



Deploy a CSR 1000v by Using a Solution Template

You can deploy a CSR 1000v router in Google Cloud Platform (GCP) in two ways: by using a VM instance, or by using a solution template. This chapter specifies how you can deploy a CSR 1000v solution template and the configuration of the associated resources in the service provider's cloud.

- [Create an SSH Key, on page 1](#)
- [Create a VPC Network, on page 2](#)
- [Deploy the CSR Solution Template, on page 2](#)

Create an SSH Key

To create an SSH key, which is required to access a Cisco CSR 1000v VM instance, perform the following steps. Enter the commands at a terminal server.

Step 1 Execute `ssh-keygen -t rsa -f ~/.ssh/keyfile [-C username]`

`~/.ssh/keyfile` - Directory path and filename of the key. Example: `/users/joe/.ssh/mykey`.

`-C username` - Username, which is added as a comment. This variable is optional.

Two key files are created; a private key and a public key in the `.ssh` directory. For example, `mykey` and `mykey.pub`.

For more information on creating an SSH key, see *Creating a new SSH key* in the Google Cloud Platform documentation. See also [Managing SSH keys in Metadata](#).

Example:

```
ssh-keygen -t rsa -f /users/joe/.ssh/mykey -C joe
```

Step 2 `cat ~/.ssh/[keyfile_pub]`

`keyfile_pub` specifies the public key; for example, `mykey.pub`.

Example:

```
Example: cat /users/joe/.ssh/mykey.pub
```

The system displays the contents of the public key. You will need this public key to [Create a VM Instance](#).

Create a VPC Network

Before you begin

To learn about VPC networks, see: [Virtual Private Cloud \(VPC\) Network Overview](#) and [Using VPC Networks](#).

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- Step 1** From the navigation pane in the Google Cloud Platform console, scroll down to **VPC network** and select **VPC networks**.
 - Step 2** Click **Create VPC Network**.
 - Step 3** Enter a **Name** for the network. **CREATE VPC NETWORK**.
 - Step 4** Enter a **Description** for the network.
 - Step 5** Select **Subnets > Add Subnet**.
 - Step 6** In the New Subnet dialog box, Enter a **Name** for the subnet. For example, **csrnet1**.
 - Step 7** Select the appropriate option in the **Region** field.
 - Step 8** Enter an **IP address range**. For example, enter 10.10.1.0/24 for the subnet address.
 - Step 9** Click **Done** to create the subnet.

To create multiple subnets for the VPC network, repeat steps 5 to 9.
 - Step 10** Click **Create** to create the VPN Network.
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Deploy the CSR Solution Template

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- Step 1** Go to the Google Marketplace and search for Cisco CSR100v. Select the CSR Template.

Figure 1: Select CSR Deployment Template

cisco-csr-1000v
Cisco Systems
Estimated costs: \$0.00/month + BYOL license fee
Deploy and manage enterprise-class networking services and VPN.

[LAUNCH ON COMPUTE ENGINE](#) 2 PAST DEPLOYMENTS

Rules on
Google Compute Engine

Type
Single VM
BYOL

Last updated
1/10/19, 10:20 AM

Category
Compute
Networking

Version
16.9

Operating system
IOSXE 16.9

Overview
The Bring Your Own License (BYOL) of Cisco Cloud Services Router (CSR1000V) delivers enterprise-class networking services & VPN in the Google Compute Platform. This software supports all the four CSR Technology packages. The CSR is a full feature Cisco IOS XE router and enables enterprise IT to deploy the same enterprise-class networking services in the cloud that they are familiar with on-prem networks. It enables Routing, VPN, Firewall, High-Availability, IP-SLA, AVC, WAN Opt, and more. The familiar IOS XE CLI and Netconf/Restconf/Yang API ensure easy deployment, monitoring, troubleshooting, and service orchestration. To activate this software, please obtain a license from Cisco with the following: (1) Tech Package: IPBase, SEC, AppX, or AX (2) Performance Level: 10Mbps, 50 Mbps, 100Mbps, 250Mbps, 500 Mbps, 1 Gbps, 2.5 Gbps or 5Gbps and (3) Time period: 1-year, 3-year, or perpetual. For a 60-day eval license, please click the resource link below. www.cisco.com/go/license

About Cisco Systems
Cisco is transforming how people, think and processes connect, communicate, and collaborate. Cisco is a technology leader in the IT industry creating products related to the communications and information technology (IT) industry.
[Learn more](#)

About BYOL
BYOL (Bring Your Own License) solutions let you run software on Compute Engine while using licenses purchased directly from the provider. Google only charges you for the infrastructure costs, giving you the flexibility to purchase and manage your own licenses.

Pricing
This is a BYOL solution which requires a valid license to use. You are responsible for purchasing and managing your own licenses from Cisco Systems.
[Request a license](#)

To purchase CSR1000v software license, please contact your Cisco sales representative or partner. You can customize the configuration later when deploying this solution.

Estimated costs are based on 30-day, 24 hours per day usage in Central US region. Sustained use discount is included.
New Google Cloud customers may be eligible for free trial.
[Learn more about Google Cloud pricing](#) & [free trial](#)

Item	Estimated costs
Cisco Systems license fee (BYOL)	Varies
<small>Google Cloud not collect this license fee.</small>	
Total	\$0.00/month + BYOL license fee

Tutorials and documentation
[CSR 1000V Configuration Guides](#)
[CSR 1000V Home Page](#)

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Step 2 Click **Launch On Compute Engine**.

