Configure server settings for P2S VPN Gateway certificate authentication

This article helps you configure the necessary VPN Gateway point-to-site (P2S) server settings to let you securely connect individual clients running Windows, Linux, or macOS to an Azure virtual network (VNet). P2S VPN connections are useful when you want to connect to your VNet from a remote location, such as when you're telecommuting from home or a conference. You can also use P2S instead of a site-to-site (S2S) VPN when you have only a few clients that need to connect to a virtual network (VNet). P2S connections don't require a VPN device or a public-facing IP address.

There are various different configuration options available for P2S. For more information about point-to-site VPN, see About point-to-site VPN. This article helps you create a P2S configuration that uses **certificate authentication** and the Azure portal. To create this configuration using the Azure PowerShell, see the Configure P2S - Certificate - PowerShell article. For RADIUS authentication, see the P2S RADIUS article. For Microsoft Entra authentication, see the P2S Microsoft Entra ID article.

P2S Azure certificate authentication connections use the following items, which you'll configure in this exercise:

- A route-based VPN gateway (not policy-based). For more information about VPN type, see VPN Gateway settings.
- The public key (.cer file) for a root certificate, which is uploaded to Azure. Once the certificate is uploaded, it's considered a trusted certificate and is used for authentication.
- A client certificate that is generated from the root certificate. The client certificate installed on each client computer that will connect to the VNet. This certificate is used for client authentication.
- VPN client configuration files. The VPN client is configured using VPN client configuration files. These files contain the necessary information for the client to connect to the VNet. Each client that connects must be configured using the settings in the configuration files.

Prerequisites

Verify that you have an Azure subscription. If you don't already have an Azure subscription, you can activate your MSDN subscriber benefits or sign up for a free account.

Example values

You can use the following values to create a test environment, or refer to these values to better understand the examples in this article:

VNet
- **VNet Name:** VNet1
- **Address space:** 10.1.0.0/16
  For this example, we use only one address space. You can have more than one address space for your VNet.
- **Subnet name:** FrontEnd
- **Subnet address range:** 10.1.0.0/24
- **Subscription:** If you have more than one subscription, verify that you're using the correct one.
- **Resource Group:** TestRG1
- **Location:** East US

Virtual network gateway
- **Virtual network gateway name:** VNet1GW
- **Gateway type:** VPN
- **VPN type:** Route-based (required for P2S)
- **SKU:** VpnGw2
- **Generation:** Generation2
- **Gateway subnet address range:** 10.1.255.0/27
- **Public IP address name:** VNet1GWpip

Connection type and client address pool
- **Connection type:** Point-to-site
- **Client address pool:** 172.16.201.0/24
  VPN clients that connect to the VNet using this point-to-site connection receive an IP address from the client address pool.

Create a VNet

In this section, you create a VNet. Refer to the Example values section for the suggested values to use for this configuration.

Note

When you use a virtual network as part of a cross-premises architecture, be sure to coordinate with your on-premises network administrator to carve out an IP address range that you can use specifically for this virtual network. If a duplicate address range exists on both sides of the VPN connection, traffic will route in an unexpected way. Additionally, if you want to connect this virtual network to another virtual network, the address space can't overlap with the other virtual network. Plan your network configuration accordingly.

1stSign in to the Azure portal.

