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.

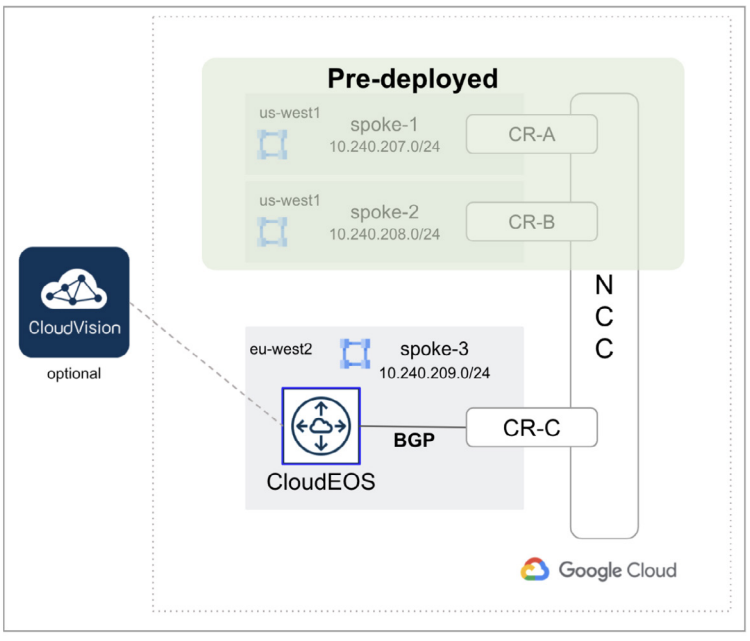
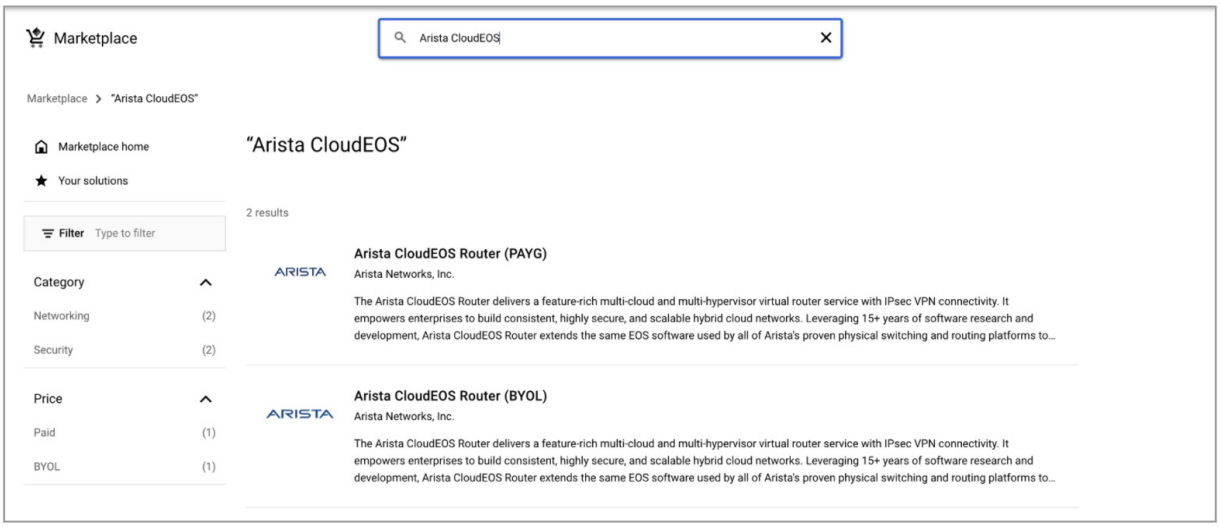


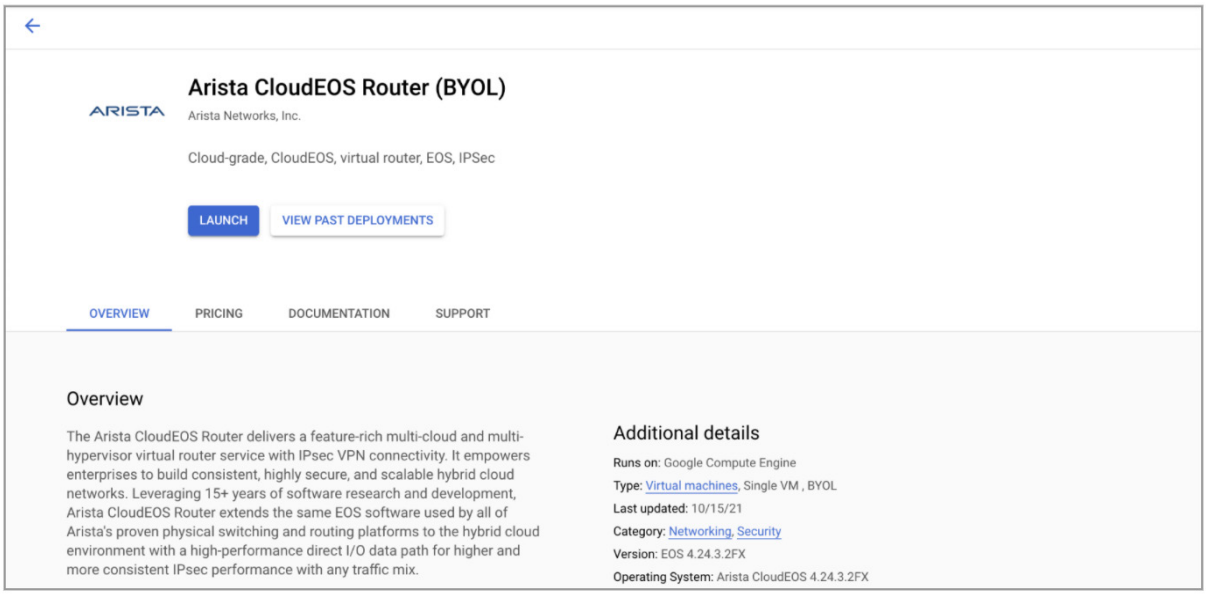
Figure: Connect Arista CloudEOS Router to Google Network Connectivity Center

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)".

