

Deploy Arista CloudEOS with Google Cloud Network Connectivity Center

Goal

In this deployment guide, we will show you how to connect the Arista CloudEOS Router to Google Cloud Network Connectivity Center (NCC), with the following high-level tasks.

- Deploy an Arista CloudEOS Router from the Google Cloud marketplace
- Create NCC Hub and Spokes using NCC's UI page
- Configure Arista CloudEOS and Google NCC to establish the BGP connection.
- Verify the BGP connection and routing information using Arista EOS CLI, CloudVision, and Google NCC's UI page

For more information about the Arista CloudEOS Router, see [here](#) and Arista CloudVision, see [here](#).

For more information about Google Network Connectivity Center, see [here](#).

Deployment Diagram

In the following diagram, we will focus on spoke-3's creation and connecting it to Google NCC. spoke-1 and spoke-2 are optional. They are pre-deployed to show that the CloudEOS router in spoke-3 can learn the other spokes' prefixes from NCC. CloudVision component is also optional, but it allows you to take advantage of Arista's real-time state-streaming telemetry capabilities and additional management functionalities.

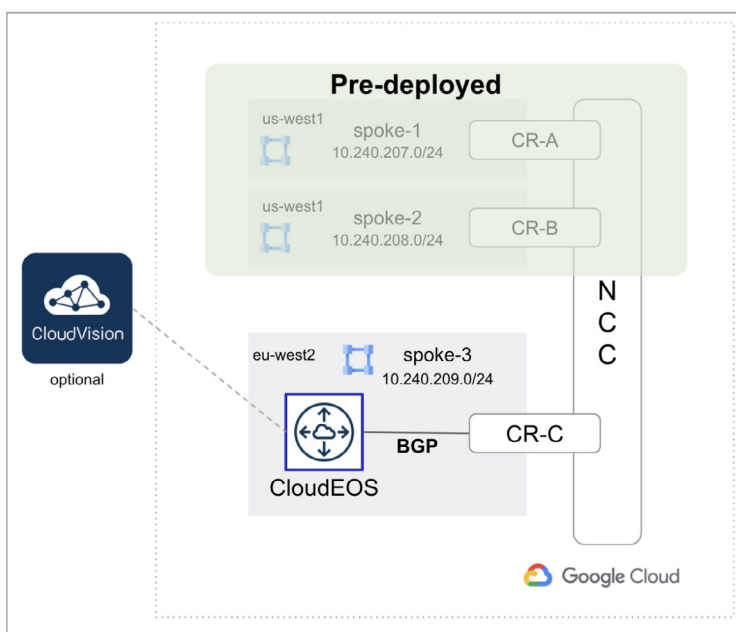
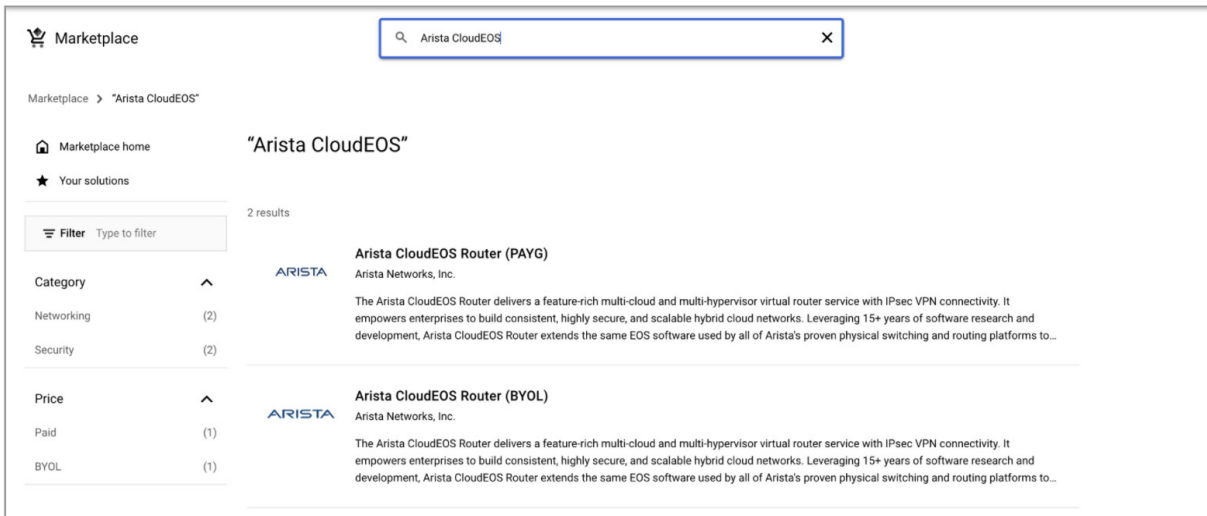


