

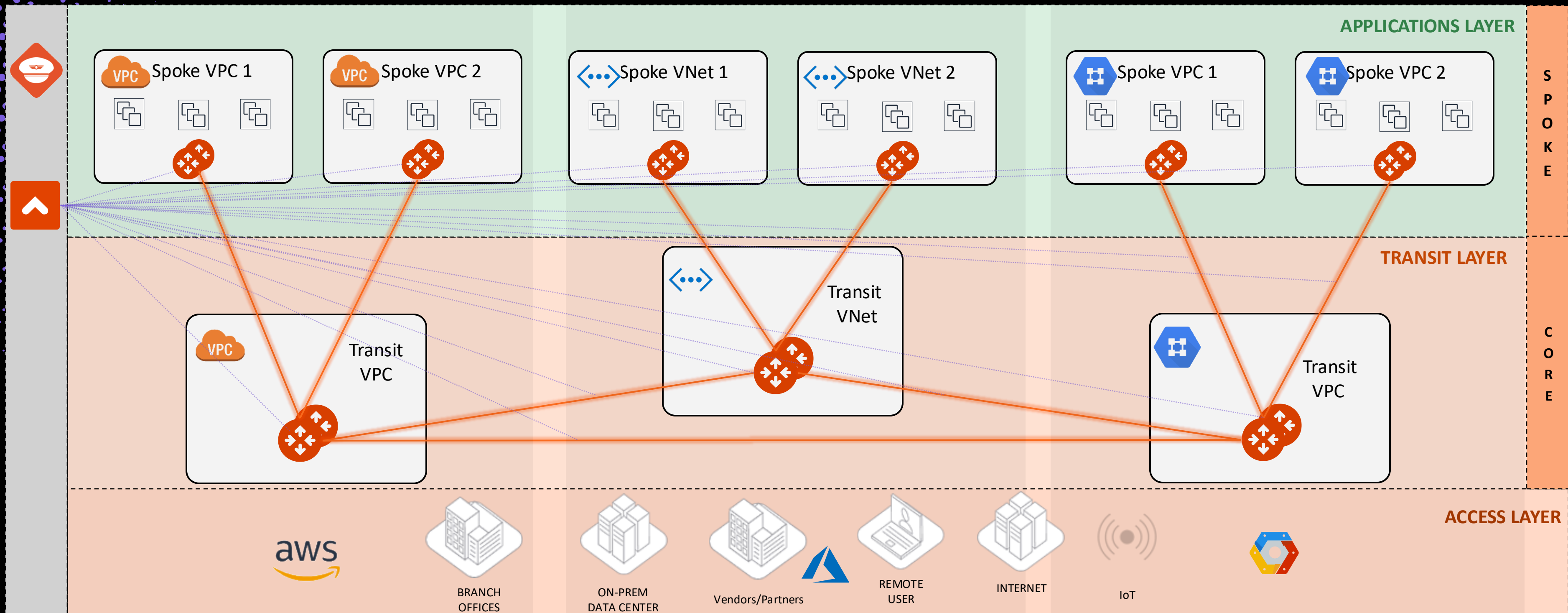


Cloud Native Security Fabric

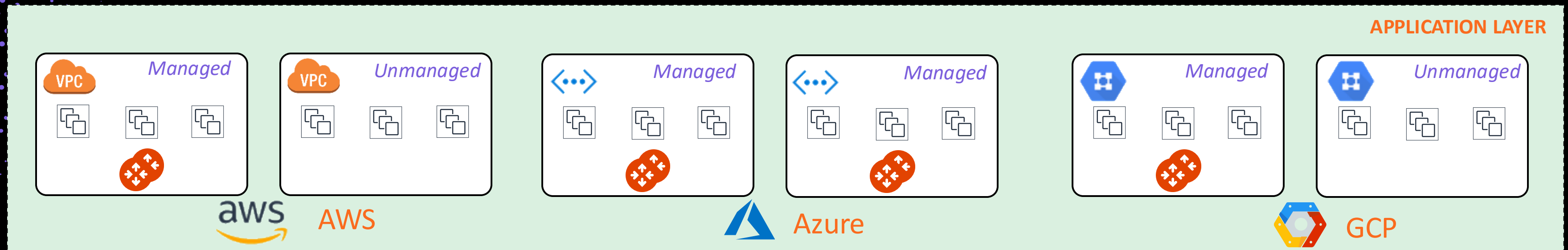
Deployment



Aviatrix Cloud Native Security Fabric: Deployment

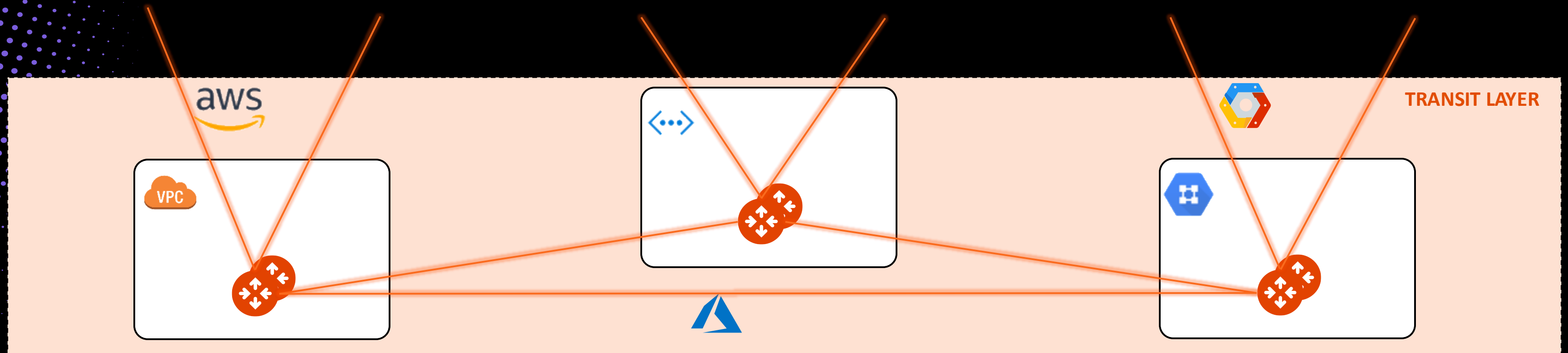


Spoke Gateway



- A Spoke Gateway is a component of the Aviatrix CNSF that you deploy on Spoke VPCs, VNets or VCNs in a hub-and-spoke network topology (*default behaviour*).
- The presence of a Spoke GW allows to gain **deep visibility** into all the cloud resources inside any Application VPCs.
- Each Spoke Gateway deployed inside any Availability Zones will receive the traffic coming from the CSP router (i.e. all the private summary routes, RFC1918's routes, will point to the ENI of the Spoke Gateway).
- The Spoke Gateway will become an **Enforcement Security Point** as soon as the Distributed Cloud Firewall service is enabled, allowing to carry out the Network Segmentation, the Micro-Segmentation, the Security Group Orchestration, etc.
- You are not forced to insert a Spoke Gateway inside all the available VPCs, however **Unmanaged VPCs** (i.e. VPCs with no Aviatrix Gateway) will not benefit of the Aviatrix functionalities.

Transit Gateway

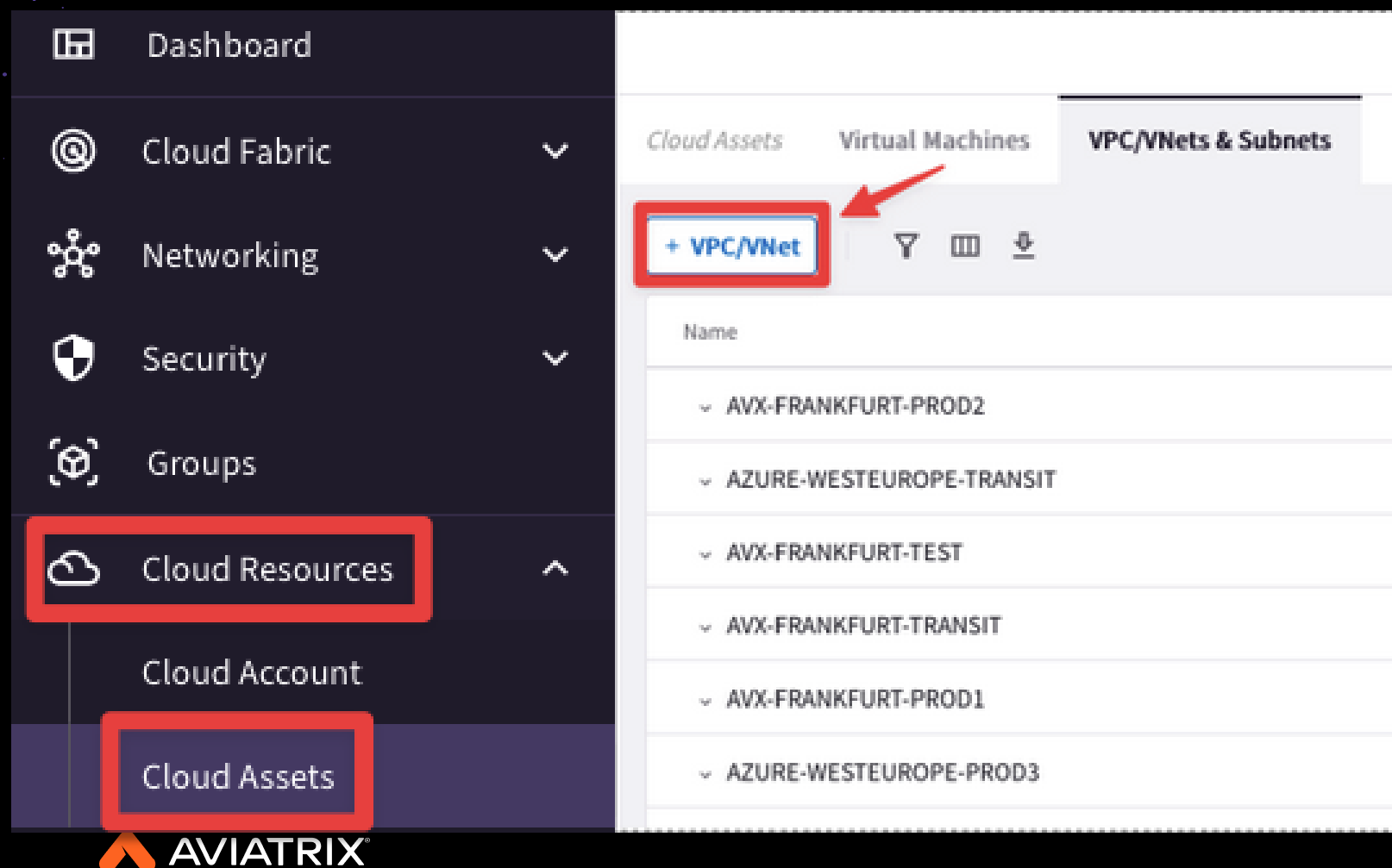


- In Aviatrix's Hub-and-Spoke Topology, a Transit Gateway connects a company's VPCs across the main Cloud Service Providers: AWS, Azure, GCP and OCI.
- The Transit Gateway connection provides high-speed and secure data transfers between networks while allowing for traffic engineering and multi-account subscription monitoring.
- The Transit Gateway will have a **larger size** because it serves as the hub of a hub-and-spoke architecture, terminating multiple spokes. This means it will need **more IPSec throughput and performance** compared to Spoke gateways, which service only one VPC/VNET/VCN of workloads.
- The Transit Gateways are capable to maintain **multiple Routing Tables** (i.e. VRFs) when the Network Segmentation is enabled.