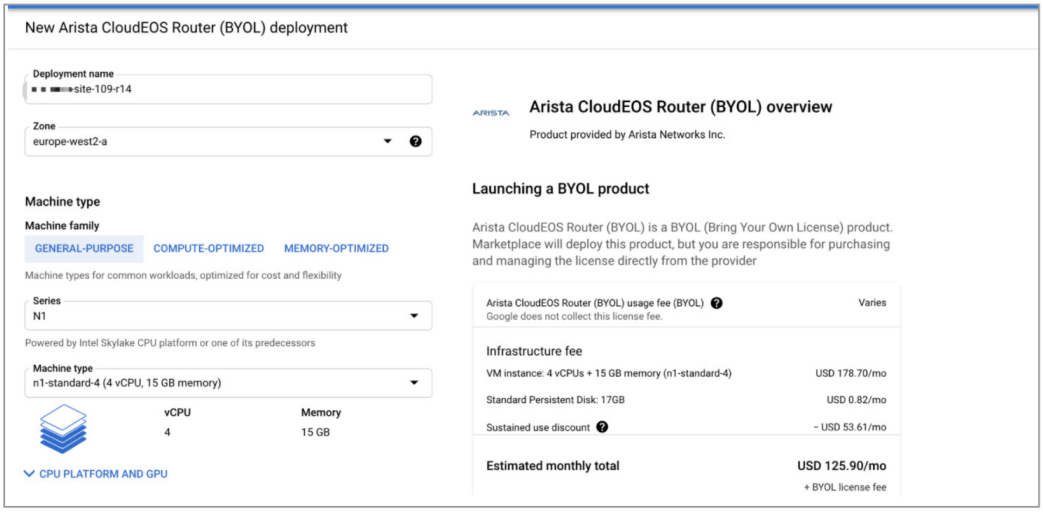


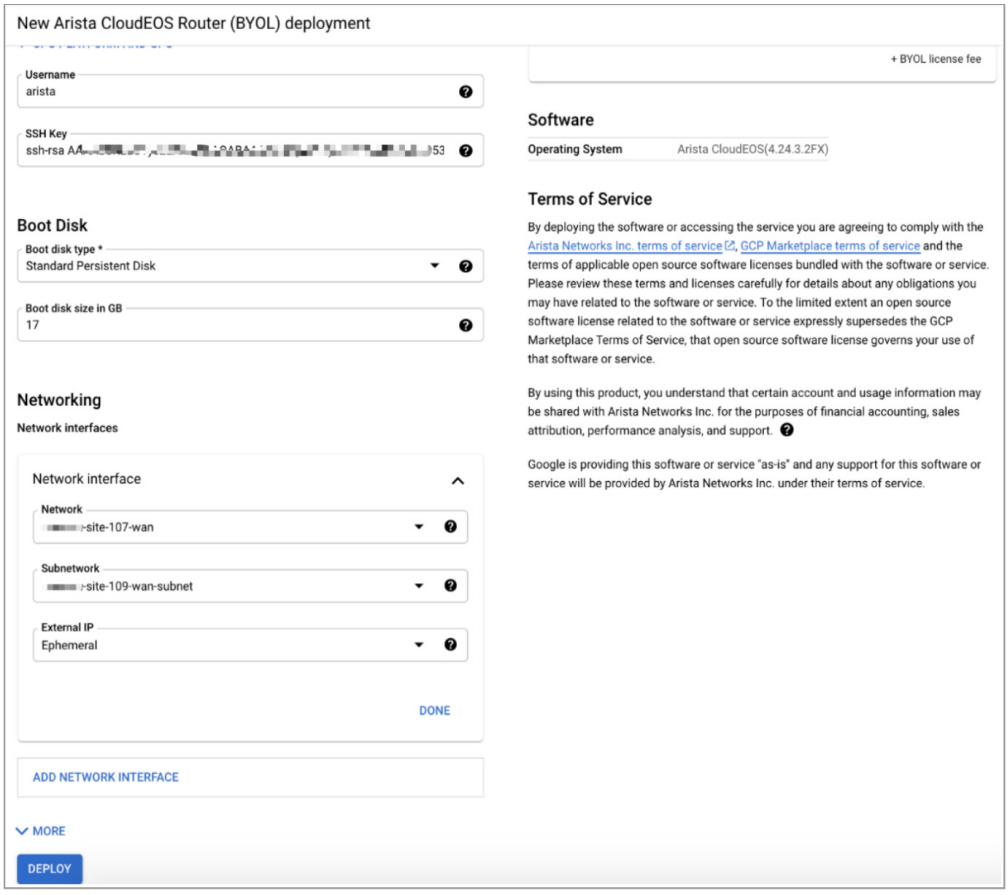
2. Click "Launch"



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

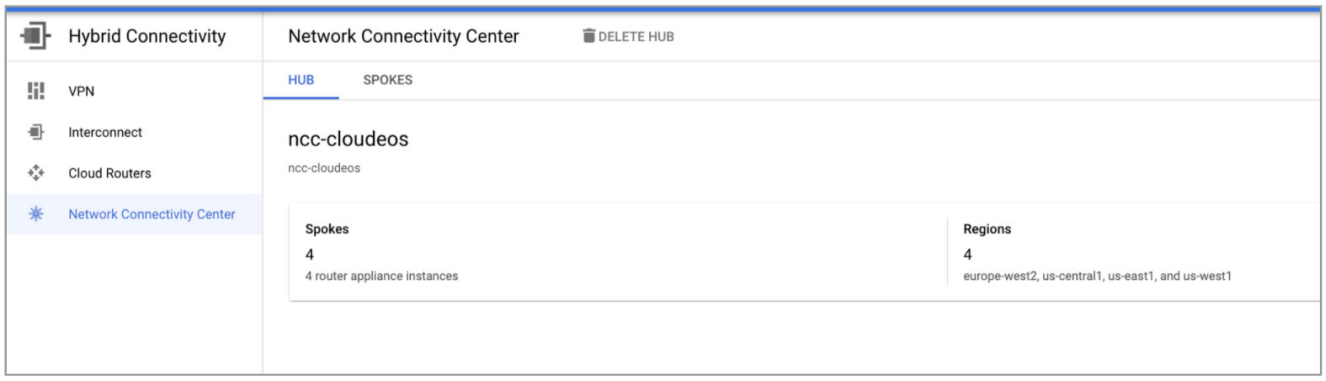
- Ssh Key: the public key router will use for authentication, in such format: ssh-key XXXX username@host-name
- Boot disk-type: Standard Persistent Disk
- Boot disk size in GB: 17
- Network Interface
  - › Network: the VPC network where cloudeos router will be deployed
  - › Subnetwork: the VPC subnet 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)