Step 3 In the New Cisco 1000v Deployment screen, provide the following details:

- Deployment name:** This field is filled by default, and displays the cisco-csr1000v-‘deployment number’
- Instance Name:** The name of the CSR 1000v instance in text format. You must follow the GCP naming pattern for successful deployment. The name of the instance must be a combination of regex `'(?:[a-z](?:[-a-z0-9]{0,61}[a-z0-9])?')>`
- Username:** Specify the username that is used to access the CSR 1000v instance.
- Instance SSH Key:** Specify the public key to be used for SSHing into the instance. To know how to create an ssh-key, see [SSH-Key](#).
- Zone:** Select the zone where the CSR 1000v is deployed from the drop-down list.
- Machine Type:** Select the size of the CSR 1000v that you want to deploy. For more information on CSR 1000v sizes, see [Machine Types](#).

Bootdisk

- Bootdisk type:** By default, the SSD Persistent disk is selected. Cisco recommends that you use the default Boot disk type.
- Boot disk size in GB:** The default value is 10 GB. Cisco recommends that you use the default Boot disk size.

Networking

- i) **Network (VPC):** Select the network in the region where you want to deploy the CSR 1000v instance. You must create the Network (VPC) before you create the CSR 1000v instance. Ensure that at least one subnet is associated to that Network (VPC). For more information about VPC networks, see [Virtual Private Cloud Network Overview](#) and [Using VPC Networks](#).
- j) **Subnetwork:** Select the subnet that is associated with the selected Network (VPC). This subnet acts as the first Network Interface (nic0) of the CSR instance.
- k) **ExternalIP:** The public IP address that you must use to SSH into the CSR 1000v instance. This can be static, Ephemeral (Dynamic) and None. For more information about IP addresses, see [IP Addresses](#).
- l) **Firewall:** The firewall rule associated to the VPC Network. With the current Solution Template, you can use TCP ports 21, 22, 80. You can also create additional Firewall rules. For more information on firewall rules, see [Firewalls in VPC Networking and Firewalls](#).

Note You can also specify source ranges for firewalls rules.

- m) **IP Forwarding:** The default value to allow traffic between interfaces on the CSR 1000v instance. By default, the value for IP Forwarding is ON.

Figure 2: New CSR 1000v Deployment Screen

← New cisco-csr-1000v deployment

Deployment name
cisco-csr-1000v-2

Instance name
test1

Username
varveti

Instance SSH Key
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQDDPqwpd1k8m3SE1qHTE2v1F

Zone
us-central1-f

Machine type
4 vCPUs 15 GB memory Customize

Boot Disk
Boot disk type
SSD Persistent Disk

Boot disk size in GB
10

Networking
Network
aregion

Subnetwork
aregion (10.100.1.0/24)

External IP
Ephemeral

Firewall
Add tags and firewall rules to allow specific network traffic from the Internet
 Allow TCP port 22 traffic
 Allow HTTP traffic
 Allow TCP port 21 traffic

Source IP ranges for TCP port 22 traffic
0.0.0.0/0

Source IP ranges for HTTP traffic
0.0.0.0/0, 192.168.1.0/24

Source IP ranges for TCP port 21 traffic
0.0.0.0/0, 192.169.0.2/24

IP forwarding
On

Less

Additional Network Interfaces
Multiple network interfaces deployment is described in [Deploy a CSR1000v for GCP with Multiple Network Interfaces](#).
 Show Additional Network Interfaces options

cisco-csr-1000v overview
Solution provided by Cisco Systems

Software
Operating System IOSXE (16.9)

Launching a BYOL solution
cisco-csr-1000v is a BYOL (Bring Your Own License) solution. Marketplace will deploy this solution, but you are responsible for purchasing and managing the license directly from the provider.

Terms of Service
The software or service you are about to use is not a Google product. By deploying the software or accessing the service you are agreeing to comply with the Cisco Systems terms of service, GCP Marketplace terms of service and the terms of any third party software licenses related to the software or service. Please review these licenses carefully for details about any obligations you may have related to the software or service. To the limited extent an open source software license related to the software or service expressly supersedes the GCP Marketplace Terms of Service, that open source software license governs your use of that software or service.
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- n) **Additional Network Interfaces:** Configure this field if you want to configure additional interfaces. By default, the value of this field is 0. To add additional interfaces, specify additional interfaces that are needed for the CSR 1000v instance. Select the additional network interfaces based on the machine type. For more information on deployment of instance with multiple interfaces in GCP, see [Creating Instances With Multiple Network Interfaces](#).

Figure 3: Additional Network Interfaces

Note For the deployment to be successful, even if you do not require all the additional interfaces, you must select the Additional Network Interfaces option. This is a known issue where Google brings up to 8 interfaces, and you must fill in all the eight interfaces.

For example, in the following image, even though two additional NICs were selected, note that the 7 additional interfaces are configured with the networks and subnets present in region where the CSR 1000v instance is deployed.

After successful deployment, the system displays a message that the CSR instance has been deployed.

Figure 4: Verify successful deployment

The screenshot displays the Google Cloud console interface for a newly deployed cisco-csr-1000v-2 instance. On the left, a navigation pane shows the project structure, including the instance and associated firewall rules. The main content area features a 'Get started with cisco-csr-1000v' section with 'Suggested next steps' such as 'Request a license', 'Open TCP port 21 traffic', and 'Assign a static external IP address to your VM instance'. A terminal snippet shows the command used to create the firewall rule.

cisco-csr-1000v	
Solution provided by Cisco Systems	
Username	varveti
External IP Address	35.222.181.209
Instance	instance
Instance zone	us-central1-f
Instance machine type	n1-standard-4
Number of NICs	3
Message	VM got attached with 2 additional NICs as expected.
SSH Command	ssh -i /private-key-path varveti@35.222.181.209

```
gcloud --project=crpytic-net-198518 compute firewall-rules create "cisco-csr-1000v-2"
```

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