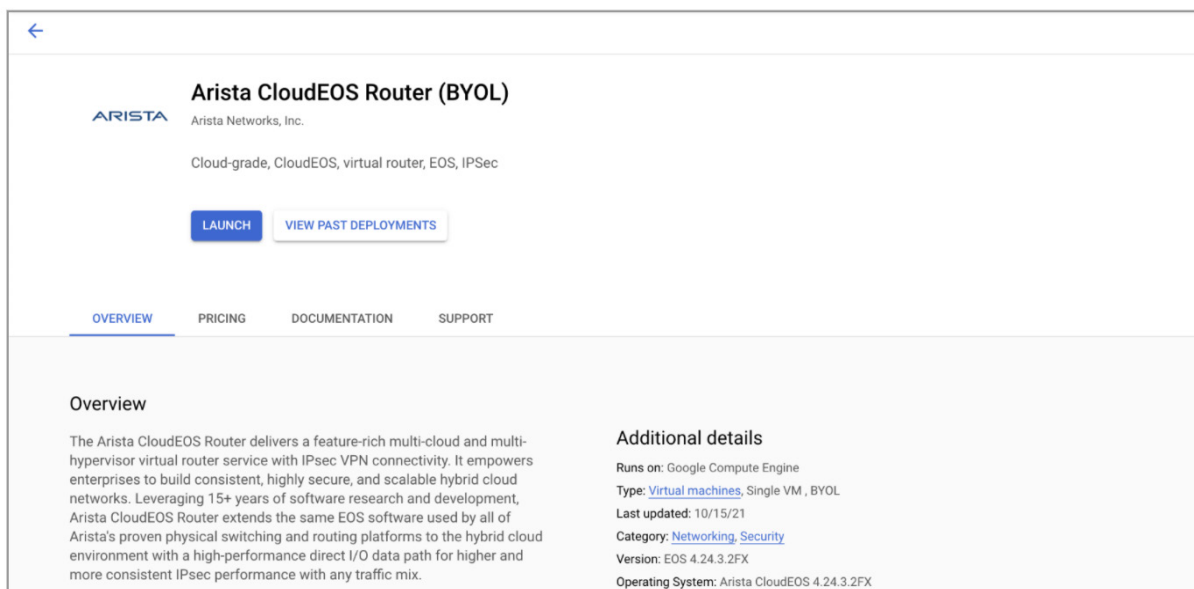
Figure: Connect Arista CloudEOS Router to Google Network Connectivity Center

Deployment Steps

1. In the Google Cloud marketplace, search Arista CloudEOS. Choose the licensing model based on your requirement. For this example, we used "Arista CloudEOS Router (BYOL)".



2. Click "Launch"



3. Fill out the following information, and click "Deploy"
 - Deployment name: your deployment name
 - Zone: choose the google region/zone where the router will be deployed
 - Machine type: choose one of the following, N1-standard-4, N1-standard-8, and N1-standard-16
 - User name: set the user name for ssh login

- Ssh Key: the public key router will use for authentication, in such format: ssh-key XXXX username@host-name
- Boot disk-type: Standard Persistent Disk
- Boot disk size in GB: 17
- Network Interface
 - › Network: the VPC network where cloudeos router will be deployed
 - › Subnetwork: the VPC subnet where cloudeos will be deployed
 - › External IP: Ephemeral (which you can use for SSH and build a tunnel to on-prem cloudeos router for later use)

New Arista CloudEOS Router (BYOL) deployment

Deployment name
site-109-r14

Zone
europe-west2-a

Machine type

Machine family
GENERAL-PURPOSE COMPUTE-OPTIMIZED MEMORY-OPTIMIZED

Series
N1

Machine type
n1-standard-4 (4 vCPU, 15 GB memory)

	vCPU	Memory
	4	15 GB

Powered by Intel Skylake CPU platform or one of its predecessors

✓ CPU PLATFORM AND GPU

Arista CloudEOS Router (BYOL) overview

Product provided by Arista Networks Inc.