Create VPC/VNet

☐ CLOUD ASSETS

- On the CoPilot you can create a new VPC/VNet/VCN.
- This feature is not only useful in a Greenfield deployment, but also if you need to add a new VPC/VNet/VCN on an existing environment, based on the architecture design.
- You can create two types of VPC/VNet/VCN:
 - **Default** (i.e. *Spoke*)
 - **Transit + FireNet**



The screenshot shows the 'Create VPC/VNet' form. The form has a title bar with a question mark icon. The fields are as follows:

- Name:** AVX-FRANKFURT-TRANSIT
- Cloud:** A row of cloud provider icons: AWS (selected), Azure, GCP, OCI, and Alibaba. The AWS icon is highlighted with a blue border.
- Account:** aws-account
- Region:** eu-central-1 (Frankfurt)
- VPC CIDR:** 10.11.0.0/23
- VPC Function:** A dropdown menu with 'Transit + FireNet' selected. The dropdown is open, showing 'Default' and 'Transit + FireNet' as options.
- Advanced Settings:** A section with a downward arrow icon.
- Buttons:** Cancel and Save buttons at the bottom right.

Cloud Assets: Managed VPC vs. Unmanaged VPC

- CoPilot shows VPC/VNets that were created in the CSP environment as well as those that were created as part of deploying Aviatrix resources such as those created during the deployment of your Controller, CoPilot, and gateways.
- A VPC/VNet can be marked as Aviatrix managed where:
 - **Aviatrix Managed = Yes** — Indicates an Aviatrix gateway is running in the VPC/VNet.
 - **Aviatrix Managed = No** — Indicates no Aviatrix gateways exist in the VPC/VNet.

Cloud Assets

Virtual Machines

VPC/VNets & Subnets

+ VPC/VNet

Actions

Search

<input type="checkbox"/> Name	Cloud	Region ↑	IP Address CIDR	CSP Tags	SmartGroups	Aviatrix Managed ↓
<div>▼</div> <input type="checkbox"/> azure-west-us-spoke2	Azure ARM	westus	192.168.2.0/24	Aviatrix-Created-Resource: ..., + 1 more		Yes
<div>▼</div> <input type="checkbox"/> gcp-us-central1-transit	GCP					Yes
<div>▼</div> <input type="checkbox"/> gcp-us-central1-spoke1	GCP					Yes
<div>▼</div> <input type="checkbox"/> aws-us-east-1-spoke1	AWS	us-east-1	10.0.12.0/24	Name: aws-us-east-1-spoke1, + 1 more		Yes
<div>▼</div> <input type="checkbox"/> aws-us-east-2-spoke1	AWS	us-east-2	10.0.1.0/24	Name: aws-us-east-2-spoke1, + 1 more		Yes
<div>▼</div> <input type="checkbox"/> azure-west-us-transit	Azure ARM	westus	192.168.10.0/23	Aviatrix-Created-Resource: ..., + 1 more		Yes
<div>▼</div> <input type="checkbox"/> azure-west-us-spoke1	Azure ARM	westus	192.168.1.0/24	Aviatrix-Created-Resource: ..., + 1 more		Yes
<div>▼</div> <input type="checkbox"/> aws-us-east-2-transit	AWS	us-east-2	10.0.10.0/23	Aviatrix-Created-Resource: ..., + 1 more		Yes
<div>▼</div> <input type="checkbox"/> aws-us-east-1-transit	AWS	us-east-1	10.0.20.0/23	Name: aws-us-east-1-transit, + 1 more		Yes
<div>▼</div> <input type="checkbox"/> vpc-574bab31	AWS	ap-southeast-1	172.31.0.0/16			No
<div>▼</div> <input type="checkbox"/> vpc-3bf48952	AWS	ap-northeast-3	172.31.0.0/16			No
<div>▼</div> <input type="checkbox"/> on-prem-partner1	AWS	us-east-1	172.16.1.0/24	Terraform: true, + 2 more		No
<div>▼</div> <input type="checkbox"/> vpc-390a155e	AWS	sa-east-1	172.31.0.0/16			No
<div>▼</div> <input type="checkbox"/> default	GCP					No
<div>▼</div> <input type="checkbox"/> AviatrixVPC	AWS	us-east-1	172.16.0.0/16	aws:cloudformation:stack-..., + 4 more		No

Note: If you create a VPC/Vnet by using cloud provider tools instead of Aviatrix tools (i.e. CoPilot UI), the VPC/Vnet will be marked as unmanaged even if an Aviatrix gateway is running in it.

Cloud Assets: Virtual Machines

- CoPilot shows in a central location all the virtual machines running in your clouds for cloud accounts onboarded onto Aviatrix Controller.
- A VM can be marked *as Aviatrix managed* where:
 - **Aviatrix Managed = Yes** — Indicates the VM is behind an Aviatrix Gateway; that is running in a VPC/VNet where an Aviatrix gateway is deployed.
 - **Aviatrix Managed = No** — Indicates the VM is running in a VPC/VNet where no Aviatrix gateways exist.
 - **Aviatrix Managed = Gateways** — Indicates the VM is running an Aviatrix Gateway (Transit, Spoke, or Specialty/Other)

Cloud Assets						
Virtual Machines						
VPC/VNets & Subnets						
Actions						
Search						
<input type="checkbox"/> Name	Cloud	Region	IP Address	Tags	SmartGroups	Aviatrix Managed
<input type="checkbox"/> aviatrix-aws-us-east-1-transit	AWS	us-east-1	10.0.21.138, + 10 more	Controller: 54.161.179.60, HA: False, + 3 more		Gateways
<input type="checkbox"/> aviatrix-aws-us-east-1-transit-hagw	AWS	us-east-1	10.0.21.196, + 1 more	Name: aviatrix-aws-us-east-1-transit-h..., + 4 more		Gateways
<input type="checkbox"/> aviatrix-aws-us-east-1-spoke1-hagw	AWS	us-east-1	10.0.12.235, + 1 more	Aviatrix-Created-Resource: Do-Not-Del..., + 4 more		Gateways
<input type="checkbox"/> aviatrix-aws-us-east-1-spoke1	AWS	us-east-1	10.0.12.135, + 10 more	Aviatrix-Created-Resource: Do-Not-Del..., + 4 more		Gateways
<input type="checkbox"/> gcp-us-central1-transit	GCP	us-central1	172.16.10.2, + 1 more			Gateways
<input type="checkbox"/> gcp-us-central1-transit-hagw	GCP	us-central1	172.16.10.3, + 1 more			Gateways
<input type="checkbox"/> av-gw-azure-west-us-spoke2	Azure ARM	westus	104.40.57.73, + 1 more	Aviatrix-Created-Resource: Do-Not-Del..., + 3 more		Gateways
<input type="checkbox"/> av-gw-azure-west-us-transit	Azure ARM	westus	192.168.10..., + 3 more	Type: gateway, Controller: 54.161.179.60, + 2 more		Gateways
<input type="checkbox"/> av-gw-azure-west-us-transit-hagw	Azure ARM	westus	192.168.10..., + 3 more	Name: Aviatrix-av-gw-azure-west-us-tr..., + 3 more		Gateways
<input type="checkbox"/> aws-us-east-1-spoke1-test2	AWS	us-east-1	10.0.12.60, + 1 more	Name: aws-us-east-1-spoke1-test2		Yes
<input type="checkbox"/> aws-us-east-1-spoke1-test1	AWS	us-east-1	10.0.12.40, + 1 more	Name: aws-us-east-1-spoke1-test1		Yes
<input type="checkbox"/> azure-west-us-spoke2-test1	Azure ARM	westus	104.40.65..., + 1 more	environment: bu2		Yes
<input type="checkbox"/> aws-us-east-2-spoke1-test2	AWS	us-east-2	10.0.1.10	Name: aws-us-east-2-spoke1-test2, + 1 more		No
<input type="checkbox"/> aws-us-east-2-spoke1-test1	AWS	us-east-2	10.0.1.100, + 1 more	Name: aws-us-east-2-spoke1-test1, + 1 more		No
<input type="checkbox"/> AviatrixCoPilot	AWS	us-east-1	172.16.1.5, + 1 more	aws:cloudformation:stack-id: arn:aws:..., + 4 more		No
<input type="checkbox"/> AviatrixController	AWS	us-east-1	172.16.1.213, + 1 more	Name: AviatrixController, + 4 more		No
<input type="checkbox"/> aws-cisco-csr	AWS	us-east-1	172.16.1.65, + 1 more	Name: aws-cisco-csr		No
<input type="checkbox"/> gcp-us-central1-spoke1-test1	GCP	us-central1	172.16.1.100, + 1 more	environment: bu2		No
Total 19 Virtual Machines						

Greenfield Deployment (VPC/Vnet/VCN creation)

Caveat: for the sake of simplicity, only the deployment in AWS is explained


Creation of the Transit VPC

- The VPC CIDR range for a Transit VPC is from /16 to /23
- There is a specific reason why the Aviatrix Controller does not allow less than /23 prefix length for the Transit VPC (this will be discussed on the HPE lecture).

[AVXERR-TOOLS-0030] VPC/VNet CIDR size must be between 16 to 23. e.g. 10.0.0.0/20