2nd

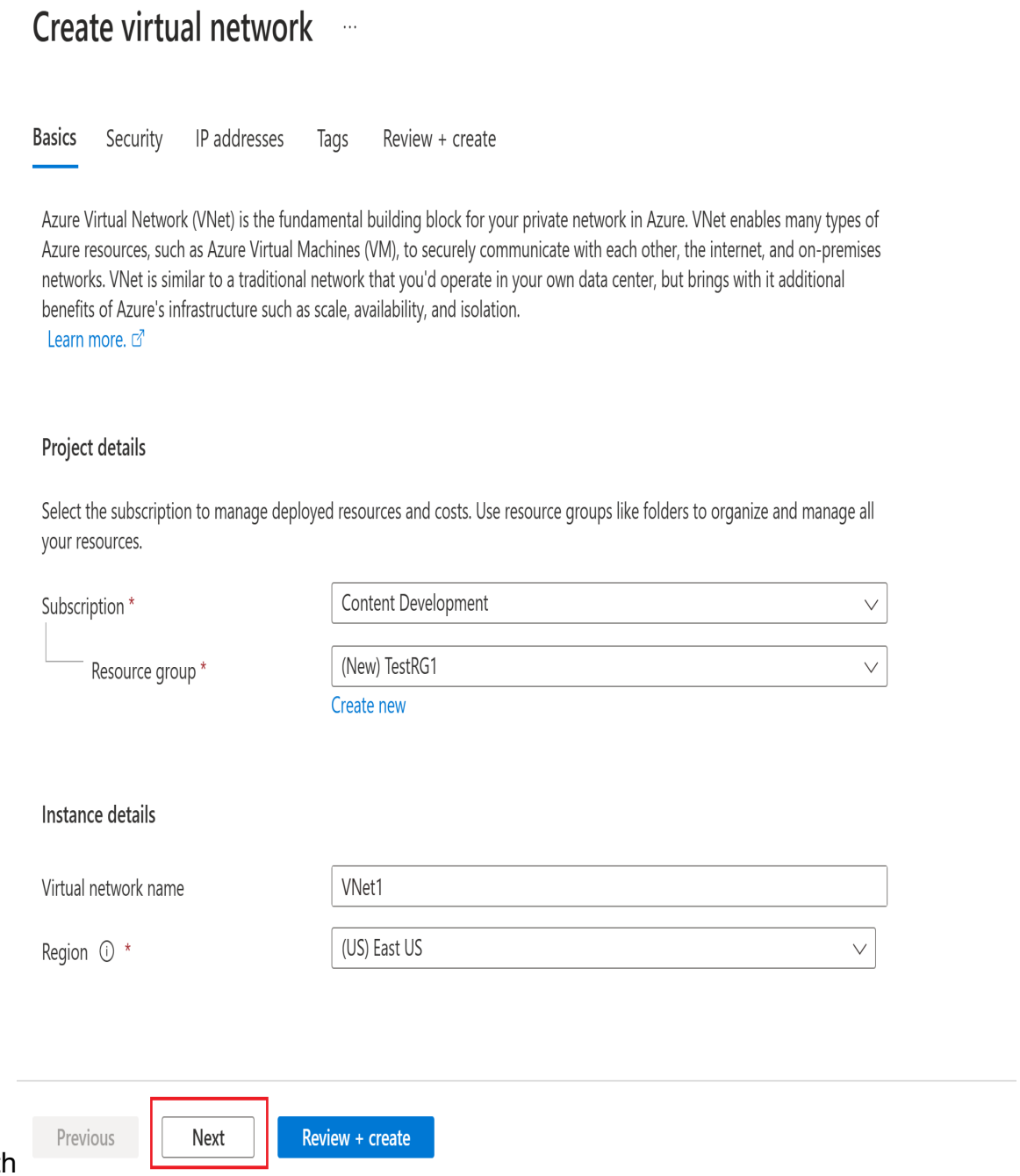
3rdIn **Search resources, service, and docs (G+/)** at the top of the portal page, enter **virtual network**. Select **Virtual network** from the **Marketplace** search results to open the **Virtual network** page.

4th

5thOn the **Virtual network** page, select **Create** to open the **Create virtual network** page.

6th

7thOn the **Basics** tab, configure the virtual network settings for **Project details** and **Instance details**. You see a green check mark when the values you enter are validated. You can adjust the values shown in the example according to the settings that you require.



8th

- **Subscription**: Verify that the subscription listed is the correct one. You can change subscriptions by using the dropdown box.
- **Resource group**: Select an existing resource group or select **Create new** to create a new one. For more information about resource groups, see Azure Resource Manager overview.
- **Name**: Enter the name for your virtual network.
- **Region**: Select the location for your virtual network. The location determines where the resources that you deploy to this virtual network will reside.
-

9thSelect **Next** or **Security** to go to the **Security** tab. For this exercise, leave the default values for all the services on this page.

10th

11thSelect **IP Addresses** to go to the **IP Addresses** tab. On the **IP Addresses** tab, configure the settings.

- **IPv4 address space**: By default, an address space is automatically created. You can select the address space and adjust it to reflect your own values. You can also add a different address space and remove the default that was automatically created. For example, you can specify the starting address as **10.1.0.0** and specify the address space size as **/16**. Then select **Add** to add that address space.
-
- **+ Add subnet**: If you use the default address space, a default subnet is created automatically. If you change the address space, add a new subnet within that address space. Select **+ Add subnet** to open the **Add subnet** window. Configure the following settings, and then select **Add** at the bottom of the page to add the values.
- **Subnet name**: An example is **FrontEnd**.
- **Subnet address range**: The address range for this subnet. Examples are **10.1.0.0** and **/24**.
-
-

12thReview the **IP addresses** page and remove any address spaces or subnets that you don't need.

13th

14thSelect **Review + create** to validate the virtual network settings.

15th

16thAfter the settings are validated, select **Create** to create the virtual network.

17th

Create a gateway subnet

The virtual network gateway requires a specific subnet named **GatewaySubnet**. The gateway subnet is part of the IP address range for your virtual network and contains the IP addresses that the virtual network gateway resources and services use. Specify a gateway subnet that's /27 or larger.

1stOn the page for your virtual network, on the left pane, select **Subnets** to open the **Subnets** page.

2ndAt the top of the page, select **+ Gateway subnet** to open the **Add subnet** pane.

3rdThe name is automatically entered as **GatewaySubnet**. Adjust the IP address range value, if necessary. An example is **10.1.255.0/27**.

4thDon't adjust the other values on the page. Select **Save** at the bottom of the page to save the subnet.