Launching a BYOL product

Arista CloudEOS Router (BYOL) is a BYOL (Bring Your Own License) product. Marketplace will deploy this product, but you are responsible for purchasing and managing the license directly from the provider

Arista CloudEOS Router (BYOL) usage fee (BYOL)	Varies
Google does not collect this license fee.	
Infrastructure fee	
VM instance: 4 vCPUs + 15 GB memory (n1-standard-4)	USD 178.70/mo
Standard Persistent Disk: 17GB	USD 0.82/mo
Sustained use discount	- USD 53.61/mo
Estimated monthly total	USD 125.90/mo
	+ BYOL license fee

New Arista CloudEOS Router (BYOL) deployment

Username
arista

SSH Key
ssh-rsa AAAA...@site-109-r14

Boot Disk

Boot disk type
Standard Persistent Disk

Boot disk size in GB
17

Networking

Network interfaces

Network interface

Network
site-107-wan

Subnetwork
site-109-wan-subnet

External IP
Ephemeral

DONE

ADD NETWORK INTERFACE

▼ MORE

DEPLOY

+ BYOL license fee

Software

Operating System
Arista CloudEOS(4.24.3.2FX)

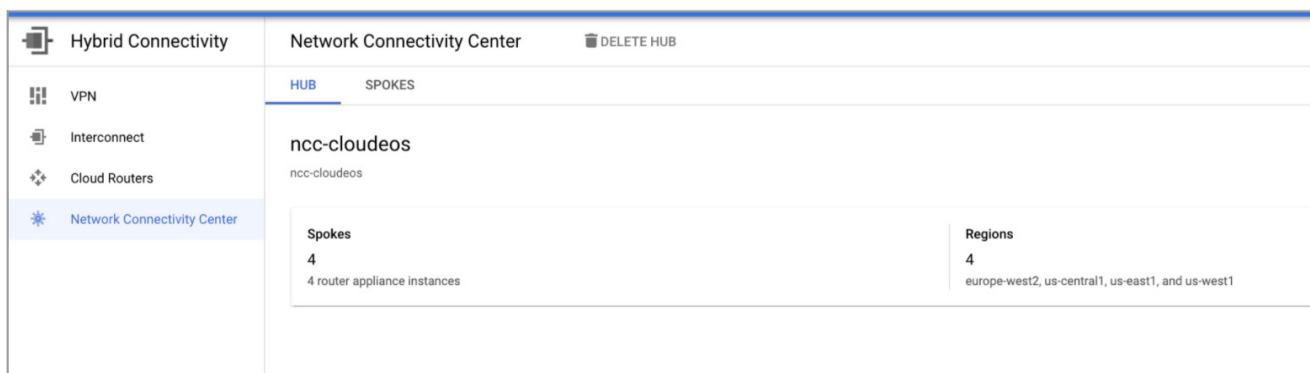
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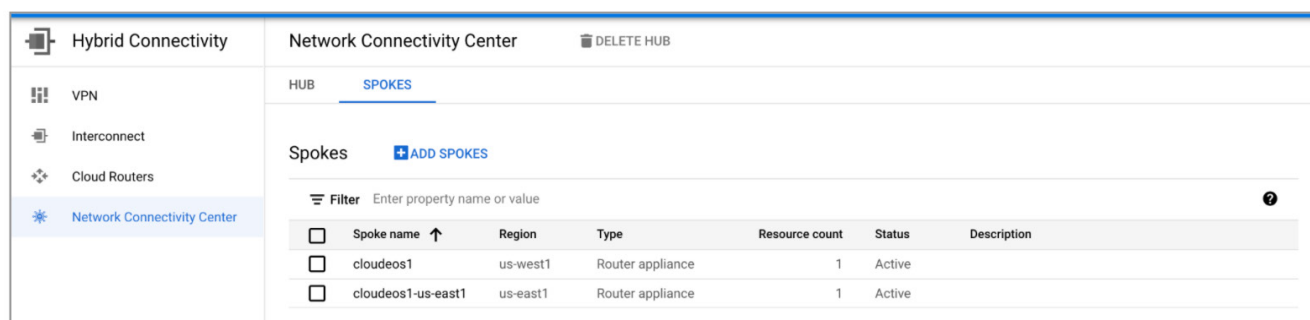
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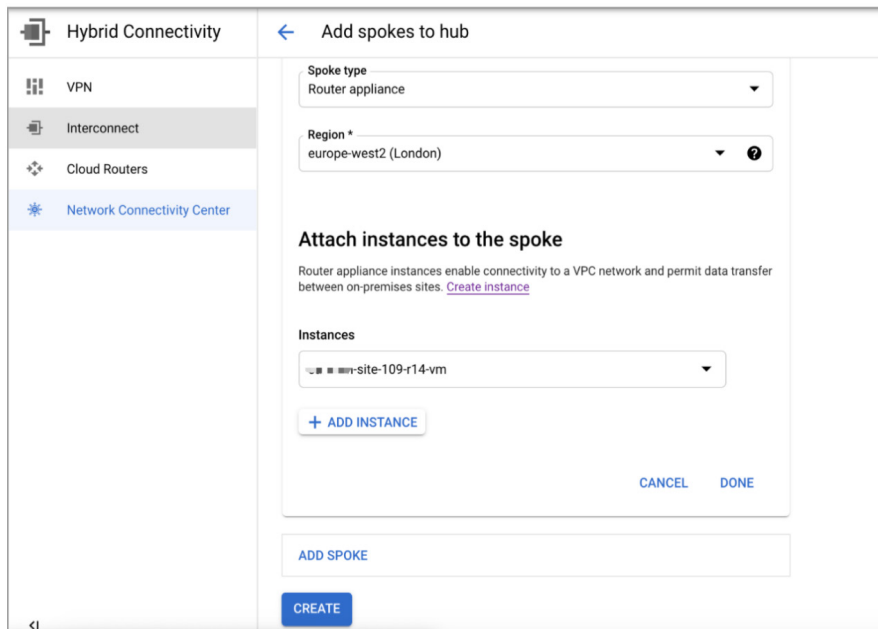
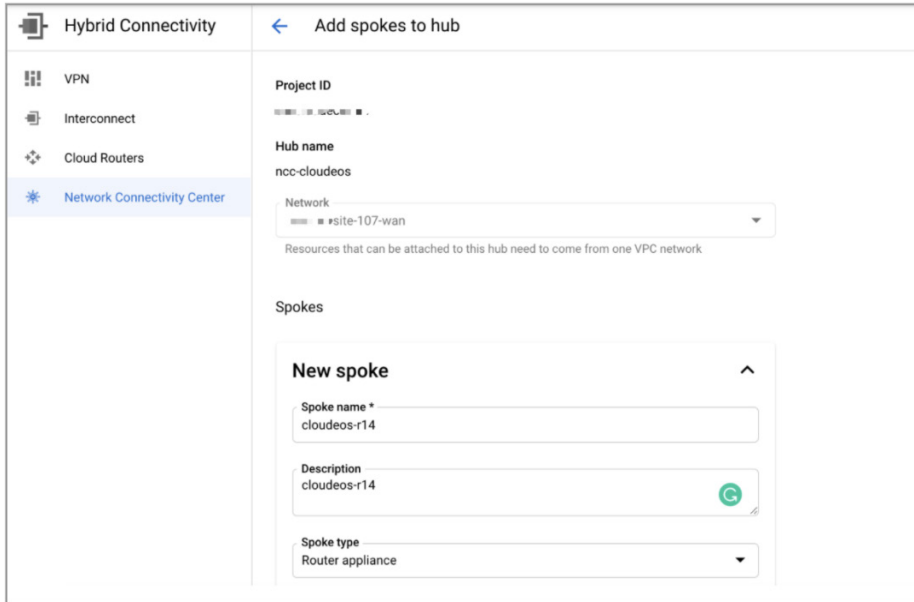
4. The router will take about 5 minutes to be created and boot up. After the router is up and running, log in to the router using the SSK key, and install the license if you choose the BYOL model. You don't need to install a license if you choose the PAYG model, the license is activated automatically.
5. Go back to Google Cloud Console, click "Network Connectivity Center" under Hybrid Connectivity, you will see the summary information about your NCC environment. A hub is already created. You can create a new hub if you don't see one.



