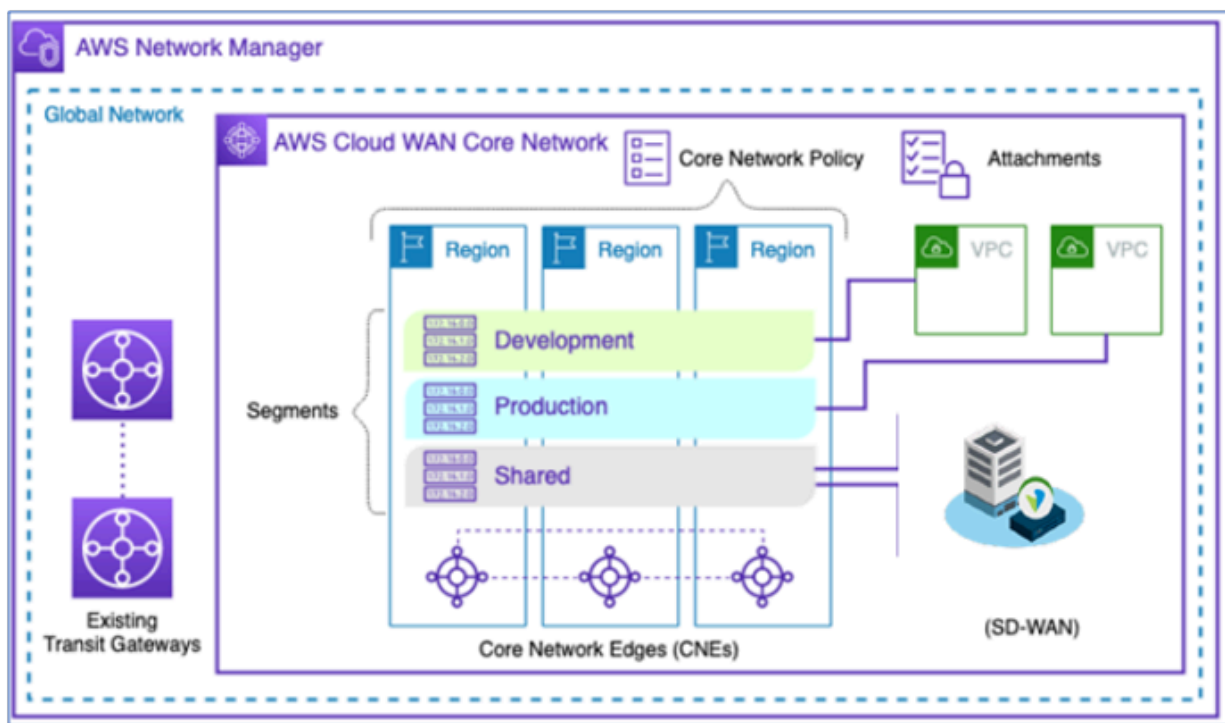


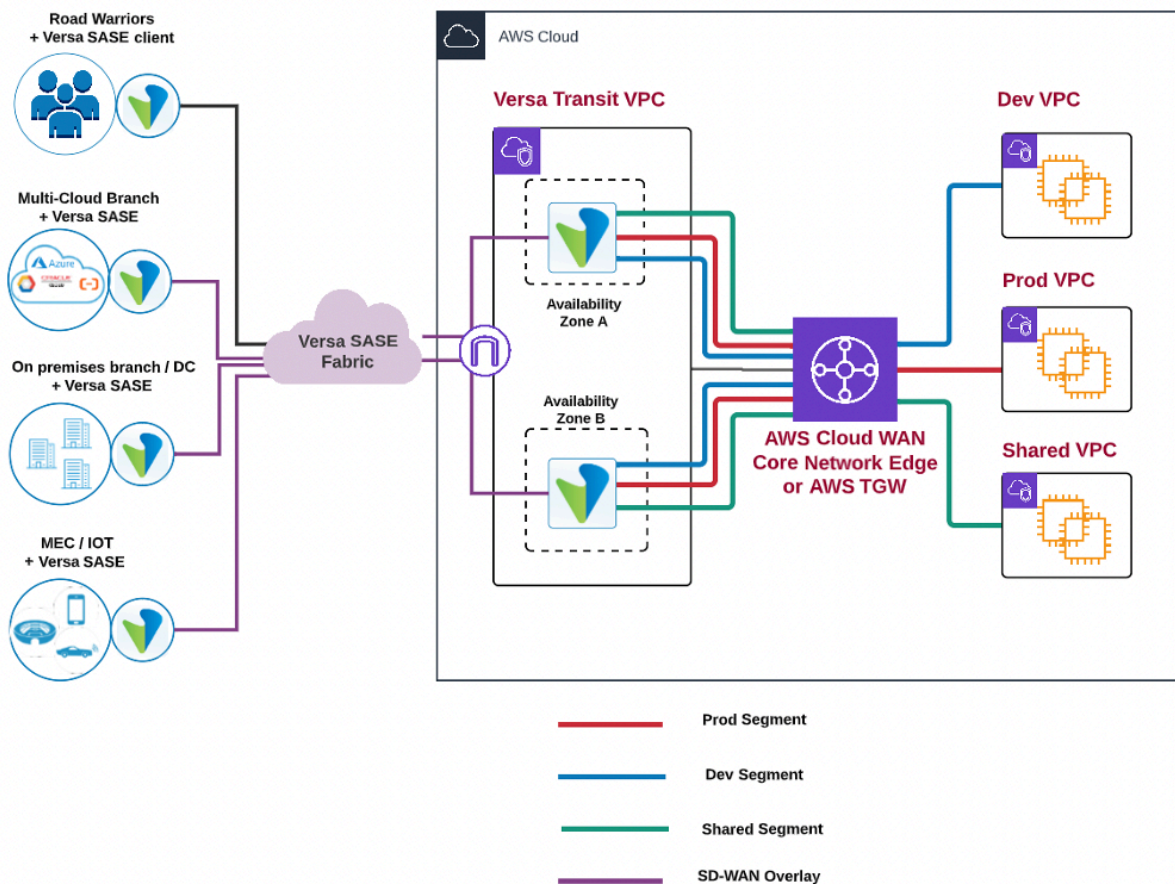
Integrate HA with AWS Cloud WAN

For supported software information, [click here](#).

You can integrate Versa Operating System™ (VOS™) high availability (HA) with AWS cloud WAN to provide high availability for the customer workloads connected to different VPCs within a region and across a region. VOS HA enables network-wide redundancy by enabling fast recovery from faults that may occur in any part of the network. With VOS HA, network hardware and software work together and enable fast recovery from network disruptions to ensure the best experience for users and network applications.

The following figures illustrate the components of the AWS cloud WAN and how they are integrated with VOS HA.





These two figures illustrate the following components in the AWS cloud WAN:

- **AWS network manager**—The user interfaces in the AWS management console and associated APIs to centrally manage the global network.
- **Global network**—A single private network that acts as the root-level container for network objects. A global network can contain both transit gateways and a core network.
- **Core network**—The part of the global network managed by AWS.
- **Core network Policy**—A single, versioned policy document that defines all aspects of the core network.
- **Attachments**—Any connections or resources you want to add to the core network. Supported attachments include VPCs, VPNs, and connect attachments.
- **Core network edge (CNE)**—A regional connection point for the attachments as defined in the policy. For this, Cloud WAN uses technology similar to a transit gateway, but because it is managed by AWS, there are differences, such as dynamic routing.
- **Network Segments**—Routing domains that by default allow communication only within a segment, consistently throughout the global network. These are strongly enforced Layer 3 routing domains, unless you create sharing relationships in the network policy.

