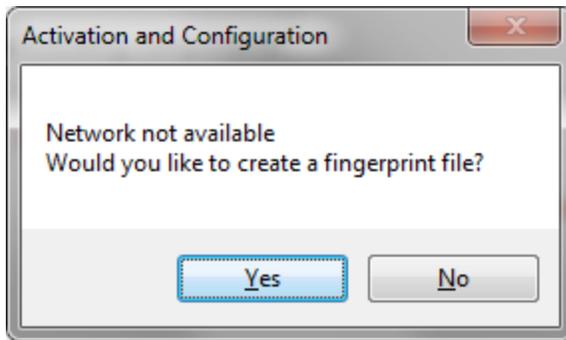
**Result:** Locks RTX component(s) to the machine

2. Check your Internet connection. Continue with these steps only if there is no connection to the Internet. If you are connected, follow the steps in the previous section:
3. Enter your activation key and then click **Activate**.

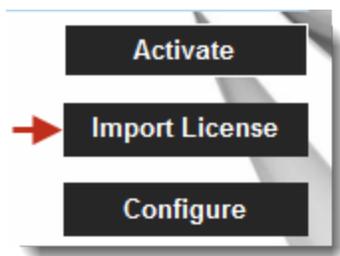
**NOTE: You can find your activation key in the email you received from IntervalZero Sales.**

**NOTE: If you enter an invalid activation key, you will not know until you attempt to generate a license file in Step 11.**

4. In the dialog that appears, click **Yes** to create a fingerprint file.



5. In the **Save As** dialog, name the file `fingerprint.rfp`. By default, the file will be saved to the desktop.
6. Navigate to the desktop, and then copy and paste the file `fingerprint.rfp` to an external device.
7. Connect the device to a machine with Internet connectivity.
8. Launch a web browser, and navigate to <http://Activation.IntervalZero.com>.
9. Browse for and open the file `fingerprint.rfp`.
10. Read and agree with the **Terms & Conditions**.
11. Click **Activate** to generate a license (`.lic`) file.
12. In the File Download dialog, click **Save**.
13. Copy the file `License.lic` to the external device, and transfer it to the machine on which RTX is installed.
14. In the Product Activation dialog, click **Import License**.



15. Browse for and open the file `License.lic`.
16. Click **Configure** to configure system processors. See [Configuring Your System](#) below for more information.

**IMPORTANT! You must configure the RTX Subsystem before you can use RTX.**

## Licensing your Product to a Dongle

Follow the appropriate steps below to license RTX components to an IntervalZero-provided dongle. Dongles are available in two sizes:

	Small Form Factor	Standard
<b>Supported RTX Versions</b>	RTX 2016	All
<b>Holds a copy of the license file</b>	Yes	No

If you have a dongle that has already been activated for the components you have installed, skip to section [To use a dongle that has already been activated](#).

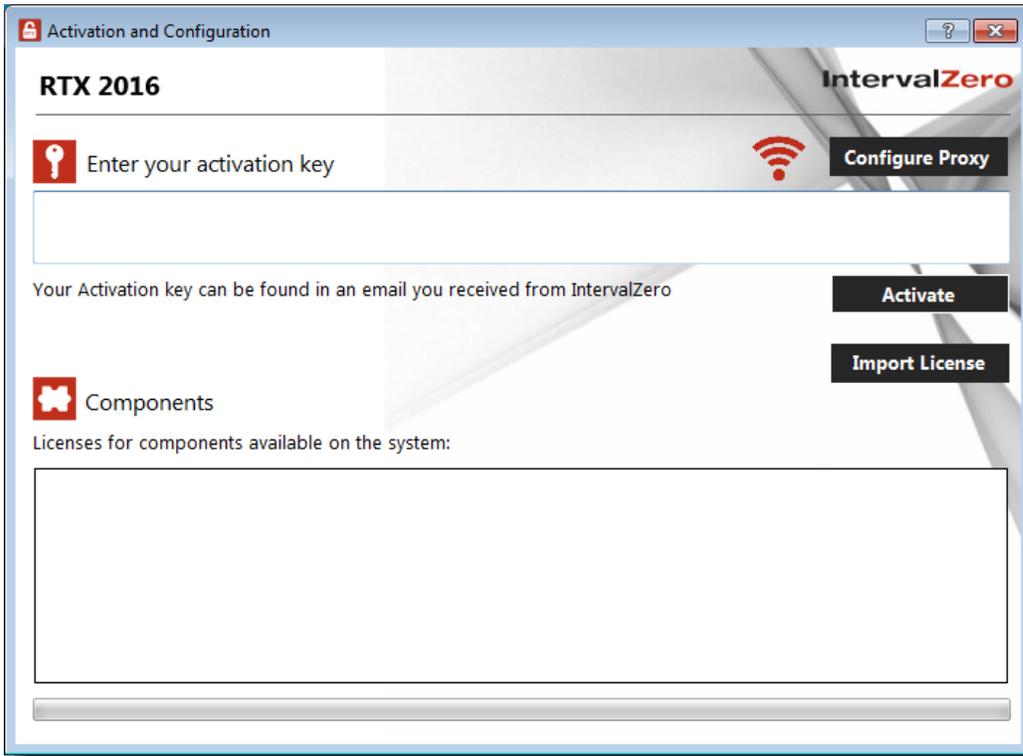
**NOTE:** You can also license RTX components to an IntervalZero-provided dongle using the **Dongle Activation Utility**. The IntervalZero-provided **Dongle Activation Utility** can be used to pre-activate licensed components on machines where RTX is not installed. You can download the **Dongle Activation Utility** from the IntervalZero website at <http://www.intervalzero.com/rtx-downloads/tools-utilities/>.

**IMPORTANT!** You cannot license RTX components to a dongle when more than one dongle is connected to the machine.

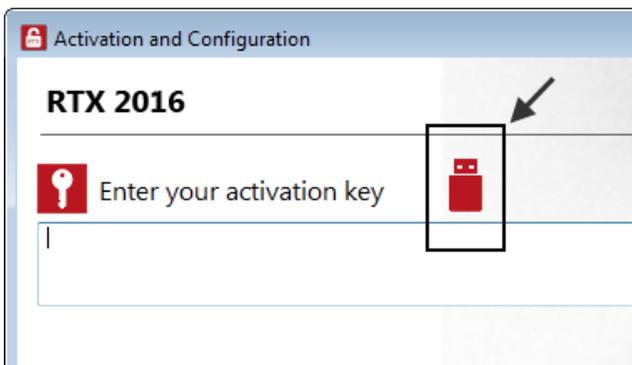
---

To activate your product (Internet connection):

1. Open the **Activation and Configuration** dialog. This dialog appears once RTX has been installed. You can also launch it from **Start > All Programs > IntervalZero > RTX 2016 > Activation and Configuration**.



2. Connect the IntervalZero-provided dongle to the machine now. When a dongle is connected to the machine, a dongle icon appears in the **Activation and Configuration** dialog.



