Tableau Server on Windows in Microsoft Azure

Administrator Guide

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Install Tableau Server on Microsoft Azure

When you install Tableau on a Microsoft Azure virtual machine (VM), you still have the advanced capabilities of Tableau in a local environment. Running Tableau on a Microsoft Azure VM is an excellent choice if you want the flexibility of scaling up and scaling out without having to purchase and maintain an expensive fleet of servers. For instance, you can configure Tableau to be highly available, and integrate with all of the common enterprise applications (for example, Active Directory) that many organizations rely on.

Looking for Tableau on Linux? See Install Tableau Server on Microsoft Azure.

Tableau can take advantage of many native Azure features:

- Azure SQL Database: Relational database-as-a-service that uses the Microsoft SQL Server Engine.
- Azure Synapse Analytics: (formerly Azure SQL Data Warehouse) Massively parallel processing (MPP) cloud-based distributed database system.
- Apache Spark on Azure HDInsight: Open-source parallel processing framework for big-data analytic applications.
- Azure Active Directory: Cloud-based directory and identity management service.

In addition, you can store the data you use with Tableau Server using any of the following Microsoft features. Tableau provides native data connectors that enable you to connect to data in the following Microsoft data sources:

- Azure Synapse Analytics: Cloud data warehouse for enterprises.
- Microsoft Access: Relational database management system that is included in Microsoft Office.
- Microsoft Analysis Services: Online analytical and transactional processing (OLAP) and data mining tool in Microsoft SQL Server.
- Microsoft Excel: Spreadsheet included in Microsoft Office.
- Microsoft PowerPivot: Microsoft Excel add-in that enables you to import data from multiple sources into single workbook, create PivotTables and PivotCharts, and analyze the data.
- Microsoft SQL Server: Relational database management system that uses structured query language (SQL).

Tableau Server on Microsoft Azure deployment options

You can deploy Tableau Server on Microsoft Azure – by self-deploying, using the Azure Quick Start to deploy on a single VM running Linux, or through a preconfigured deployment on an Azure Marketplace VM. The following table shows the differences between each option.

Tableau Server	Azure VM Self-Deployment	Azure Quick Start	Azure Marketplace VM
Production ready	✓	✗	✗
Upgrade Tableau without replacing the VM	✓	✓	✗
Install on Linux	✓	✓	✗

Install on Windows	✓	✗	✓
Scale-up	✓	✓	✓
Scale-out (add nodes)	✓	✓	✗
Active Directory support	✓	✗	✓
14-day trial license	✓	✓	✗
BYOL license	✓	✓	✓

Each of the deployment options are described in more detail below:

- **Self-Deploy to Azure VM** - Provides the most flexibility and options to customize Tableau Server to your environment. If you are launching a system that will only run for a short period of time (i.e., for testing or evaluation purposes) use the Tableau Server on Azure Marketplace VM instead.

  Self-deployment of Tableau Server to an Azure VM is recommended for development, test, and production environments that start simple but may need to scale later.

  For more information about self-deployment, see Self-Deploy a Single Tableau Server on Microsoft Azure. For more information about deploying in a distributed environment, see Self-Deploy Tableau Server on Microsoft Azure in a Distributed Environment.

- **Tableau Server on Azure Quick Start** – Installs Tableau Server using an Azure Resource Manager template on a standalone Azure VM running CentOS, Redhat Enterprise Linux (RHEL), or Ubuntu Server, with all required infrastructure elements. This deployment strategy allows you to go live quickly and limit your overall costs.

The Tableau Server on Azure Quick Start is recommended for development, test, and production environments that start simple but may need to scale-up or scale-out later. You can use your own license (BYOL) or a free 14-day trial version. You can upgrade Tableau Server without having to replace your VM. For more information about installing Tableau Server using the Quick Start, see Tableau Server Linux Single Node at the Microsoft website.

- **Azure Marketplace VM** – One of the fastest ways to get Tableau Server up and running on Microsoft Azure, based on a pre-configured Server image, is through the Azure Marketplace. This option installs Tableau Server on an Azure VM running Windows. Tableau Server in Azure Marketplace is only available through a bring your own license (BYOL) model. After Tableau Server is up-and-running on the Azure VM, you can purchase a Tableau license and activate the associated product key. The Tableau Server Azure Marketplace VMs are recommended for quick testing and proof-of-concept environments only.

