

ature is in a pre-release state and might change or have limited support. For more information, see the [product launch](#) ([/products/#product-launch-stages](#)).

This document describes how to attach the Visual Studio remote debugger to processes on a Compute Engine Virtual Machine running Windows.

Before you begin, ensure your virtual machine meets the following prerequisites:

- Running the Windows operating system
- Has a public IP address
- Has Remote PowerShell installed and enabled
 - If you don't want to enable Remote PowerShell connection, or if it's not installed on the VM, you can find steps to install the Visual Studio Debugger Remote Tools manually by searching for **MSDN Visual Studio Remote Debugging**.
 - You can also [add firewall rules](#) ([/compute/docs/vpc/using-firewalls](#)) to unblock the Debugger Remote Tool port.

You can [deploy an ASP.NET framework image](#)

(https://console.cloud.google.com/marketplace/details/click-to-deploy-images/aspnet?_ga=1.196962543.236660576.1482928062)

that meets all of these prerequisites.

To attach the remote debugger:

1. Select **Tools > Google Cloud Tools > Show Google Cloud Explorer** to launch the **Cloud Explorer**.
2. Right click the Compute Engine VM instance you want to attach the remote debugger to and select **Attach debugger**.

The attach debugger wizard displays.

3. Click **OK** when prompted to add firewall rules to allow traffic to the required ports.
 - a. The **Learn more** link in the dialog takes you to the [Opening firewall ports](#) (#open_firewall_port) section for more information.
4. Select the process to debug and click **OK**.

Note the following:

- The first time you connect to a remote VM instance, the wizard installs Visual Studio Debugger Remote Tools for you. This installation can take some time if the VM is in a different region.
- The debugger tools are installed in `Program Files\VisualStudioRemoteTools` on the target machine.
- You must load symbols manually if you optimize your release build:
 1. As you are debugging your application, select **Debug > Windows > Modules**.
 2. Locate your debuggee assembly.
 3. Right click the appropriate entry and select **Load Symbols**.

To enable remote debugging, you need to add firewall rules to allow traffic to the target machine and enable connection to the Debugging Remote Tools. For Visual Studio 2017, the port is **4022**.

Cloud Tools for Visual Studio can install and start remote tools for you using a remote PowerShell connection. You first must enable remote PowerShell HTTPs port **5986**.

When you are finished debugging, remove the firewall rules:

1. Select **Tools > Google Cloud Tools > Show Google Cloud Explorer** to launch the **Cloud Explorer**.
2. Right click the Compute Engine VM instance and select **Firewall Options...**
3. Clear the checkboxes for the **Allow Visual Studio Debugger connections to the instance** and the **Allow Remote PowerShell HTTPs traffic to the instance** firewall rules.
4. Click **Save** to remove the firewall rules.