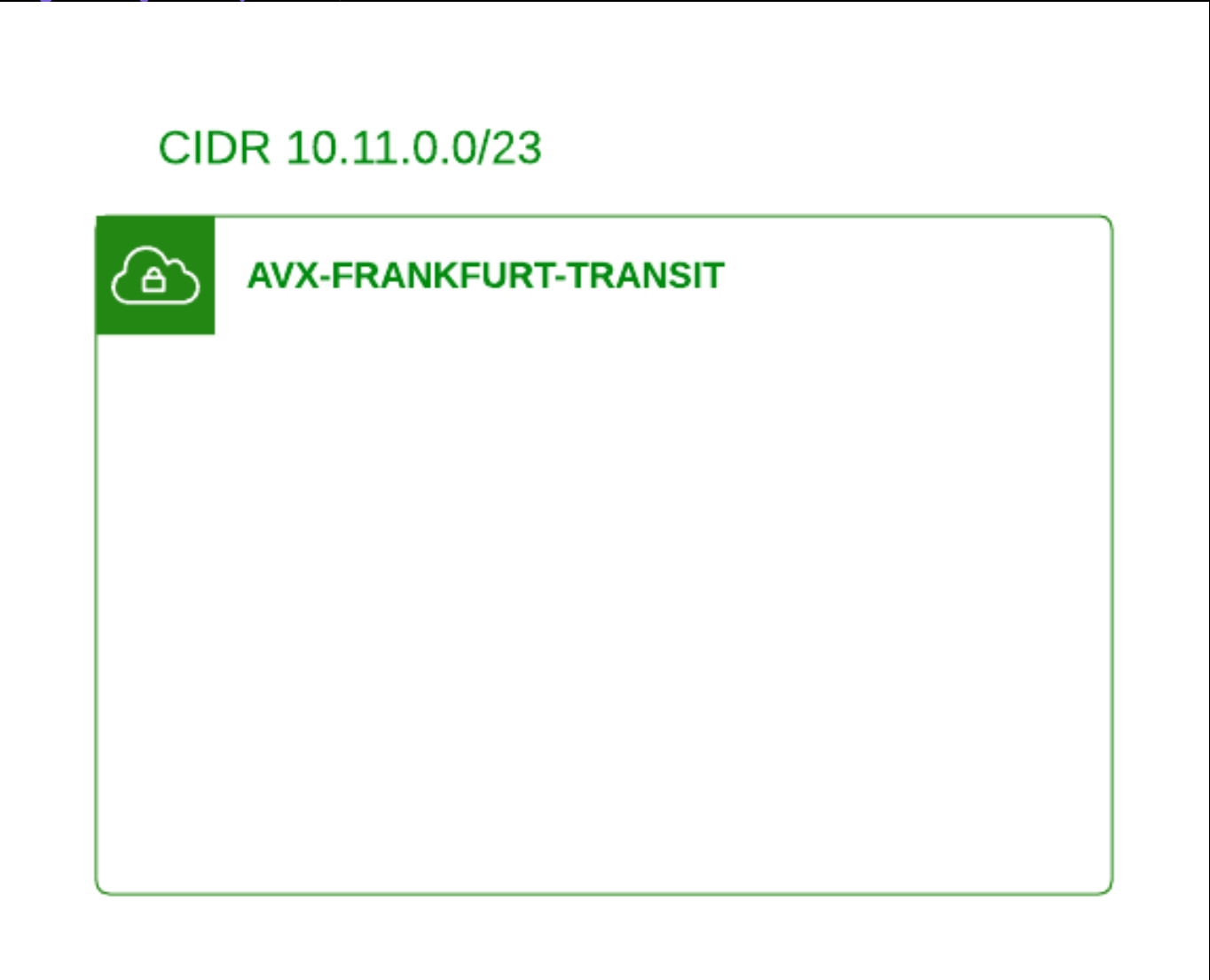
- An IGW with the same name of the Transit VPC will be created and attached to the VPC, automatically

CIDR 10.11.0.0/23

 AVX-FRANKFURT-TRANSIT

Internet gateways (1/1) Info				
<div><div><div>Q</div><div>Filter internet gateways</div></div><div><div>search: AVX-FRANKFURT-TRANSIT</div><div>Clear filters</div></div></div>				
<input checked="" type="checkbox"/>	Name	Internet gateway ID	State	VPC ID
<input checked="" type="checkbox"/>	AVX-FRANKFURT-TRANSIT	igw-06d499f4d0f772915	<input checked="" type="checkbox"/> Attached	vpc-01f51fa31db0c8458 AVX-FRANKFURT-TRANSIT

Greenfield Deployment (VPC/Vnet/VCN creation)



Creation of the Transit VPC

- The Aviatrix Controller will create 8 subnets, in two availability zones:
 - 4x Private subnets for the FW
 - 2x Public subnets for Ingress-Egress
 - 2x Public subnets for GW-FW-mgmt.
- All the subnets will have a /28 prefix length

❖ The subnets' size can be customized

^ Advanced Settings

Subnet Size

Optional

Number of Subnet Pair(s)

Optional

Cancel

Save

Subnets (8) Info				
<div><div>Q Filter subnets</div><div>search: AVX-FRANKFURT-TRANSIT X Clear filters</div></div>				
<input type="checkbox"/>	Name ▲	Subnet ID ▼	IPv4 CIDR ▼	Availability Zone
<input type="checkbox"/>	AVX-FRANKFURT-TRANSIT-Private-FW-north-eu-central-1a	subnet-04d1f3362661ae02a	10.11.0.16/28	eu-central-1a
<input type="checkbox"/>	AVX-FRANKFURT-TRANSIT-Private-FW-north-eu-central-1b	subnet-0a35db8130d9f9031	10.11.0.48/28	eu-central-1b
<input type="checkbox"/>	AVX-FRANKFURT-TRANSIT-Private-FW-south-eu-central-1a	subnet-06f4b955d965f1457	10.11.0.0/28	eu-central-1a
<input type="checkbox"/>	AVX-FRANKFURT-TRANSIT-Private-FW-south-eu-central-1b	subnet-0560c62d12c3ff59b	10.11.0.32/28	eu-central-1b
<input type="checkbox"/>	AVX-FRANKFURT-TRANSIT-Public-FW-ingress-egress-eu-central-1a	subnet-07818dd7b731a32a2	10.11.0.80/28	eu-central-1a
<input type="checkbox"/>	AVX-FRANKFURT-TRANSIT-Public-FW-ingress-egress-eu-central-1b	subnet-04094cc05bcd736a3	10.11.0.112/28	eu-central-1b
<input type="checkbox"/>	AVX-FRANKFURT-TRANSIT-Public-gateway-and-firewall-mgmt-e...	subnet-08228163bc8ca6f7d	10.11.0.64/28	eu-central-1a
<input type="checkbox"/>	AVX-FRANKFURT-TRANSIT-Public-gateway-and-firewall-mgmt-e...	subnet-002f879d78f686a57	10.11.0.96/28	eu-central-1b

Greenfield Deployment (VPC/Vnet/VCN creation)

Creation of the Transit VPC

- 2x Routing Tables will be created:
 - Public RTB will encompass the 4 public subnets

Destination	Target
0.0.0.0/0	lgw-06d499f4d0f772915
10.11.0.0/23	local

- Private RTB will encompass the 4 private subnets

Destination	Target
10.11.0.0/23	local

Route tables (2) [Info](#)

Filter route tables

search: AVX-FRANKFURT-TRANSIT

Clear filters

	Name	Route table ID	Explicit subnet associations
<input type="checkbox"/>	AVX-FRANKFURT-TRANSIT-Public-rtb	rtb-0e5a22d0060c17eac	4 subnets
<input type="checkbox"/>	AVX-FRANKFURT-TRANSIT-Private-rtb	rtb-085cf49590ee4592d	4 subnets

Greenfield Deployment (VPC/Vnet/VCN creation)

CIDR 10.1.1.0/24



AVX-FRANKFURT-SPOKE-PROD

Creation of the Application/Spoke VPC

- The VPC CIDR range for a Spoke VPC is from /16 to /24
- An IGW with the same name of the Spoke VPC will be created and attached to the VPC, automatically

Internet gateways (1/1) [Info](#)

Filter internet gateways

search: AVX-FRANKFURT-SPOKE-PROD X

Clear filters

<input checked="" type="checkbox"/>	Name	Internet gateway ID	State	VPC ID
<input checked="" type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD	igw-0327c092c11fbd749	Attached	vpc-068d94ca168a85633 AVX-FRANKFURT-SPOKE-PROD

Greenfield Deployment (VPC/Vnet/VCN creation)

Creation of the Application/Spoke VPC

- The Aviatrix Controller will create a pair of subnets, a public subnet and a private subnet, on each availability zone
- All the subnets will have a /28 prefix length

CIDR 10.1.1.0/24

**AVX-FRANKFURT-SPOKE-PROD**

Subnets (6) [Info](#)

Filter subnets

search: AVX-FRANKFURT-SPOKE-PROD X Clear filters

<input type="checkbox"/>	Name	Subnet ID	VPC	IPv4 CIDR
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Private-1-eu-central-1a	subnet-060df41c64a2c643a	vpc-068d94ca168a85633 AV...	10.1.1.0/28
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Private-2-eu-central-1b	subnet-00bf95727955ec09b	vpc-068d94ca168a85633 AV...	10.1.1.16/28
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Private-3-eu-central-1c	subnet-0bd05503b4b1f880c	vpc-068d94ca168a85633 AV...	10.1.1.32/28
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Public-1-eu-central-1a	subnet-0b22457ff5b1a4895	vpc-068d94ca168a85633 AV...	10.1.1.48/28
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Public-2-eu-central-1b	subnet-0c140dc3d0af1fa65	vpc-068d94ca168a85633 AV...	10.1.1.64/28
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Public-3-eu-central-1c	subnet-06219ac03978942e3	vpc-068d94ca168a85633 AV...	10.1.1.80/28

❖ The subnets' size can be customized

Advanced Settings

Subnet Size Optional

Number of Subnet Pair(s) Optional

Cancel Save

Greenfield Deployment (VPC/Vnet/VCN creation)

Creation of the Application/Spoke VPC

➤ a Public RTB per each availability zone will encompass the corresponding subnet

Destination	Target
0.0.0.0/0	igw-0327c092c11fbd749
10.1.1.0/24	local

➤ a Private RTB per each availability zone will encompass the corresponding subnet