To install an Azure Marketplace VM

1. Go to the Azure Portal Marketplace and search for “Tableau Server”.
2. Select Tableau Server and “Create” the image.
3. Enter your subscription information and choose a resource group and a deployment location.
4. Select your Virtual Machine size.
5. Configure optional features such as your disk type, storage account, subnet, etc.
6. Validate your Server configuration.
7. Deploy your Tableau Server.

For more information about Tableau licensing options, search for "Licensing Overview" in the Tableau Help.

What You Need Before You Begin

Before deploying Tableau Server on Microsoft Azure, you must have the following:

- A Microsoft Azure subscription. If you don't already have a subscription, you can sign up for a free trial on the Microsoft Azure Free Trial website.
- A Tableau license.
  - For a standalone deployment, you can use a 14-day trial version of Tableau, which doesn’t require the use of a product key. After 14 days, you’ll need to purchase a Tableau license and activate the associated product key.
  - For a cluster-based deployment, you need a user-based license (which covers all authorized users of Tableau), a core-based license (with a minimum of 16 cores), or a Tableau subscription license. To obtain a product key, contact sales.

  For more information about Tableau licensing options, search for "Licensing Overview" in the Tableau Help.
- Microsoft Remote Desktop installed on your computer. You use Remote Desktop to sign in to the VM that is hosting Tableau Server. Remote Desktop is pre-installed on Windows-based operating systems. If you use a Mac, you can install Remote Desktop as a client from the Microsoft Download Center. If you're connecting from a computer running Linux, you can use rdesktop to connect to your Azure VM running Microsoft Windows. For more information, see How to connect and log on to an Azure virtual machine running Windows at the Microsoft Azure website.
- Tableau Server installer. You can download the installer from the Tableau Server Trial Download page.

Best Practices for Installing Tableau Server on Microsoft Azure

The following best practices make installing Tableau Server in the cloud a better experience.

- Search for "Plan Your Deployment" in the Tableau Server Help.
- Read What You Need Before You Begin.
- Search for "Security Hardening Checklist" in the Tableau Server Help
- If you're new to the cloud, use the Azure free tier to get familiar with working in the cloud before you deploy Tableau Server on Microsoft Azure.
- Read about and understand network topology on Microsoft Azure and how to architect it.

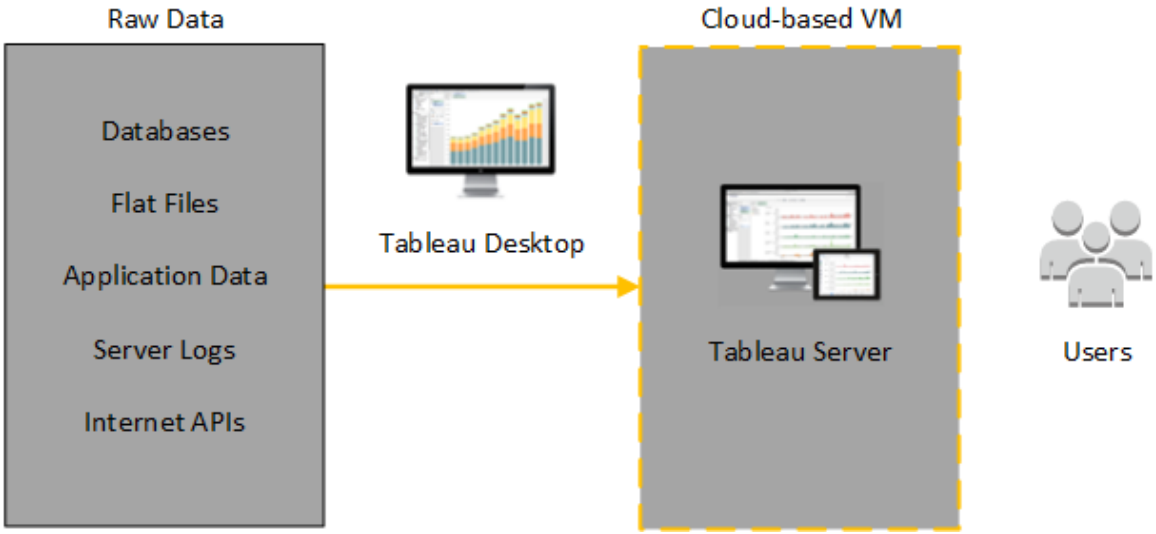
Keeping Costs Down

Microsoft Azure offers cloud-based services on a pay-as-you-go basis. Costs are determined by the services you run and amount of time you use them. Different combinations of instance types and sizes have different costs. For more information about services pricing, see Azure pricing. You can estimate your total monthly costs using the Microsoft Azure Pricing Calculator. You can also compare on-premises vs the cloud using the Microsoft Azure Total Cost of Ownership (TCO) Calculator.