The following are some of the use cases for an AWS cloud WAN :

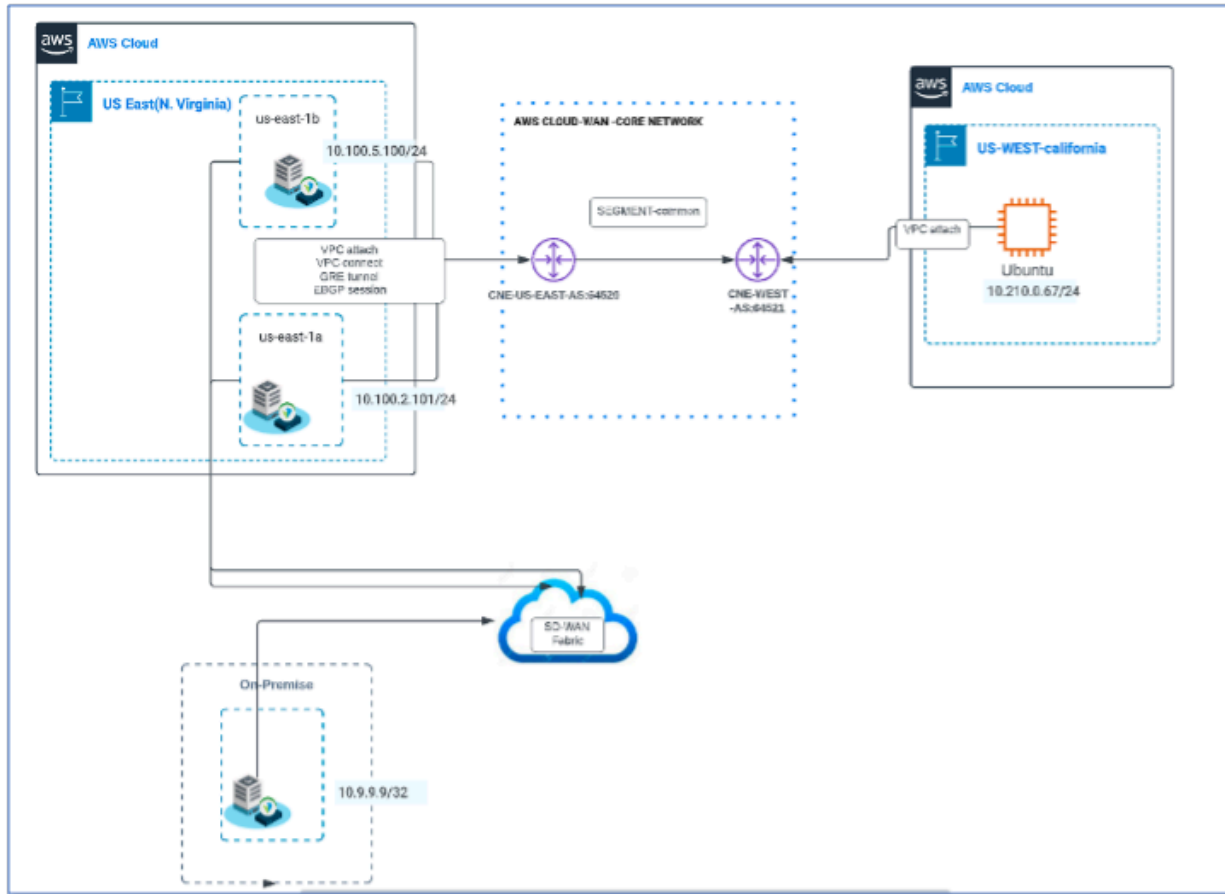
https://docs.versa-networks.com/Getting_Started/Deployment_and_Initial_Configuration/Branch_Deployment/Initial_Configura...

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Configure VOS HA for a Multi-Availability Zone in a Single Region

This section describes how to configure VOS HA for a multi-availability zone in a single region. The following figure illustrates the topology.