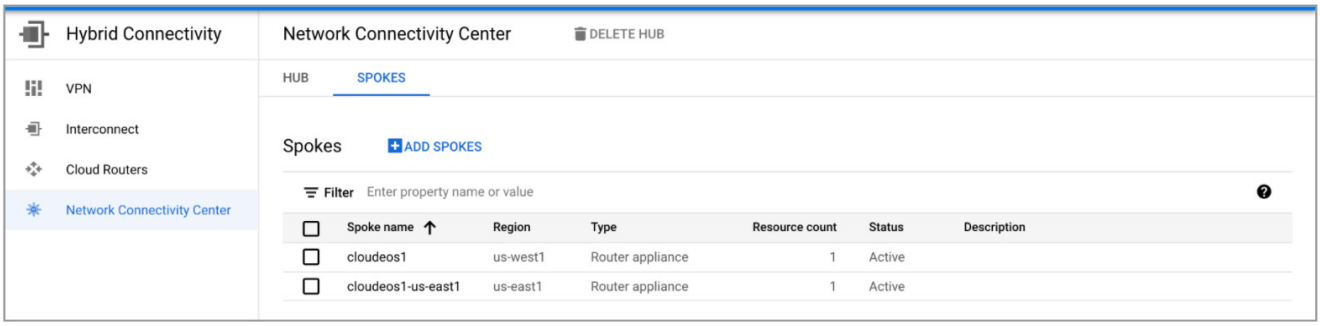


4. The router will take about 5 minutes to be created and boot up. After the router is up and running, log in to the router using the SSK key, and install the license if you choose the BYOL model. You don't need to install a license if you choose the PAYG model, the license is activated automatically.

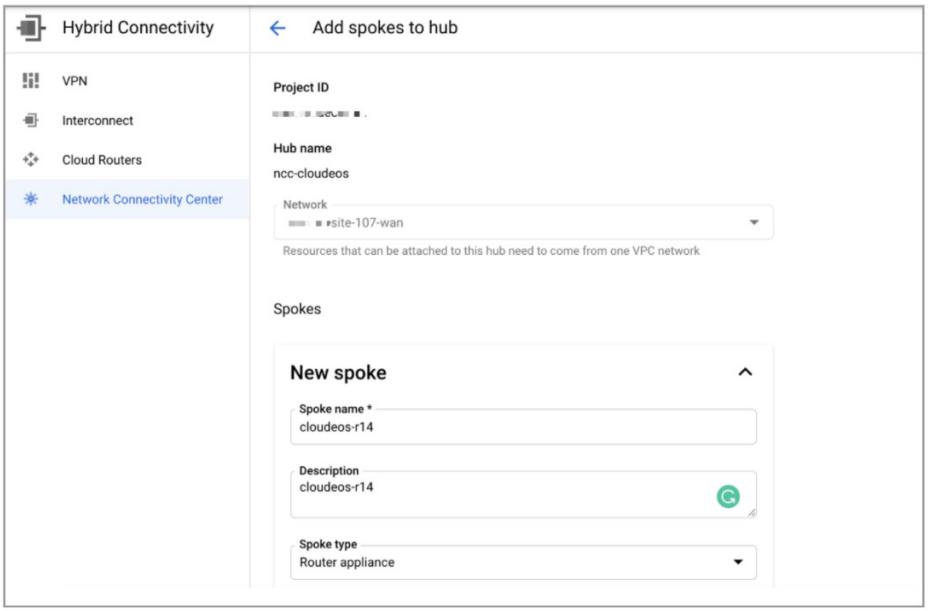
5. Go back to Google Cloud Console, click "Network Connectivity Center" under Hybrid Connectivity, you will see the summary information about your NCC environment. A hub is already created. You can create a new hub if you don't see one.

