

Deploy Arista CloudEOS with Google Cloud Network Connectivity Center

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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.

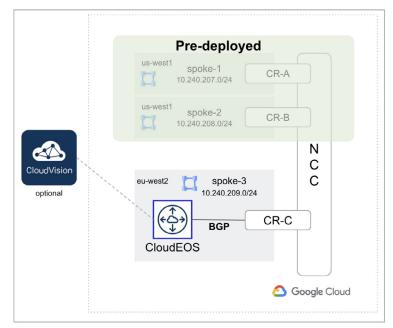


Figure: Connect Arista CloudEOS Router to Google Network Connectivity Center



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)".

Ş	Marketplace			Q. Arista CloudEOS X
Mark	etplace > "Arista CloudEO)S"		
۵	Marketplace home		"Arista Clou	JdEOS"
*	Your solutions			
Ŧ	Filter Type to filter		2 results	
			ARISTA	Arista CloudEOS Router (PAYG) Arista Networks. Inc.
Cat	legory	^		
Net	working	(2)		The Arista CloudEOS Router delivers a feature-rich multi-cloud and multi-hypervisor virtual router service with IPsec VPN connectivity. It empowers enterprises to build consistent, highly secure, and scalable hybrid cloud networks. Leveraging 15+ years of software research and
Sec	urity	(2)		development, Arista CloudEOS Router extends the same EOS software used by all of Arista's proven physical switching and routing platforms to
Prie	ce	~		Arista CloudEOS Router (BYOL)
		(4)	ARISTA	Arista Networks, Inc.
Pair	3	(1)		The Arista CloudEOS Router delivers a feature-rich multi-cloud and multi-hypervisor virtual router service with IPsec VPN connectivity. It
BYC	DL	(1)		empowers enterprises to build consistent, highly secure, and scalable hybrid cloud networks. Leveraging 15+ years of software research and development, Arista CloudEOS Router extends the same EOS software used by all of Arista's proven physical switching and routing platforms to

2. Click "Launch"

ARISTA	Arista CloudEOS Router (BYOL) Arista Networks, Inc.	
	Cloud-grade, CloudEOS, virtual router, EOS, IPSec	
	LAUNCH VIEW PAST DEPLOYMENTS	
OVERVIEW	PRICING DOCUMENTATION SUPPORT	
Overview		
The Arista Clou	dEOS Router delivers a feature-rich multi-cloud and multi-	Additional details
The Arista Clou hypervisor virtu enterprises to b	al router service with IPsec VPN connectivity. It empowers uild consistent, highly secure, and scalable hybrid cloud	Runs on: Google Compute Engine
The Arista Clou hypervisor virtu enterprises to b networks. Leve	al router service with IPsec VPN connectivity. It empowers uild consistent, highly secure, and scalable hybrid cloud raging 15+ years of software research and development,	Runs on: Google Compute Engine Type: <u>Virtual machines</u> , Single VM , BYOL
The Arista Clou hypervisor virtu enterprises to b networks. Leve Arista CloudEO	al router service with IPsec VPN connectivity. It empowers uild consistent, highly secure, and scalable hybrid cloud raging 15+ years of software research and development, S Router extends the same EOS software used by all of	Runs on: Google Compute Engine
The Arista Clou hypervisor virtu enterprises to b networks. Leve Arista CloudEO Arista's proven environment wi	al router service with IPsec VPN connectivity. It empowers uild consistent, highly secure, and scalable hybrid cloud raging 15+ years of software research and development,	Runs on: Google Compute Engine Type: <u>Virtual machines</u> , Single VM , BYOL Last updated: 10/15/21

- 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

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- > 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)

A series in the information of the information o	eployment name				
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PUP PLATFORM AND GPU Estimated monthly total New Arista CloudEOS Router (BYOL) deployment Utername arista </td <td></td> <td></td> <td></td> <td></td> <td></td>					
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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.

id Connectivity	Network Connectivity Center	
	HUB SPOKES	
onnect	ncc-cloudeos	
Routers	ncc-cloudeos	
rk Connectivity Center	Spokes	Regions
	4 router appliance instances	4 europe-west2, us-central1, us-east1, and us-west1
R	nect	HUB SPOKES nnect nnect ncc-cloudeos ncc-cloudeos spokes 4