Configure the HA Topology

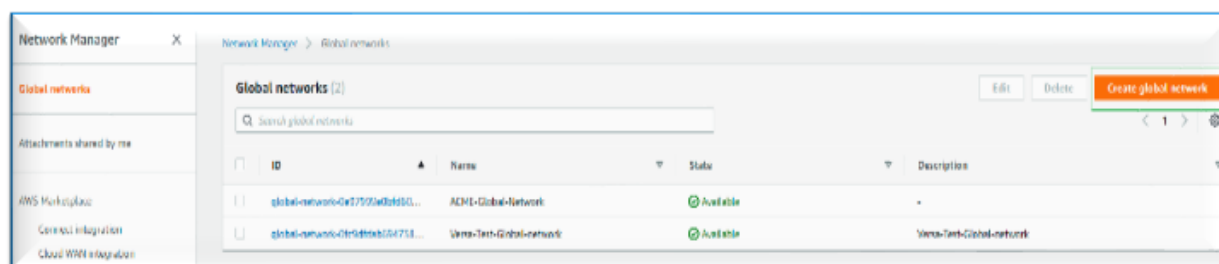
The following steps summarize the configuration of HA for a multi-availability zone in a single region:

1. Deploy the VOS device as a hub or branch in the cloud using the IaC tool Terraform or Versa Director CMS. In a multi-availability zone in a single region, you can deploy the VOS device as either a hub or a branch.
2. Create the AWS cloud WAN attachments to the core network. The supported attachments include VPCs, VPNs, and connect attachments.
3. The VOS device uses the VPC attachment to connect the CORE network.
4. After VPC attachment completes, create the VPC connect to configure GRE and EBGP.
5. Ensure that the EBGP session between the VOS and core network core network edge (CNE) is up.
6. Check the routing propagation from the VOS device to the core network routing table, and vice versa.
7. Ensure that all traffic destined for SD-WAN prefers the primary AWS hub or branch based on the highest LPF.

8. Ensure that all traffic destined for the AWS cloud prefers the primary VOS device based on the AS path prepend (lowest AS path BGP attributes).
9. Ensure that all traffic destined for the regional and interregional cloud prefers the primary VOS device based on the lowest AS path. The secondary VOS device should have a higher AS path prepending.
10. Use the BGP LPF and AS path prepend attributes help to ensure that the traffic destined for the cloud and SD-WAN network reaches these networks symmetrically.
11. LAN failover is driven by EBPB configured between the VOS device and the core network.
12. WAN failover is managed by the default native VOS SLA PDU between the VOS devices

Configure VOS HA with AWS

1. Use Terraform or create a CMS connector to deploy the VOS device.
2. In the AWS Network Manager, select Create Global Network to create a global network:



3. In the Policy Version, enable the BGP AS numbers for the core network so that the CNE can form the EBPB session using these AS numbers.
4. Configure the edge locations for the core networks.

General Settings

Version: 2021.12 | VPN ECMP support: No

ASN ranges (1)

Search ASN ranges

From: 64520 | To: 65534

Inside CIDR blocks (1)

Search inside CIDR blocks

CIDR: 10.0.0/16

Edge locations (6)

Search edge locations

Location	ASN	Inside CIDR blocks
Asia Pacific (Mumbai)	-	-
Asia Pacific (Singapore)	-	-
Asia Pacific (Sydney)	-	-
Europe (Frankfurt)	-	-
US East (N. Virginia)	-	10.0.1.0/24
US West (B. California)	-	-

5. View the JSON version of the policy version configuration:

Policy version - 6

Policy details | **JSON**

```

1 {
2   "version": "2021.12",
3   "core-network-configuration": {
4     "vpn-ecmp-support": false,
5     "inside-cidr-blocks": [
6       "10.0.0.0/16"
7     ],
8     "asn-ranges": [
9       "64520-65534"
10    ],
11    "edge-locations": [
12      {
13        "location": "us-east-1",
14        "inside-cidr-blocks": [
15          "10.0.1.0/24"
16        ]
17      },
18      {
19        "location": "us-west-1"
20      },
21      {
22        "location": "ap-south-1"
23      },
24      {
25        "location": "ap-southeast-1"
26      },
27      {
28        "location": "ap-southeast-2"
29      }
30    ]
31  }
32 }

```

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6. Create the VPC attachment.