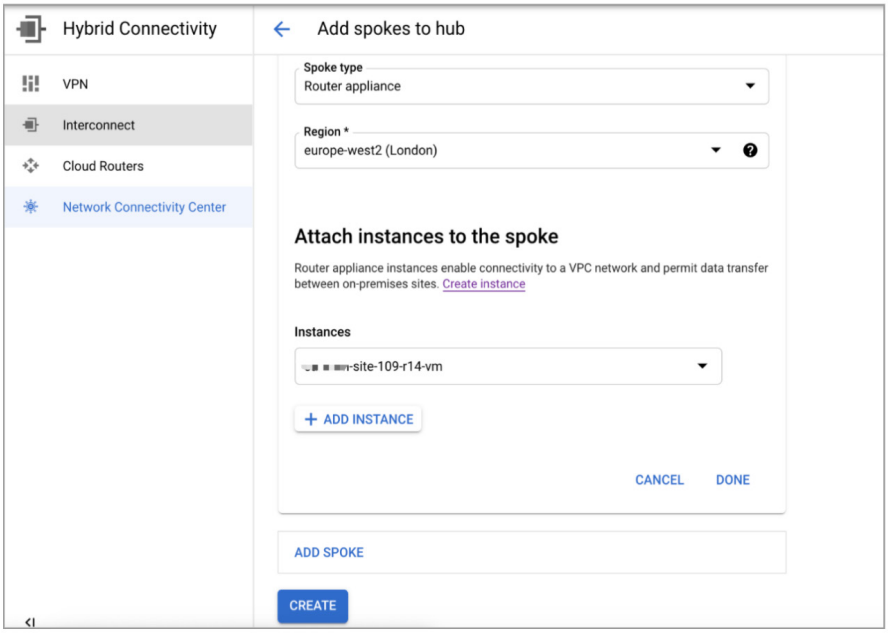


6. Click the tab "SPOKES", you will see all the spokes belonging to the same hub.

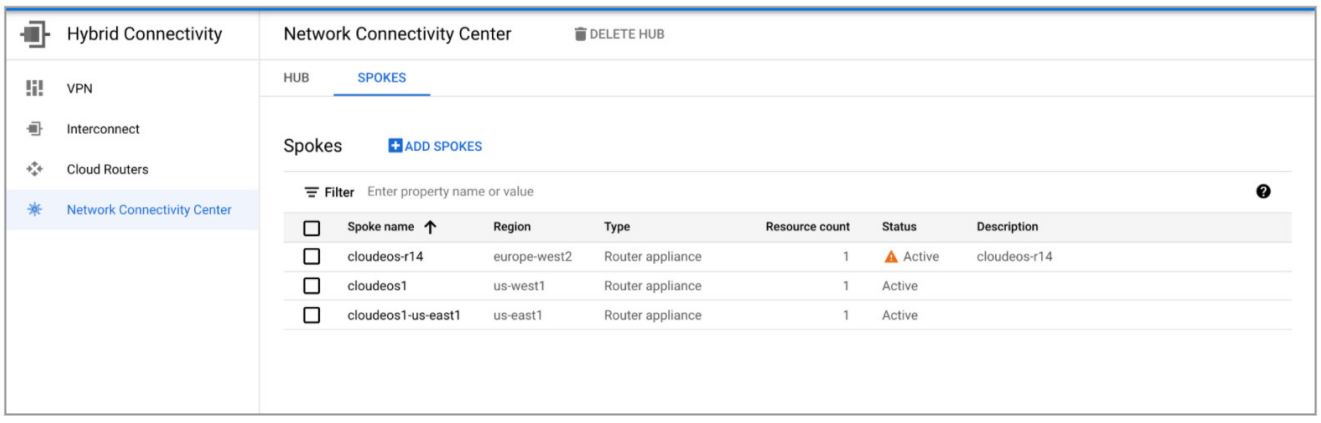


7. Click "ADD SPOKES" to add a new spoke, with the following information, and click "Create"
   - Spoke name: cloudeos-r14
   - Description: cloudeos-r14
   - Spoke type: Router appliance
   - Region: choose the region where the cloudeos router is deployed in the previous step
   - Attach instances to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

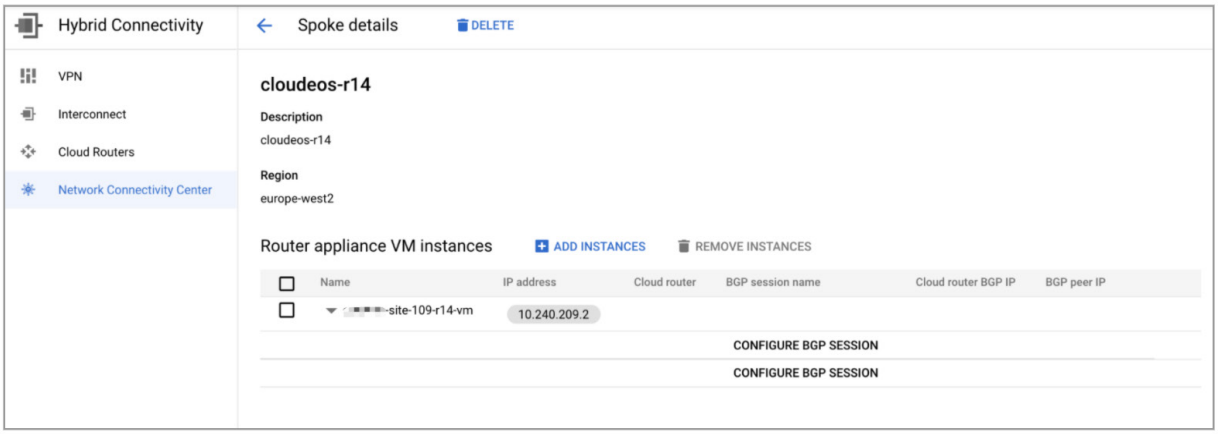




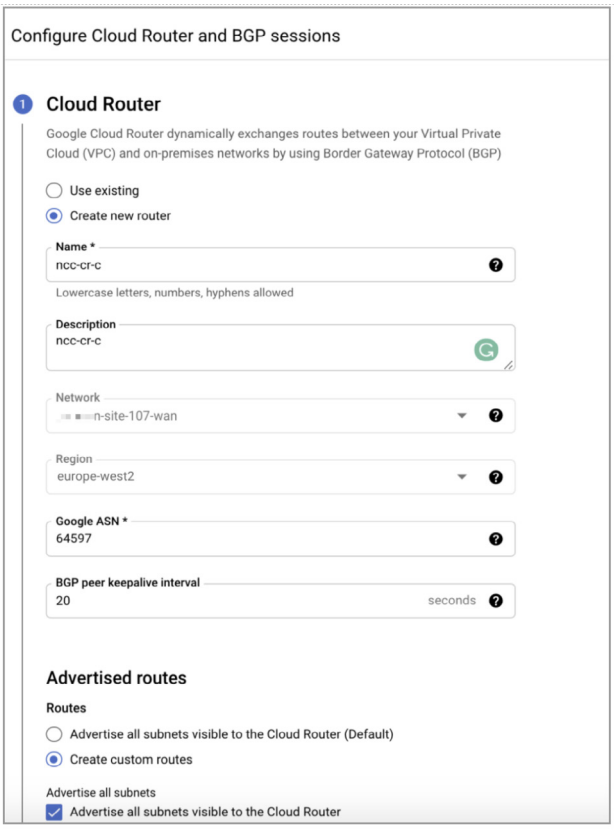
8. Now you can see the new spoke is being created as below