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

Ð	Hybrid Connectivity	Netwo	rk Connectivity Ce	enter	👕 DELETE HUB				
51	VPN	HUB	SPOKES						
•	Interconnect	Spokes	S + ADD SPOKE	S					
***	Cloud Routers								
*	Network Connectivity Center	≡ Fil	Iter Enter property nam	ie or value					Ø
			Spoke name 🕇	Region	Туре	Resource count	Status	Description	
			cloudeos1	us-west1	Router appliance	1	Active		
			cloudeos1-us-east1	us-east1	Router appliance	1	Active		
			cloudeos1-us-east1	us-east1	Router appliance	1	Active		

- 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



- Hybrid Connectivity	← Add spokes to hub
VPN Interconnect Cloud Routers Network Connectivity Center	Project ID Hub name ncc-cloudeos Network setter 107-wan Resources that can be attached to this hub need to come from one VPC network
	Spokes New spoke Spoke name * cloudeos:r14 Description cloudeos:r14
Hybrid Connectivity	Spoke type Router appliance
VPN	Spoke type Router appliance
Interconnect Cloud Routers	Region * europe-west2 (London)
* Network Connectivity Center	Attach instances to the spoke Router appliance instances enable connectivity to a VPC network and permit data transfer between on-premises sites. <u>Create instance</u> Instances Instances
	+ ADD INSTANCE
	ADD SPOKE
<1	CREATE

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

Ð	Hybrid Connectivity	Network Connectivi	ty Center 👘	DELETE HUB				
58	VPN	HUB SPOKES						
- - - ☆	Interconnect Cloud Routers	Spokes ADD S	POKES					
*	Network Connectivity Center	= Filter Enter proper	ty name or value					0
*	Network Connectivity Center	Spoke name	Region	Туре	Resource count	Status	Description	
		cloudeos-r14	europe-west2	Router appliance	1	🛕 Active	cloudeos-r14	
		cloudeos1	us-west1	Router appliance	1	Active		
		cloudeos1-us-ea	ast1 us-east1	Router appliance	1	Active		

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

Ð	Hybrid Connectivity	← Spoke details ■DELETE
53	VPN	cloudeos-r14
•	Interconnect	Description
**+	Cloud Routers	cloudeos-r14
*	Network Connectivity Center	Region europe-west2
		Router appliance VM instances ADD INSTANCES
		Name IP address Cloud router BGP session name Cloud router BGP IP BGP peer IP
		□ ▼ -===-site-109-r14-vm 10.240.209.2
		CONFIGURE BGP SESSION
		CONFIGURE BGP SESSION

- 10. Configure the Google Cloud Router BGP info
 - Create New router

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- 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)

ioogle Cloud Router dynamically exchanges routes between your Virtual Privat cloud (VPC) and on-premises networks by using Border Gateway Protocol (BGF Use existing	
loud (VPC) and on-premises networks by using Border Gateway Protocol (BGF	
) Use existing	
) Use existing	
Create new router	
Name *	
ncc-cr-c	8
Lowercase letters, numbers, hyphens allowed	
Description	
ncc-cr-c	
	10
Network	
n-site-107-wan	2
Region	
europe-west2 🔻	8
Google ASN *	2
04357	
BGP peer keepalive interval	
	2

- 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

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\equiv Google Cloud Platform	😫 💷 💶 💻 🔍 Sear	Configure Cloud Router and BGP	Create BGP session
Hybrid Connectivity Hybrid Connectivity Hit VPN Hiterconnect Cloud Routers	Spoke details DELETE Cloudeos-r14 Description cloudeos-r14	Cloud Router Google Cloud Router dynamically excha Cloud (VPC) and on-premises networks BGP sessions Two BQP sessions are needed for route	Name * cloudeos+14-bgp-1 Course letters, numbers, hyphens allowed Peer ASN * 65109
Network Connectivity Center	Region europe-west2 Router appliance VM instances reame PP add P add P add P add P add P add	Two BGP sessions are needed for roote BGP session name 1 2 CREATE CANCEL	Advertised route priority (MED) MED value is used for Active/Passive configuration 10:240:209.3 10:240:209.2 BOP peer (P © Anabed © Insabled > ADVERTISED ROUTES, BIDIRECTIONAL FORWARDING DETECTION (BFD) SAVE AND CONTINUE CAMPEL