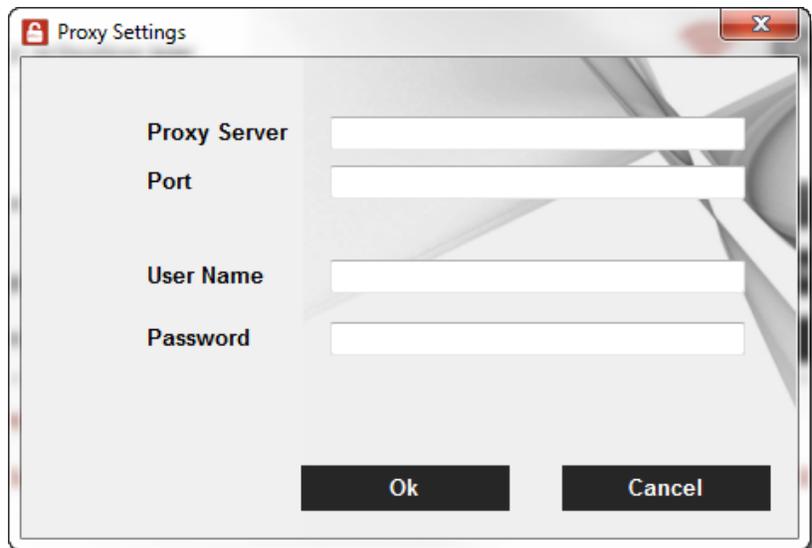
<b>Status:</b>	Dongle recognized and available	Dongle is connected but turned off. Click the icon to enable the dongle.	Multiple dongles detected
<b>Result:</b>	Locks RTX component(s) to the dongle	Locks RTX component(s) to the machine	You cannot license RTX components to a dongle when more than one dongle is connected to the machine.

**IMPORTANT! Once components are locked to a dongle, the dongle must be connected in order to use RTX components on that machine.**

3. Make sure your machine is connected to the Internet with access to the IntervalZero License Server.

<b>Icon:</b>		
<b>Status:</b>	Network Connection	No Network Connection
<b>Result:</b>	Continue with activation	Configure a Proxy Server

If no network connection is found, make sure all network cables are plugged in and that the firewall allows access, and click the Network icon to refresh. If a network connection still isn't found, you may need to configure a Proxy Server. To do this, click the **Configure Proxy** button and provide the requested settings:

The image shows a 'Proxy Settings' dialog box with the following fields and buttons:

- Proxy Server:** Text input field
- Port:** Text input field
- User Name:** Text input field
- Password:** Text input field
- Buttons:** 'Ok' and 'Cancel' buttons at the bottom.

This information should be available from your IT department.

**NOTE: The proxy server must be able to proxy HTTP connections. SOCKS proxies are not supported.**

**NOTE: If no network connection can be established, skip to *To activate your product (no Internet connection)*.**

4. Enter your activation key and then click **Activate**. The product components activated by your key are indicated by a check mark in the Components box. Note that the RT-TCP/IP Stack requires a separate license.

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

5. Click **Configure** to configure system processors. See [Configuring your System](#) below for more information.

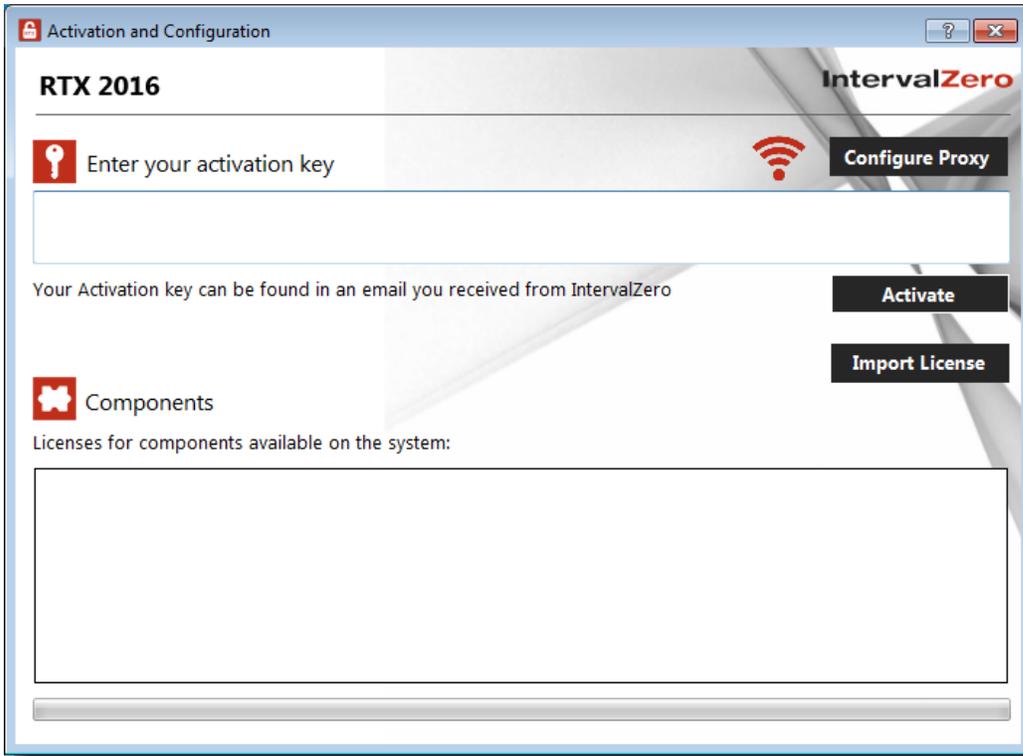
**IMPORTANT! You must configure the RTX Subsystem before you can use RTX.**

---

### To activate your product (no Internet connection):

If the computer on which you installed RTX is *not* connected to the Internet, the activation process requires a few additional steps.

1. Open the **Activation and Configuration** dialog. This dialog appears once RTX has been installed. You can also launch it from **Start > All Programs > IntervalZero > RTX 2016 > Activation and Configuration**.



2. Connect the IntervalZero-provided dongle to the machine now. When a dongle is connected to the machine, a dongle icon appears in the **Activation and Configuration** dialog.



Icon:



<b>Status:</b>	Dongle recognized and available	Dongle is connected but turned off. Click the icon to enable the dongle.	Multiple dongles detected
<b>Result:</b>	Locks RTX component(s) to the dongle	Locks RTX component(s) to the machine	You cannot license RTX components to a dongle when more than one dongle is connected to the machine.

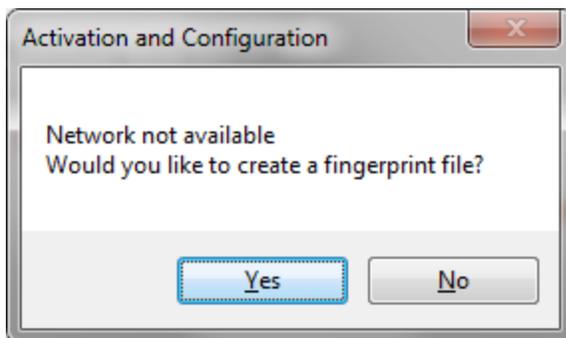
**IMPORTANT! Once components are locked to a dongle, the dongle must be connected in order to use RTX components on that machine.**

3. Check your Internet connection. Continue with these steps only if there is no connection to the Internet. If you are connected, follow the steps in the previous section:
4. Enter your activation key and then click **Activate**.

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

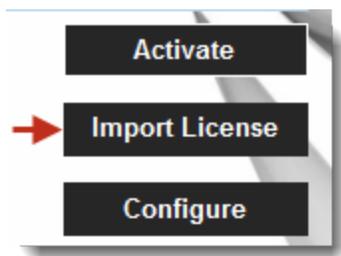
**NOTE: If you enter an invalid activation key, you will not know until you attempt to generate a license file in Step 12.**

5. In the dialog that appears, click **Yes** to create a fingerprint file.



6. In the **Save As** dialog, name the file `fingerprint.rfp`. By default, the file will be saved to the desktop.
7. Navigate to the desktop, and then copy and paste the file `fingerprint.rfp` to an external device.
8. Connect the device to a machine with Internet connectivity.
9. Launch a web browser, and navigate to <http://Activation.IntervalZero.com>.
10. Browse for and open the file `fingerprint.rfp`.
11. Read and agree with the **Terms & Conditions**.