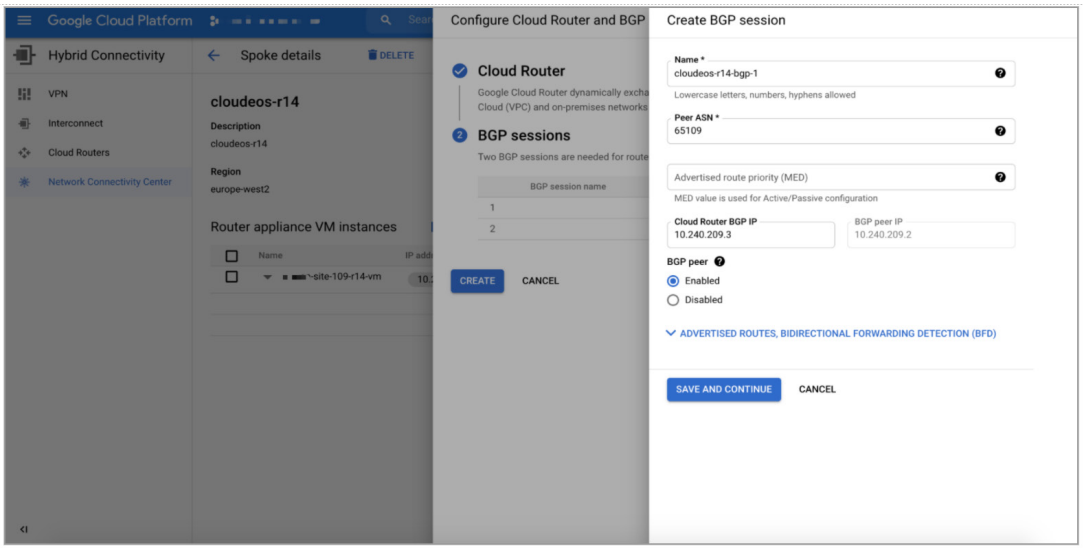
9. Click the newly created spoke to configure additional information. Click "CONFIGURE BGP SESSION"



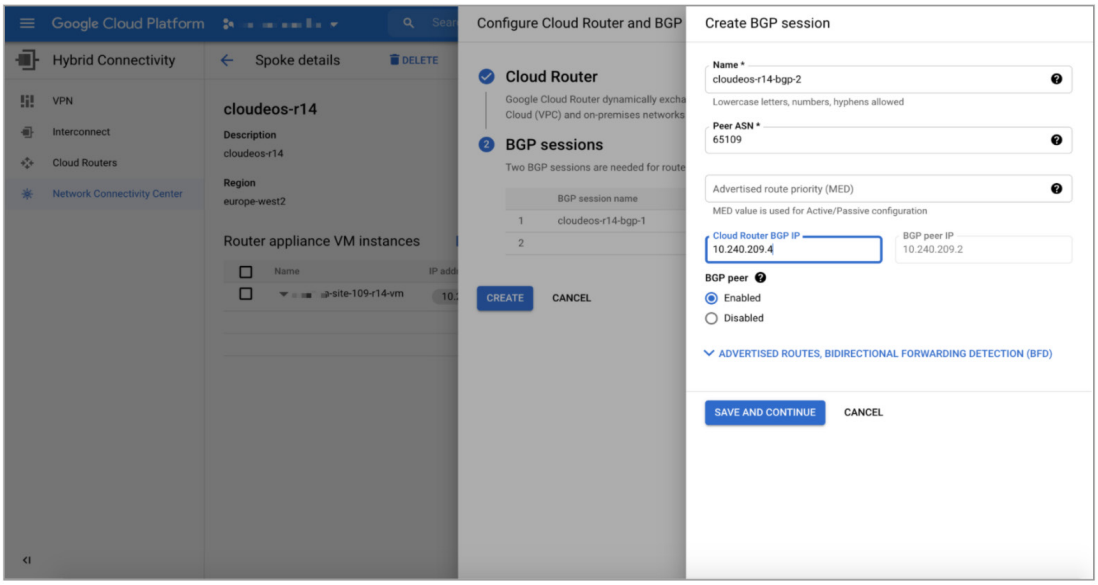
10. Configure the Google Cloud Router BGP info
    - Create New router
    - Name: ncc-cr-c
    - Description: ncc-cr-c
    - Network: xxx-site-107-wan
    - Region: europe-west2 (the region where cloudeos is deployed in the previous step)
    - Google ASN: 64597
    - BGP peer Keepalive interval: 20
    - 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)