Create the VPN gateway

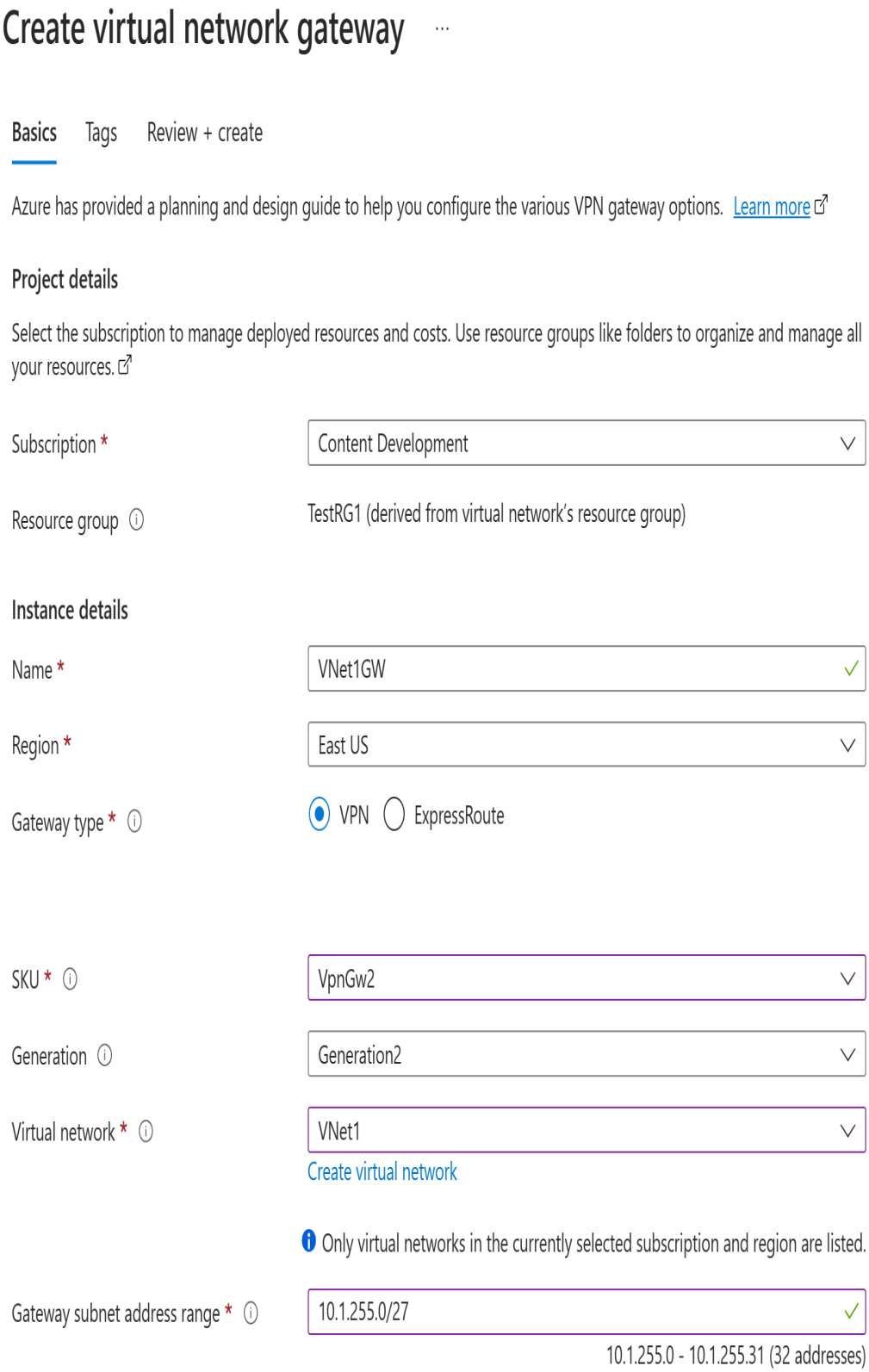
In this step, you create the virtual network gateway for your VNet. Creating a gateway can often take 45 minutes or more, depending on the selected gateway SKU.

Note
The Basic gateway SKU does not support IKEv2 or RADIUS authentication. If you plan on having Mac clients connect to your VNet, do not use the Basic SKU.

1stIn **Search resources, services, and docs (G+/)**, enter **virtual network gateway**. Locate **Virtual network gateway** in the **Marketplace** search results and select it to open the **Create virtual network gateway** page.

2nd

3rdOn the **Basics** tab, fill in the values for **Project details** and **Instance details**.