12. Click **Activate** to generate a license (.lic) file.
13. In the File Download dialog, click **Save**.
14. Copy the file `License.lic` to the external device, and transfer it to the machine on which RTX is installed.
15. In the Product Activation dialog, click **Import License**.



16. Browse for and open the file `License.lic`.
17. Click **Configure** to configure system processors. See [Configuring your System](#) below for more information.

**IMPORTANT! You must configure the RTX Subsystem before you can use RTX.**

---

### To use a dongle that has been pre-activated:

If the dongle you have received has already been pre-activated, you only need to:

Small Form Factor	Standard
Plug in the dongle (the license file is already on the dongle)	Import the license file
<ol style="list-style-type: none"> <li>1. Connect the IntervalZero-provided dongle to a USB port on the machine.</li> <li>2. Open the <b>Activation and Configuration</b> dialog. This dialog appears once RTX has been installed. You can also launch it from <b>Start &gt; All Programs &gt; IntervalZero &gt; RTX 2016 &gt; Activation and Configuration</b>.</li> <li>3. Make sure the Activation and Configuration utility recognizes the dongle:</li> </ol>	

**Icon:**



---

**Status:** Dongle recognized and available

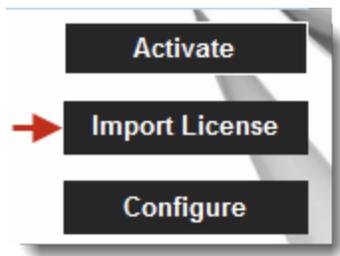
---

**Result:** Locks RTX component(s) to the dongle

If the dongle is not recognized, make sure it is securely connected to your machine. Proceed once you see the Dongle Active icon.

**Steps 4-5 are for Standard dongles only:**

4. In the Product Activation dialog, click **Import License**.



5. Browse for and open the file `License.lic` you received with the activated dongle.

**NOTE: The license is locked to the dongle. The dongle must be connected to the machine in order to use RTX components.**

6. Click **Configure** to configure system processors.

**NOTE: You must configure the RTX Subsystem before you can use RTX.**

## Configuring your System

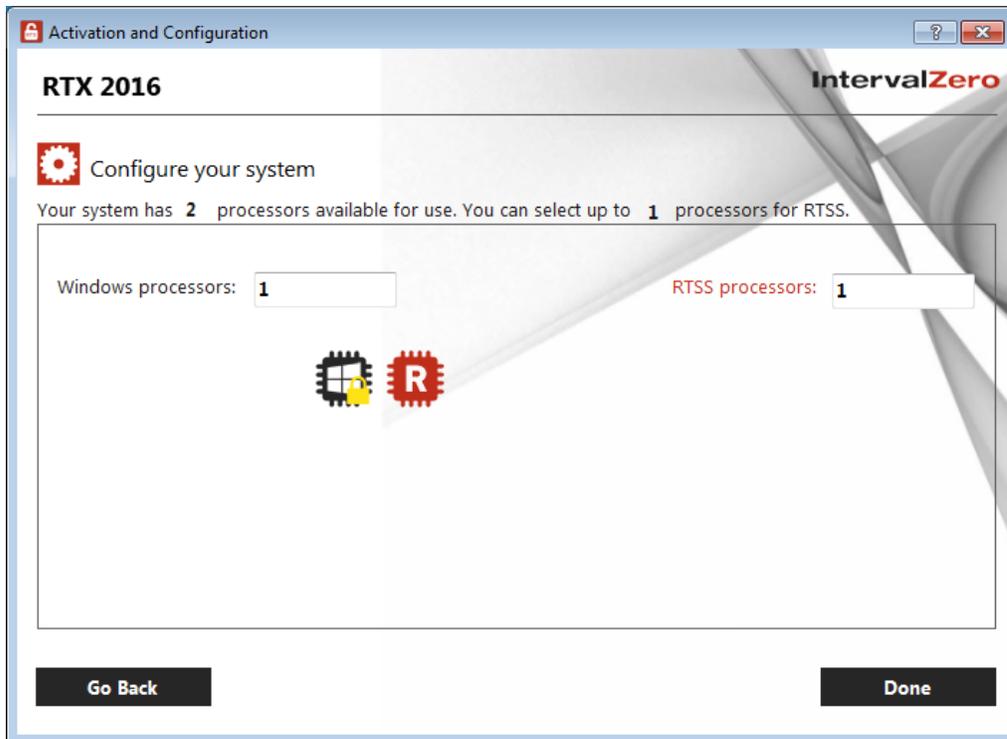
Through the Configure screen, you can assign available processors to Windows or RTX. The configuration routine automatically detects the total number of processors on your system.

**NOTE: If your system is hyper-threaded, it is recommended that you assign an even number of processors between Windows and RTX. The Windows logical processor and RTSS logical processor must not share the same physical processor.**

## To assign processors:

1. In the Activation and Configuration dialog, click **Configure** to configure system processors. You can assign processors between Windows and RTX. There must be at least one Windows processor (indicated by the lock). Based on the edition purchased, you will have a maximum number of processors that can be used for RTX, as shown in the text of the dialog.

**NOTE: Any processors not associated with either Windows or RTX will be disabled and unavailable for use.**



2. Click **Done** to complete configuration.
3. When you are prompted, click **Yes** to restart your computer.

**NOTE: On Windows 8.1, configuration changes will only take effect following a restart, not a shutdown.**

4. Choose the RTX boot configuration at system startup:
  - Windows 8.1: **Windows 8.1 - RTX**
  - Windows 7: **Windows 7 - RTX**

**NOTE: The RTX control panel will not provide completely accurate information until you reboot your system.**

**NOTE: Even if you don't restart immediately, all changes will be saved and will take affect after the next restart.**

# 2

## Scenario 2: Installing RTX Silently

In this scenario, the installation, activation and configuration of RTX is done silently through a Command Prompt interface to the RTX Runtime product installation. The command line interface can be invoked from the command line or used within your own product installation process so as not to require user interaction during the RTX installation process.

The method used to activate and configure will depend on whether or not the user has network connectivity.

### Product Installation

#### Before Installing

Before beginning the installation, do the following:

- Review the *RTX 2016 Silent Install Guide*.
- Verify that your configuration meets the system requirements described in the *RTX 2016 Silent Install Guide*.
- You must have administrator privileges on your system. Log on with administrator privileges or start the RTX installation using Administrator privileges.
- RTX requires Microsoft .NET 4.0 to be installed on the system. If it is not already installed, you will be prompted to have RTX install it for you.
- You must reboot the system after RTX is installed.

# Getting the Installation Package

This release can be downloaded from IntervalZero's website or copied from the IntervalZero CD.

**NOTE: The RTX Runtime components are also available as merge modules that can be included in the installation of an OEM product. See [Scenario 3: OEM Including RTX Merge Modules Within Their Installation](#) for more information.**

## Performing the Install

The silent installer provides the ability to install the RTX Runtime from the command line. This makes it possible to install the RTX runtime within another product installation. Take note of the following information before you begin.