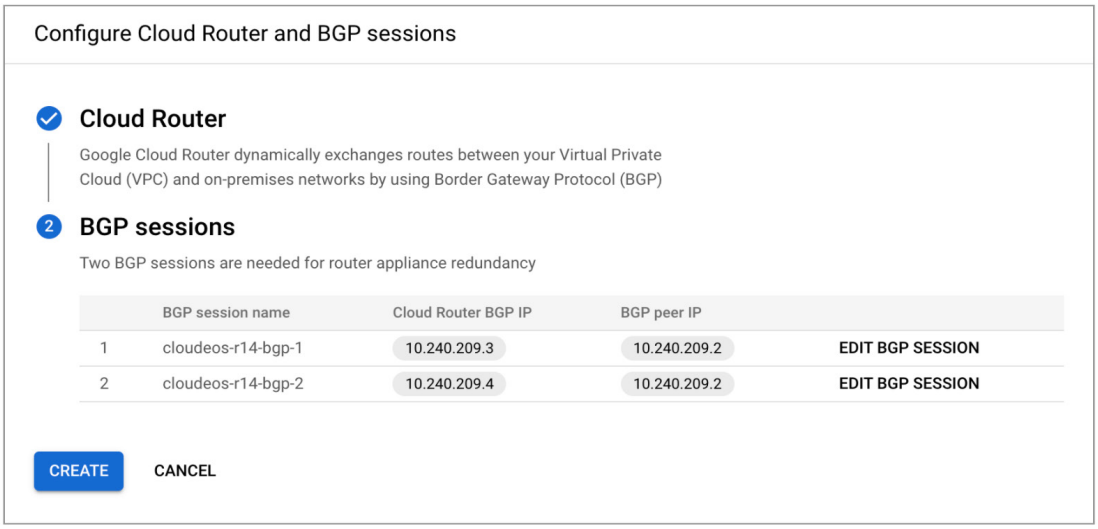
11. Configure the first BGP session information, and Click "SAVE AND CONTINUE"
    - Name: cloudeos-r14-bgp-1
    - Peer ASN: 65109 (CloudEOS Router's ASN)
    - Cloud Router BGP IP: 10.240.209.3 (Google Cloud Router's IP used for BGP Peering)
    - BGP Peer IP: 10.240.209.2 (unchangeable, the CloudEOS Router's IP used for BGP Peering)
    - BGP Peer: enabled



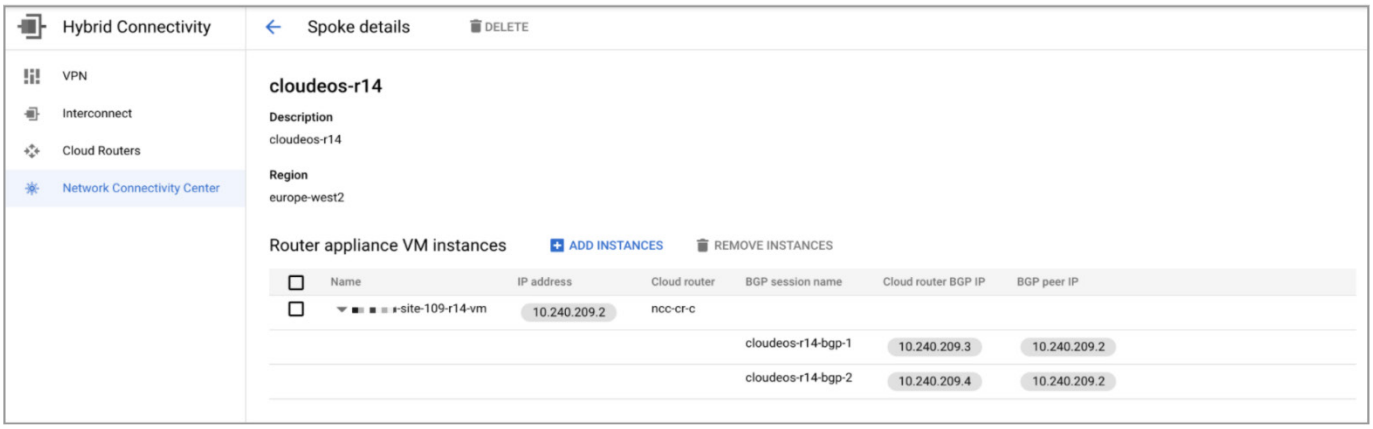
12. Configure the second BGP session information (for redundancy), and Click "SAVE AND CONTINUE"
    - Name: cloudeos-r14-bgp-2
    - Peer ASN: 65109 (CloudEOS Router's ASN)
    - Cloud Router BGP IP: 10.240.209.4 (Google Cloud Router's IP used for BGP Peering)
    - BGP Peer IP: 10.240.209.2 (unchangeable, 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"