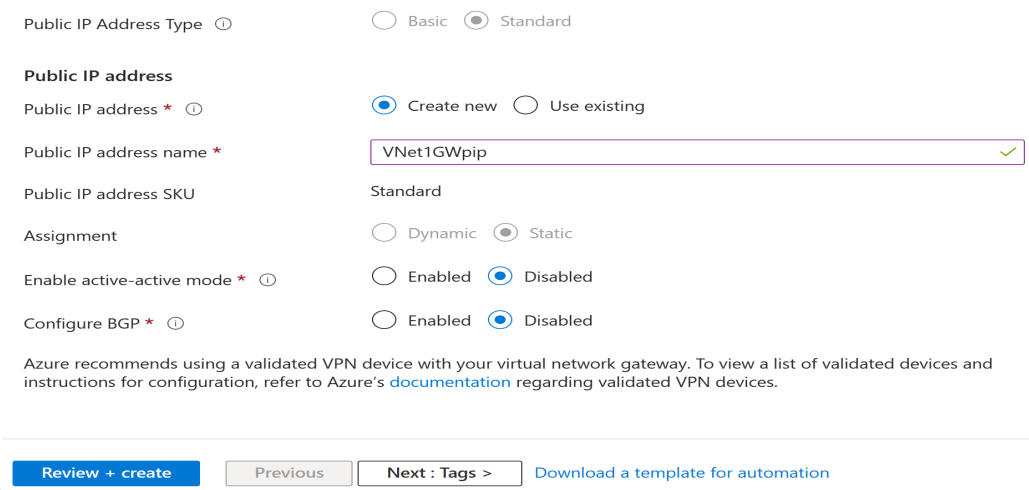
4th

- **Subscription**: Select the subscription you want to use from the dropdown list.

-
- **Resource group**: This setting is autofilled when you select your virtual network on this page.
-
- **Name**: Name your gateway. Naming your gateway isn't the same as naming a gateway subnet. It's the name of the gateway object you're creating.
-
- **Region**: Select the region in which you want to create this resource. The region for the gateway must be the same as the virtual network.
-
- **Gateway type**: Select **VPN**. VPN gateways use the virtual network gateway type **VPN**.
-
- **SKU**: From the dropdown list, select the gateway SKU that supports the features you want to use. See Gateway SKUs. In the portal, the SKUs available in the dropdown list depend on the VPN type you select. The Basic SKU can only be configured using Azure CLI or PowerShell.
-
- **Generation**: Select the generation you want to use. We recommend using a Generation2 SKU. For more information, see Gateway SKUs.
-
- **Virtual network**: From the dropdown list, select the virtual network to which you want to add this gateway. If you can't see the virtual network for which you want to create a gateway, make sure you selected the correct subscription and region in the previous settings.
-
- **Gateway subnet address range** or **Subnet**: The gateway subnet is required to create a VPN gateway.
- At this time, this field can show various different settings options, depending on the virtual network address space and whether you already created a subnet named **GatewaySubnet** for your virtual network.

- If you don't have a gateway subnet *and* you don't see the option to create one on this page, go back to your virtual network and create the gateway subnet. Then, return to this page and configure the VPN gateway.
-
-

5thSpecify the values for **Public IP address**. These settings specify the public IP address object that gets associated to the VPN gateway. The public IP address is assigned to this object when the VPN gateway is created. The only time the primary public IP address changes is when the gateway is deleted and re-created. It doesn't change across resizing, resetting, or other internal maintenance/upgrades of your VPN gateway.



6th

- **Public IP address type**: If you are presented with this option, select **Standard**. The **Basic** public IP address SKU is only supported for **Basic** SKU VPN gateways.
- **Public IP address**: Leave **Create new** selected.
- **Public IP address name**: In the text box, enter a name for your public IP address instance.
- **Public IP address SKU**: Setting is autoselected.
- **Assignment**: The assignment is typically autoselected. For the Standard SKU, assignment is always Static.
- **Enable active-active mode**: Select **Disabled**. Only enable this setting if you're creating an active-active gateway configuration.
- **Configure BGP**: Select **Disabled**, unless your configuration specifically requires this setting. If you do require this setting, the default ASN is 65515, although this value can be changed.
-

7thSelect **Review + create** to run validation.

8th

9thAfter validation passes, select **Create** to deploy the VPN gateway.

10th

You can see the deployment status on the **Overview** page for your gateway. After the gateway is created, you can view the IP address that has been assigned to it by looking at the VNet in the portal. The gateway appears as a connected device.

Important
Network security groups (NSGs) on the gateway subnet are not supported. Associating a network security group to this subnet might cause your virtual network gateway (VPN and ExpressRoute gateways) to stop functioning as expected. For more information about network security groups, see What is a network security group?

Generate certificates

Certificates are used by Azure to authenticate clients connecting to a VNet over a point-to-site VPN connection. Once you obtain a root certificate, you upload the public key information to Azure. The root certificate is then considered 'trusted' by Azure for connection over P2S to the VNet.

You also generate client certificates from the trusted root certificate, and then install them on each client computer. The client certificate is used to authenticate the client when it initiates a connection to the VNet.

The root certificate must be generated and extracted before you configure the point-to-site gateway settings.

Generate a root certificate

Obtain the .cer file for the root certificate. You can use either a root certificate that was generated with an enterprise solution (recommended), or generate a self-signed certificate. After you create the root certificate, export the public certificate data (not the private key) as a Base64 encoded X.509 .cer file. You upload this file later to Azure.