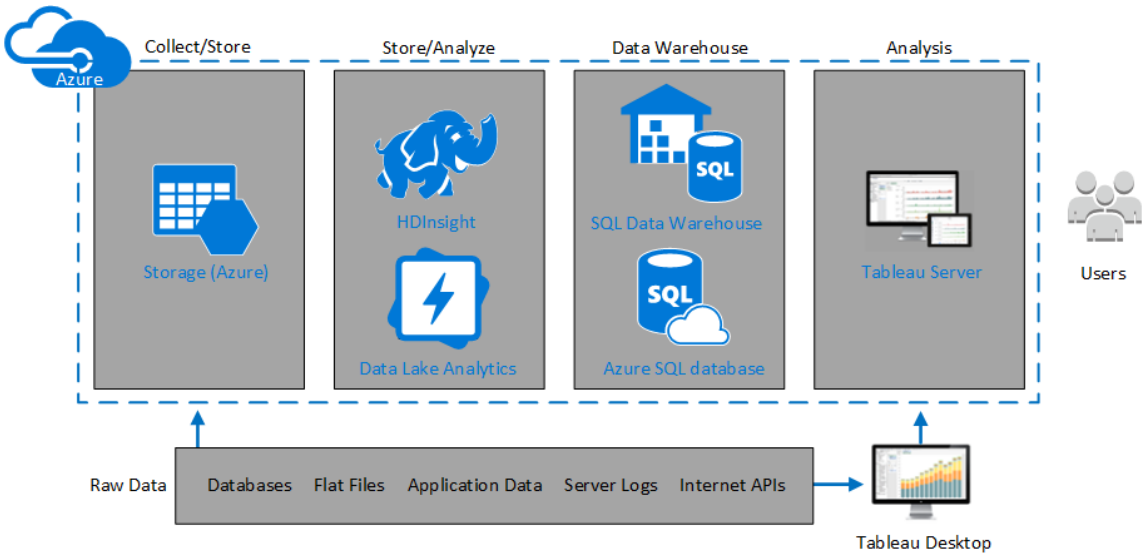
To help monitor and control usage costs on an ongoing basis, you can set up billing alerts for Microsoft Azure to alert you when your monthly Microsoft Azure costs reach your predefined spending threshold. For more information, see Set up billing or credit alerts for your Microsoft Azure subscriptions at the Microsoft Azure website.

Tableau Server on Microsoft Azure Topology

When deploying Tableau Server on Microsoft Azure, you may choose the level and depth of integration between Tableau Desktop and Tableau Server on your Microsoft Azure virtual machines (VMs). You can use Tableau Desktop and its ability to extract data from your data sources to act as a bridge between your data and Tableau Server. Based on your needs, or if you already have a lot of data in Microsoft Azure, you might instead choose to leverage the full range of Microsoft Azure services in conjunction with Tableau Server. The following diagram shows data source integration with Tableau Desktop and Tableau.



In the following diagram, all of your data is hosted in Microsoft Azure. You can analyze both structured and unstructured data managed in a secure, scalable manner. You may leverage data that resides in Microsoft Azure only, unmanaged data that lives outside of Microsoft Azure, or a combination of both. This flexibility greatly increases the ability of your organization to support moves to the cloud from on-premise data, since both types of data is supported equally.



Selecting a Microsoft Azure Virtual Machine Type and Size

Microsoft Azure offers many types of VM images in various sizes. Choosing the right VM image for your workload is an important factor for a successful Tableau Server deployment. You can choose from a wide range of Microsoft Azure VM images. For a complete list of all available VM image types and sizes, see Virtual Machine series at the Microsoft Azure website.

It is important to select an image that can run Tableau Server. The VM image must meet the Tableau Server hardware guidelines (a minimum of 8 cores and 32 GB of RAM). We recommend that you choose an instance that supports Azure premium storage.

