Installing GitHub Enterprise Server on Hyper-V

In this article

To install GitHub Enterprise Server on Hyper-V, you must deploy onto a machine running Windows Server 2008 through Windows Server 2019.

Prerequisites 🔗

- You must have a GitHub Enterprise license file. For more information, see "[Setting up a trial of GitHub Enterprise Server](#)" and "[About licenses for GitHub Enterprise](#)."
- You must have Windows Server 2008 through Windows Server 2019, which support Hyper-V.
- Most actions needed to create your virtual machine (VM) may also be performed using the [Hyper-V Manager](#). However, we recommend using the Windows PowerShell command-line shell for initial setup. Examples using PowerShell are included below. For more information, see the Microsoft guide [Getting Started with Windows PowerShell](#).

Hardware considerations 🔗

- [Minimum requirements](#)
- [Storage](#)
- [CPU and memory](#)

Minimum requirements 🔗

We recommend different hardware configurations depending on the number of user licenses for your GitHub Enterprise Server instance. If you provision more resources than the minimum requirements, your instance will perform and scale better.

User licenses	x86-64 vCPUs	Memory	Root storage	Attached (data) storage
Trial, demo, or 10 light users	4	32 GB	200 GB	150 GB
10 to 3,000	8	48 GB	200 GB	300 GB

3,000 to 5000	12	64 GB	200 GB	500 GB
5,000 to 8000	16	96 GB	200 GB	750 GB
8,000 to 10,000+	20	160 GB	200 GB	1000 GB

If you plan to enable GitHub Actions for the users of your instance, more resources are required.

For more information about these requirements, see "Getting started with GitHub Actions for GitHub Enterprise Server."

If you plan to enable Container registry for the users of your instance, more resources are required. For more information about these requirements, see "Getting started with GitHub Packages for your enterprise."

For more information about adjusting resources for an existing instance, see "Increasing storage capacity" and "Increasing CPU or memory resources."

Storage

We recommend a high-performance SSD with high input/output operations per second (IOPS) and low latency for GitHub Enterprise Server. Workloads are I/O intensive. If you use a bare metal hypervisor, we recommend directly attaching the disk or using a disk from a storage area network (SAN).

Your instance requires a persistent data disk separate from the root disk. For more information, see "System overview."

To configure GitHub Actions, you must provide external blob storage. For more information, see "Getting started with GitHub Actions for GitHub Enterprise Server."

The available space on the root filesystem will be 50% of the total disk size. You can resize your instance's root disk by building a new instance or using an existing instance. For more information, see "System overview" and "Increasing storage capacity."

CPU and memory

The CPU and memory resources that GitHub Enterprise Server requires depend on the levels of activity for users, automations, and integrations.

Any VMs you provision for your GitHub Enterprise Server instance must use the x86-64 CPU architecture. Other architectures are not supported, such as Aarch64 or arm64.

If you plan to enable GitHub Actions for the users of your GitHub Enterprise Server instance, you may need to provision additional CPU and memory resources for your instance. For more information, see "Getting started with GitHub Actions for GitHub Enterprise Server."

When you increase CPU resources, we recommend adding at least 6.5 GB of memory for each vCPU (up to 16 vCPUs) that you provision for the instance. When you use more than 16 vCPUs, you don't need to add 6.5 GB of memory for each vCPU, but you should monitor your instance to ensure it has enough memory.

> **Warning:** We recommend that users configure webhook events to notify external systems of activity on GitHub Enterprise Server. Automated checks for changes, or *polling*, will negatively impact the performance and scalability of your instance. For more information, see "About webhooks."

For more information about monitoring the capacity and performance of GitHub

Enterprise Server, see "Monitoring your instance."

You can increase your instance's CPU or memory resources. For more information, see "Increasing CPU or memory resources."

Downloading the GitHub Enterprise Server image 🔗

1. Download your license. For more information, see "Downloading your license for GitHub Enterprise."

2. Navigate to the image you want to use for your new instance.

    - Navigate to Release notes.
    - In the right sidebar, click the version you want to download.
    - Click **Download GitHub Enterprise Server X.X.X**.

3. Under "GitHub On-premises", select the "Select your hypervisor" dropdown menu and click **Hyper-V (VHD)**.

4. Click **Download for Hyper-V (VHD)**.

Creating the GitHub Enterprise Server instance 🔗

To create the instance, you'll need to import the GitHub Enterprise Server image to your virtual machine and attach an additional storage volume for your instance data. For more information, see "Hardware considerations."

1. In PowerShell, create a new Generation 1 virtual machine, configure the size based on your user license count, and attach the GitHub Enterprise Server image you downloaded. For more information, see New-VM in the Microsoft documentation.

    ```
    PS C:\> New-VM -Generation 1 -Name VM_NAME -MemoryStartupBytes MEMORY_SIZE -
    BootDevice VHD -VHDPath PATH_TO_VHD
    ```

2. Create a new virtual disk to use as an attached storage volume for your instance data, and configure the size based on your user license count. If reusing an existing disk, ensure that the disk is empty and there are no partitions. Replace `PATH_TO_DATA_DISK` with the path to the location where you create the disk. For more information, see "New-VHD" in the Microsoft documentation.

    ```
    PS C:\> New-VHD -Path PATH_TO_DATA_DISK -SizeBytes DISK_SIZE
    ```

3. Attach the data disk to your instance. For more information, see Add-VMHardDiskDrive in the Microsoft documentation.

    ```
    PS C:\> Add-VMHardDiskDrive -VMName VM_NAME -Path PATH_TO_DATA_DISK
    ```

4. Start the VM. For more information, see Start-VM in the Microsoft documentation.

    ```
    PS C:\> Start-VM -Name VM_NAME
    ```

5. Get the IP address of your VM. For more information, see Get-VMNetworkAdapter in

the Microsoft documentation.

```
PS C:\> (Get-VMNetworkAdapter -VMName VM_NAME).IpAddresses
```

6 Copy the VM's IP address and paste it into a web browser.

Configuring the GitHub Enterprise Server instance 🔗

To configure the instance, you must upload a license file, set the root Management Console password, configure the instance's settings, and restart the instance.

> **Warning**: To prevent an attacker from compromising the new instance, ensure that you personally set the root Management Console password and create the first user as soon as possible.

1 Copy the virtual machine's public DNS name, and paste it into a web browser.

2 At the prompt, upload your license file and set a management console password. For more information, see "[Managing your license for GitHub Enterprise](#)."

3 In the [Management Console](#), configure and save your desired settings. For more information, see "[Configuring GitHub Enterprise](#)."

4 The instance will restart automatically.

5 Click **Visit your instance**.

Further reading 🔗

- "[System overview](#)"
- "[About upgrades to new releases](#)"