- 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

=	Google Cloud Platform	Statistical State	L Sean	Configure	Cloud Router and BGP	Create BGP session
	Geogle Cloud Platform Hybrid Connectivity Interconnect Cloud Routers Network Connectivity Center		ELETE	Cloud Google Cloud (V BGP :	Cloud Router and BGP I Router Cloud Router dynamically excha PC) and on-premises networks sessions are needed for route BGP session name cloudeos-r14-bgp-1	Create BGP session Name * cloudeos14 bgp/2 Lowercase letters, numbers, hyphens allowed Per ASN* 65109 Advertised route priority (MED) MED value is used for Active/Passive configuration Cloude number BGP IP 10.240.209.4 BGP per IP 10.240.209.2 BGP per IP 10.240.209.2 BGP per IP 10.240.209.2 BGP per IP 10.240.209.2
ĸı			l			AUVENTISED ROUTES, BIDIRECTIONAL FORWARDING DETECTION (BFD)

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

CIOU	d Router			
-		changes routes between your Vi ks by using Border Gateway Pro		
BGP	sessions			
Two B0	GP sessions are needed for ro	uter 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

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

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•	Hybrid Connectivity	← s	poke details 🔋 🗎 DEL	ETE									
58	VPN	cloud	eos-r14										
-	Interconnect	Descript	ion										
***	Cloud Routers	cloudeos	s-r14										
*	Network Connectivity Center	Region europe-v	Region europe-west2										
		Route	Router appliance VM instances ADD INSTANCES										
			Name	IP address	Cloud router	BGP session name	Cloud router BGP IP	BGP peer IP					
			▼ ■ ■ = #-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

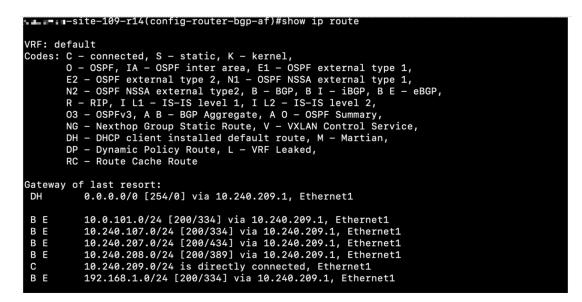
neighbor 10.240.209.4 activate



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.

BGP summary info				show ip	bgp	summa	ary						
Router identifie	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		MsgSent						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



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 https://www.arista.io/cv. More information about CloudVision can be found https://www.arista.io/cv. More information about CloudVision can be found https://www.arista.io/cv. More information about CloudVision can be found https://www.arista.io/cv. More information about CloudVision can be found https://www.arista.io/cv. More information about CloudVision can be found https://www.arista.io/cv. More information about CloudVision can be found https://www.arista.io/cv. More information about CloudVision can be found https://www.arista.io/cv. More information about CloudVision can be found https://www.arista.io/cv.

	Devices	Events	Provisioning	Dashboards	Topology					۹ 🗖	a a fair a com
Devices >	site-10	9-r14 🖉	> Routing >	BGP > VRF	: Default ∨						
nvironment		BGP Ove	erview								
lags		Local BGP	Details						Peer	States	
witching		15: BGP AS Num		16:00		16:15	16:30				
ARP Table		BOP AS NUM	ber				6510				
NDP Table		BGP Configur	red				Enable	9			
Bridging Capability		BGP Establish	hed Peers							2 eers	
MAC Address Table		BGP Learned	Paths				2 peer	5			
MLAG							12 path	5			
VXLAN		BGP Peers					2 peer	5			
outing		BGP Unestab	lished Peers				0 peer		(2) Es	tablished	
IPv4 Routing Table		Configured B	GP Router ID								
IPv6 Routing Table		IPv4 BGP Lea	erned Routes				10.240.209.	2			
IPv4 Multicast Table							S route	5			
BGP		IPv6 BGP Lea	arned Routes				0 route				
IGMP											
Segmentation		BGP Pee	rs								
raffic Flows		David A			State		Enabled	Local Address	Advertised Router	Router ID	AS Number
02.1X		Peer ↑			state		Enabled	Local Address	ID	Router ID	AS Number
terfaces		Filter			Filter		Filter	Filter	Filter	Filter	Filter
Ethernet		10.240.20	09.3		Established		Enabled	10.240.209.2	Default	10.240.209.3	64597
Routed Ports		10.240.20	9.4	1	Established		Enabled	10.240.209.2	Default	10.240.209.4	64597
Port Channels		Export to CS	5V								Showing 2 of 2 row
Traffic Counters	G	Q Q ~ 00	t 13, 2021 15:38:36 -								Show Last: 1h 30m 5m
LLDP Neighbors			18:00	21;00)	Oct 13, 2021	3:00	6:00	9:00	12;00	15:00
Power Over Ethernet											