Attachments (1/3)

Attachment ID	Name	Edge location	Resource Type	Resource ID	State	Segment	Attachment
attachment-059b7f925a36510	rasb-naave-connect	us-east-1	Connect	attachment-...	Available	common	1
attachment-059b1946547b25e44	rasb-california-attach	us-west-1	VPC	vpc-0a2f12...	Available	common	1
attachment-0c2f343bd66c093d	rasb-naaveen-vpc-attachment	us-east-1	VPC	vpc-0b1a2e...	Available	common	1

rasb-naaveen-vpc-attachment

Details

Attachment ID: attachment-0c2f343bd66c093d

Edge location: us-east-1

Resource Type: VPC

Resource ID: vpc-0b1a2e04d95668f6f

IPv6 support: No

Segment: common

Attachment policy rule number: 1

State: Available

Subnet IDs: subnet-0a2f1204d18ba1c80e, subnet-0a2f1204d18ba1c80e

7. Connect the VPN attachment to the core networks.

Attachments (1/3)

Attachment ID	Name	Edge location	Resource Type	Resource ID	State	Segment	Attachment policy rule number
attachment-059b7f925a36510	rasb-naave-connect	us-east-1	Connect	attachment-...	Available	common	1
attachment-059b1946547b25e44	rasb-california-attach	us-west-1	VPC	vpc-0a2f12...	Available	common	1
attachment-0c2f343bd66c093d	rasb-naaveen-vpc-attachment	us-east-1	VPC	vpc-0b1a2e...	Available	common	1

rasb-naave-connect

Connect peers (2)

Connect peer ID	State	Core network CIDR address	Peer CIDR address	BGP Profile CIDR block	Core network BGP 1 address	Transit Gateway BGP 1 status	Peer BGP address	Core network ASN	Peer ASN
connect-peer-0152b8f51798e0f	Available	10.0.0.0/24	10.100.0.0/24	100.254.105.0/29	100.254.105.10	Up	100.254.105.9	64514	64514
connect-peer-0267c17c1f88b6d5	Available	10.0.0.0/24	10.100.0.0/24	100.254.105.0/29	100.254.105.10	Up	100.254.105.1	64514	64514

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Attachment ID	Name	Edge location	Resource Type	Resource	State	Segment	Attachment policy rule number
<input checked="" type="checkbox"/> attachment-036b792f5e36510	rasb-navee-connect	us-east-1	Connect	attachment...	Available	common	1
<input type="checkbox"/> attachment-0500194654b29e44	rasb-california-attach	us-west-1	VPC	vpc-0e3f12...	Available	common	1
<input type="checkbox"/> attachment-0e3f143b0d6e19b0d	rasb-navee-vpc-attachment	us-east-1	VPC	vpc-0b1ab...	Available	common	1