Destination	Target
10.1.1.0/24	local



Route tables (6) Info

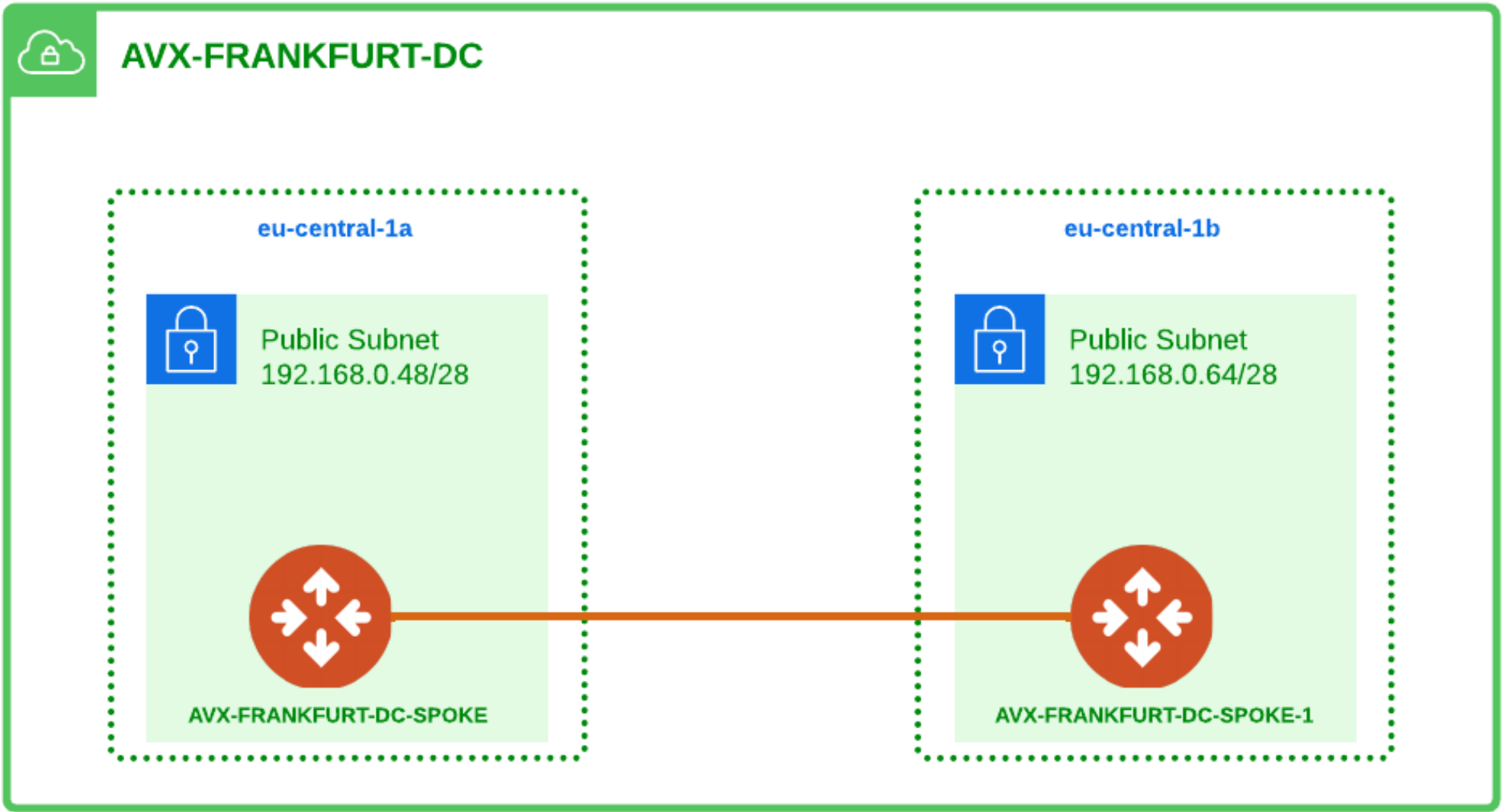
Filter route tables

search: AVX-FRANKFURT-SPOKE-PROD X Clear filters

	Name	Route table ID	Explicit subnet associations
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Private-1-eu-central-1a-rtb	rtb-0ca98234a5088dceb	subnet-060df41c64a2c643a / AVX-FRANKFURT-SPOKE-PROD-Private-1-eu-central-1a
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Private-2-eu-central-1b-rtb	rtb-0cad721a70d6256d9	subnet-00bf95727955ec09b / AVX-FRANKFURT-SPOKE-PROD-Private-2-eu-central-1b
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Private-3-eu-central-1c-rtb	rtb-04afaa976264662ac	subnet-0bd05503b4b1f880c / AVX-FRANKFURT-SPOKE-PROD-Private-3-eu-central-1c
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Public-1-eu-central-1a-rtb	rtb-0c52cd5084b440f2d	subnet-0b22457ff5b1a4895 / AVX-FRANKFURT-SPOKE-PROD-Public-1-eu-central-1a
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Public-2-eu-central-1b-rtb	rtb-0c973dec3847ae8ce	subnet-0c140dc3d0af1fa65 / AVX-FRANKFURT-SPOKE-PROD-Public-2-eu-central-1b
<input type="checkbox"/>	AVX-FRANKFURT-SPOKE-PROD-Public-3-eu-central-1c-rtb	rtb-099810bbea6608f17	subnet-06219ac03978942e3 / AVX-FRANKFURT-SPOKE-PROD-Public-3-eu-central-1c

Name Convention with Multiple Gateways

Cluster of Gateways



- ❖ If you create two or more Gateways, they will be encompassed inside a **cluster**.
- ❖ The name of the cluster will match the name of the first gateway.
- ❖ The second gateway will have the string “-1” appended to its name.
- ❖ The third gateway will have the string “-2” appended to its name.
-
-
-
- ❖ The fifteenth gateway will have the string “-14” appended to its name.

CLUSTER

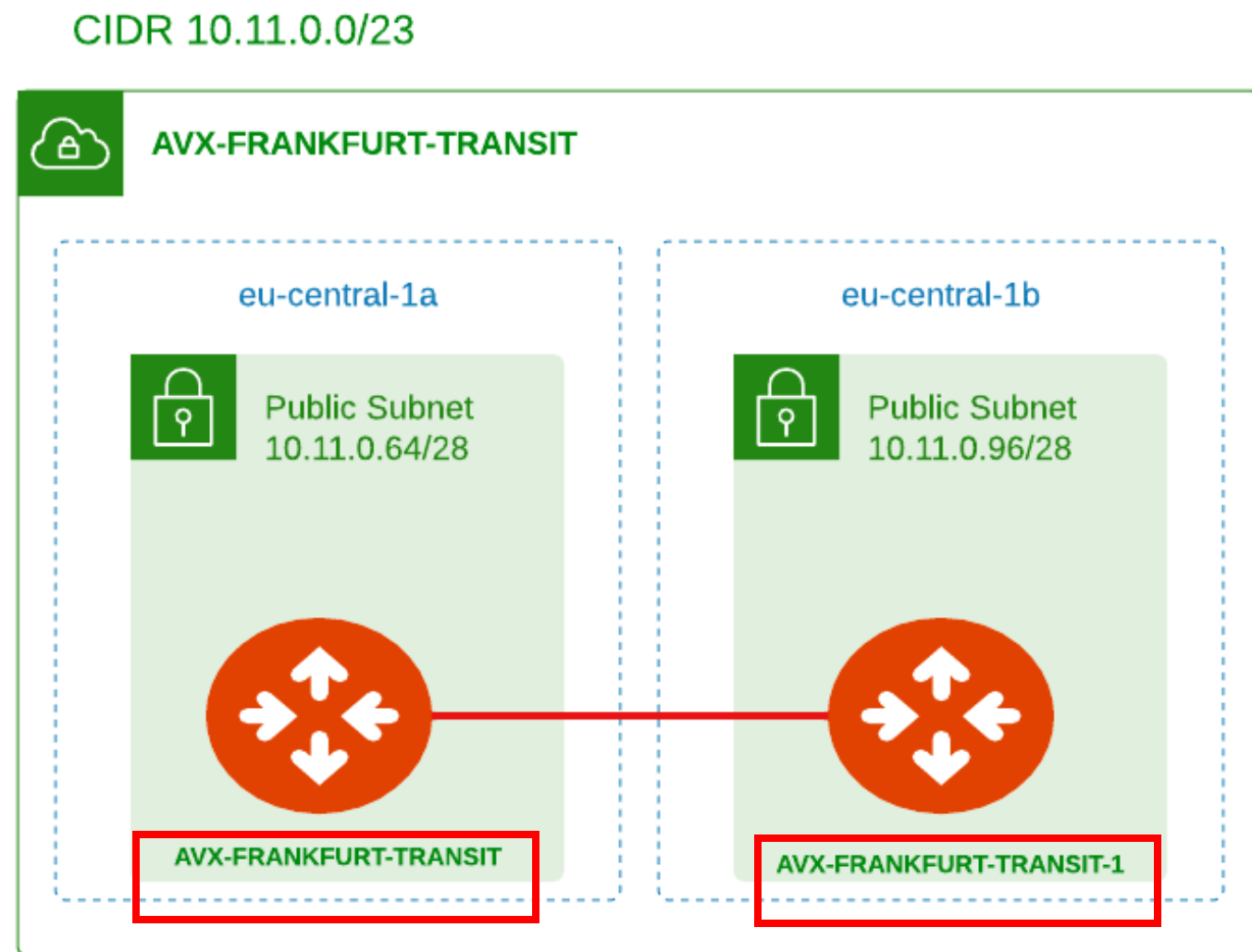
GW #1

GW #2

● AVX-FRANKFURT-DC-SPOKE	eu-central-1	vpc-04d947b7b73180e3c~~AVX-FRANKFURT-DC	
● AVX-FRANKFURT-DC-SPOKE	eu-central-1	vpc-04d947b7b73180e3c~~AVX-FRANKFURT-DC	192.168.0.48/28
● AVX-FRANKFURT-DC-SPOKE-1	eu-central-1	vpc-04d947b7b73180e3c~~AVX-FRANKFURT-DC	192.168.0.64/28

Greenfield Deployment (Transit Gateways deployment)

Transit Gateways Deployment through the CoPilot



Create Transit Gateway

Name: AVX-FRANKFURT-TRANSIT

Cloud: ☒ AWS Standard ☐ Azure ☐ GCP ☐ OCI ☐ Alibaba

Account: AWS-AVIATRIX Region: eu-central-1 (Frankfurt) VPC/VNet: AVX-FRANKFURT-TRANSIT

Instance Size: c5n.large High Performance Encryption: ☐ Off

Peer To Transit Gateways: Optional

Instances

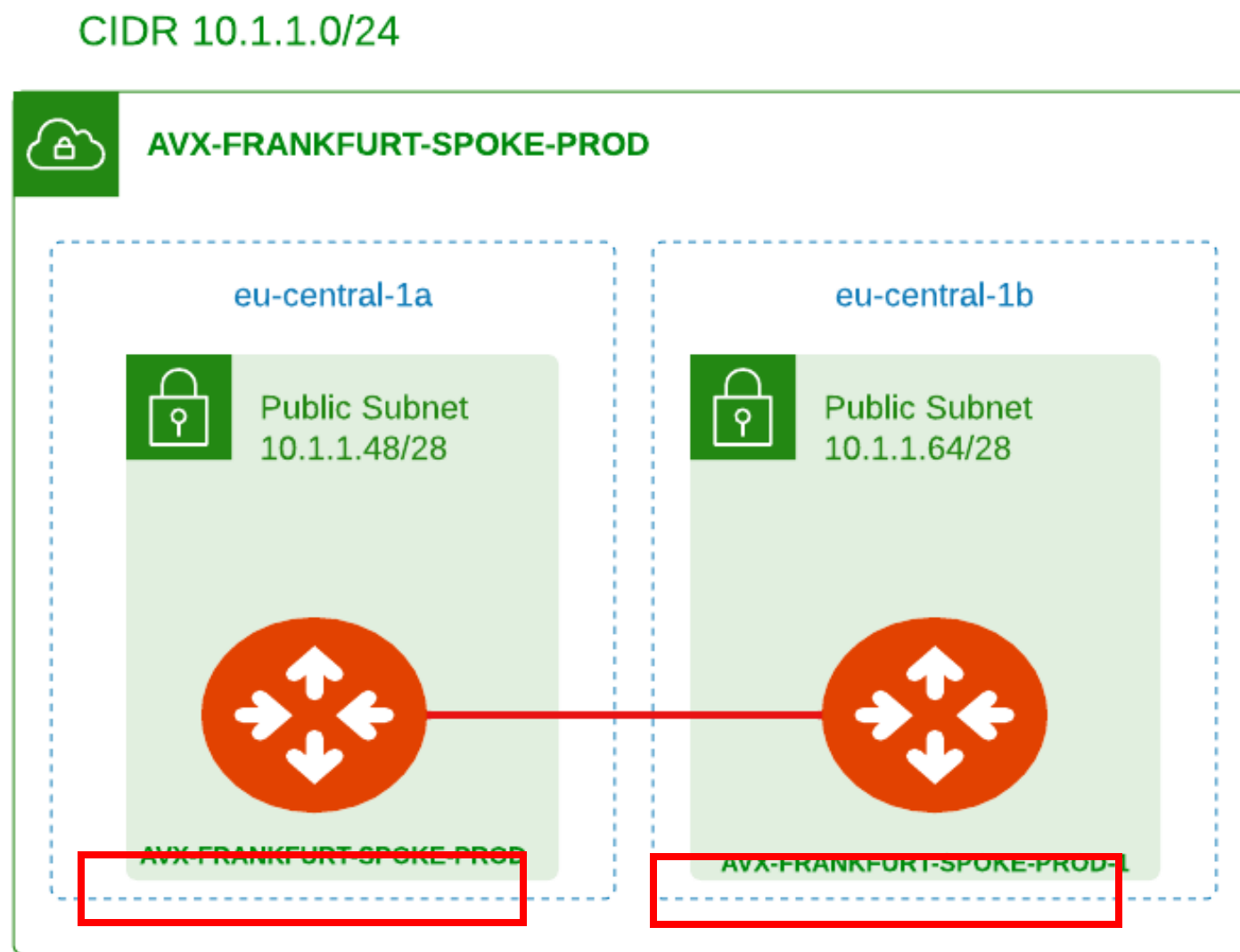
	Attach to Subnet	Public IP
1	10.11.0.64/28	Allocate New Static Public IP
2	10.11.0.96/28	Allocate New Static Public IP