At minimum, a 64-bit Tableau Server requires a 4-core CPU (the equivalent of 8 Azure vCPUs) and 16 GB RAM. However, a total of 8 CPU cores (16 Azure vCPUs) and 64GB RAM are strongly recommended for a single production Microsoft Azure VM.

Typical VM types and sizes for development, test, and production environments

- D Series – D13, D14, D16
- DS Series – DS13, DS14

> **Note:** We recommend that you use the DS series VMs with Premium Storage, which is best for database and other high performance applications. Typically, the D16s_v3 or DS13_V2 instances are a good choice. For testing and proof-of-concept purposes, you may find a virtual machine with only four cores acceptable (such as the DS13_V2).

Use two or three disks in RAID 0 configuration in order to get enough input/output operations per second (IOPS) on a single volume to provide high disk throughput. Two disks striped as a single volume provides good enough performance for an additional node not hosting repo. If you are running Tableau Server on a single computer, use three drives striped as a single volume (RAID 0) to provide enhanced disk performance, since more disk operations will happen on that computer.

Recommended specifications for a single production instance

Component/Resource	Microsoft Azure
CPU	16 vCPU cores

Operating System	• Tableau Server 2021.3.0 and later:
	  • Windows Server 2016
	  • Windows Server 2019
	
	Earlier versions:

	• Tableau Server 2020.1.0 - 2021.2.x:
	  • Windows Server 2012
	  • Windows Server 2012 R2
	  • Windows Server 2016
	  • Windows Server 2019
	• Tableau Server 2019.1.0 - 2019.x:
	  • Windows Server 2008 R2
	  • Windows Server 2012
	  • Windows Server 2012 R2
	  • Windows Server 2016
	  • Windows Server 2019

Memory	64+ GB RAM (4GB RAM per vCPU)
Storage	Two volumes: 30-50 GiB volume for the operating system 100 GiB or larger volume for Tableau Server
Storage type	Premium Storage P20 (512GB)++ For more information, see High-performance Premium Storage and managed disks for VMs at the Microsoft Azure website.
Disk latency	Less than or equal to 20ms as measured by the **Avg. Transfer disk/sec** Performance Counter in Windows.

Self-Deploy a Single Tableau Server on Microsoft Azure

You can install and run Tableau Server on a Microsoft Azure virtual machine (VM). Tableau Server is an online solution for sharing, distributing, and collaborating on content created in Tableau.

Perform the following tasks to install and run Tableau on a Microsoft Azure virtual machine (VM):

Step 1: Set up an Azure VM

Create a Microsoft Azure virtual machine (VM) where you'll install Tableau.

1. Sign in to the Microsoft Azure portal (https://portal.azure.com).
2. On the Microsoft Azure dashboard, click **New**.
3. Under **Azure Marketplace**, select **Compute**, and then on the **New** blade, click **See all.**
4. On the **Compute** blade, choose **Windows Server**, and then on the **Windows Server** blade, choose **Windows Server 2016 Datacenter**.
5. On the **Windows Server 2016 Datacenter** blade, review the information. In the **Select a deployment model** drop-down list, select **Resource Manager**, and then click **Create**.
6. On the **Create virtual machine - Basics** blade, specify the following information:
    a. **Name:** Enter a name for your virtual machine (VM). The name must be 15 or fewer characters.
    b. **VM disk type:** choose SSD.

c. **User name:** Enter your user name. You will use this user name to log in to the VM using Remote Desktop Protocol (RDP).

d. **Password:** Enter your password. You will use this password to log in to the VM using RDP.

e. **Subscription:** The Azure subscription this VM should be associated with.

f. **Resource group:** Choose **Create new** and then enter the name of a new resource group to host the VM's resources.

g. **Location:** The location of the new resource group.

7. At the bottom of the **Basics** blade, click **OK**.

8. On the **Create virtual machine - Choose a size** blade, click **View all** in order to see all available virtual machine sizes.

9. Select a VM that meets the system requirements for Tableau Server. For example, choose the **DS13_V2** size, and then click **Select**.

10. In the **Create virtual machine - Settings** blade, under **Network**, click **Network security group (firewall)**.

11. On the **Create network security group** blade, click **Add an inbound rule**.

12. Next, you'll create inbound rules that allow specific types of internet traffic to reach your VM. On the **Add inbound security rule** blade, in the **Service** drop-down list box, choose **HTTP**.