- If a previous version of RTX is already installed on the system, you must uninstall it and reboot the system before you can install RTX. If an update was applied to that previous version, you must also manually uninstall the update.
- **Administrator privileges are required** — Installation must be done from an account that has administrator privileges. This can be done in one of several ways:
  - From any version of Windows:
    - a. Right-click to start a command prompt and select **Run as...** from the pop-up menu.
    - b. After the command prompt appears, run the installer using the options described under *Installation Options*.
  - From a pre-Vista version of Windows:
    - a. Log onto an account with administrative privileges and begin the installation as described in this document.

## Installation Command Line Parameters

### MSI Supported Options

The RTX Silent Installer uses the standard Windows Installer Component (`msiexec.exe`) to perform the installation. You can use other supported `msiexec.exe` options if desired. For a full list of options, enter this command in a Command Prompt:

```
msiexec.exe /?
```

Option	Description
/s	<b>Optional.</b> Makes the <code>setup.exe</code> run silently.
/v	<b>Optional.</b> Tells <code>setup.exe</code> to pass the quoted parameters into <code>msiexec.exe</code> .
/qn	<b>Required.</b> Tells <code>msiexec.exe</code> to run silently.

## Unsupported Options

The following options are not supported. If used, an error message will appear and setup will abort.

Option	Description
/a	Administrative install  <b>IMPORTANT! An administrative install, performed using the /a option, is not the same as “running with administrative permissions”. The RTX Runtime Silent Installation must be run with administrative permissions, as explained in this document. An administrative install is performed to a network for the purpose of making a product available to users in a workgroup. This type of group-wide installation is not supported by RTX.</b>
/j	Advertise a product

## Available RTX Options

Option	Description
ADDLOCAL	<b>Optional.</b> Used to select which features to install on the system. See <i>ADDLOCAL Options</i> for more information.
RTXDIR=<Directory>	<b>Optional.</b> Installation directory. If you omit this parameter, the installation process installs RTX Runtime into this directory:  <WINDISK>\Program Files\IntervalZero\RTX  where <WINDISK> represents the disk on which Windows is currently installed. If you use this parameter, your installation process is responsible for verifying that the disk exists and the directory is valid and writeable.
DT_ICONS	<b>Optional.</b> The DT_ICONS parameter instructs the installer to add RTX icons to the desktop. If you want RTX to be hidden from the user, do not use this parameter.

SM\_ICONS

**Optional.** The SM\_ICONS parameter instructs the installer to add RTX to the Start menu. If you want RTX to be hidden from the user, do not use this parameter. Users can still access RTX Properties from the Control Panel. When this parameter is not specified, no start menu icons are displayed.

**NOTE: Icons are installed by default. You can suppress them by including DT\_ICONS=0 and SM\_ICONS=0. For example:**

```
RTX_2016_Setup.exe /s /v"/qn ADDLOCAL=HeadersAndLibraries,Tools,VS130 DT_ICONS=0  
SM_ICONS=0  
RTXDIR="C:\Program Files\IZ\RTX\"
```

## ADDLOCAL Options

Arguments to the RTX Silent Installer ADDLOCAL parameter are shown in the table below. RTX uses MSI logic to handle selection of features during silent installation. You can implement the ADDLOCAL property to define a comma-delimited list of features to install.

Option	Description
Documentation	<b>Optional.</b> Information on using the Subsystem, utilities, and tools.
HeadersAndLibraries	<b>Optional.</b> Headers and libraries needed to build RTSS applications.
Subsystem	<b>Optional.</b> Drivers and utilities that make up the RTX Subsystem.
DotNetRuntimeSupport	<b>Optional.</b> Installs runtime support for .Net.
RTTCIPSupport	<b>Optional.</b> Includes the RTX realtime TCP/IP stack and a number of NIC drivers.
Samples	<b>Optional.</b> Sample applications using the RTX Subsystem.
Tools	<b>Optional.</b> A set of tools and utilities for diagnosing issues and monitoring performance.
SampleSource	<b>Optional.</b> Useful sample application code. This includes device driver samples, as well as RTSS application samples, and Win32 samples showing how to adjust RTX properties programmatically.
Symbols	<b>Optional.</b> Debugging symbols for the RTX Subsystem.
MSVSSupport	<b>Optional.</b> Wizards and debugger add-ins for Microsoft Visual Studio.
VS2013	<b>Optional.</b> Wizards and debugger add-ins for Microsoft Visual Studio 2013.

VS2015

**Optional.** Wizards and debugger add-ins for Microsoft Visual Studio 2015.

---

WinDbgSupport

**Optional.** Real-time debugging support for Microsoft WinDbg.

The installer looks through the entire list of ADDLOCAL parameters provided, and if an option is found that isn't recognized as a valid switch by the installer, an error message is displayed and the installation will not continue.

**NOTE: Selecting a sub-feature will automatically select its parent. For example, including RTTCPIPSupport will automatically include Subsystem.**

## Format

The following two examples would produce identical results:

```
RTX_2016_Setup.exe /s /v"/qn  
ADDLOCAL=  
=We-  
lcome,Documentation,HeadersAndLibraries,Subsystem,DotNetRuntimeSupport,RTTCPIPSupport,  
  
Samples,Tools,SampleSource,Sym-  
bols,MSVSSupport,VS80,VS90,VS100,VS110,WinDbgSupport"
```

and

```
RTX_2016_Setup.exe /s /v"/qn ADDLOCAL=ALL"
```

In the example below, only the Runtime with Tools, Headers and Libs, and Visual Studio 2010 Support is installed:

```
RTX_2016_Setup.exe /s /v"/qn ADDLOCAL=HeadersAndLibraries,Tools,VS100"
```

For more information, see the *RTX 2016 Silent Install Guide*.

# Product Activation and Configuration

You can activate your product and configure the RTX boot configuration using a Command Line utility

### **Recommended License Type:**

*Node Locked – Pool Activation.* For more information, see [License Types](#).

# Activating your Product

---

To activate your product (Internet connection required):

1. Navigate to the `RTX\bin` directory and run `RtxActivationUtil.exe` as Administrator.
2. Type the `-a` flag, and then provide your activation key. For example:

```
RtxActivationUtil.exe -a IZRTX-111-2222-3333-4444-5555-TCP-111-2222-3333-4444-5555-IZSDK-111-2222-3333-4444-5555
```

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

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

## Configuring your System

---

Setting the boot configuration (.NET 4.0 required):

1. Navigate to the `RTX\bin` directory.
2. Run `RtxActivationGUI.exe` as Administrator.
3. Provide the number of Windows `-w` and RTSS `-r` processors. For example, to assign 3 processors to Windows and 5 processors to RTX, you would type:

```
RtxActivationGUI.exe -w 3 -r 5
```

4. Restart the system.

**NOTE: For complete usage information, see [Appendix A: RTX Activation and Configuration Usage](#).**

# 3

## Scenario 3: Including RTX Merge Modules within Your Installation

In this scenario, RTX is installed by including RTX Merge Modules within your own product installation process. Activation and configuration occurs silently on the target system after installation is completed.

### Product Installation

#### Before Installing

- Before starting installation of RTX, review the system requirements in the *RTX Install Guide for Merge Modules*.

#### Performing the Install

---

##### To install RTX Merge Modules:

1. Download the self-extracting executable, `RTX_2016_MM_Setup.exe`, from the IntervalZero web site:

<http://www.intervalzero.com/rtx-2016-downloads/#tab-1>

**NOTE:** For access to evaluation kits, visit the Evaluation page at <http://www.intervalzero.com/>.

In the form that appears, select RTX 2016 from the drop-down list, fill out the contact information, and click **Submit**.