- **Enterprise certificate:** If you're using an enterprise solution, you can use your existing certificate chain. Acquire the .cer file for the root certificate that you want to use.
-

- **Self-signed root certificate:** If you aren't using an enterprise certificate solution, create a self-signed root certificate. Otherwise, the certificates you create won't be compatible with your P2S connections and clients receive a connection error when they try to connect. You can use Azure PowerShell, MakeCert, or OpenSSL. The steps in the following articles describe how to generate a compatible self-signed root certificate:
- PowerShell instructions for Windows 10 or later: These instructions require PowerShell on a computer running Windows 10 or later. Client certificates that are generated from the root certificate can be installed on any supported P2S client.
- MakeCert instructions: Use MakeCert to generate certificates if you don't have access to a computer running Windows 10 or later. Although MakeCert is deprecated, you can still use it to generate certificates. Client certificates that you generate from the root certificate can be installed on any supported P2S client.
- Linux - OpenSSL instructions
- Linux - strongSwan instructions
-

Generate client certificates

Each client computer that you connect to a VNet with a point-to-site connection must have a client certificate installed. You generate it from the root certificate and install it on each client computer. If you don't install a valid client certificate, authentication will fail when the client tries to connect to the VNet.

You can either generate a unique certificate for each client, or you can use the same certificate for multiple clients. The advantage to generating unique client certificates is the ability to revoke a single certificate. Otherwise, if multiple clients use the same client certificate to authenticate and you revoke it, you'll need to generate and install new certificates for every client that uses that certificate.

You can generate client certificates by using the following methods:

- **Enterprise certificate:**
  -
- If you're using an enterprise certificate solution, generate a client certificate with the common name value format *name@yourdomain.com*. Use this format instead of the *domain name\username* format.
-

- Make sure the client certificate is based on a user certificate template that has *Client Authentication* listed as the first item in the user list. Check the certificate by double-clicking it and viewing **Enhanced Key Usage** in the **Details** tab.

-

-

- **Self-signed root certificate:** Follow the steps in one of the following P2S certificate articles so that the client certificates you create will be compatible with your P2S connections.

- When you generate a client certificate from a self-signed root certificate, it's automatically installed on the computer that you used to generate it. If you want to install a client certificate on another client computer, export it as a .pfx file, along with the entire certificate chain. Doing so will create a .pfx file that contains the root certificate information required for the client to authenticate.

- The steps in these articles generate a compatible client certificate, which you can then export and distribute.

- Windows 10 or later PowerShell instructions: These instructions require Windows 10 or later, and PowerShell to generate certificates. The generated certificates can be installed on any supported P2S client.

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- MakeCert instructions: Use MakeCert if you don't have access to a Windows 10 or later computer for generating certificates. Although MakeCert is deprecated, you can still use it to generate certificates. You can install the generated certificates on any supported P2S client.

-

- Linux: See strongSwan or OpenSSL instructions.

-

-

Add the address pool

The **Point-to-site configuration** page contains the configuration information that's needed for the P2S VPN. Once all the P2S settings have been configured and the gateway has been updated, the Point-to-site configuration page is used to view or change P2S VPN settings.
1stGo to the gateway you created in the previous section.
2ndIn the left pane, select **Point-to-site configuration**.
3rdClick **Configure now** to open the configuration page.

The client address pool is a range of private IP addresses that you specify. The clients that connect over a point-to-site VPN dynamically receive an IP address from this range. Use a private IP address range that doesn't overlap with the on-premises location that you connect from, or the VNet that you want to connect to. If you configure multiple protocols and SSTP is one of the protocols, then the configured addr

1stOn the **Point-to-site configuration** page, in the **Address pool** box, add the private IP address range that you want to use. VPN clients dynamically receive an IP address from the range that you specify. The minimum subnet mask is 29 bit for active/passive and 28 bit for active/active configuration.

2nd

3rdNext, configure the tunnel and authentication type.

4th

Specify tunnel and authentication type

> Note
>
> If you don't see tunnel type or authentication type on the **Point-to-site configuration** page, your gateway is using the Basic SKU. The Basic SKU doesn't support IKEv2 or RADIUS authentication. If you want to use these settings, you need to delete and re-create the gateway using a different gateway SKU.

In this section, you specify the tunnel type and the authentication type. These settings can become complex, depending on the tunnel type you require and the VPN client software that will be used to make the connection from the user's operating system. The steps in this article walk you through basic configuration settings and choices.

You can select options that contain multiple tunnel types from the dropdown - such as *IKEv2 and OpenVPN(SSL)* or *IKEv2 and SSTP (SSL)*, however, only certain combinations of tunnel types and authentication types are supported. For example, Microsoft Entra authentication can only be used when you select *OpenVPN (SSL)* from the tunnel type dropdown, and not *IKEv2 and OpenVPN(SSL)*.

Additionally, the tunnel type and the authentication type correspond to the VPN client software that can be used to connect to Azure. For example, one VPN client software application might be only able to connect via IKEv2, while another can only connect via OpenVPN. And some client software, while it supports a certain tunnel type, might not support the authentication type you choose.

As you can tell, planning the tunnel type and authentication type is important when you have various VPN clients connecting from different operating systems. Consider the following criteria when you choose your tunnel type in combination with **Azure certificate** authentication. Other authentication types have different considerations.