13. In the **Priority** box, give the rule a priority, for example, 100. Lower numbers are processed first. For example, a rule priority of 100 will be processed before a rule priority of 110.

14. In the **Name** box, enter a name for the inbound rule, for example HTTP Port-80, and then click **OK**.

15. Repeat steps 11-14 to create a second rule for the HTTPS service with a priority of 101.

16. When complete, the **Create network security group** dialog should include three rules to allow RDP, HTTP, and HTTPS access. Click **OK**.

17. On the **Create virtual machine - Create** blade, under **Summary**, review your settings and click **Create**.

    After the VM deployment process is complete and the VM is running, click the your VM's tile on the Azure Dashboard.

18. Under **Settings**, click **Disks**.

    > **Note:** Your VM was provisioned with only one disk. We recommend adding a second disk and installing Tableau on its own disk.

19. On the **Disks** blade, under **Data disks**, click **Add data disk**. In the **Name** column, in the **No managed disks available** drop-down list, choose **Create disk**.

20. On the **Create managed disk** blade, in the **Name** field, enter a name for the disk.

21. Set the **Size (GiB)** field to **128**, **512**, or **1024**, and then click **Create**.

    > **Note:** Even though the **Size** field allows any number, Azure will round up the provisioned storage to one of those values as per current three options for Premium Storage disk size. We recommend you select at least **512** GiB, which will provide a minimally acceptable amount of IOPS and throughput.

22. In the **Host Caching** column, select **None**, and then click **Save**.

Step 2: Connect to your Azure VM

Use Remote Desktop Protocol (RDP) from a computer running Microsoft Windows to

connect to your Azure VM running Microsoft Windows. If you're connecting from a computer running Linux, you can use rdesktop to connect to your Azure VM running Microsoft Windows. For more information, see How to connect and log on to an Azure virtual machine running Windows at the Microsoft Azure website.

1. On the Azure Dashboard, click your VM's tile, and then click **Connect** to download and use the RDP file for your VM.

   Note: You can save the RDP file so that you can connect to the VM any time you want.

2. Double-click the RDP file. If you see a warning that the publisher of the remote connection can't be identified, click **Connect**.

3. In the **Windows Security** dialog box, enter the name and password that you specified when you created the instance earlier, and then click **OK**.

   Note: If you are already signed in to a Windows domain, the dialog box might offer you options to connect as your domain user. If so, you should enter the credentials under **Other User**. Under the password field, select your local computer as the domain.

Step 3: Add a second disk to your Azure VM

You must configure the data disk you added before Windows Server will recognize it. You will install Tableau on this disk in Self-Deploy a Single Tableau Server on Microsoft Azure.

1. On your Azure VM running Microsoft Windows, right-click the **Start** button and choose **Run**.

2. Open **Disk Management**. Type **diskmgmt.msc** and then press **Enter**.

3. In the **Initialize Disk** dialog box, click **OK**.
4. Right-click Disk 2 and choose **New Simple Volume**.
5. In the **New Simple Volume Wizard**, click **Next** on each screen and accept the default values until you reach the final screen, and then click **Finish**.
6. When prompted to format the disk, click **Format disk**, and then in the **Format New Volume** dialog box, click **Start**.

Step 4: Install Tableau Server on your Azure VM

Installing Tableau on your Microsoft Azure virtual machine (VM) is similar to installing it on any other server.

Note:

- You can select local authentication or Active Directory authentication. However, if you select Active Directory authentication, Active Directory must be set up on Azure. For more information, see Install a replica Active Directory domain controller in an Azure virtual network in the Microsoft Azure documentation.
- The Run As user must be a local user on the server instance.

1. Copy the Tableau Server installation program to the data disk you added to your VM by doing one of the following:
    - Copy the Tableau Server installation program to the data disk you added to your VM by doing one of the following:
        - **Download the installer directly**. While logged into the VM, open a browser, browse to the Tableau Server download page, and download the 64-bit version of Tableau.

> **Note:** The default enhanced security configuration on Windows Server dictates that Internet Explorer is always set to High for the Internet zone and cannot be changed for that zone. Therefore, as you browse to public sites using Internet Explorer, you must add those sites to the list of trusted sites.