Cancel Save

- ❖ The connection between the Transit Gateways is automatically created by the Controller.
- ❖ **Best Practice:** always deploy the Transit Gateway-1 (i.e the second gateway), and choose a different AZ.
- ❖ Only two Transit Gateways can be deployed per Transit VPC
- ❖ Aviatrix gateways are deployed in Public subnets

Greenfield Deployment (Spoke Gateways deployment)

Spoke Gateways Deployment through the CoPilot



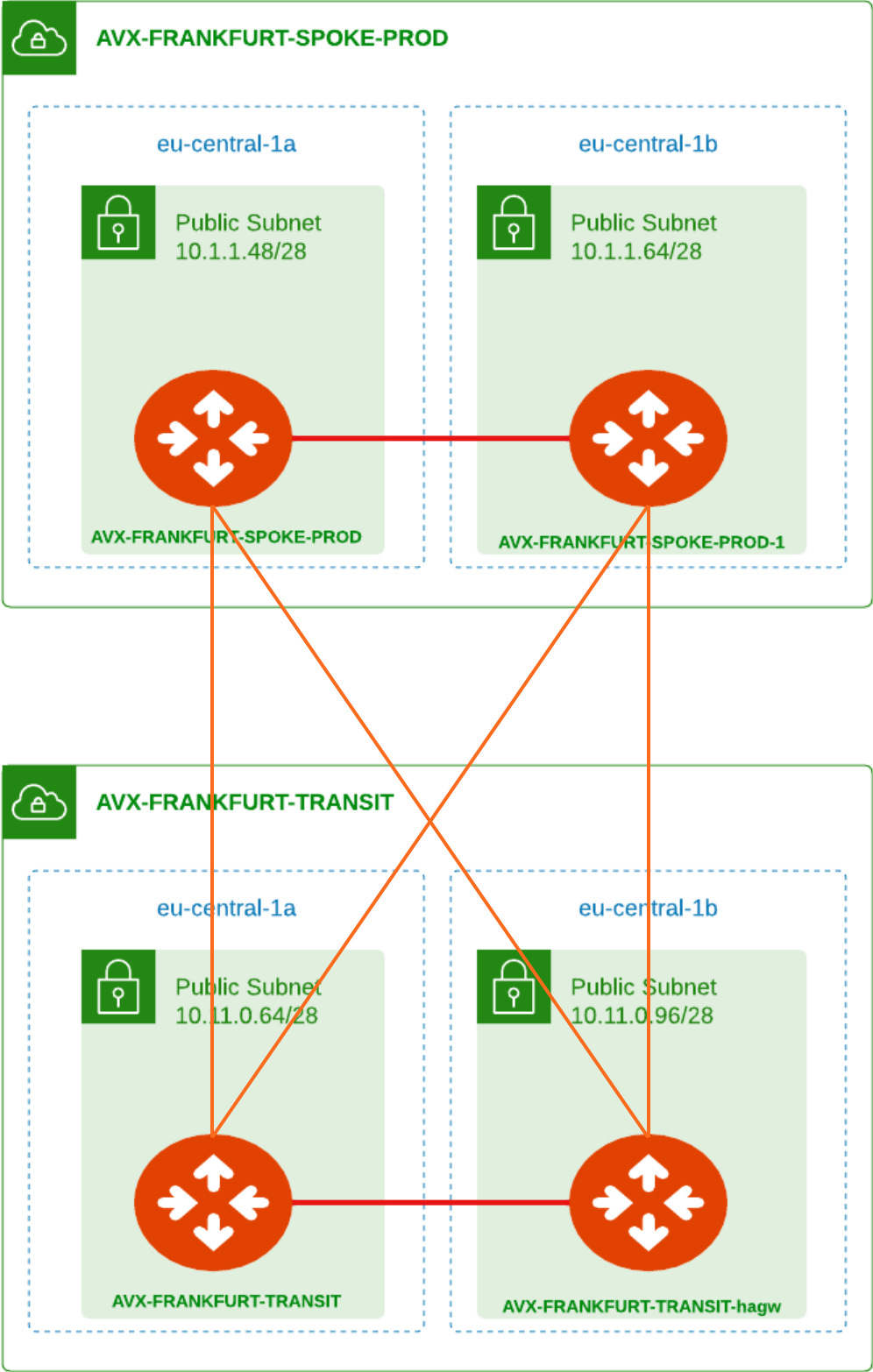
The screenshot shows the 'Create Spoke Gateway' form in the AWS CoPilot console. The form is for the VPC AVX-FRANKFURT-SPOKE-PROD in the eu-central-1 (Frankfurt) region. The Cloud provider is set to AWS, and the Instance Size is t3.micro. High Performance Encryption is turned off. The Attach To Transit Gateway option is set to Optional. The Advanced Settings section shows BGP is turned off. The Instances section shows two instances being created, each attached to a subnet (10.1.1.48/28 and 10.1.1.80/28) and allocated a new static public IP.

	Attach to Subnet	Public IP
1	10.1.1.48/28	Allocate New Static Public IP
2	10.1.1.80/28	Allocate New Static Public IP

- ❖ The connection between the Spoke Gateways is automatically created by the Controller.
- ❖ **Best Practice:** deploy the Spoke Gateway-1 (i.e the second gateway) on a different AZ.
- ❖ You can deploy up to **15 Spoke Gateways per each Spoke VPC**
- ❖ Aviatrix gateways are deployed in Public subnets

Greenfield Deployment (Attachments deployment)

Deployment of the attachments through the CoPilot



Edit Spoke Gateway: AVX-FRANKFURT-SPOKE-PROD

Name: AVX-FRANKFURT-SPOKE-PROD

Cloud: AWS

Account: AWS-AVIATRIX

Region: eu-central-1

VPC/VNet: AVX-FRANKFURT-SPOKE-PROD

Instance Size: t3.micro

High Performance Encryption: Off

Attach To Transit Gateway: AVX-FRANKFURT-TRANSIT (Optional)

Advanced Settings

BGP: Off

Instances

	Attach to Subnet	Public IP
1	10.1.1.48/28	3.72.194.207
2	10.1.1.80/28	18.192.199.249

Cancel Save

Greenfield Deployment (Attachments deployment)

- As soon as the Controller completes the deployment of the attachments between Spoke Gateways and Transit Gateways, it will also program the *three RFC1918 routes* in the route tables to point to the ENI of the Spoke Gateways.

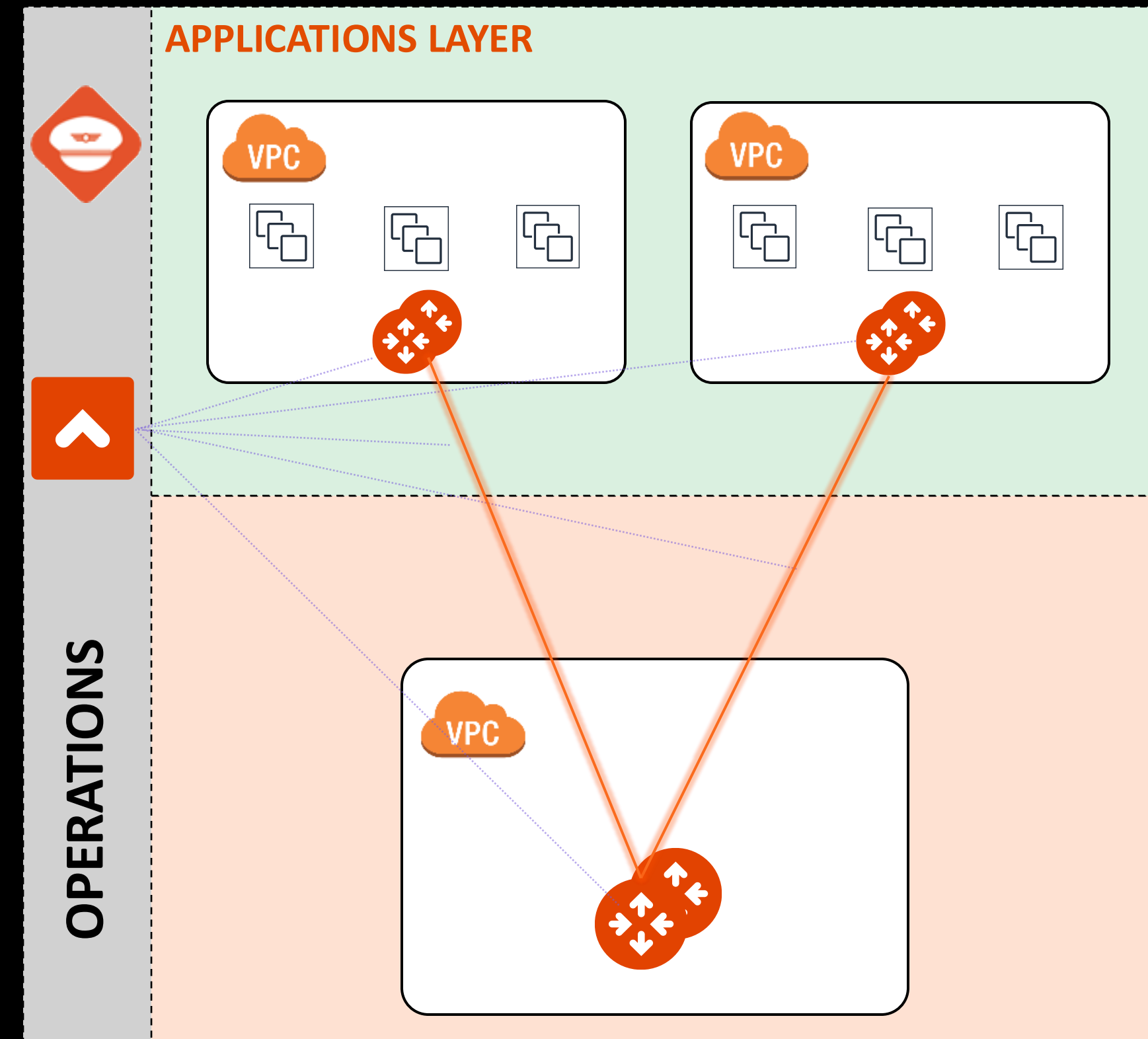
Attachment = RFC1918 Routes Injection

Routes	Subnet associations	Edge associations	Route propagation	Tags
Routes (4)				
Filter routes				
Destination			Target	
10.0.0.0/8			eni-08ac50fc16cd8c4a5	
10.1.1.0/24			local	
172.16.0.0/12			eni-08ac50fc16cd8c4a5	
192.168.0.0/16			eni-08ac50fc16cd8c4a5	