- **Windows**:
- Windows computers connecting via the native VPN client already installed in the operating system try IKEv2 first and, if that doesn't connect, they fall back to SSTP (if you selected both IKEv2 and SSTP from the tunnel type dropdown).
- If you select the OpenVPN tunnel type, you can connect using an OpenVPN Client or the Azure VPN Client.
- The Azure VPN Client can support optional configuration settings such as custom routes and forced tunneling.
-

- **macOS and iOS**:
- The native VPN client for iOS and macOS can only use the IKEv2 tunnel type to connect to Azure.
- The Azure VPN Client isn't supported for certificate authentication at this time, even if you select the OpenVPN tunnel type.
- If you want to use the OpenVPN tunnel type with certificate authentication, you can use an OpenVPN client.
- For macOS, you can use the Azure VPN Client with the OpenVPN tunnel type and Microsoft Entra ID authentication (not certificate authentication).
-

- **Linux**:
- The Azure VPN Client for Linux supports the OpenVPN tunnel type.
- The strongSwan client on Android and Linux can use only the IKEv2 tunnel type to connect.
-

Tunnel type

On the **Point-to-site configuration** page, select the **Tunnel type**. For this exercise, from the dropdown, select **IKEv2 and OpenVPN(SSL)**.

Upload root certificate public key information

In this section, you upload public root certificate data to Azure. Once the public certificate data is uploaded, Azure can use it to authenticate clients that have installed a client certificate generated from the trusted root certificate.

1stMake sure that you exported the root certificate as a **Base-64 encoded X.509 (.CER)** file in the previous steps. You need to export the certificate in this format so you can open the certificate with text editor. You don't need to export the private key.

2nd

3rdOpen the certificate with a text editor, such as Notepad. When copying the certificate data, make sure that you copy the text as one continuous line without carriage returns or line feeds. You might need to modify your view in the text editor to 'Show Symbol/Show all characters' to see the carriage returns and line feeds. Copy only the following section as one continuous line:

4th

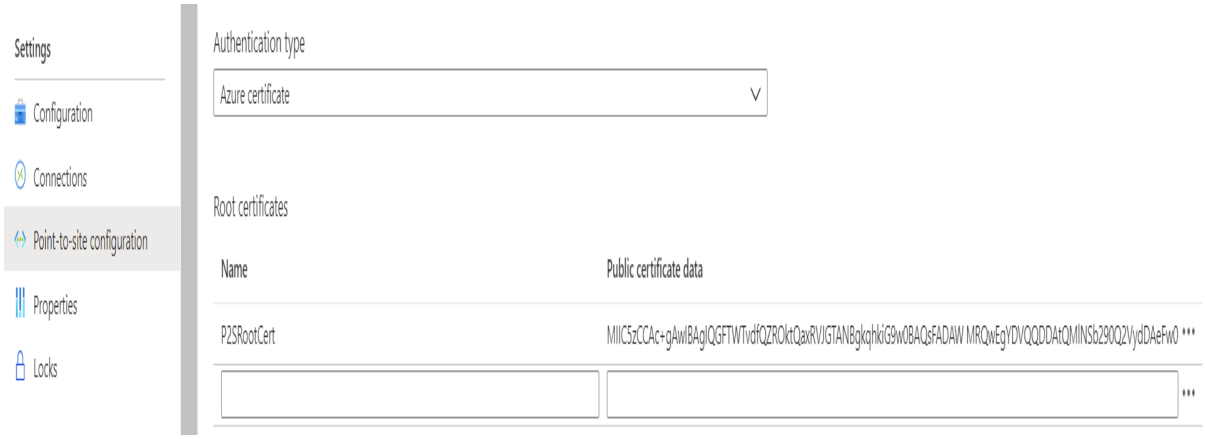
5th

6thNavigate to your **Virtual network gateway -> Point-to-site configuration** page in the **Root certificate** section. This section is only visible if you have selected **Azure certificate** for the authentication type.

7th

8thIn the **Root certificate** section, you can add up to 20 trusted root certificates.