2. Double-click the `RTX_2016_MM_Setup.exe`.
3. Click **Next** in the IntervalZero RTX Merge Modules installation Welcome window.

**NOTE: If Microsoft .NET 4.5.1 is not already installed on your machine, it will now be installed for you. Click Install to continue.**

4. Read the End User License Agreement, select **I accept the terms in the license agreement** and then click **Next**.
5. In the Custom Setup screen, view the default features that will be installed, make any changes if desired and then click **Next**.
6. In the Ready to Install the Program screen click **Install**.
7. View the status bar as the installation proceeds.
8. Click **Finish** in the installation Completed screen.

## Files Added During Installation

The RTX Merge Modules installation adds files to the following directory:

```
c:\Program Files\IntervalZero\RTX Merge Modules
```

Merge Modules can be found in the subdirectory

```
\Repository\MergeModules
```

The merge modules that are installed include:

- `haspds.msm`
- `RtxManaged.msm`
- `RtxSubsystem.msm`
- `RtxTcpip.msm`
- `RtxTools.msm`
- `RtxPrereq.msm`
- `VirtualNic.msm`

Samples can be found in:

```
\Samples\InstallShield2008\SampleInstall.ism
```

- Sample InstallShield Setup Project file

\Samples\VisualStudio9Setup\VSISample.vdproj

- Sample Visual Studio Installer Merge Module Project

## Merge Module Deployment

Once the merge modules have been installed onto the development system, they can be included in a setup file that will be installed on a target system.

### Runtime Installation Requirements

In addition to the target machine operating system requirements listed at the start of this document, take note of the following information when RTX merge modules are added to an installation.

- **Administrator privileges are required** — Installations using RTX merge modules must be done from an account that has administrator privileges.
- You must reboot after RTX has been installed.

### Merge Module Dependencies

If any of the RTX merge modules are added to an installation, they must include the RTX Subsystem, which is contained in the merge module file `RtxSubsystem.msm`.

### Merge Module Properties

Before adding the RTX Runtime merge modules to an installation kit, note the mandatory and optional properties listed in this section.

Error messages are listed at the end of this document.

Property	Description	Set to...
EMAILADDRESS	<b>Optional.</b> User email address.	Valid email address

Property	Description	Set to...
RTX_ERROR_DISPLAY	<p><b>Optional.</b> Used to determine how error messages will be displayed.</p> <p>If this property is not added, the default behavior is Message box error display.</p>	<p>One of the following:</p> <p>MessageBox – Custom action error messages will be displayed in a message box as they do during a normal RTX installation.</p> <p>StringRegVal – The full text of an error message will be written into the registry location "InstallError" under the key SOFTWARE \Microsoft\Windows \CurrentVersion \Uninstall \{E1A7EFBE-9B1A-4517-BEF8-659A55AA93B4}</p> <p>NumRegVal – The error number of an error will be written into the registry location "InstallError" under the key SOFTWARE \Microsoft\Windows \CurrentVersion \Uninstall \{E1A7EFBE-9B1A-4517-BEF8-659A55AA93B4}</p>
RTX_WARNING_DISPLAY	<p><b>Optional.</b> Used to determine how warning messages will be displayed.</p> <p>If this property is not added, the default behavior is MessageBox error display.</p>	<p>One of the following:</p> <p>MessageBox – Custom action warning messages will be displayed in a message box as they do during a normal RTX installation.</p> <p>StringRegVal – The full text of a warning message will be written into the registry location "InstallWarning" under the key SOFTWARE \Microsoft\Windows \CurrentVersion\Uninstall \{E1A7EFBE-9B1A-4517-BEF8-659A55AA93B4}</p> <p>NumRegVal – The error number of a warning will be written into the registry location "InstallWarning" under the key SOFTWARE \Microsoft\Windows \CurrentVersion\Uninstall \{E1A7EFBE-9B1A-4517-BEF8-659A55AA93B4}</p>

Property	Description	Set to...
RTXDIR	<b>Required.</b> Used to determine where the RTX subsystem files will be installed. Default is  "%ProgramFiles%\IntervalZero\RTX"  or C:\Program Files\IntervalZero\RTX	Directory location (will be created if it does not exist).
DT_ICONS	<b>Optional.</b> Used to instruct the installer to add RTX icons to the desktop.	1 to enable. Otherwise, the default is for icon addition to be disabled.
SM_ICONS	<b>Optional.</b> Used to instruct the installer to add RTX to the Start menu.	1 to enable. Otherwise, the default is for Start menu addition to be disabled.

## Target Activation and Configuration

Once RTX is installed on your target system, you must activate the RTX product and configure system processors using a Command Line utility.

### Recommended License Type:

*Node Locked – Pool Activation.* For more information, see [License Types](#).

## Activating your Product

To activate your product (Internet connection required):

1. Navigate to the RTX\bin directory and run `RtxActivationUtil.exe` as Administrator.
2. Type the `-a` flag, and then provide your activation key. For example:

```
RtxActivationUtil.exe -a IZRTX-111-2222-3333-4444-5555-IZTCP-111-2222-3333-4444-5555-IZSDK-111-2222-3333-4444-5555
```

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

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

# Configuring your System

---

## Setting the boot configuration (.NET 4.0 required):

1. Navigate to the `RTX\bin` directory.
2. Run `RtxActivationGUI.exe` as Administrator.
3. Provide the number of Windows `-w` and RTSS `-r` processors. For example, to assign 3 processors to Windows and 5 processors to RTX, you would type:

```
RtxActivationGUI.exe -w 3 -r 5
```

4. Restart the system.

**NOTE:** For complete usage information, see **Appendix A: RTX Activation and Configuration Usage**.

# 4

## Scenario 4: Installing on Windows Embedded Standard 7

In this scenario, RTX installation is accomplished through the Windows Image Build Wizard, the Image Creation Editor, and RTX Silent install. RTX activation and configuration is completed silently after the first boot of the full Operating System that contains RTX.

**NOTE: RTX requires .NET 4.0 for configuration on Windows 7 systems.**

### Product Installation

This section will walk you through the steps necessary to create a Windows Embedded Standard 7 image that includes the RTX Runtime.

### WES7 Image Creation Steps

Creating an image that includes the RTX Runtime requires the following steps:

- Install the Windows Embedded Standard 7 Toolkit.
- Start the Image Configuration Editor.
- Create an Answer File (AF).
- Select a Distribution Share (DS).
- Add the RTX Silent Installer to the Distribution Share.
- Add the RTX installation command to the Answer File.
- Add Additional Components to the Image.
- Analyze Installation Kit Dependencies.

- Validate the Answer File.
- Create Image Files.
- Create a Bootable Device.
- Add Image Files to the Device.
- Boot the WES7 Install on the Target System
- Customize the Image.
- Activate RTX.

## Create Image Using ICE

The Image Configuration Editor (ICE) allows you to create an answer file that will define the components and settings for your target installation.

---

### Start the Image Configuration Editor:

Once the Windows Embedded Standard 7 Toolkit has been installed, start the Image Configuration Editor from the Start menu by selecting:

**Windows Embedded Standard 7 > Image Configuration Editor**

---

### Create an answer file:

To create a new answer file

From the **File** menu, select **New Answer File**.