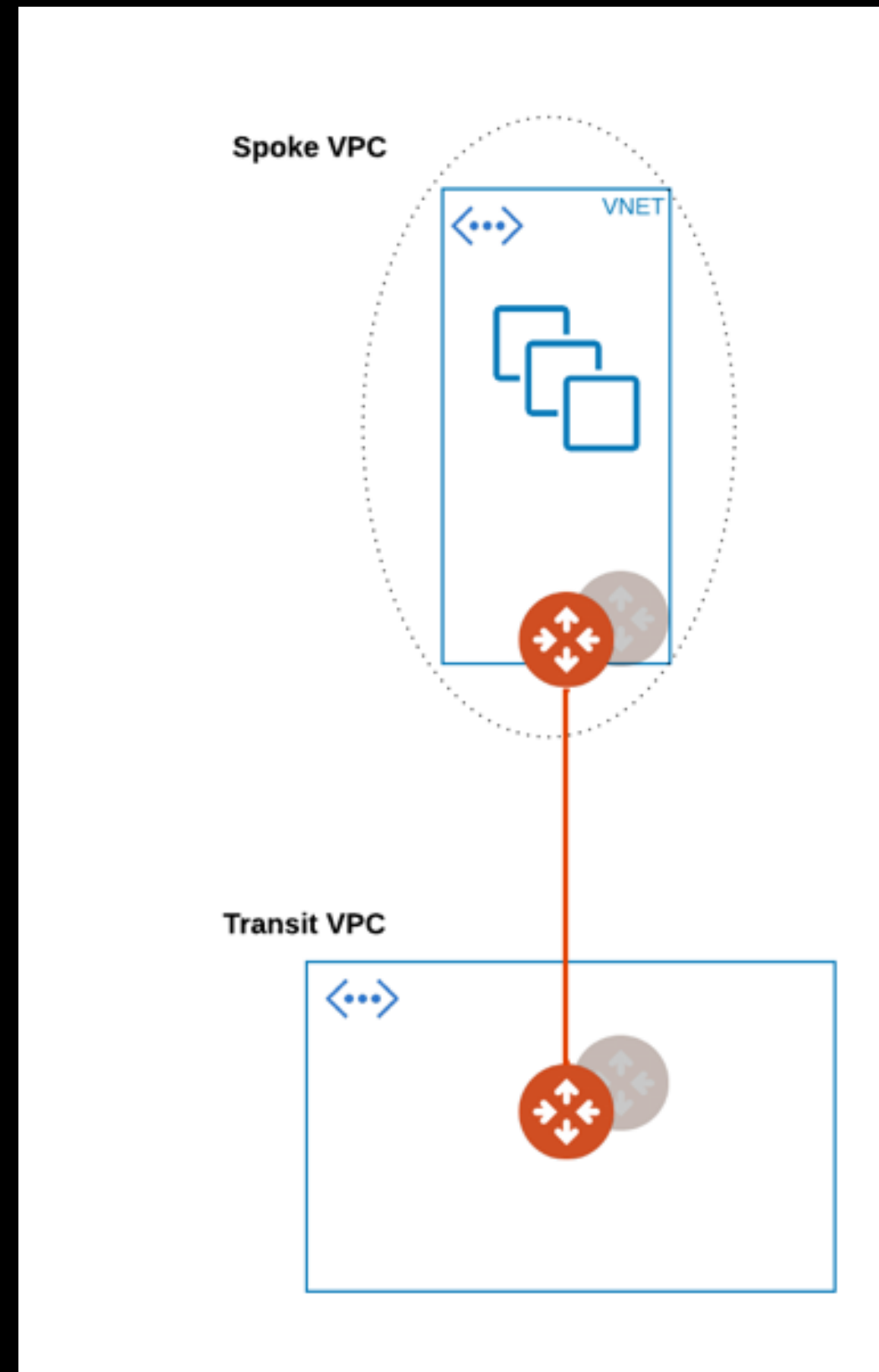
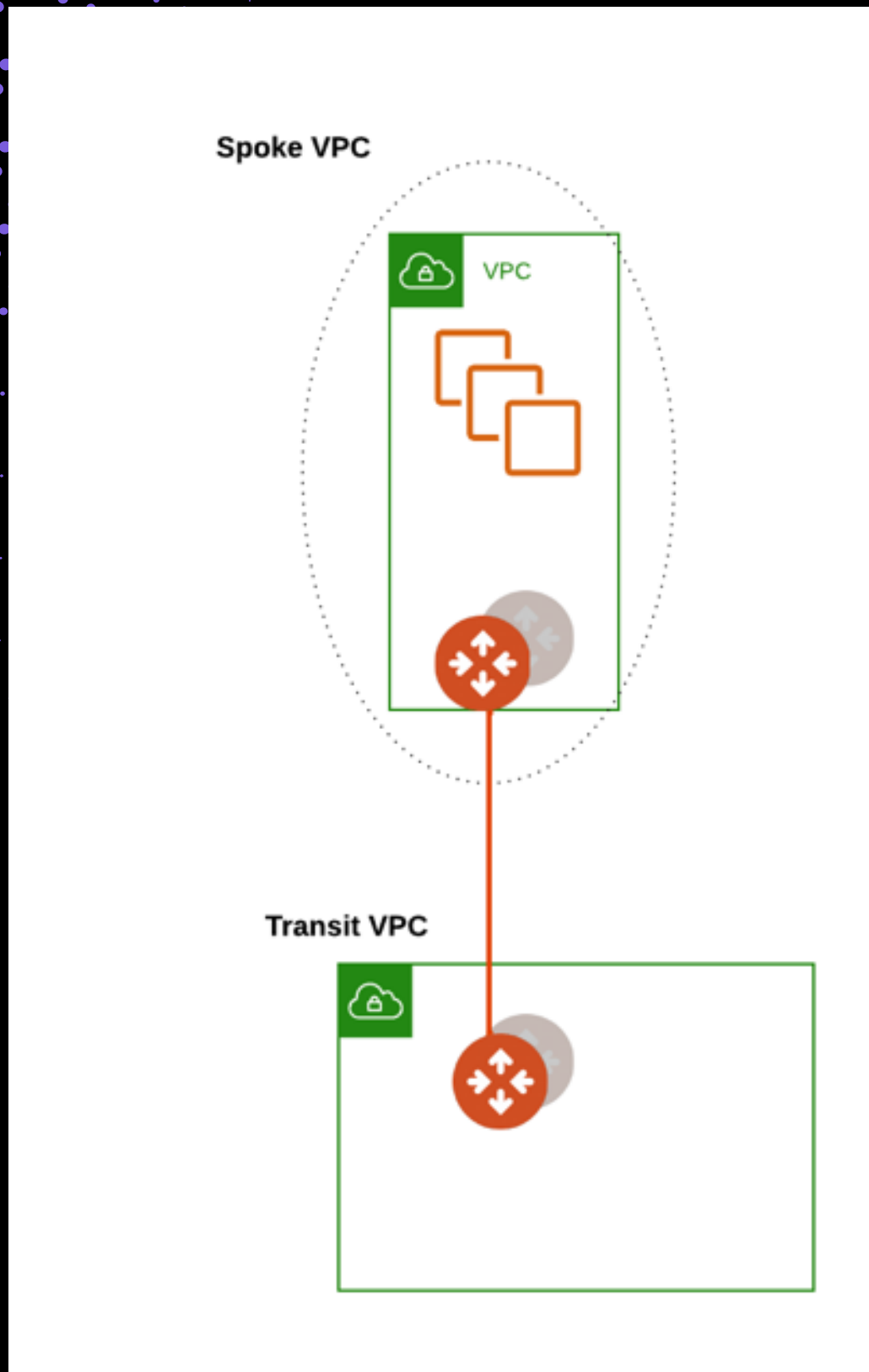
Route table for Private Subnet

Routes	Subnet associations	Edge associations	Route propagation	Tags
Routes (5)				
Filter routes				
Destination			Target	
0.0.0.0/0			igw-07c6ddedd190d12d3	
10.0.0.0/8			eni-08ac50fc16cd8c4a5	
10.1.1.0/24			local	
172.16.0.0/12			eni-08ac50fc16cd8c4a5	
192.168.0.0/16			eni-08ac50fc16cd8c4a5	

Route table for Public Subnet

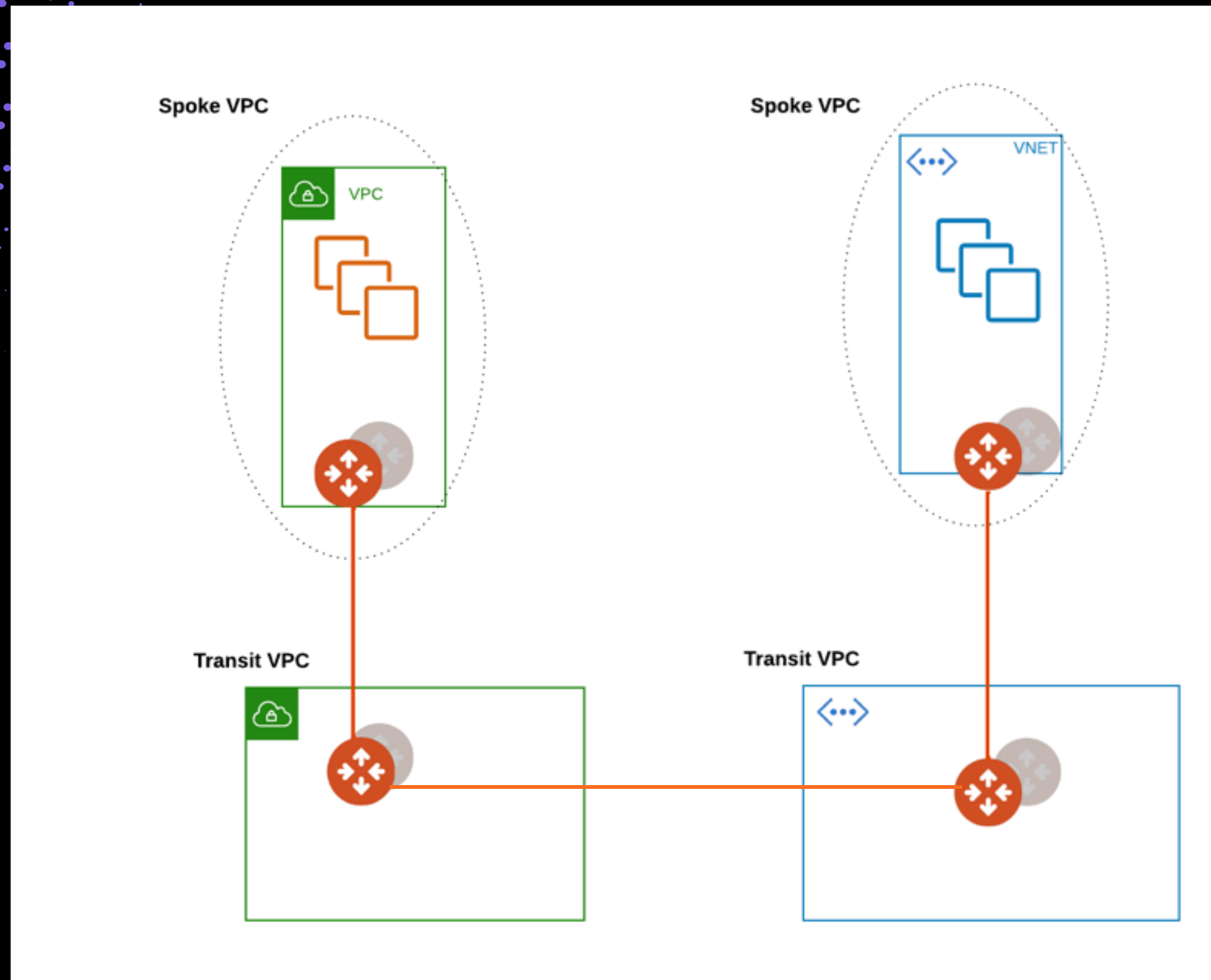


Greenfield Deployment (Repeatable Design)