- **Copy the installer to the VM**. If you already have a copy of the Tableau installer on your computer, copy it to the disk you added to your VM. Create a folder on the VM where you want to put the installer. From your computer, upload the Tableau installer file (for example, Tableau-Server-64bit-10.5.exe) to the VM.

- **Copy the installer to the VM**. If you already have a copy of the Tableau installer on your computer, copy it to the VM. Create a folder on the VM where you want to put the installer. From your computer, upload the Tableau installer file (for example, TableauServer-64bit-10.5.exe) to the VM.

2. Run the Tableau installer on the VM to start the server installation process. The installation process works the same as it does on any other server. For more information, search for "Install and Configure Tableau Server" in the Tableau Help.

Step 5: Access your Azure VM from a remote browser

Make sure that users can access the Azure virtual machine (VM) where you've installed Tableau.

1. In the Microsoft Azure portal, navigate to the **Overview** page of your VM. Note the Public IP address associated with the VM.

2. (optional) To give your VM a public hostname, click the Public IP address.

3. On another computer (not on the VM), open a browser.

4. In the browser, type the IP address or DNS name of the Tableau you installed on the

VM.

Examples:

`http://13.64.47.61` or `http://tableauonazure.westus.cloudapp.azure.com`

5. If you cannot connect to the instance, search for "Troubleshooting Tableau on Microsoft Azure" in the Tableau Help.

Step 6: Publish data to Tableau Server on your Azure VM

After you set up Tableau Server on your Microsoft Azure virtual machine (VM), users in your organization can publish workbooks and data sources to Tableau on the VM. The process works the same way that it does if Tableau is installed on premises, except that users must sign in to the server running on the VM.

Before you allow users to publish, make sure that each user has been created with the Publisher site role in Tableau Server and that the users have Publisher permissions. For more information, search for "Add Users to the Server" in the Tableau Help.

To publish workbooks and data sources to Tableau, users must sign in to the server using the IP address (or optional DNS hostname) that you created for your VM (e.g., `http://13.64.47.61` or `http://tableauonazure.westus.cloudapp.azure.com`) and use their assigned user name and password. For more information, see How to Publish Workbooks to a Tableau Server in the Tableau documentation.

Step 7: Manage Tableau Server licenses when shutting down or deleting your Microsoft Azure VM

Ensure that your Microsoft Azure virtual machine (VM) uses a static MAC address or static VM ID. If your Microsoft Azure VM isn't using a static MAC address or static VM ID, you must deactivate your Tableau Server license prior to stopping the instance. Otherwise your Tableau Server can become unlicensed when you shut down your Microsoft Azure VM,

which requires you to reactivate your license when you restart the VM. In addition, when you stop your VM using the Azure portal, resources are deallocated and you stop accruing charges, except for storage. However, if you stop your VM by shutting down the operating system, resources are not deallocated by Azure and you will continue to accrue charges.

Deleting a VM deallocates all of its resources, including external storage. You might delete your VM when you no longer need it. Always deactivate your Tableau license before you shut down and delete your VM.

Before you delete your VM, do the following:

1. Sign in to your VM.
2. Create a backup of Tableau, and then copy the `.tsbak` file to another location that will be accessible after the VM is no longer available. For more information, search for "Perform a Full Backup and Restore of Tableau" in the Tableau Help.
3. Use the tsm licenses deactivate command to deactivate your Tableau product key. You can now shut down and delete your VM.

Self-Deploy Tableau Server on Microsoft Azure in a Distributed Environment

You can run Tableau Server on two virtual machines (VMs) in a distributed environment, also known as a cluster. However, if you want to run Tableau Server in a highly available (HA) distributed environment, you need to launch three or more Microsoft Azure virtual machines (VMs) of the same type and capacity and configure them as worker nodes. This scenario assumes that you have three Microsoft Azure VMs with Tableau Server installed on each instance. One instance is configured as the primary node, and the other two instances are configured as additional nodes.

Use the following steps to install and deploy Tableau Server on a cluster of three Microsoft Azure VMs in a highly available and scalable configuration.

