

[Cloud VPN](https://cloud.google.com/vpn/) (<https://cloud.google.com/vpn/>)

[Documentation](https://cloud.google.com/vpn/docs/) (<https://cloud.google.com/vpn/docs/>) [Guides](#)

Creating a Classic VPN using dynamic routing

This page describes how to create a Classic VPN gateway and one tunnel using dynamic routing, which uses [the Border Gateway routing Protocol \(BGP\)](https://cloud.google.com/vpn/docs/concepts/overview#bgp-definition).

(<https://cloud.google.com/vpn/docs/concepts/overview#bgp-definition>).

With dynamic routing, you do not specify local or remote traffic selectors; instead, you use a [Cloud Router](https://cloud.google.com/router/docs/concepts/overview) (<https://cloud.google.com/router/docs/concepts/overview>). Route information is exchanged dynamically.

Before you begin

- Review information about how [dynamic routing](https://cloud.google.com/vpn/docs/concepts/choosing-networks-routing#dynamic-routing) (<https://cloud.google.com/vpn/docs/concepts/choosing-networks-routing#dynamic-routing>) works in Google Cloud.
- Make sure your [peer](https://cloud.google.com/vpn/docs/concepts/overview#peer-definition) (<https://cloud.google.com/vpn/docs/concepts/overview#peer-definition>) VPN gateway supports BGP.
- See the [Classic VPN Topologies page](https://cloud.google.com/vpn/docs/concepts/classic-topologies) (<https://cloud.google.com/vpn/docs/concepts/classic-topologies>) for sample topologies.

Setting up the following items in Google Cloud makes it easier to configure Cloud VPN:

1. [Sign in](https://accounts.google.com/Login) (<https://accounts.google.com/Login>) to your Google Account.

If you don't already have one, [sign up for a new account](https://accounts.google.com/SignUp)

(<https://accounts.google.com/SignUp>).

2. In the Cloud Console, on the project selector page, select or create a Google Cloud project.

★ **Note:** If you don't plan to keep the resources that you create in this procedure, create a project instead of selecting an existing project. After you finish these steps, you can delete the project, removing all resources associated with the project.

[GO TO THE PROJECT SELECTOR PAGE \(HTTPS://CONSOLE.CLOUD.GOOGLE.COM/PROJECTSELECT\)](https://console.cloud.google.com/projectselect)

3. Make sure that billing is enabled for your Google Cloud project. [Learn how to confirm billing is enabled for your project](https://cloud.google.com/billing/docs/how-to/modify-project) (https://cloud.google.com/billing/docs/how-to/modify-project).
4. [Install and initialize the Cloud SDK](https://cloud.google.com/sdk/docs/) (https://cloud.google.com/sdk/docs/).
4. If you are using `gcloud` commands, set your project ID with the following command. The `gcloud` instructions on this page assume that you have set your project ID before issuing commands.

```
gcloud config set project project-id
```



You can also view a project ID that has already been set:

```
gcloud config list --format='text(core.project)'
```



⌵ Permissions required for this task

To perform this task, you must have been granted the following permissions **OR** the following IAM roles.

Permissions

- `compute.targetVpnGateways.get`
- `compute.targetVpnGateways.list`
- `compute.targetVpnGateways.create`
- `compute.targetVpnGateways.delete`
- `compute.targetVpnGateways.get`
- `compute.targetVpnGateways.list`
- `compute.targetVpnGateways.use`
- `compute.targetVpnGateways.setLabels`

Roles

- `roles/compute.networkAdmin`

Creating a custom Virtual Private Cloud network and subnet

Before creating an Classic VPN gateway and tunnel, you must create a Virtual Private Cloud network and at least one subnet in the region where the Classic VPN gateway will reside.

- To create a custom mode (recommended) VPC network, refer to [Creating a custom mode network](https://cloud.google.com/vpc/docs/using-vpc#create-custom-network) (<https://cloud.google.com/vpc/docs/using-vpc#create-custom-network>).
- To create subnets, see [Working with subnets](https://cloud.google.com/vpc/docs/using-vpc#subnet-rules) (<https://cloud.google.com/vpc/docs/using-vpc#subnet-rules>).

Creating a gateway and tunnel

Important: Each BGP session on the same Cloud Router must use a unique `/30` CIDR from the `169.254.0.0/16` block.

The **VPN setup wizard** is the only console option for creating a Classic VPN gateway. The wizard includes all required configuration steps for creating a Classic VPN gateway, tunnels, BGP sessions, and an external VPN gateway resource. However, you can complete certain steps later. For example, configuring BGP sessions.

The **Create a VPN** button only supports creating HA VPN gateways.

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Configure the Gateway

1. Go to the VPN page in the Google Cloud Console.

[GO TO THE VPN PAGE \(HTTPS://CONSOLE.CLOUD.GOOGLE.COM/HYBRID/VPN/LIST\)](https://console.cloud.google.com/hybrid/vpn/list)

2. Click **VPN setup wizard**.
3. On the **Create a VPN** page, specify **Classic VPN**.
4. Click **Continue**.

5. On the **Create a VPN connection** page, specify the following gateway settings:

- **Name** – The name of the VPN gateway. The name cannot be changed later.
- **Description** – Optionally, add a description.
- **Network** – Specify an existing VPC network in which to create the VPN gateway and tunnel.
- **Region** – Cloud VPN gateways and tunnels are regional objects. Choose a [Google Cloud region](https://cloud.google.com/compute/docs/regions-zones/) (<https://cloud.google.com/compute/docs/regions-zones/>) where the gateway will be located. Instances and other resources in *different regions* can use the tunnel for egress traffic subject to the [order of routes](https://cloud.google.com/vpn/docs/concepts/order-of-routes) (<https://cloud.google.com/vpn/docs/concepts/order-of-routes>). For best performance, locate the gateway and tunnel in the same region as relevant Google Cloud resources.
- **IP address** – Create or choose an existing regional [external IP address](https://cloud.google.com/compute/docs/ip-addresses#reservedaddress) (<https://cloud.google.com/compute/docs/ip-addresses#reservedaddress>).