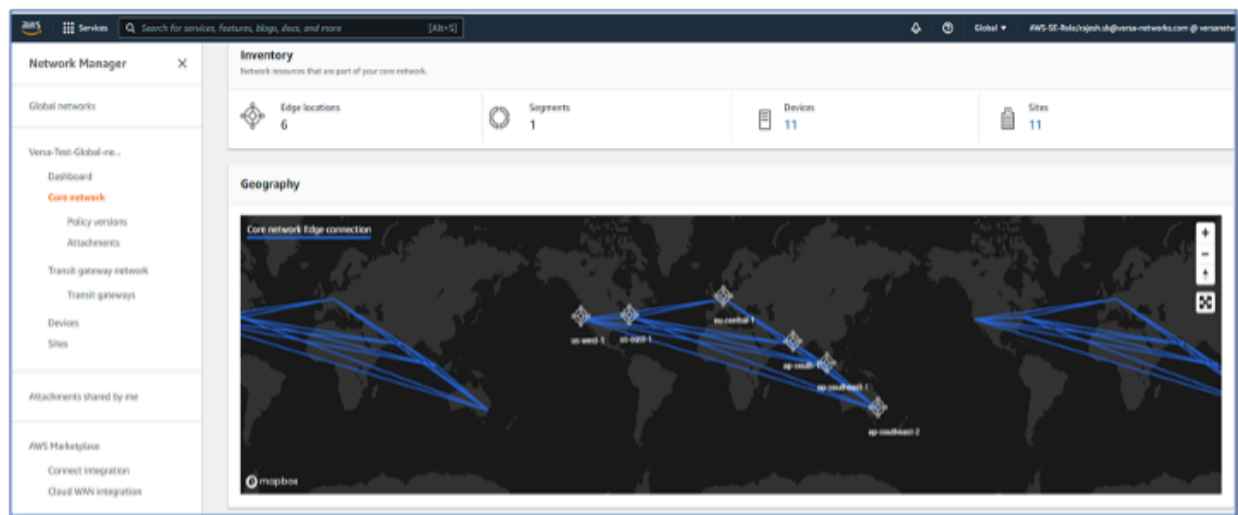
rasb-navee-connect

Details **Connect peers** Tags

Connect peers (1/2)

State	Core network GRE address	Peer GRE address	BGP inside CIDR block	Core network BGP 1 address	Transit Gateway BGP 1 status	Peer BGP address	Core network A
Available	10.0.1.2	10.100.5.100	169.254.105.8/29	169.254.105.10	Up	169.254.105.9	64520
Available	10.0.1.1	10.100.2.101	169.254.105.0/29	169.254.105.2	Up	169.254.105.1	64520

8. View the core network topology:



9. View the topology graph:



12. View the route propagation:

The screenshot shows the AWS Network Manager console for a 'Core network'. The 'Routes' tab is selected, displaying a list of routes. The 'Route Filter' section shows 'Segment: common' and 'Edge location: us-east-1'. The 'Routes' table lists various destinations and their associated connections.