Step 1: Create an Azure Virtual Network (VNet)

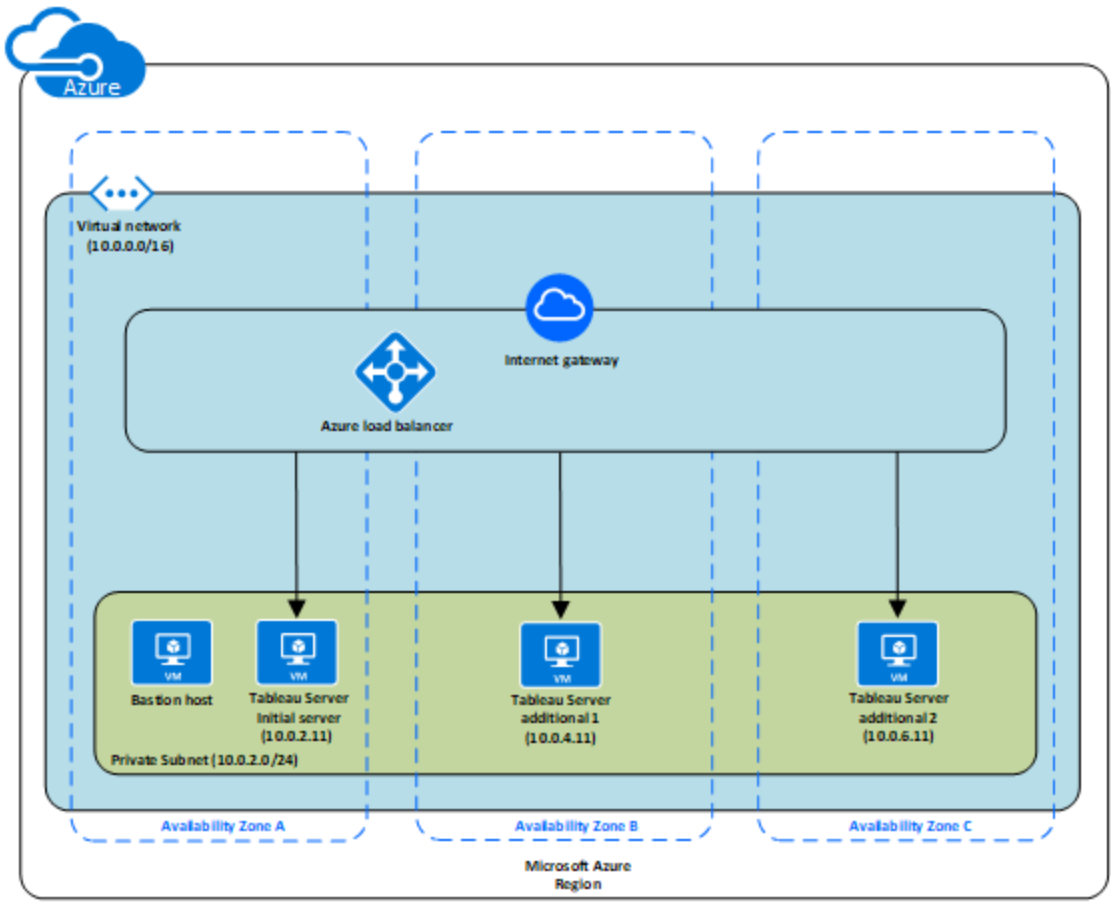
You must have an existing Azure Virtual Network (VNet) with a private subnet spanning three Availability Zones. For information about how to plan and create a VNet with public and private subnets, see Azure Virtual Network, Plan and design Azure Virtual Networks, and Create a virtual network with multiple subnets at the Microsoft Azure website.

(Optional) Step 2: Create an Azure Active Directory Service for the VNet

Follow the steps in Enable Azure Active Directory Domain Services using the Azure portal, at the Microsoft Azure website, to create a fully-managed Samba-based directory in Microsoft Azure. When you create a directory with Microsoft AD, the Azure Active Directory Service creates two directory servers and DNS servers. The directory servers are created in different subnets in your virtual network for redundancy, so that your directory remains accessible even if a failure occurs.

Use the private subnet within your Azure VNet to create the Microsoft AD so that you can run Tableau Server across Availability Zones.

Note: If you want to use SSL with your deployment, use Microsoft Azure Application Gateway instead of the Microsoft Azure Load Balancer.



Step 3: Deploy Three Azure VMs

Deploy three Microsoft Azure virtual machines (VMs) across three Availability Zones. Be sure to select a region that supports Availability Zones. Select a VM that meets the system requirements for Tableau Server. You'll use one node as the initial server and two new nodes as additional servers. All of the instances should be of the same type and capacity.