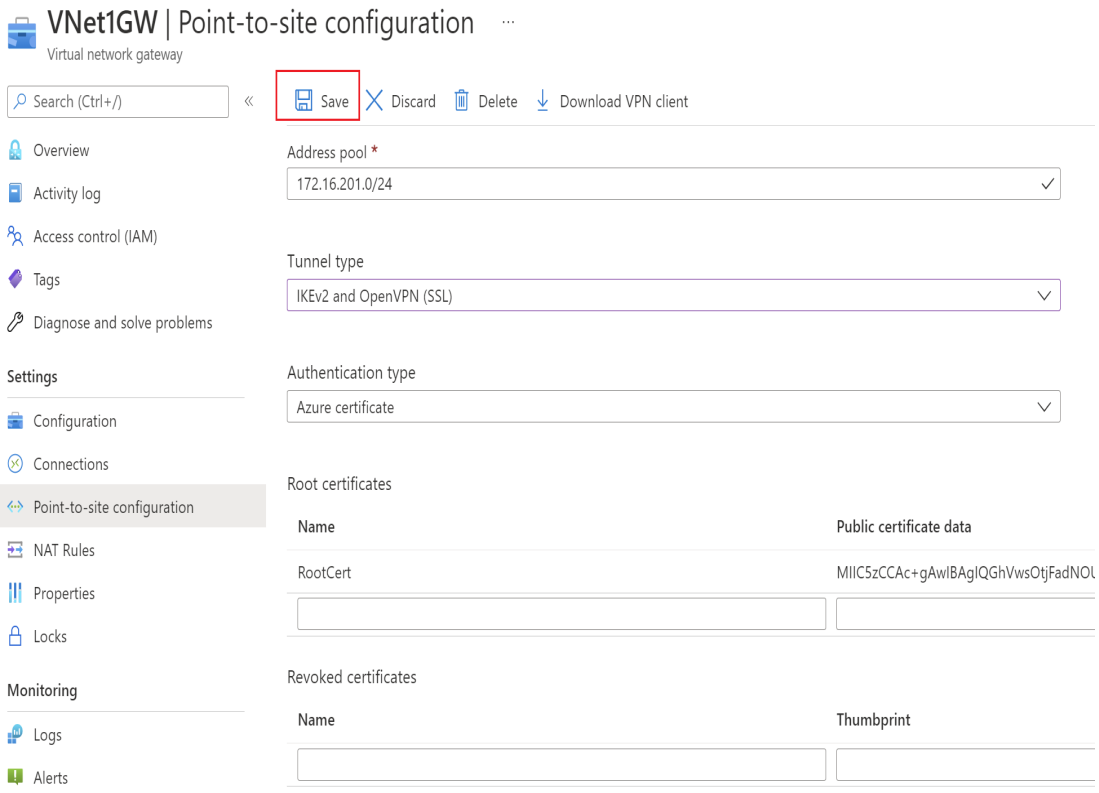
- Paste the certificate data into the **Public certificate data** field.
- **Name** the certificate.



9thAdditional routes aren't necessary for this exercise. For more information about the custom routing feature, see Advertise custom routes.

10th

11thSelect **Save** at the top of the page to save all of the configuration settings.



12th

13th

Generate VPN client profile configuration files

All the necessary configuration settings for the VPN clients are contained in a VPN client profile configuration zip file. VPN client profile configuration files are specific to the P2S VPN gateway configuration for the VNet. If there are any changes to the P2S VPN configuration after you generate the files, such as changes to the VPN protocol type or authentication type, you need to generate new VPN client profile configuration files and apply the new configuration to all of the VPN clients that you want to connect. For more information about P2S connections, see About point-to-site VPN.

You can generate client profile configuration files using PowerShell, or by using the Azure portal. The following examples show both methods. Either method returns the same zip file.

Azure portal

1st

2ndIn the Azure portal, go to the virtual network gateway for the virtual network to which you want to connect.

3rd

4thOn the virtual network gateway page, select **Point-to-site configuration** to open the Point-to-site configuration page.

5th

6thAt the top of the **Point-to-site configuration** page, select **Download VPN client**. This doesn't download VPN client software, it generates the configuration package used to configure VPN clients. It takes a few minutes for the client configuration package to generate. During this time, you might not see any indications until the packet generates.

7th

8th

9thOnce the configuration package is generated, your browser indicates that a client configuration zip file is available. It's named the same name as your gateway.

10th

11thUnzip the file to view the folders. You'll use some, or all, of these files to configure your VPN client. The files that are generated correspond to the authentication and tunnel type settings that you configured on the P2S server.

12th

PowerShell

When you generate VPN client configuration files, the value for '-AuthenticationMethod' is 'EapTls'. Generate the VPN client configuration files using the following command:

Azure PowerShellCopy
Open Cloud Shell

```
$profile=New-AzVpnClientConfiguration -ResourceGroupName "TestRG" -Name
"VNet1GW" -AuthenticationMethod "EapTls"

$profile.VPNProfileSASUrl
```

Copy the URL to your browser to download the zip file.

Configure VPN clients and connect to Azure

For steps to configure your VPN clients and connect to Azure, see the following articles:

Expand table

Authentication	Tunnel type	Client OS	VPN client
Certificate			
	IKEv2, SSTP	Windows	Native VPN client
	IKEv2	macOS	Native VPN client
	IKEv2	Linux	strongSwan
	OpenVPN	Windows	Azure VPN client OpenVPN client
	OpenVPN	macOS	OpenVPN client
	OpenVPN	iOS	OpenVPN client
	OpenVPN	Linux	Azure VPN Client

Authentication	Tunnel type	Client OS	VPN client
			OpenVPN client
Microsoft Entra ID			
	OpenVPN	Windows	Azure VPN client
	OpenVPN	macOS	Azure VPN Client
	OpenVPN	Linux	Azure VPN Client

Verify your connection

These instructions apply to Windows clients.

1stTo verify that your VPN connection is active, open an elevated command prompt, and run *ipconfig/all*.