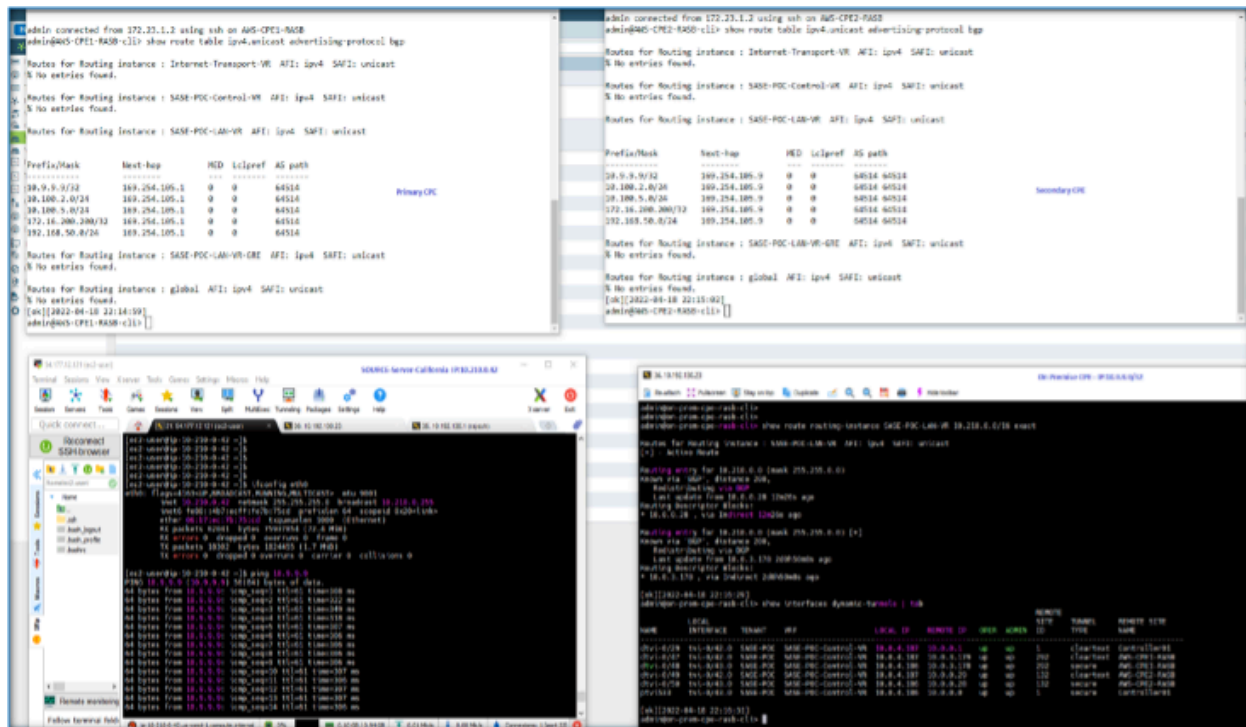
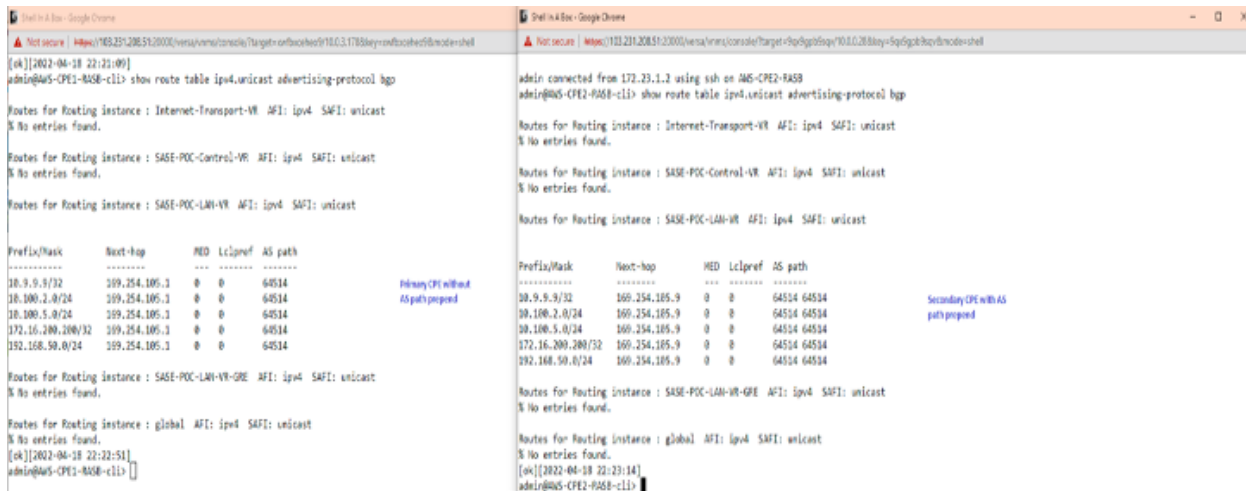
Destination	Connections	Route type
10.100.0.0/16	attachment-0e31543bdc4e928d04 vpc-087a0e342b638f8f	PROPAGATED
10.210.0.0/16	common us-east-1	PROPAGATED
10.100.2.0/24	attachment-036b79925e36510 connect connect-peer-02676372d7c8950c5169.254.165.23 attachment-036b79925e36510 connect connect-peer-0152308e51739b0c7169.254.165...	PROPAGATED
10.100.5.0/24	attachment-036b79925e36510 connect connect-peer-02676372d7c8950c5169.254.165.23 attachment-036b79925e36510 connect connect-peer-0152308e51739b0c7169.254.165...	PROPAGATED
10.9.3.3/32	attachment-036b79925e36510 connect connect-peer-02676372d7c8950c5169.254.165.23 attachment-036b79925e36510 connect connect-peer-0152308e51739b0c7169.254.165...	PROPAGATED
172.16.200.200/32	attachment-036b79925e36510 connect connect-peer-02676372d7c8950c5169.254.165.23 attachment-036b79925e36510 connect connect-peer-0152308e51739b0c7169.254.165...	PROPAGATED
192.168.50.0/24	attachment-036b79925e36510 connect connect-peer-02676372d7c8950c5169.254.165.23 attachment-036b79925e36510 connect connect-peer-0152308e51739b0c7169.254.165...	PROPAGATED