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



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
```

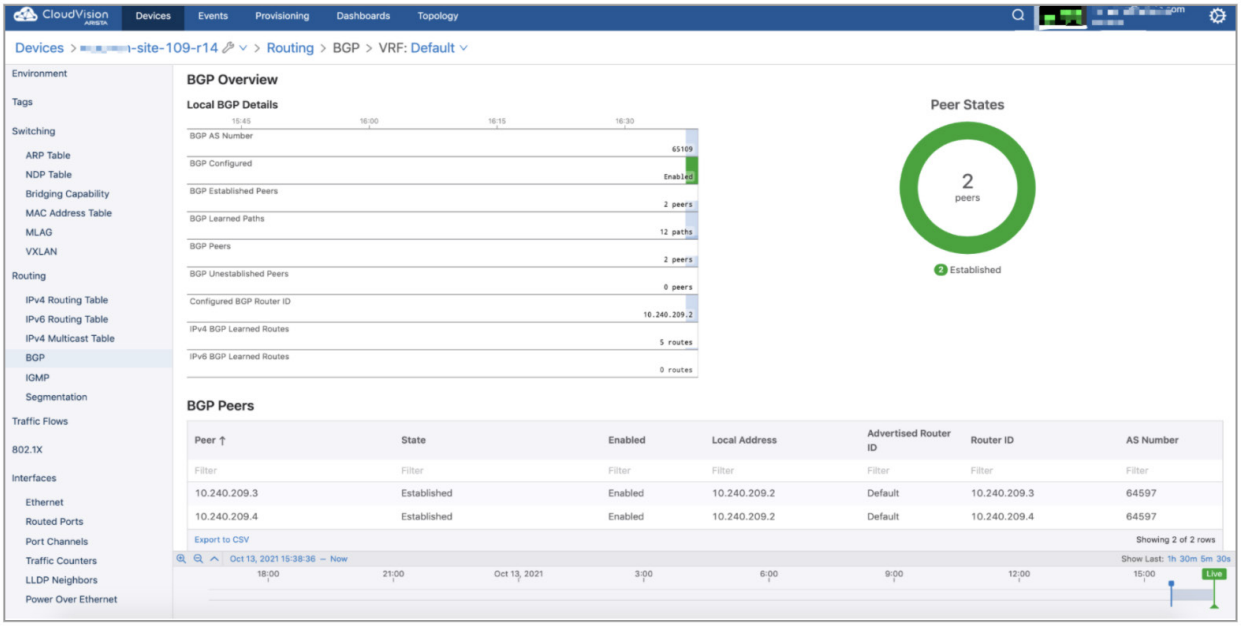
16. Now you should be able to verify the BGP status on the CloudEOS router using EOS CLI. The following shows that the two BGP sessions are established and 6 prefixes are learned from Google's Cloud Router.

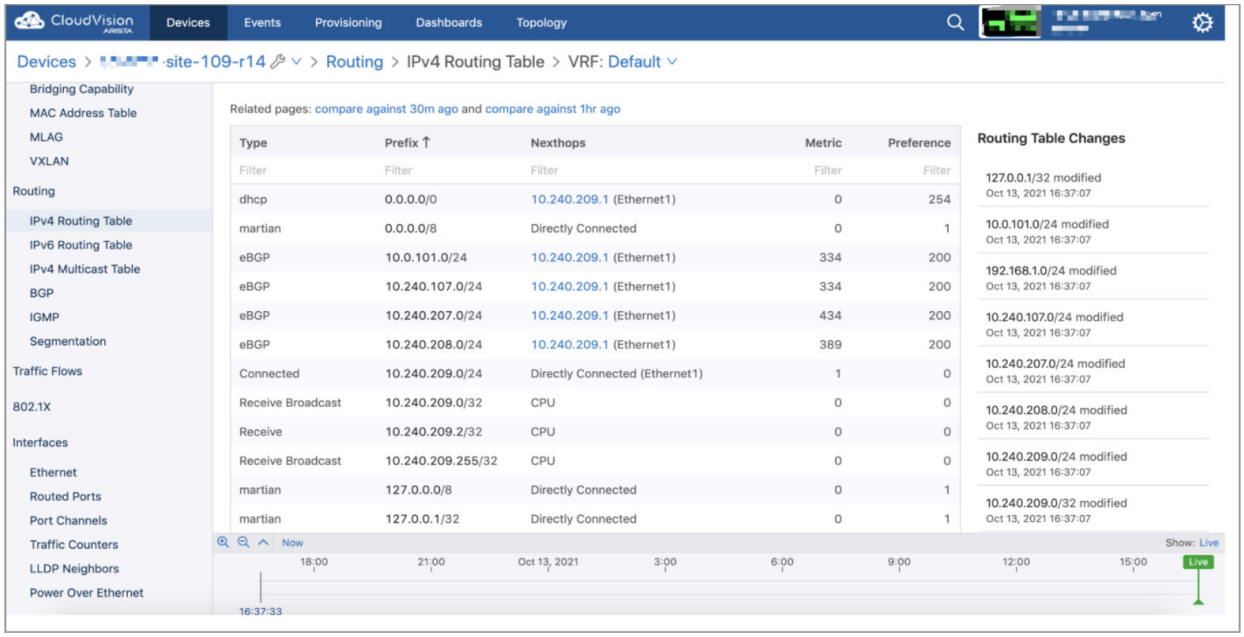
```
[redacted]-site-109-r14(config-router-bgp-af)#   show ip bgp summary
BGP summary information for VRF default
Router identifier 10.240.209.2, local AS number 65109
Neighbor Status Codes: m - Under maintenance
  Neighbor         V  AS           MsgRcvd   MsgSent  InQ OutQ  Up/Down State   PfxRcd PfxAcc
  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