After you have launched the Microsoft Azure VMs, connect to them from one of the Remote Desktop Gateway (RDGW) instances by using the credentials that you decrypted for the local administrator account.

Step 4: Install and Configure Tableau Server

You'll install Tableau Server on the Microsoft Azure virtual machines (VMs) you launched in

Self-Deploy Tableau Server on Microsoft Azure in a Distributed Environment and configure the instances as an initial server and the rest as additional servers. For more information about installing and configuring Tableau Server on an initial server and on additional servers, search for "Install and Configure Additional Nodes" in the Tableau Server Help.

Use a bastion host to manage access to VMs within the virtual network. For more information, see Planning a bastion environment at the Microsoft Azure website.

Step 5: Create an Azure Load Balancer for the Tableau Server Cluster

Read the Azure Load Balancer overview at the Microsoft Azure website and follow the steps to launch a load balancer within your Azure Virtual Network (VNet).

1. Create and launch either an Internet-facing load balancer or an internally accessible load balancer:

    - To launch a public, Internet-facing load balancer, follow the steps in Load balance VMs across availability zones with a Standard Load Balancer using the Azure portal at the Microsoft Azure website, and select the two public subnets. Make sure that you configure the load balancer with SSL, as explained in Configure an application gateway for SSL offload by using the Azure portal at the Microsoft Azure website.

    - To launch an internally accessible load balancer, follow the steps in Create an Internal load balancer in the Azure portal at the Microsoft Azure website, and select the two private subnets.

2. Ensure that your security group is configured to allow access on port 80 or 443 only, with the source limited to hosts or ranges of hosts that will access Tableau Server.

3. Specify the ping path as /.

4. Select the Tableau Server instances and ensure that **Enable CrossZone Load**

Balancing is selected so that the load balancer can load-balance the traffic across the instances in multiple Availability Zones.

5. Update Tableau to use the load balancer. For more information, search for "Add a Load Balancer" in the Tableau Server Help.

Troubleshooting Tableau Server on Microsoft Azure

If you're having trouble with Tableau on your Microsoft Azure virtual machine (VM), or with getting access to Tableau after installation, review these troubleshooting tips.

- **Cannot connect to the VM using RDP**

  One or more of the following issues might prevent you from connecting to your VM using RDP:

  - Make sure you're using the right credentials.
  - Choose the **Other User** option and enter your credentials there.
  - Make sure that you're using a username that is valid on the Microsoft Azure VM. For instance, if you created the instance with an administrator account of **myuser**, enter **.\myuser** as the username in the RDP dialog box.

- **Cannot access the server from a remote browser**

  One or more of the following issues might prevent you from accessing the server from a remote browser:

  - Sign in to the instance and make sure that the server is running.
  - In the instance, open a browser and access the server locally (for example, using http://localhost or http://localhost:port, where port is the port number that

the server was configured to listen on).

- In the Microsoft Azure dashboard, make sure that you've configured an endpoint to allow HTTP traffic to the instance.

> **Note:** You cannot use the Windows ping utility to test connectivity to the instance. The ping utility will always report a timeout when used from the public internet.

- **You receive the following error message: Tableau Server is unlicensed**

  This error can occur if you've shut down instances without first deactivating the license. For more information, see Error "Tableau Server is unlicensed" After Rebooting a Virtual Machine Hosting Tableau Server.

- **Tableau Server does not use all CPU cores**

  One or more of the following symptoms might occur when working with Tableau Server core-based licensing:

  - When installing Tableau Server, the installer might show fewer cores than you would expect to see for the computer running Tableau Server.
  - On the Licenses page on Tableau Server, the number of cores listed under Licenses in Use is less than you would expect to see.
  - When you run `tsm licenses list`, Tableau Server might report fewer cores in use that you would expect to see.

  For more information, see Not All Cores Recognized by Tableau Server.

- **Slow performance in Tableau installed on a Microsoft Azure VM running Windows**

  After installing Tableau Server on a Windows Azure virtual machine, issues with slow performance or system instability might occur.

- Verify that the virtual machine running Azure meets minimum system requirements for Tableau Server.
- For optimal performance, Tableau Server should be installed on low latency disks. For more information on configuring your Azure virtual machine with low latency disks, see High-performance Premium Storage and managed disks for VMs at the Microsoft Azure website.