13. Verify the VOS HA control plane:

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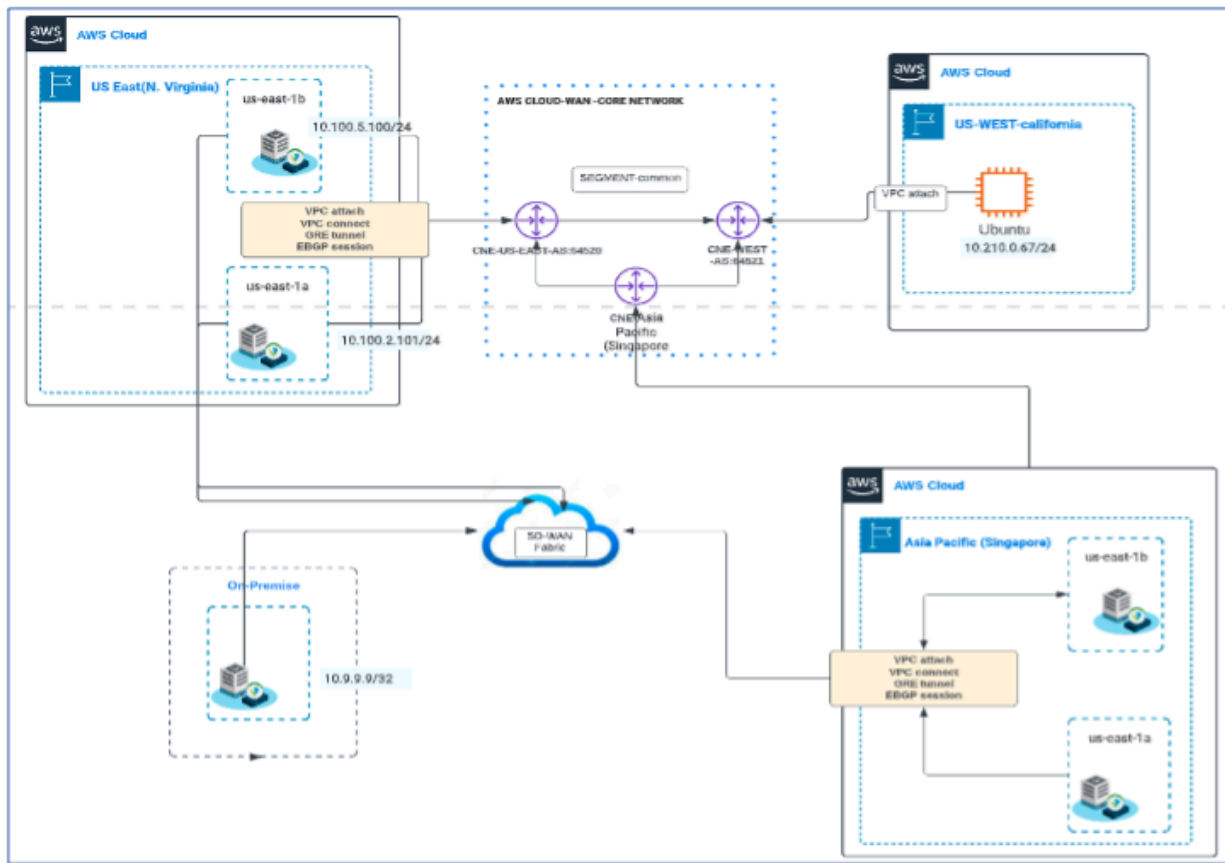
Configure VOS HA for a Multi-Availability Zone in Multiple Regions

This section describes how to configure VOS HA for a multi-availability zone in multiple regions. The following figure illustrates the topology.

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The following are configuration components:

1. Deploy VOS devices in multiple availability zones across multiple regions to have regional-level redundancy for the workload hosted in the cloud.
2. Users can reach their workloads in the closest regional hubs.
3. Each non-regional hub can act as a backup for the cloud workloads.
4. Users receive multi-availability zone and multiregion HA.
5. Configure a spoke group to ensure that user traffic behind the SD-WAN VOS device prefers the regional hubs to reach the workload with less latency.
6. Configure an AS path prepend to ensure that traffic destined for the cloud prefers the hubs to maintain a symmetric traffic path.

Supported Software Information

Releases 21.2.2 and later support all content described in this article.