**NOTE: The new answer file has a default name of `Untitled`. To name the file, save the answer file by selecting **Save Answer File** from the File menu. For now, ignore validation errors as they will be corrected later.**

---

### Select a distribution share:

All components that will be used to build the image are stored in a distribution share (DS) folder. Using a shared folder allows the same source to be used to create multiple images. Preconfigured, default distribution shares include:

- `C:\Program Files\Windows Embedded Standard 7\DS`

For a 32-bit distribution built on a 32-bit development computer

- C:\Program Files\Windows Embedded Standard 7\DS64

For a 64-bit distribution share built on a 32-bit development computer

Since IntervalZero RTX Runtime supports only the 32-bit version of WES7, to ensure you have the correct distribution share:

1. Right-click the directory specification under the Distribution Share heading.
2. Click **Select Distribution Share** from the pop-up menu.
3. Browse to and then double-click:

**C:\Program Files\Windows Embedded Standard 7\DS**

**NOTE: This assumes that Windows Embedded Standard 7 was installed in the default directory.**

---

### Add the RTX Runtime Installer to the distribution share:

The distribution share should contain all components needed to build the image. To include the RTX Installer in the image, it must be added to a subdirectory of the distribution share. To do this:

1. Right-click the directory name at the top of the Distribution Share tree.
2. Select **Explore Distribution Share...** from the pop-up menu.
3. When an explorer window pops up:
  - a. Browse to (or create, if it does not exist) the following subdirectory in the distribution share directory tree.

`<DS>\$OEM$ Folders\Custom Files\$OEM$\$1`

Where the default value of `<DS>` is `C:\Program Files\Windows Embedded Standard 7\DSSP1`.

- b. Copy the RTX Runtime installer (`RTX_2016_Setup.exe`) to this subdirectory

**NOTE: The `\$OEM$\$1` directory represents the root of the drive onto which you will install Windows Embedded Standard 7.**

To ensure files in this `$OEM$` directory and subdirectories are included in your image:

1. Right-click the Answer File (name, or "Untitled" if it has not yet been saved).
2. In the pop-up menu, click **Insert Oem Folders Path**.
3. Browse to `<DS>\$OEM$ Folders\Custom Files\$OEM$`

After the command has been added, you can see it by browsing the Answer File pane to `Product\Operating System\Foundation Core\Windows Embedded Edition\Setup_x86`, and then look for *PathAndCredentials* under *OEMFoldersPaths* in the **Settings** pane.

For more information, refer to the MSDN article:

[Add Custom Files and Folders Using Image Configuration Editor](#)

---

### Add the RTX installation command to the answer file:

ICE allows the developer to add custom commands to the answer file. To perform an installation of the RTX Runtime, add it to the answer file as follows:

1. Right-click the Answer File (name, or Untitled if it has not yet been saved).
2. In the pop-up menu, click **Insert Synchronous Command to Pass 7 oobeSystem**.
3. Enter the RTX Runtime installation command using the full directory path.
4. Set the **Order** value to 2
5. Click **OK**.

As noted above, since the Installer file was copied to the `\$OEM$\$1` subdirectory, an example of the command line would be :

```
C:\RTX_2016_Setup.exe
```

For information on installing the RTX Runtime Silently, see the *RTX Silent Install Guide*.

#### NOTE:

After the commands have been added, you can see them by browsing the Answer File pane to `Product\Operating System\Foundation Core\Windows Embedded Edition\Shell-Setup_x86`, and then looking for *CommandLine* under the **FirstLogonCommands, Synchronous Commands** in the Settings pane.

After the RTX Runtime install command has run, you must reboot your system for the RTX Runtime installation to complete.

After the target system boots and the RTX Runtime installation has run, the install kits will still reside in the base directory. You can optionally add a second synchronous command to remove the file, such as:

```
cmd /c del "C:\RTX_2016_Setup.exe"
```

---

## Add additional components to the image:

A new WES7 answer file begins with the Windows Embedded Edition Foundation Core component. Additional components are selected by the user. RTX requires both the Windows Installer and the Device Driver Frameworks.

Follow these instructions to add each component:

1. Expand the Distribution Share to locate the component.
2. Right-click the component.
3. From the pop-up menu, click **Add to Answer File**.

A new WES7 answer file requires the following components:

- **Packages > FeaturePack > .NET Framework > .NET Framework 2.0 Client Profile**
- **Packages > FeaturePack > .NET Framework > .NET Framework 3.0 Client Profile**
- **Packages > FeaturePack > .NET Framework > .NET Framework 3.5 Client Profile**
- **Packages > FeaturePack > System Services > Windows Installer**
- **Packages > FeaturePack > Devices and Printers > Driver Frameworks**
- **Packages > FeaturePack > Management > Windows Application Compatibility**
- **Packages > FeaturePack > Management > Windows Updates**
- **Packages > FeaturePack > Management > System Management > Group Policy Management**
- **Packages > FeaturePack > Management > System Management > System Management Administration**
- **Packages > FeaturePack > Management > System Management > System Management Utilities**
- **Packages > FeaturePack > Management > Power Management**
- **Packages > FeaturePack > Networking > Remote Access Service (RAS)** (required for activation over a network connection)

**NOTE: RTX requires .NET 4.5.1 for configuration on Windows 7 systems.**

Additional components can be added either by selecting them individually, or by including a template that contains a common group of features. The WES7 kit provides the ability to use one of several predefined templates. To view and select one of these, do the following:

1. Expand the Distribution Share to locate **Templates > IBW**.
2. Right-click a template.
3. Select **Add to Answer File** from the pop-up menu.

**NOTE: Once you have selected each of the components that you want to include, you can save your own template to be used as an initial starting point for future image builds.**

---

### Analyze installation kit dependencies:

The Image Configuration Editor provides a tool to analyze a silent installer file and determine what components it depends upon. Analyze the RTX Runtime installation file as follows:

1. From the Tools pull-down menu, select **Analyze Static Dependencies**.
2. Browse to the `RTX_2016_Setup.exe` file that was added to your selected distribution share.
3. A pop-up status window will appear while static dependencies are being analyzed.
4. In the Analyze Static Dependencies window
  - Select Required Packages.
  - Enter a name for the file subfolder (such as `RtxDependencies`).
  - Click **OK**.

The selected components will now be in the Answer File.

---

### Validate the answer file:

The new answer file will include the Windows Embedded Edition Foundation Core and any additional components you have added. Some of the components that were added will have required dependencies and others will allow you to select from a group of optional dependencies. To ensure that all required and optional dependencies are included,

1. From the **Validate** menu, select **Validate Only**.
2. In the Messages Pane at the bottom of the window, double-click each validation description and select optional and required components from the Resolve Dependencies window.

Repeat the steps above until no more validation errors are displayed.

**NOTE: After making any changes to the answer file (such as adding components or importing a template) you should repeat the validation steps to ensure any dependencies are satisfied and then save the answer file using File > Save Answer File.**

---

## Create image files:

Once all selections have been made and the Answer File has been saved, create image files that will be copied to a bootable device. Create the Windows Image Builder Wizard (IBW) files using:

### Tools > Create Media > Create IBW Image from Answer File

Select a directory location to store the IBW image files. Remember this directory location, as it will be needed when the image is put onto a bootable device. For example, `C:\temp\IBW_wRTX_Image`.

**Optional installation procedure:** This MiniTutorial walks you through the steps needed to configure a single device that will boot and then automatically begin setup of the WES7 install. It is also possible to install WES7 after booting from a lightweight or preinstallation environment (PE) version of Windows. To do that, see the section titled *Installing From PE Image* at the end of this document.

Once the image has been saved, you can exit the Image Configuration Editor.

## Put Image Files onto a Bootable Device

To install the new Windows Embedded Standard 7 onto your target, you must first create a bootable device. The steps needed to create bootable media that will automatically run Setup from the IBW image are listed below.