Bridging Capability		r r v + routing	Table > VRF: Default >			
bridging capability						
MAC Address Table	Related pages: compare	against 30m ago and com	npare against 1hr ago			
MLAG	Туре	Prefix 1	Nexthops	Metric	Preference	Routing Table Changes
VXLAN	Filter	Filter	Filter	Filter	Filter	127.0.0.1/32 modified
uting	dhcp	0.0.0.0/0	10.240.209.1 (Ethernet1)	0	254	Oct 13, 2021 16:37:07
IPv4 Routing Table	martian	0.0.0/8	Directly Connected	0	1	10.0.101.0/24 modified
IPv6 Routing Table	eBGP	10.0.101.0/24	10.240.209.1 (Ethernet1)	334	200	Oct 13, 2021 16:37:07
IPv4 Multicast Table BGP	eBGP	10.240.107.0/24	10.240.209.1 (Ethernet1)	334	200	192.168.1.0/24 modified Oct 13, 2021 16:37:07
IGMP	eBGP	10.240.207.0/24	10.240.209.1 (Ethernet1)	434	200	10.240.107.0/24 modified
Segmentation	eBGP	10.240.208.0/24	10.240.209.1 (Ethernet1)	389	200	Oct 13, 2021 16:37:07
ffic Flows	Connected	10.240.209.0/24	Directly Connected (Etherne		0	10.240.207.0/24 modified Oct 13, 2021 16:37:07
2.1X	Receive Broadcast	10.240.209.0/32	CPU	0	0	10.240.208.0/24 modified
	Receive	10.240.209.2/32	CPU	0	0	Oct 13, 2021 16:37:07
erfaces	Receive Broadcast	10.240.209.255/32	CPU	0	0	10.240.209.0/24 modified
Ethernet	martian	127.0.0.0/8	Directly Connected	0	1	Oct 13, 2021 16:37:07
Routed Ports	martian	127.0.0.1/32	Directly Connected	0	1	10.240.209.0/32 modified Oct 13, 2021 16:37:07
Port Channels		127.0.0.1/32	Directly Connected	U	1	Show: Liv
Traffic Counters	18:00	21:00	Oct 13, 2021 3:00	6:00	9:00	12:00 15:00 Live

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

ŀ	Hybrid Connectivity	Clou	d Routers	CREATE ROUTER	C REFRESH	DELETE				
₩ ● ◆	VPN Interconnect Cloud Routers Network Connectivity Center			Get real-time analy Use Network Intelligence Ce Visualize your network of Diagnose and prevent of View packet loss and lat Keep your firewall rules GO TO NETWORK INTELLIG	nter for comprehensi esources onnectivity issues tency metrics strict and efficient	-		nore		×
			er Enter propert		Region	Google ASN	Interconnect	Connection	BGP sessions	Logs
			er Enter propert Name ↑ ncc-cr-a	y name or value Network IIII June, site- 107-wan	Region us-west1	Google ASN 64599	Interconnect -	Connection site-107-r10- vm	BGP sessions © cloudeos-1-bgp-peer- a-0 © cloudeos-1-bgp-peer- a-1	Logs View
			Name 1	Network				site-107-r10-	 cloudeos-1-bgp-peer- a-0 cloudeos-1-bgp-peer- 	

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



- Hyb	brid Connectivity	 Router details 	/ EDIT	DELETE		
		ncc-cr-c				
VPN		Description	ncc-cr-c			
l- Inter	rconnect	Network	-site-107-wan			
		Region	europe-west2			
Cloue	d Routers	Google ASN	64597			
E Netw	work Connectivity Center	BGP peer keepalive interval	20 seconds			
			'S TOM 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	
		n-site-108-wan-su	ibnet us-east1	10.240.208.0/24	10.240.208.0/24	
		site-109-wan-su	ibnet europe-west2	10.240.209.0/24	10.240.209.0/24	

₽	Hybrid Connectivity	← Route	details	/ EDIT	DELETE					
58	VPN	Advertised	IP ranges							
•	Interconnect	SUBNETS	CUSTOM IP	RANGES						
-	Cloud Routers	Subnet		Region	IP range	Adver	tised IP range			
		site-107-wan	-subnet	us-west1	10.240.2	207.0/24 10.24	0.207.0/24			
*	Network Connectivity Center	■ ■ ■ P-site-	108-wan-subnet	us-east1	10.240.2	208.0/24 10.24	0.208.0/24			
		m = s site-	109-wan-subnet	europe-west2	10.240.2	209.0/24 10.24	0.209.0/24			
		BGP session								
		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 onprem CloudEOS routers to build the overlay tunnel back to your existing network.

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