Configure Tunnels

1. Specify the following in the **Tunnels** section for the new tunnel item:

- **Name** – The name of the VPN tunnel. The name cannot be changed later.
- **Description** – Optionally, type a description.
- **Remote peer IP address** – Specify the public IP address of the peer VPN gateway.
- **IKE version** – Choose the appropriate IKE version supported by the peer VPN gateway. IKEv2 is preferred if it's supported by the peer device.
- **Shared secret** – Provide a pre-shared key used for authentication. The shared secret for the Cloud VPN tunnel must match the one used when you configure the counterpart tunnel on the peer VPN gateway. You can follow [these directions](https://cloud.google.com/vpn/docs/how-to/generating-pre-shared-key) (<https://cloud.google.com/vpn/docs/how-to/generating-pre-shared-key>) to generate a cryptographically strong shared secret.
- **Routing options** – Select **Dynamic (BGP)**.
- **Cloud router** – If you haven't already, create a new Cloud Router specifying the options as noted below. Alternatively, you can use an existing Cloud Router, if the Cloud Router does not already manage a BGP session for an interconnect attachment associated with a Partner Interconnect. If you choose an existing Cloud Router, you'll still create a new BGP session, but the Google ASN is the same. To create a new Cloud Router, specify the following details:
 - **Name** – The name of the Cloud Router. The name cannot be changed later.
 - **Description** – Optionally, type a description.
 - **Google ASN** – Choose a [private ASN](https://tools.ietf.org/html/rfc6996) (<https://tools.ietf.org/html/rfc6996>) (64512 - 65534, 4200000000 - 4294967294). This Google ASN is used for all BGP sessions managed by the Cloud Router. The ASN cannot be changed later.
 - Click **Save and continue**.

- **BGP session** – Click the pencil icon, then specify the following details. When you are done, click **Save and continue**:
 - **Name** – The name of the BGP session. It cannot be changed later.
 - **Peer ASN** – A public or private (<https://tools.ietf.org/html/rfc6996>) (64512 - 65534, 4200000000 - 4294967294) ASN used by your peer VPN gateway.
 - **Advertised route priority** – (Optional) The base priority Cloud Router uses when advertising the “to Google Cloud” routes. For more information, see [Route metrics](https://cloud.google.com/router/docs/concepts/overview#route_metrics) (https://cloud.google.com/router/docs/concepts/overview#route_metrics). Your peer VPN gateway imports these as MED values.
 - **Cloud Router BGP IP** and **BGP peer IP** – The two BGP interface IP addresses must be *link-local* IP addresses belonging to a common /30 CIDR from the 169.254.0.0/16 block. Each BGP IP defines the respective link-local IP used to exchange route information. For example, 169.254.1.1 and 169.254.1.2 belong to a common /30 block.
2. If you need to create more tunnels on the same gateway, click **Add tunnel** and repeat the previous step. You can [add more tunnels later](https://cloud.google.com/vpn/docs/how-to/adding-a-tunnel) (<https://cloud.google.com/vpn/docs/how-to/adding-a-tunnel>)
 3. Click **Create**.

Follow-up steps

You must complete the following steps before you can use a new Cloud VPN gateway and tunnel:

1. Set up the peer VPN gateway and configure the corresponding tunnel there. Refer to these pages:
 - For specific configuration guidance for certain VPN devices, refer to the [VPN Interoperability Guides](https://cloud.google.com/vpn/docs/how-to/interop-guides) (<https://cloud.google.com/vpn/docs/how-to/interop-guides>).
 - For general configuration parameters, refer to [Configuring the Peer VPN Gateway](https://cloud.google.com/vpn/docs/how-to/configuring-peer-gateway) (<https://cloud.google.com/vpn/docs/how-to/configuring-peer-gateway>).
2. Configure firewall rules in Google Cloud and your peer network as required. Refer to the [firewall rules page](https://cloud.google.com/vpn/docs/how-to/configuring-firewall-rules) (<https://cloud.google.com/vpn/docs/how-to/configuring-firewall-rules>) for suggestions.
3. [Check the status](https://cloud.google.com/vpn/docs/how-to/checking-vpn-status) (<https://cloud.google.com/vpn/docs/how-to/checking-vpn-status>) of your tunnel, including [forwarding rules](https://cloud.google.com/vpn/docs/how-to/checking-vpn-status#forwarding-rules) (<https://cloud.google.com/vpn/docs/how-to/checking-vpn-status#forwarding-rules>).

What's next

- [Maintain VPN tunnels and gateways](https://cloud.google.com/vpn/docs/how-to/maintaining-vpns) (https://cloud.google.com/vpn/docs/how-to/maintaining-vpns)
- [View logs and metrics](https://cloud.google.com/vpn/docs/how-to/viewing-logs-metrics) (https://cloud.google.com/vpn/docs/how-to/viewing-logs-metrics)
- [Get troubleshooting help](https://cloud.google.com/vpn/docs/support/troubleshooting) (https://cloud.google.com/vpn/docs/support/troubleshooting)
- See [Advanced Configurations](https://cloud.google.com/vpn/docs/concepts/advanced) (https://cloud.google.com/vpn/docs/concepts/advanced) for information on high-availability, high-throughput scenarios, or multiple subnet scenarios.

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