1. Create a bootable device (USB flash drive, CD-ROM disk or other bootable media).
2. Copy all files from the IBW image directory to the bootable device.
3. Boot the target system from the newly configured device and setup of the IBW image files will automatically begin.

Instructions for creating a bootable USB Flash Drive (UFD) and for creating a bootable CD-ROM are given below. Select one of these, or read the following MSDN article for help with other device options:

### Image Builder Wizard – Quick and Easy Embedded OS Creation

**NOTE: Instructions are given for creating a bootable UFD and for creating a bootable CD-ROM. Other media that can be booted on your system can also be used. Only one media type needs to be selected and created.**

---

## Create a bootable UFD with IBW image files:

To create a bootable USB Flash Drive (UFD) open a command prompt with Administrator privileges and use the diskpart utility as shown below. These instructions can also be found in the MSDN article titled *Create a Bootable Utility UFD*.

**NOTE: The diskpart utility in Windows XP does not show removable storage in a disk list. So, this step should be performed using a Windows Vista or Windows 7 system.**

1. Start the disk partition tool:

```
diskpart
```

2. Determine your disk number:

```
list disk
```

3. Select your device

```
select disk <disk_number>
```

4. Remove partition and volume information

```
clean
```

5. Create a primary partition

```
create partition primary
```

6. Set focus to the newly created primary partition

```
select partition 1
```

7. Mark the partition with focus as a valid system partition

```
active
```

8. Format the partition

```
format FS=ntfs LABEL=<Label> QUICK
```

9. Assign a drive letter to the partition

```
assign
```

or

```
assign LETTER=<L>
```

10. Exit the diskpart utility

```
exit
```

Copy all files from the IBW image directory to the bootable UFD using the following command:

```
xcopy C:\temp\IBW_wRTX_Image\*.*/s /e /f L:\
```

where C:\temp\IBW\_wRTX\_Image is your IBW image file directory and L:\ is your UFD drive letter.

---

### Create a bootable CD-ROM with IBW image files:

To create a bootable CD-ROM with IBW image directory files, you must first create an ISO that contains a bootable image of the IBW directory as follows:

1. From the Start menu on the development computer, select

**All Programs > Windows Embedded Standard 7 >**

**Windows PE Tools Command Prompt**

A Windows PE Tools Command Prompt window opens.

2. At the Windows PE Tools command prompt, use the `Oscdimg` tool to create an ISO file that has the contents of the image directory you created, using the `ETFSBOOT.COM` command located in the `BOOT` subdirectory. For example, if your image directory is `C:\temp\IBW_wRTX_Image` and you want to create your ISO in `C:\temp\`, called `IBW_wRTX.iso` type the following:

```
oscdimg -n -bc:\temp\IBW_wRTX_Image\BOOT\ETFSBOOT.COM C:\temp\IBW_wRTX_Image  
C:\temp\IBW_wRTX.iso
```

Where parameters to `oscdimg` are:

`-n` allow long names

`-blocation` - Location of boot sector file (no space after the "b")

Location of image source files

Location of target ISO file

The `Oscdimg` command above will create a bootable ISO file named `IBW_wRTX.iso` in the `c:\temp\` folder. Using CD-ROM burning software, burn the ISO file to a blank CD-ROM.

For more information, refer to the MSDN article: [Create and burn the ISO file to a CD-ROM](#)

## Boot the WES7 Install on the Target System

The Image Configuration Editor allows you to create an answer file that includes the components and settings for an image that will be installed onto your target system.

Before booting your image, check that the system BIOS is set to ensure that the boot order includes the device that you have built your IBW image onto.

After inserting your boot media, the following should occur:

- Messages will display indicating:
  - Windows is loading files
  - Starting Windows
  - Setup is Starting
- License agreement will be displayed. Read and accept terms and click **Next**.
- Language preferences will be displayed. Select and click **Next**.
- Available disks will be displayed.

- Select the disk for the target installation.
- To format the disk, expand drive options and select **Format**.
- To use the selected disk click **Next**.
- Windows installation messages will appear including:
  - Copying Windows files
  - Expanding Windows files
  - Installing features and updates

The system will reboot to apply system settings. When the system comes back up, the Windows Boot Manager will include **Windows Embedded Standard** as a new boot option.

**NOTE: If using a bootable UFD, remove it after system files have been copied, and before a reboot occurs.**

## Customize the Image

The first time you start your image, the following setup prompts will appear.

- Username and Computer name
- An optional user password
- Product key

Customization will continue after selecting one of the following:

- User recommended settings
- Install important updates only
- Ask me later

The last prompt will be for time and date settings.

After screens for *Welcome* and *Preparing your desktop* the RTX Runtime installation will occur.

- A Windows Security pop-up window will confirm the installation IntervalZero software. Click **Install** to continue.
- A warning that *setup was unable to interface with the power management service* may appear. Since RTX does not use Power Management services, this warning can be ignored. Click **OK** to continue.

After the installation of RTX, you must reboot your system for the RTX Runtime installation to complete.

**IMPORTANT! To confirm that the system has been rebooted after the installation of RTX, go to the Control tab of the RTX Properties control panel. If status is Undetermined, the system needs to be rebooted. If status is Stopped you can start the subsystem by clicking the Start button.**

To make custom changes to the Windows Image (.wim) file of a target system that has been installed and is running, use the Deployment Image Servicing and Management (DISM) tool.

## Product Activation and Configuration

RTX activation and configuration is done silently using a Command Line utility.

**NOTE: RTX requires .NET 4.0 for configuration on Windows 7 systems.**

### Recommended License Type:

*Node Locked – Pool Activation.* For more information, see [License Types](#).

## Activating your Product

---

To activate your product (Internet connection required):

1. Navigate to the `RTX\bin` directory and run `RtxActivationUtil.exe` as Administrator.
2. Type the `-a` flag, and then provide your activation key. For example:

```
RtxActivationUtil.exe -a IZRTX-111-2222-3333-4444-5555-IZTCP-111-2222-3333-4444-5555-IZSDK-111-2222-3333-4444-5555
```

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

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

## Configuring your System

---

Setting the boot configuration (.NET 4.0 required):

1. Navigate to the `RTX\bin` directory.
2. Run `RtxActivationGUI.exe` as Administrator.
3. Provide the number of Windows `-w` and RTSS `-r` processors. For example, to assign 3 processors to Windows and 5 processors to RTX, you would type:

```
RtxActivationGUI.exe -w 3 -r 5
```

4. Restart the system.

**NOTE:** For complete usage information, see **Appendix A: RTX Activation and Configuration Usage**.

# 5

## Scenario 5: Deploying RTX in an Image for Auto Activation

In this scenario, RTX is installed and configured for auto activation before an image is created for deployment.

### Deployment Steps

Deployment of RTX in this scenario requires the following steps:

1. Product Installation
2. Product Activation and Configuration
3. Image Creation
4. RTX Activation on the Target System

### Product Installation

#### Before Installing

Before beginning the installation, do the following:

- Review the *RTX 2016 Install Guide*.
- Verify that your configuration meets the system requirements described in the *RTX 2016 Install Guide*.

- You must have administrator privileges on your system. Log on with administrator privileges or start the RTX installation using **Run as Administrator**.
- IntervalZero recommends that you de-select the Windows "Automatically reboot" option for Startup and Recovery from the Advanced tab of the System Properties page of the Windows Control Panel. De-selecting this parameter allows you to view blue screen information.
- Exit all Windows programs.
- If a previous version of RTX is already installed on the system, you must uninstall it and reboot the system before you can install RTX 2016. If an update was applied to that previous version, you must also manually uninstall the update.
- RTX requires Microsoft .NET 4.0 to be installed on the system. If it is not already installed on the system, you will be prompted to have RTX install it for you.

