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.

![Deployment Diagram](#)

*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.

![Network Connectivity Center](https://via.placeholder.com/150)

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

![Spokes](https://via.placeholder.com/150)

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"

![Cloud Router and BGP sessions](image)

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

![BGP information](image)

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.

```
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
                          V  AS    MsgRcd  MsgSent  InQ  OutQ  Up/Down  State   PfxRcd  PfxAcc
                        router 10.240.209.3  6   64697    14    10     0    0:02:18  Estab  6       6
                        router 10.240.209.4  6   64697    13    13     0    0:01:55  Estab  6       6
```

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

```
show ip route
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 type 2,  B  -  BGP,  L1  -  IGP,  L2  -  IS-IS
        L  -  Static,  H  -  BGP,  R  -  RIP,  I1  -  IS-IS level 1,
        L2  -  IS-IS level 2,  O3  -  OSPFv3,  A  -  BGP Aggregate,  A-D  -  OSPF Summary,
        N  -  Nexthop Group Static Route,  V  -  VXLAN Control Service,
        D  -  DHCP client installed default route,  M  -  Martian,
        P  -  Dynamic Policy Route,  L  -  VRF Leaked,
        C  -  Route Cache Route

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

B   10.240.209.0/24 is directly connected, Ethernet1
B   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](https://www.arista.io/cv). More information about CloudVision can be found [here](https://www.arista.io/cv).
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.
**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**

<table>
<thead>
<tr>
<th>SUBNETS</th>
<th>CUSTOM IP RANGES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site-107 wan subnet</strong></td>
<td><strong>Us-west1</strong> 10.240.207.0/24 10.240.207.0/24</td>
</tr>
<tr>
<td><strong>Site-108 wan subnet</strong></td>
<td><strong>Us-east1</strong> 10.240.208.0/24 10.240.208.0/24</td>
</tr>
<tr>
<td><strong>Site-109 wan subnet</strong></td>
<td><strong>Europe-west2</strong> 10.240.209.0/24 10.240.209.0/24</td>
</tr>
</tbody>
</table>

**BGP sessions**

<table>
<thead>
<tr>
<th>Name</th>
<th>Peer ASN</th>
<th>Cloud Router BGP IP</th>
<th>BGP peer IP</th>
<th>Router appliance instance</th>
<th>Advertised route priority</th>
<th>Advertisement mode</th>
<th>Bidirectional</th>
</tr>
</thead>
<tbody>
<tr>
<td>cloudsap-14-0gb-1</td>
<td>65109</td>
<td>10.240.209.3</td>
<td>10.240.209.2</td>
<td>site-109 r14-vm</td>
<td>Default</td>
<td>Disable</td>
<td></td>
</tr>
<tr>
<td>cloudsap-14-0gb-2</td>
<td>65109</td>
<td>10.240.209.4</td>
<td>10.240.209.3</td>
<td>site-109 r14-vm</td>
<td>Default</td>
<td>Disable</td>
<td></td>
</tr>
</tbody>
</table>
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.