This tutorial shows you how to mount a Cloud Filestore file share on a remote client, which can be a Compute Engine VM on a different VPC network or a non-Google Cloud VM or terminal.

You cannot access Cloud Filestore file shares from the Internet or directly through a VPN. Cloud Filestore file shares are designed to be mounted on only Compute Engine VMs. However, it is possible to mount a file share on a remote client by using a Compute Engine VM as a proxy.

To do this, you need to:

- Establish a VPN connection between the network of the remote client and the VPC network of the Cloud Filestore instance.

- Configure a Compute Engine VM on the same VPC network (/compute/docs/vpc/) to forward `NFS` packets to the Cloud Filestore instance.

- Connect the remote client to the Compute Engine VM to mount the file share of the Cloud Filestore instance on the remote client.

This solution has several caveats:

- The proxy VM is a single-point-of-failure. If it goes down, the remote client can no longer access the file share.

- The proxy VM is a performance bottleneck because it forwards all `NFS` traffic between the remote client and Cloud Filestore instance.

- File locking does not work.

- Configure a Compute Engine VM to forward `NFS` packets from a remote client to a Cloud Filestore instance.

- Mount a Cloud Filestore file share on a remote client.

This tutorial uses billable components of Google Cloud, including:

- Compute Engine VM instance

- Cloud VPN

- Filestore instance

Use the pricing calculator (/products/calculator/) to generate a cost estimate based on your projected usage. New Google Cloud users might be eligible for a free trial (/free/).

1. Sign in (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).

2. In the Cloud Console, on the project selector page, select or create a 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/projectselector2/home/dashboard)

3. Make sure that billing is enabled for your Google Cloud project. Learn how to confirm billing is enabled for your project (/billing/docs/how-to/modify-project).

The proxy VM is a Linux Compute Engine VM that forwards NFS packets between the remote client and the Cloud Filestore instance. It must be on the same VPC network as the Cloud

Filestore instance.

To learn how to create a Linux Compute Engine VM, see Quickstart Using a Linux VM
 (/compute/docs/quickstart-linux).

Create a Cloud Filestore instance (/filestore/docs/creating-instances) on the same VPC network as
the proxy VM.

1. Go to the VM instances page (https://console.cloud.google.com/compute/instances)

2. Locate the proxy VM and click **SSH** to open a terminal on that VM.

3. Install `iptables` by running the following commands:

4. Forward the `NFS` packets destined to the Cloud Filestore instance by running the following commands on the proxy VM:

where:

- **filestore-ip-address** is the IP address of the Cloud Filestore instance that the proxy VM is forwarding to.

- **network-interface** is the name of the network interface on the proxy VM, such as `eth0`. To get the name of the network interface, run the following command on the proxy VM:

The ports forwarded are:

- 111: `portmapper`

- 2049: `nfs`

- 2050: `mountd`

Before you can mount the Cloud Filestore file share on a remote client, you must establish a VPN connection between the network of the remote client and the VPC network of the Cloud Filestore

instance and proxy VM.

Create an HA VPN. For detailed instructions, see <u>Creating an HA VPN gateway to a Peer VPN</u> <u>gateway</u> (/vpn/docs/how-to/creating-ha-vpn).

- For specific configuration guidance for certain VPN devices, see <u>VPN Interoperability Guides</u> (/vpn/docs/how-to/interop-guides).

- For general configuration parameters, see <u>Configuring the Peer VPN Gateway</u> (/vpn/docs/how-to/configuring-peer-gateway).

1. Create a mount point directory on the remote client:

   where **mount-point-directory** is the path where you want to map the Cloud Filestore file share to.

2. Mount the Cloud Filestore instance on your client on a remote network by running the following command on the remote client:

   where:

   - **proxy-ip-address** is the IP address for the proxy instance.

   - **file-share** is the name of the file share on the Cloud Filestore instance.

- *file-share-sub-dir* is the path of the file share subdirectory that you want to mount. Leave this blank if you want to mount the entire file share.

- *mount-point-directory* is the path on the remote client where you want to map the Cloud Filestore file share to.

Example: The following command mounts file share `vol1` on a Cloud Filestore instance being forwarded to a Linux Compute Engine VM with IP address `34.68.144.226` to mount point directory `/mnt/test` on the remote client:

3. Confirm that your configuration works by running the following command on the remote client:

where *mount-point-directory* is the path of the mount point directory.

From the previous example, the command would be:

If the file share is mounted successfully on the remote client, the system will return the results of the `ls` command.

You can troubleshoot by running `tcpdump` on the proxy VM to check if the `NFS` packets are being forwarded:

1. Install `tcpdump`:

2. Run the following command to display the packets being transmitted or received by the proxy VM, except `SSH` and `HTTP` packets:

After you've finished the Mounting file shares on clients in a remote network tutorial, you can clean up the resources that you created on GCP so they won't take up quota and you won't be billed for them in the future. The following sections describe how to delete or turn off these resources.

The easiest way to eliminate billing is to delete the project that you created for the tutorial.

To delete the project:

> ⊖ **Caution**: Deleting a project has the following effects:
>
> - **Everything in the project is deleted.** If you used an existing project for this tutorial, when you delete it, you also delete any other work you've done in the project.
>
> - **Custom project IDs are lost.** When you created this project, you might have created a custom project ID that you want to use in the future. To preserve the URLs that use the project ID, such as an `appspot.com` URL, delete selected resources inside the project instead of deleting the whole project.
>
> If you plan to explore multiple tutorials and quickstarts, reusing projects can help you avoid exceeding project quota limits.

1. In the Cloud Console, go to the **Manage resources** page.

   Go to the Manage resources page (https://console.cloud.google.com/iam-admin/projects)

2. In the project list, select the project you want to delete and click **Delete** 🗑 .

3. In the dialog, type the project ID, and then click **Shut down** to delete the project.

To delete a Compute Engine instance:

1. In the Cloud Console, go to the **VM Instances** page.

   Go to the VM Instances page (https://console.cloud.google.com/compute/instances)

2. Click the checkbox for the instance you want to delete.

3. Click **Delete** 🗑 to delete the instance.

1. Go to the Cloud Filestore instances page (https://console.cloud.google.com/filestore/instances)

2. Click the instance ID to open the instance details page.

3. Click **Delete**.

4. When prompted, type the instance ID and click **Delete** 🗑 .

1. Go to the Cloud VPN page (https://console.cloud.google.com/hybrid/vpn)

2. Click the **Cloud VPN tunnels** tab

3. Click on the name of the tunnel and click **Delete** 🗑 .

- Learn more about creating Compute Engine instances
  (/compute/docs/instances/create-start-instance).

- Learn more about creating Cloud Filestore instances (/filestore/docs/creating-instances).

- Learn more about Cloud VPN (/vpn/docs).

- Try out other Google Cloud features for yourself. Have a look at our tutorials (/docs/tutorials).