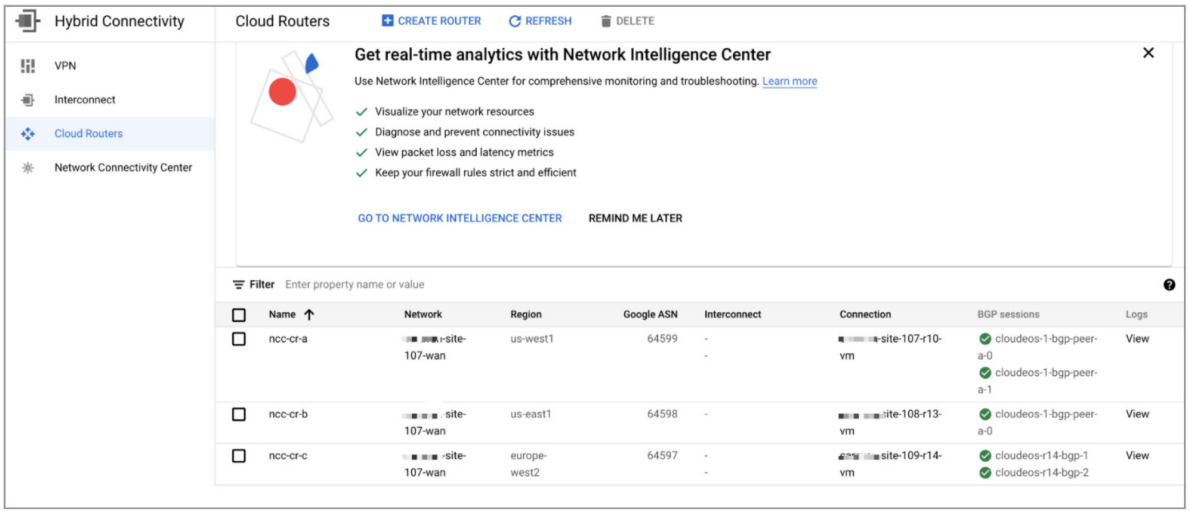
```
[redacted]-site-109-r14(config-router-bgp-af)#show ip route

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.

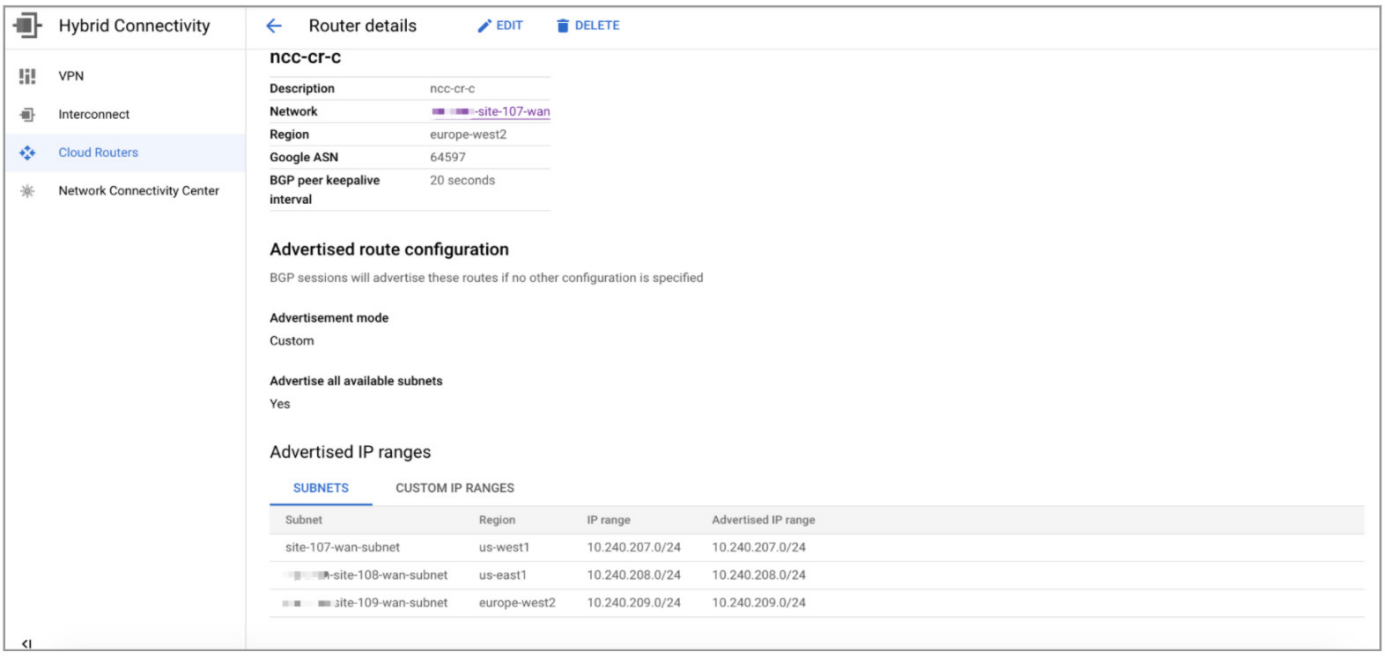


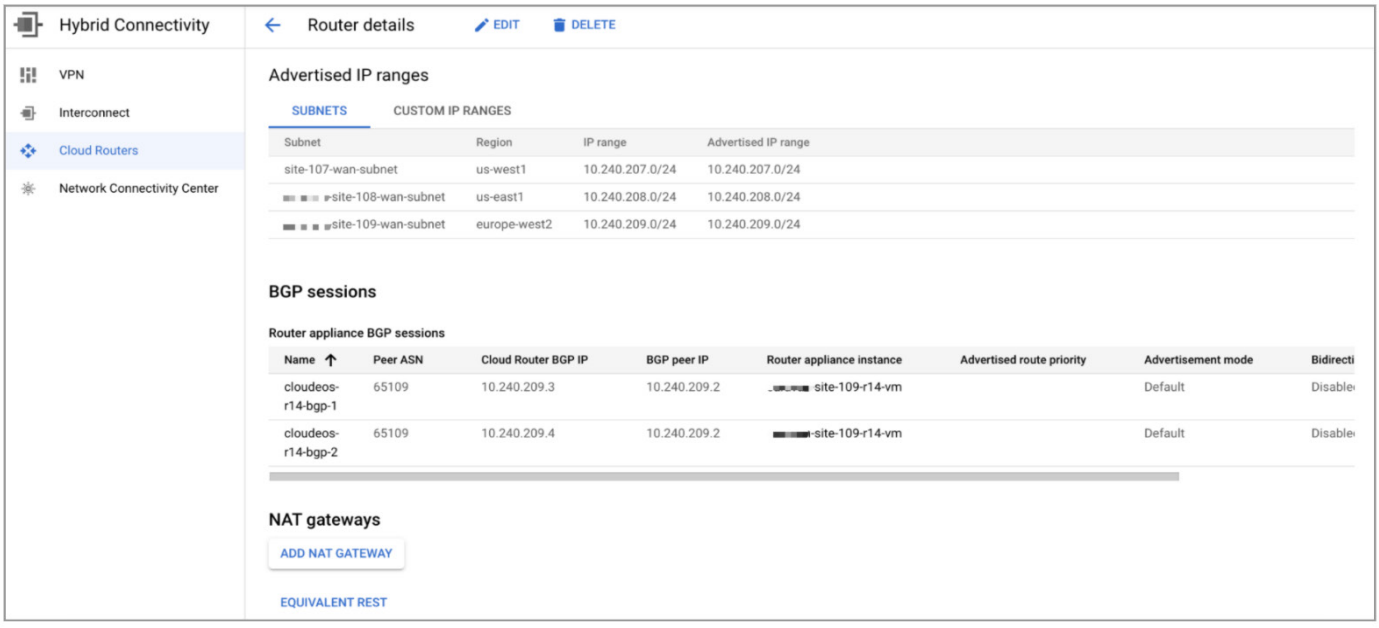


19. Go back to Google Cloud Console, under "Hybrid Connectivity" -> "Cloud Router", you can view the BGP session status on Cloud Router



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
VPN
Interconnect
Cloud Routers
Network Connectivity Center
Router details
EDIT
DELETE
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
VPN
Interconnect
Cloud Routers
Network Connectivity Center
Router details
EDIT
DELETE
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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