- ❑ The hub and spoke topology can be extended to another CSP or to another region within the same CSP
- ❑ In Azure all subnets are public by nature
- ❑ Aviatrix Controller creates “Private” subnets:
 - Aviatrix Controller programs a **default route 0.0.0.0 pointing to the next hop type “None”**: in User Defined Route Table (UDR) for all private subnets it creates
 - This will blackhole 0/0 traffic

Greenfield Deployment (Peering Deployment)



- ❑ The creation of the Transit Peering represents the last step for the completion of the **CNSF**.

Edit Transit Gateway: AVX-FRANKFURT-TRANSIT

Name: AVX-FRANKFURT-TRANSIT

Cloud: AWS

Account: AWS-AVIATRIX Region: eu-central-1 VPC/VNet: AVX-FRANKFURT-TRANSIT

Instance Size: c5n.large High Performance Encryption: Off

Peer To Transit Gateways: AZURE-WESTEUROPE-TRANSIT x Optional x

Instances

+ Instance

	Attach to Subnet	Public IP
1	10.11.0.64/28	3.75.164.186
2	10.11.0.96/28	3.127.251.156

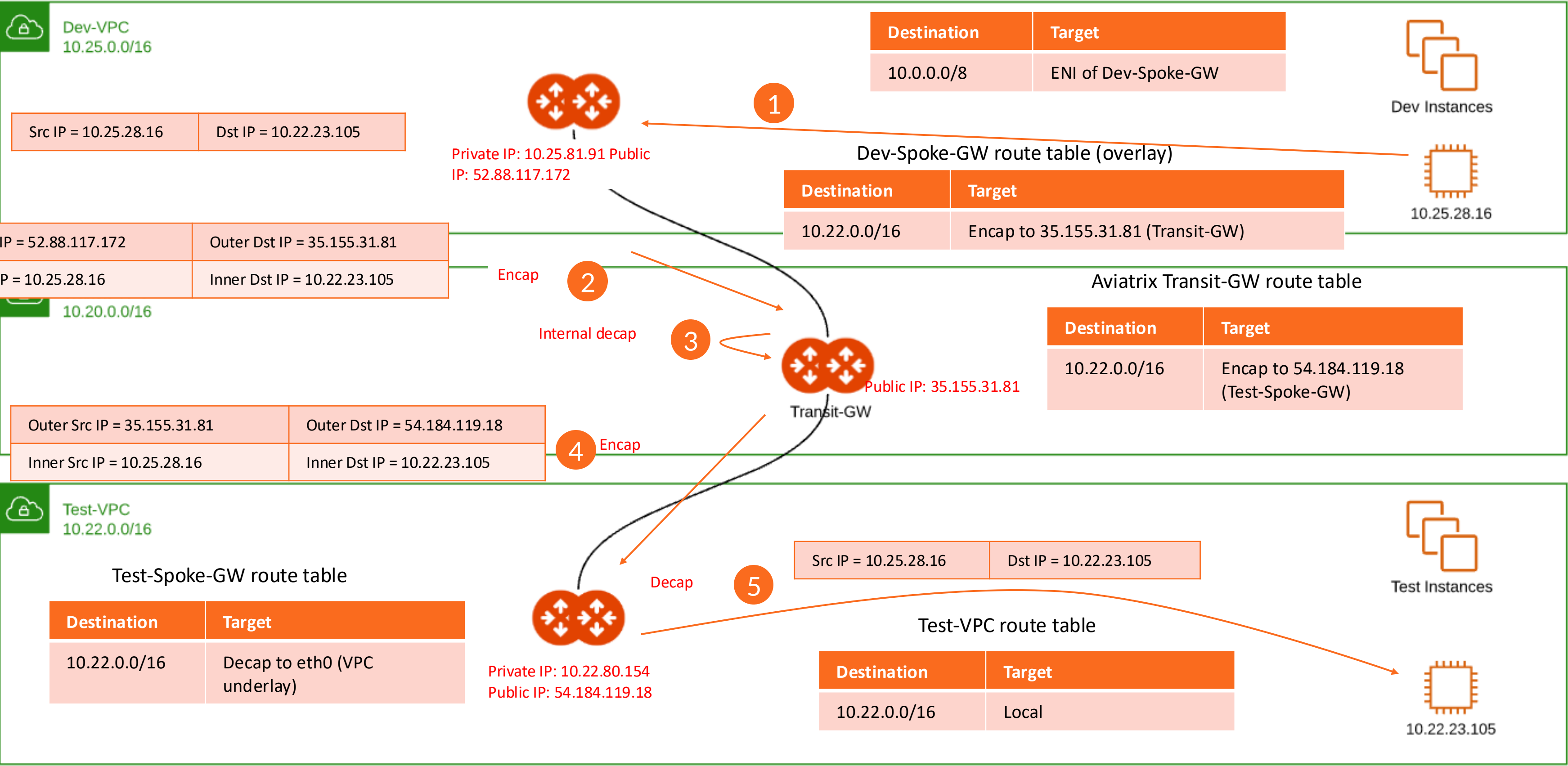
Cancel Save



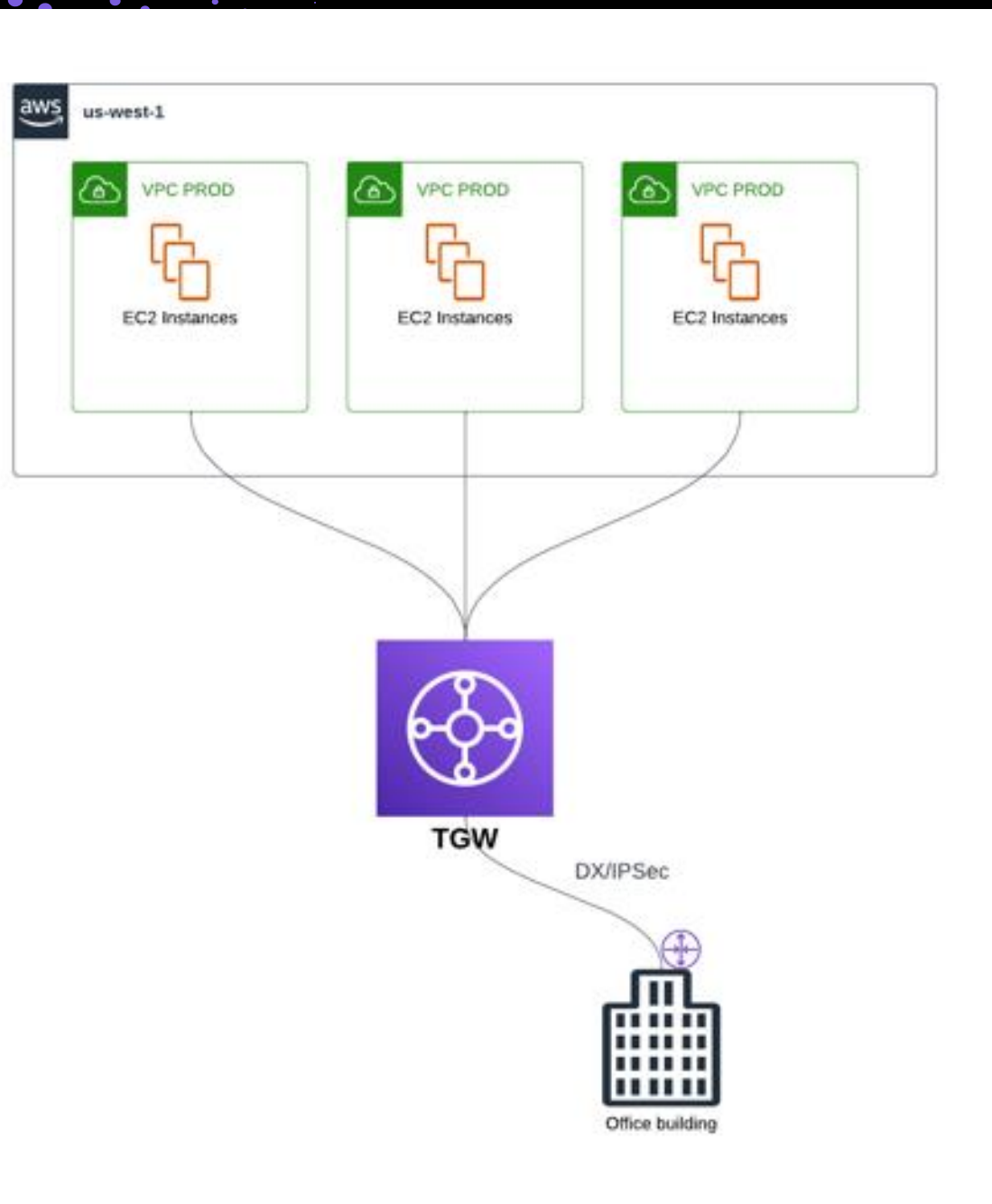
Packet Walk



us-west-2