6. Click the tab "SPOKES", you will see all the spokes belonging to the same hub.



7. Click "ADD SPOKES" to add a new spoke, with the following information, and click "Create"
 - Spoke name: cloudeos-r14
 - Description: cloudeos-r14
 - Spoke type: Router appliance
 - Region: choose the region where the cloudeos router is deployed in the previous step
 - Attach instances to the spoke
 - › Instances: choose the cloudeos instance deployed in the previous step



8. Now you can see the new spoke is being created as below

Hybrid Connectivity		Network Connectivity Center		DELETE HUB			
<ul style="list-style-type: none"> VPN Interconnect Cloud Routers Network Connectivity Center 		<ul style="list-style-type: none"> HUB SPOKES 					
		Spokes		+ ADD SPOKES			
		Filter		Enter property name or value			
<input type="checkbox"/>	Spoke name ↑	Region	Type	Resource count	Status	Description	
<input type="checkbox"/>	cloudeos-r14	europe-west2	Router appliance	1	▲ Active	cloudeos-r14	
<input type="checkbox"/>	cloudeos1	us-west1	Router appliance	1	Active		
<input type="checkbox"/>	cloudeos1-us-east1	us-east1	Router appliance	1	Active		

9. Click the newly created spoke to configure additional information. Click "CONFIGURE BGP SESSION"

10. Configure the Google Cloud Router BGP info

- Create New router
- Name: ncc-cr-c
- Description: ncc-cr-c
- Network: xxx-site-107-wan
- Region: europe-west2 (the region where cloudeos is deployed in the previous step)
- Google ASN: 64597
- BGP peer Keepalive interval: 20
- Advertised routes: create customer routes, advertise all subnets visible to cloud router (choose this so, on Google Cloud Router page, you can view all subnets that Google Cloud Router advertises to CloudEOS router)

Configure Cloud Router and BGP sessions

1 Cloud Router

Google Cloud Router dynamically exchanges routes between your Virtual Private Cloud (VPC) and on-premises networks by using Border Gateway Protocol (BGP)

Use existing
 Create new router

Name *
 ?
Lowercase letters, numbers, hyphens allowed

Description
 ?

Network
 ?

Region
 ?

Google ASN *
 ?

BGP peer keepalive interval
 seconds ?

Advertised routes

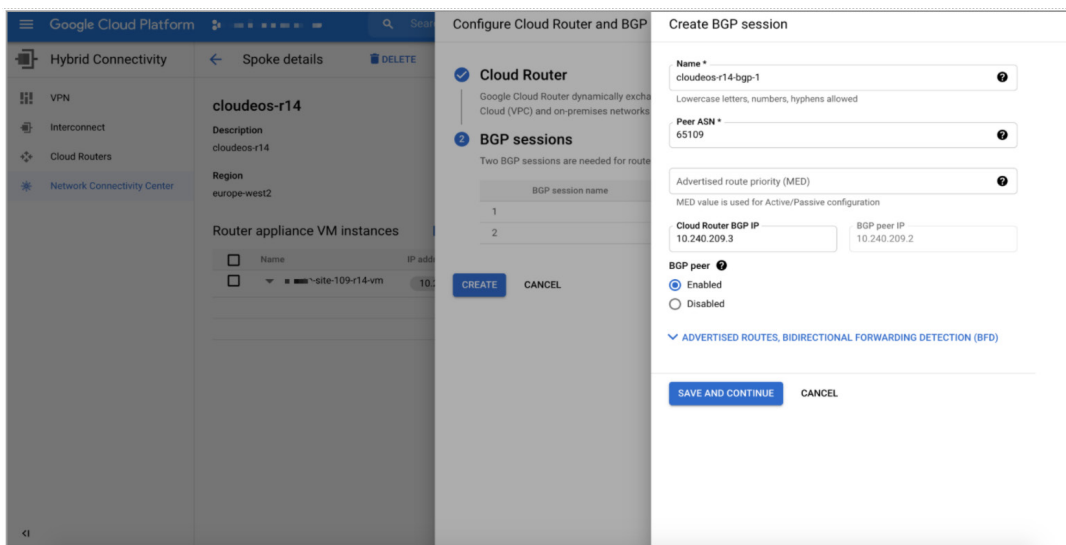
Routes

Advertise all subnets visible to the Cloud Router (Default)
 Create custom routes