2nd

3rdView the results. Notice that the IP address you received is one of the addresses within the point-to-site VPN Client Address Pool that you specified in your configuration. The results are similar to this example:

4thCopy

```
5thPPP adapter VNet1:
6th   Connection-specific DNS Suffix .:
7th   Description.....................: VNet1
8th   Physical Address................:
9th   DHCP Enabled.....................: No
10th   Autoconfiguration Enabled.......: Yes
11th   IPv4 Address.....................: 172.16.201.3(Preferred)
12th   Subnet Mask.....................: 255.255.255.255
13th   Default Gateway.................:
14th   NetBIOS over Tcpip..............: Enabled
15th
```

Connect to a virtual machine

These instructions apply to Windows clients.

You can connect to a VM that's deployed to your virtual network by creating a Remote Desktop Connection to your VM. The best way to initially verify that you can connect to your VM is to connect by using its private IP address, rather than computer name. That way, you're testing to see if you can connect, not whether name resolution is configured properly.

1stLocate the private IP address. You can find the private IP address of a VM by either looking at the properties for the VM in the Azure portal or by using PowerShell.

- **Azure portal**: Locate your VM in the Azure portal. View the properties for the VM. The private IP address is listed.
-
- **PowerShell**: Use the example to view a list of VMs and private IP addresses from your resource groups. You don't need to modify this example before using it.
- Azure PowerShellCopy
- Open Cloud Shell
- `$VMs = Get-AzVM`
- `$Nics = Get-AzNetworkInterface | Where-Object VirtualMachine -ne $null`
-
- `foreach ($Nic in $Nics) {`
- `$VM = $VMs | Where-Object -Property Id -eq $Nic.VirtualMachine.Id`
- `$Prv = $Nic.IpConfigurations | Select-Object -ExpandProperty PrivateIpAddress`
- `$Alloc = $Nic.IpConfigurations | Select-Object -ExpandProperty PrivateIpAllocationMethod`
- `Write-Output "$($VM.Name): $Prv,$Alloc"`
- `}`
-
-

2nd

3rdVerify that you're connected to your virtual network.

4th

5thOpen **Remote Desktop Connection** by entering **RDP** or **Remote Desktop Connection** in the search box on the taskbar. Then select **Remote Desktop Connection**. You can also open **Remote Desktop Connection** by using the mstsc command in PowerShell.

6th

7thIn **Remote Desktop Connection**, enter the private IP address of the VM. You can select **Show Options** to adjust other settings and then connect.

8th

If you're having trouble connecting to a VM over your VPN connection, check the following points:

- Verify that your VPN connection is successful.
- Verify that you're connecting to the private IP address for the VM.
- If you can connect to the VM by using the private IP address but not the computer name, verify that you've configured DNS properly. For more information about how name resolution works for VMs, see Name resolution for VMs.

For more information about RDP connections, see Troubleshoot Remote Desktop connections to a VM.

- Verify that the VPN client configuration package was generated after the DNS server IP addresses were specified for the VNet. If you updated the DNS server IP addresses, generate and install a new VPN client configuration package.
-
- Use 'ipconfig' to check the IPv4 address assigned to the Ethernet adapter on the computer from which you're connecting. If the IP address is within the address range of the VNet that you're connecting to, or within the address range of your VPNClientAddressPool, this is referred to as an overlapping address space. When your address space overlaps in this way, the network traffic doesn't reach Azure, it stays on the local network.
-

Add or remove trusted root certificates

You can add and remove trusted root certificates from Azure. When you remove a root certificate, clients that have a certificate generated from that root won't be able to authenticate, and thus won't be able to connect. If you want a client to authenticate and connect, you need to install a new client certificate generated from a root certificate that is trusted (uploaded) to Azure.

You can add up to 20 trusted root certificate .cer files to Azure. For instructions, see the section Upload a trusted root certificate.

To remove a trusted root certificate:

1st Navigate to the **Point-to-site configuration** page for your virtual network gateway.
2nd In the **Root certificate** section of the page, locate the certificate that you want to remove.
3rd Select the ellipsis next to the certificate, and then select **Remove**.

Revoke a client certificate

You can revoke client certificates. The certificate revocation list allows you to selectively deny P2S connectivity based on individual client certificates. This is different than removing a trusted root certificate. If you remove a trusted root certificate .cer from Azure, it revokes the access for all client certificates generated/signed by the revoked root certificate. When you revoke a client certificate, rather than the root certificate, it allows the other certificates that were generated from the root certificate to continue to be used for authentication.

The common practice is to use the root certificate to manage access at team or organization levels, while using revoked client certificates for fine-grained access control on individual users.

You can revoke a client certificate by adding the thumbprint to the revocation list.

1st Retrieve the client certificate thumbprint. For more information, see How to retrieve the Thumbprint of a Certificate.
2nd Copy the information to a text editor and remove all spaces so that it's a continuous string.
3rd Navigate to the virtual network gateway **Point-to-site-configuration** page. This is the same page that you used to upload a trusted root certificate.
4th In the **Revoked certificates** section, input a friendly name for the certificate (it doesn't have to be the certificate CN).
5th Copy and paste the thumbprint string to the **Thumbprint** field.
6th The thumbprint validates and is automatically added to the revocation list. A message appears on the screen that the list is updating.
7th After updating has completed, the certificate can no longer be used to connect. Clients that try to connect using this certificate receive a message saying that the certificate is no longer valid.