**NOTE: When you upgrade your operating system (for example, from Windows Vista to Windows 7), you must uninstall and then reinstall RTX after the OS upgrade.**

## Performing the Install

---

### To install RTX:

1. Download the self-extracting executable, `RTX_2016_Setup.exe`, from the IntervalZero web site:

<http://www.intervalzero.com/rtx-2016-downloads/#tab-1>

**NOTE:** The download page also includes:

- The RTX Merge Module installer:

`RTX_2016_MM_Setup.exe`

For access to evaluation kits, visit the Evaluation page at

<http://www.intervalzero.com/>.

In the form that appears, select RTX 2016 from the drop-down list, fill out the contact information, and click **Submit**.

2. Double-click the file `RTX_2016_Setup.exe`.
3. On Windows 7 or Vista machines, if necessary, click **Continue** in the User Account Control dialog box.

**NOTE: If you are not a member of the Administrators group, this prompt requires you to enter the password for the Administrators account.**

4. Click **Next** in the IntervalZero RTX installation Welcome window.

**NOTE: If Microsoft .NET 4.0 is not already installed on your machine, you will be prompted to have RTX install it at this point.**

5. Read the End User License Agreement, select **I accept the terms in the license agreement** and then click **Next**.
6. Enter your user name, organization, and e-mail address, and then click **Next**.
7. Optionally, change to a destination other than the default:  
`C:\Program Files\IntervalZero\RTX.`  
Click **Next** in the Destination Folder screen.

8. In the Custom Setup screen, select the components and features you want to install, then click **Next**.

**NOTE: If you select the Win32 Enabled Managed Code Support feature during installation, the Managed Code DLL will be registered by default.**

**NOTE: The Custom Setup screen only displays features in Visual Studio versions that are currently installed. If you install Visual Studio after installing RTX, you can add support for new functionality by changing the RTX installation through Add/Remove Programs.**

9. In the Ready to Install the Program screen, select whether you want Desktop Icons and/or Start Menu Icons and then click **Install**.
10. If prompted, click **Install** to install the RTX Plug and Play driver. (Windows 7 or Vista)
11. Click **Finish** in the installation Completed screen.
12. Activate your product.

## Product Activation and Configuration

You can set up your system to auto-activate your product and configure the RTX boot configuration using a Command Line utility.

### **Recommended License Type:**

*Node Locked – Pool Activation.* For more information, see [License Types](#).

# Auto-Activating RTX

---

## To activate your product (Internet connection):

1. Navigate to the `RTX\bin` directory and run `RtxActivationUtil.exe` as Administrator.
2. Type the `-aa` flag, and then provide your activation key. For example:

```
RtxActivationUtil.exe -aa IZRTX-111-2222-3333-4444-5555-IZTCP-111-2222-3333-4444-5555-IZSDK-111-2222-3333-4444-5555
```

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

This will set up the system to activate upon next reboot.

---

## To activate your product (no Internet connection):

1. Navigate to the `RTX\bin` directory and run `RtxActivationUtil.exe` as Administrator.
2. Type the `-af` flag, and then provide your activation key. For example:

```
RtxActivationUtil.exe -af IZRTX-111-2222-3333-4444-5555-IZTCP-111-2222-3333-4444-5555-IZSDK-111-2222-3333-4444-5555 fingerprint.rfp
```

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

This will set up the system to generate a fingerprint file on the desktop. The fingerprint can then be used to generate a license file.

---

# Configuring your System

---

## Setting the boot configuration (.NET 4.0 required):

1. Navigate to the `RTX\bin` directory.
2. Run `RtxActivationGUI.exe` as Administrator.
3. Provide the number of Windows `-w` and RTSS `-r` processors. For example, to assign 3 processors to Windows and 5 processors to RTX, you would type:

```
RtxActivationGUI.exe -w 3 -r 5
```

4. Restart the system.

**NOTE:** For complete usage information, see [Appendix A: RTX Activation and Configuration Usage](#).

## Image Creation

Once RTX has been installed and successfully activated and configured, create an image for deployment on the target system.

## RTX Activation on the Target System

Once the image is deployed on the target system, reboot the machine. RTX will be automatically activated if the machine was connected to the Internet. If it was not connected, the image will have a fingerprint file that can be used to license the system.

# Appendix A:

## RTX Activation and Configuration Usage

The Command Prompt flags supported by the RTX Activation Utility are listed below.

### RtxActivationGUI.exe (Windows 7 and Above)

#### Usage

RtxActivationGUI.exe

#### Parameters

- w Proc - Sets the number of Windows processors. Requires -r. Restart is required.
- r Proc - Sets the number of RTSS processors. Requires -w . Restart is required.

### RTXActivationUtil.exe

#### Usage

RtxActivationUtil.exe

#### Parameters

- a Key - Creates and activates the RTX license.
- af Key file - Automatically creates the fingerprint file on next reboot.
- ef Key file - Exports a fingerprint file.
- lf File - Imports the license file.
- aa Key - Automatically activates the key on the next boot or reboot.

- if File - Imports the activation file.
- w Proc - Sets the number of Windows processors. Requires -r. Restart is required.  
Example:  
`RtxActivationUtility.exe -w 3 -r 5`
- r Proc - Sets the number of RTSS processors. Requires -w. Restart is required.  
Example:  
`RtxActivationUtility.exe -w 3 -r 5`
- v Displays the license that is currently activated.
- listdongles Provides a list of the dongles connected to the machine.
- detectdongle Detects the ID of the dongle connected to the machine.
- h Displays help.

# Resources

You can find more information on RTX deployment scenarios in these resources:

## **Installation, Activation, and Configuration**

- *RTX 2016 Install Guide*
- *RTX 2016 Silent Install Guide*
- *RTX 2016 Install Guide for Merge Modules*
- *MiniTutorial: Including RTX 2016 Runtime with Windows Embedded Standard 7*

## **General Product Information**

- RTX Product Documentation > <http://www.intervalzero.com/technical-support/guides-and-minitutorials/>

# Getting Support

IntervalZero offers a number of support options for RTX users, including technical support and the IntervalZero Website.

## Third-Party Support

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

## Contacting Technical Support by Phone

For technical support related to installing and using RTX, you can call 1-781-996-4481. At the prompt, press 3 for Support.

Hours are Monday - Friday, 8:30 a.m. – 5:30 p.m. US Eastern time (GMT-500), excluding holidays.

## Before Calling Technical Support

Please have the following information ready before calling IntervalZero Technical Support:

### **Your Support ID**

Customers who purchase direct support receive an e-mail address and password for use when accessing the IntervalZero support Website.

### **The Version Number of Your RTX Software**

Before calling technical support, determine the version of RTX installed on your system. Also, check to make sure you have a valid maintenance contract.

To obtain the RTX version number:

1. Click **Start > All Programs > IntervalZero > RTX 2016 > RTX Properties**.
2. Record the RTX version that is shown in the RTX Properties window.

## IntervalZero Website

The IntervalZero Customer Support Web page is located at:

<http://www.intervalzero.com/technical-support/>

The IntervalZero support web pages provide electronic access to the latest product releases, documentation, and release notes. With a valid e-mail address and password, you can access the online problem report database to submit new issues or to obtain the status of previously reported issues.