Advertise all subnets
 Advertise all subnets visible to the Cloud Router

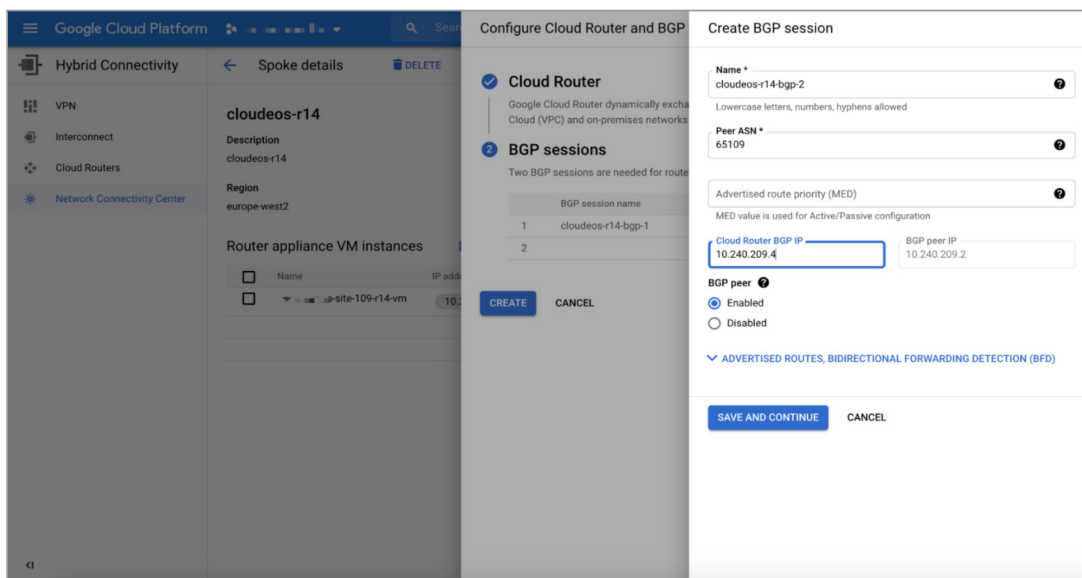
11. Configure the first BGP session information, and Click "SAVE AND CONTINUE"

- Name: cloudeos-r14-bgp-1
- Peer ASN: 65109 (CloudEOS Router's ASN)
- Cloud Router BGP IP: 10.240.209.3 (Google Cloud Router's IP used for BGP Peering)
- BGP Peer IP: 10.240.209.2 (unchangeable, the CloudEOS Router's IP used for BGP Peering)
- BGP Peer: enabled



12. Configure the second BGP session information (for redundancy), and Click "SAVE AND CONTINUE"

- Name: cloudeos-r14-bgp-2
- Peer ASN: 65109 (CloudEOS Router's ASN)
- Cloud Router BGP IP: 10.240.209.4 (Google Cloud Router's IP used for BGP Peering)
- BGP Peer IP: 10.240.209.2 (unchangeable, the CloudEOS Router's IP used for BGP Peering)
- BGP Peer: enabled



13. Now you can verify the Cloud Router and two BGP sessions configured as the following, and click "CREATE"

Configure Cloud Router and BGP sessions

1 **Cloud Router**

Google Cloud Router dynamically exchanges routes between your Virtual Private Cloud (VPC) and on-premises networks by using Border Gateway Protocol (BGP)

2 **BGP sessions**

Two BGP sessions are needed for router appliance redundancy

	BGP session name	Cloud Router BGP IP	BGP peer IP	
1	cloudeos-r14-bgp-1	10.240.209.3	10.240.209.2	EDIT BGP SESSION
2	cloudeos-r14-bgp-2	10.240.209.4	10.240.209.2	EDIT BGP SESSION

CREATE
CANCEL

14. After the creation, you can see the following BGP information

Hybrid Connectivity
← Spoke details
DELETE

cloudeos-r14

Description
cloudeos-r14

Region
europe-west2

Router appliance VM instances + ADD INSTANCES REMOVE INSTANCES

<input type="checkbox"/>	Name	IP address	Cloud router	BGP session name	Cloud router BGP IP	BGP peer IP
<input type="checkbox"/>	▼ ■ ■ ■ site-109-r14-vm	10.240.209.2	ncc-cr-c	cloudeos-r14-bgp-1	10.240.209.3	10.240.209.2
				cloudeos-r14-bgp-2	10.240.209.4	10.240.209.2

15. Log in to the CloudEOS router using the SSH key and configure the following BGP configurations

```

router bgp 65109
  neighbor 10.240.209.3 remote-as 64597
  neighbor 10.240.209.3 maximum-routes 12000
  neighbor 10.240.209.4 remote-as 64597
  neighbor 10.240.209.4 maximum-routes 12000
!
address-family ipv4
  neighbor 10.240.209.3 activate
  neighbor 10.240.209.4 activate

```

16. Now you should be able to verify the BGP status on the CloudEOS router using EOS CLI. The following shows that the two BGP sessions are established and 6 prefixes are learned from Google's Cloud Router.

```

site-109-r14(config-router-bgp-af)# show ip bgp summary
BGP summary information for VRF default
Router identifier 10.240.209.2, local AS number 65109
Neighbor Status Codes: m - Under maintenance
Neighbor      V  AS      MsgRcvd  MsgSent  InQ  OutQ  Up/Down  State  PfxRcd  PfxAcc
10.240.209.3  4  64597    14       10     0    0 00:02:18 Estab   6       6
10.240.209.4  4  64597    13       13     0    0 00:01:55 Estab   6       6

```

17. You can also check the IP routing table on the CloudEOS router

```

site-109-r14(config-router-bgp-af)#show ip route

VRF: default
Codes: C - connected, S - static, K - kernel,
O - OSPF, IA - OSPF inter area, E1 - OSPF external type 1,
E2 - OSPF external type 2, N1 - OSPF NSSA external type 1,
N2 - OSPF NSSA external type2, B - BGP, B I - iBGP, B E - eBGP,
R - RIP, I L1 - IS-IS level 1, I L2 - IS-IS level 2,
O3 - OSPFv3, A B - BGP Aggregate, A O - OSPF Summary,
NG - Nexthop Group Static Route, V - VXLAN Control Service,
DH - DHCP client installed default route, M - Martian,
DP - Dynamic Policy Route, L - VRF Leaked,
RC - Route Cache Route

Gateway of last resort:
DH      0.0.0.0/0 [254/0] via 10.240.209.1, Ethernet1

B E     10.0.101.0/24 [200/334] via 10.240.209.1, Ethernet1
B E     10.240.107.0/24 [200/334] via 10.240.209.1, Ethernet1
B E     10.240.207.0/24 [200/434] via 10.240.209.1, Ethernet1
B E     10.240.208.0/24 [200/389] via 10.240.209.1, Ethernet1
C       10.240.209.0/24 is directly connected, Ethernet1
B E     192.168.1.0/24 [200/334] via 10.240.209.1, Ethernet1

```

18. (Optional) If you have Arista CloudVision, you can also onboard the CloudEOS Router onto CloudVision, and you can see similar routing information and more valuable information from a historical perspective for troubleshooting and visibility. If you don't have Arista CloudVision, you can register it at <https://www.arista.io/cv>. More information about CloudVision can be found [here](#).

The screenshot shows the CloudVision interface for a device named 'site-109-r14'. The navigation path is 'Routing > BGP > VRF: Default'. The 'BGP Overview' section includes 'Local BGP Details' and 'BGP Peers'.

Local BGP Details:

BGP AS Number	65109
BGP Configured	Enabled
BGP Established Peers	2 peers
BGP Learned Paths	12 paths
BGP Peers	2 peers
BGP Unestablished Peers	0 peers
Configured BGP Router ID	10.240.209.2
IPv4 BGP Learned Routes	5 routes
IPv6 BGP Learned Routes	0 routes

Peer States: A circular gauge shows 2 peers, with 2 established.

BGP Peers Table:

Peer ↑	State	Enabled	Local Address	Advertised Router ID	Router ID	AS Number
10.240.209.3	Established	Enabled	10.240.209.2	Default	10.240.209.3	64597
10.240.209.4	Established	Enabled	10.240.209.2	Default	10.240.209.4	64597

The interface also includes a sidebar with navigation options like Environment, Tags, Switching, Routing, and Interfaces, and a bottom timeline for historical data.

CloudVision **site-109-r14** > Routing > IPv4 Routing Table > VRF: Default

Related pages: compare against 30m ago and compare against 1hr ago

Type	Prefix ↑	Nexthops	Metric	Preference
dhcp	0.0.0.0/0	10.240.209.1 (Ethernet1)	0	254
martian	0.0.0.0/8	Directly Connected	0	1
eBGP	10.0.101.0/24	10.240.209.1 (Ethernet1)	334	200
eBGP	10.240.107.0/24	10.240.209.1 (Ethernet1)	334	200
eBGP	10.240.207.0/24	10.240.209.1 (Ethernet1)	434	200
eBGP	10.240.208.0/24	10.240.209.1 (Ethernet1)	389	200
Connected	10.240.209.0/24	Directly Connected (Ethernet1)	1	0
Receive Broadcast	10.240.209.0/32	CPU	0	0
Receive	10.240.209.2/32	CPU	0	0
Receive Broadcast	10.240.209.255/32	CPU	0	0
martian	127.0.0.0/8	Directly Connected	0	1
martian	127.0.0.1/32	Directly Connected	0	1

Routing Table Changes

- 127.0.0.1/32 modified Oct 13, 2021 16:37:07
- 10.0.101.0/24 modified Oct 13, 2021 16:37:07
- 192.168.1.0/24 modified Oct 13, 2021 16:37:07
- 10.240.107.0/24 modified Oct 13, 2021 16:37:07
- 10.240.207.0/24 modified Oct 13, 2021 16:37:07
- 10.240.208.0/24 modified Oct 13, 2021 16:37:07
- 10.240.209.0/24 modified Oct 13, 2021 16:37:07
- 10.240.209.0/32 modified Oct 13, 2021 16:37:07
- 10.240.209.0/32 modified Oct 13, 2021 16:37:07

19. Go back to Google Cloud Console, under "Hybrid Connectivity" -> "Cloud Router", you can view the BGP session status on Cloud Router

Hybrid Connectivity > Cloud Routers

Get real-time analytics with Network Intelligence Center

- Visualize your network resources
- Diagnose and prevent connectivity issues
- View packet loss and latency metrics
- Keep your firewall rules strict and efficient

GO TO NETWORK INTELLIGENCE CENTER REMIND ME LATER

Name	Network	Region	Google ASN	Interconnect	Connection	BGP sessions	Logs
ncc-cr-a	site-107-wan	us-west1	64599	-	site-107-r10-vm	<ul style="list-style-type: none"> cloudeos-1-bgp-peer-a-0 cloudeos-1-bgp-peer-a-1 	View
ncc-cr-b	site-107-wan	us-east1	64598	-	site-108-r13-vm	<ul style="list-style-type: none"> cloudeos-1-bgp-peer-a-0 	View
ncc-cr-c	site-107-wan	europa-west2	64597	-	site-109-r14-vm	<ul style="list-style-type: none"> cloudeos-r14-bgp-1 cloudeos-r14-bgp-2 	View

20. Click the Cloud Router "ncc-cr-c" created in the previous step, you can see more details like advertised subnets and BGP configurations

Hybrid Connectivity
Router details [EDIT](#) [DELETE](#)

- VPN
- Interconnect
- Cloud Routers
- Network Connectivity Center

NCC-CR-C

Description ncc-cr-c

Network site-107-wan

Region europe-west2

Google ASN 64597

BGP peer keepalive interval 20 seconds

Advertised route configuration

BGP sessions will advertise these routes if no other configuration is specified

Advertisement mode
Custom

Advertise all available subnets
Yes

Advertised IP ranges

SUBNETS
CUSTOM IP RANGES

Subnet	Region	IP range	Advertised IP range
site-107-wan-subnet	us-west1	10.240.207.0/24	10.240.207.0/24
site-108-wan-subnet	us-east1	10.240.208.0/24	10.240.208.0/24
site-109-wan-subnet	europe-west2	10.240.209.0/24	10.240.209.0/24

Hybrid Connectivity
Router details [EDIT](#) [DELETE](#)

- VPN
- Interconnect
- Cloud Routers
- Network Connectivity Center

Advertised IP ranges

SUBNETS
CUSTOM IP RANGES

Subnet	Region	IP range	Advertised IP range
site-107-wan-subnet	us-west1	10.240.207.0/24	10.240.207.0/24
site-108-wan-subnet	us-east1	10.240.208.0/24	10.240.208.0/24
site-109-wan-subnet	europe-west2	10.240.209.0/24	10.240.209.0/24

BGP sessions

Router appliance BGP sessions

Name ↑	Peer ASN	Cloud Router BGP IP	BGP peer IP	Router appliance instance	Advertised route priority	Advertisement mode	Bidirecti
cloudeos-r14-bgp-1	65109	10.240.209.3	10.240.209.2	site-109-r14-vm		Default	Disable
cloudeos-r14-bgp-2	65109	10.240.209.4	10.240.209.2	site-109-r14-vm		Default	Disable

NAT gateways

[ADD NAT GATEWAY](#)

[EQUIVALENT REST](#)

Summary

Now you have completed the steps of creating and connecting the Arista CloudEOS Router to the Google Cloud Network Connectivity Center. You can repeat the steps to create other spokes to connect more Google Cloud regions or configure your on-prem CloudEOS routers to build the overlay tunnel back to your existing network.

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