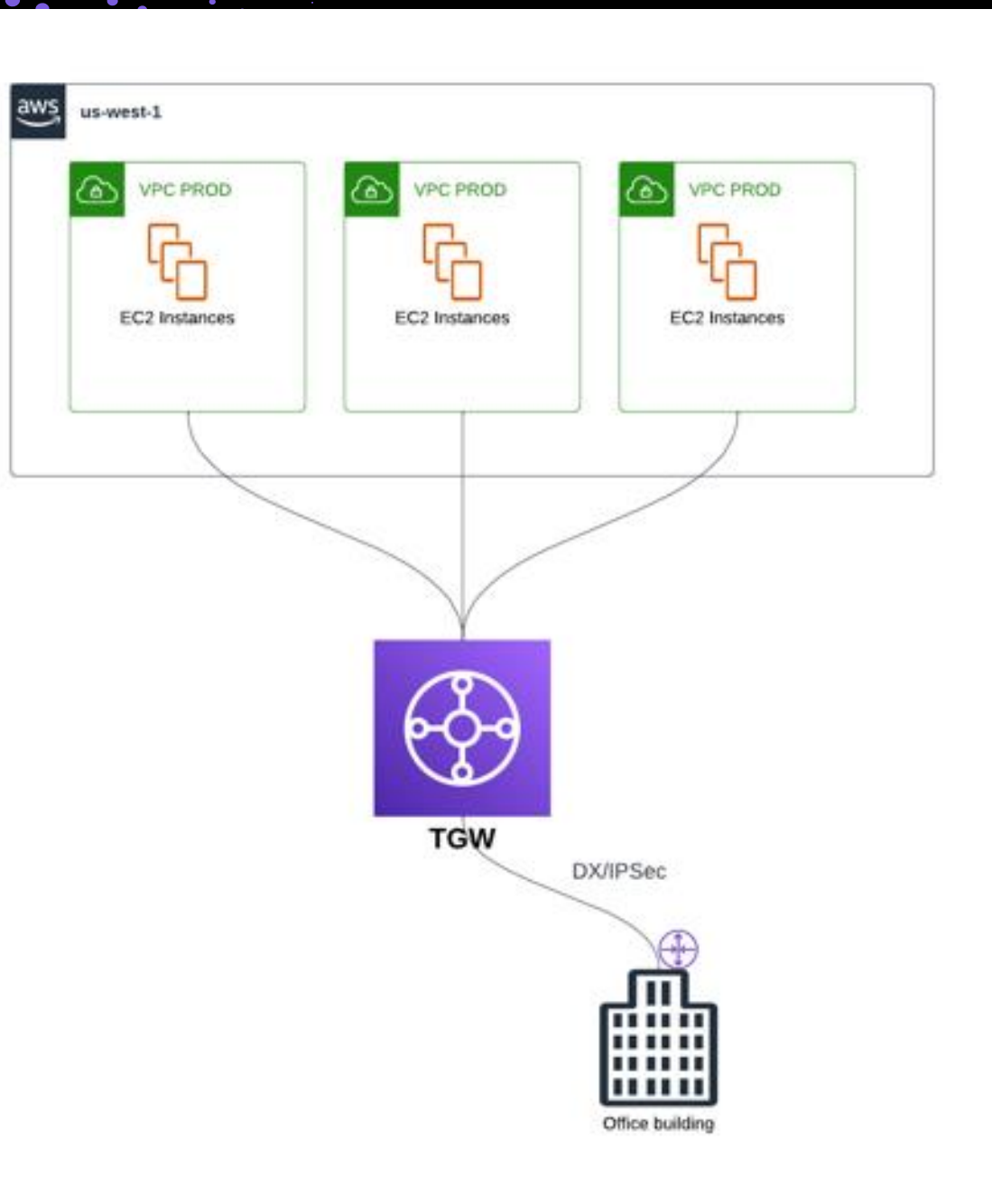
Migration Deployment: Example



Initial environment in a brownfield scenario:

- Several Application VPCs that are connected to the TGW as attachments
- OnPrem connectivity (hybrid – can be DX/IPSec)

Migration Deployment: Example

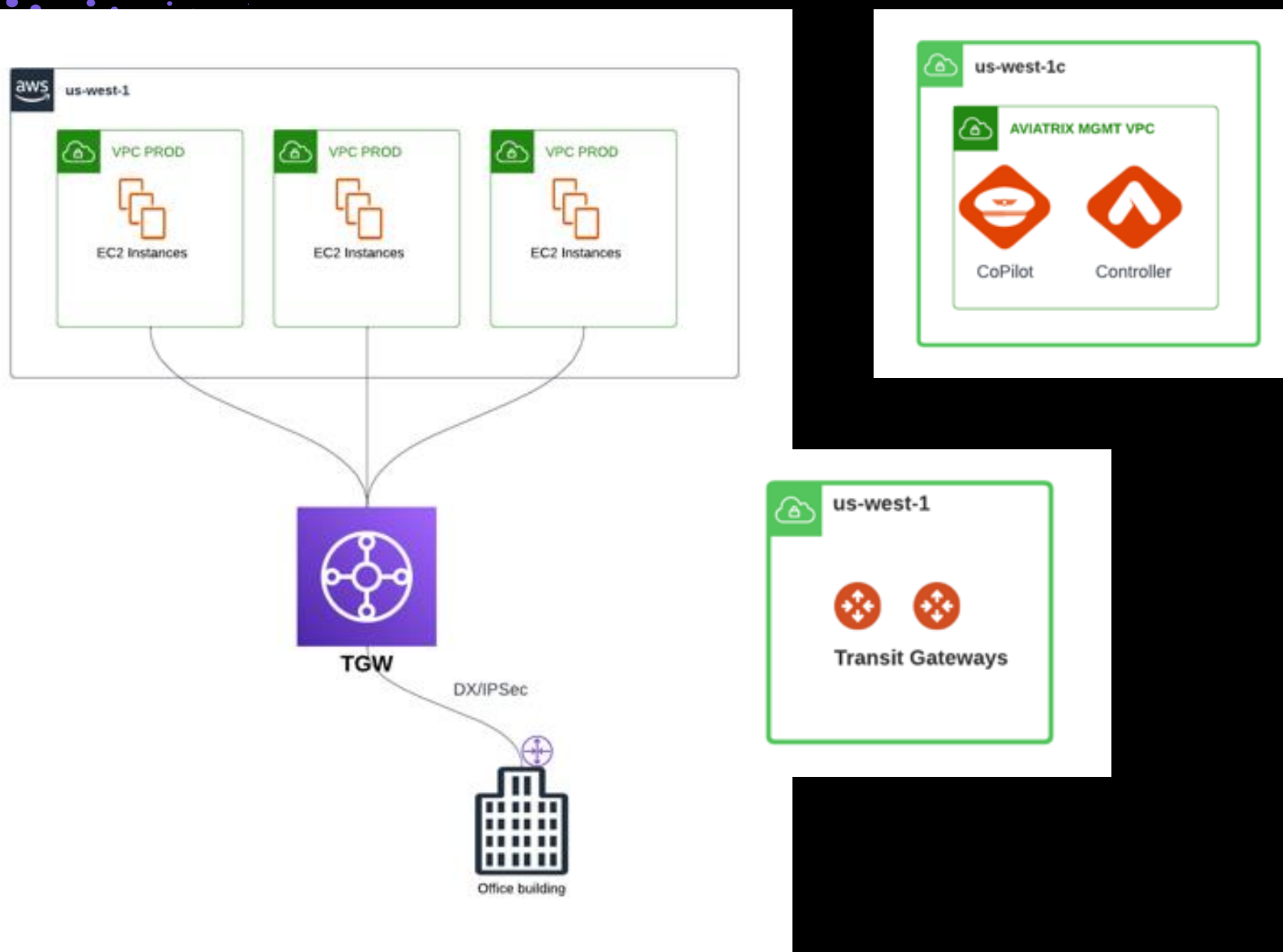


Initial environment in a brownfield scenario:

- Several Application VPCs that are connected to the TGW as attachments
- OnPrem connectivity (hybrid – can be DX/IPSec)

Deploy the Aviatrix Controller and CoPilot in a dedicated VPC, in a different AZ where there are no gateways deployed (best practice)

Migration Deployment: Example



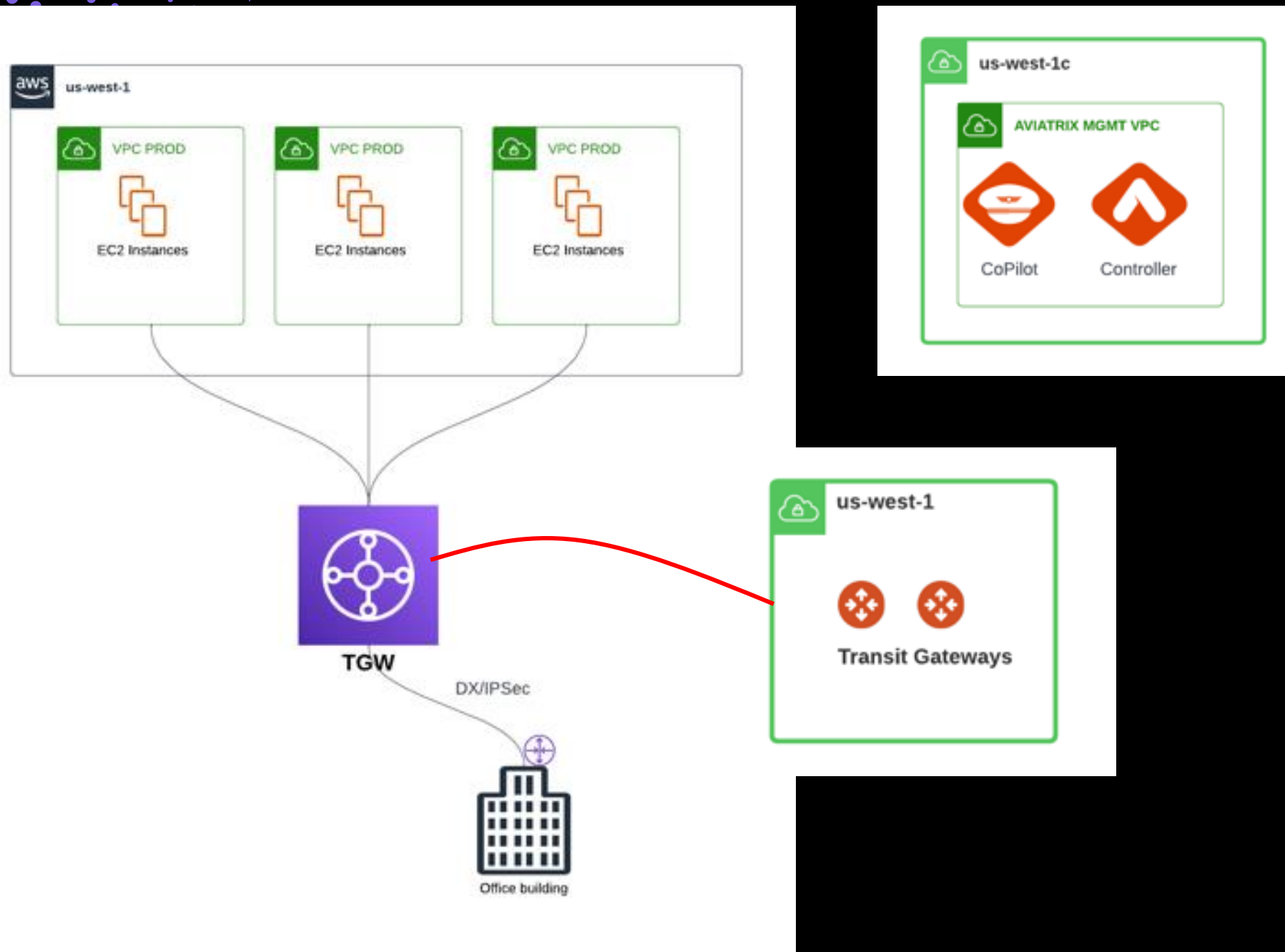
Initial environment in a brownfield scenario:

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Deploy the Aviatrix Controller and CoPilot in a dedicated VPC, in a different AZ where there are no gateways deployed (best practice)

Deploy a Transit VPC and deploy a pair of Transit Gateways

Migration Deployment: Example



Initial environment in a brownfield scenario:

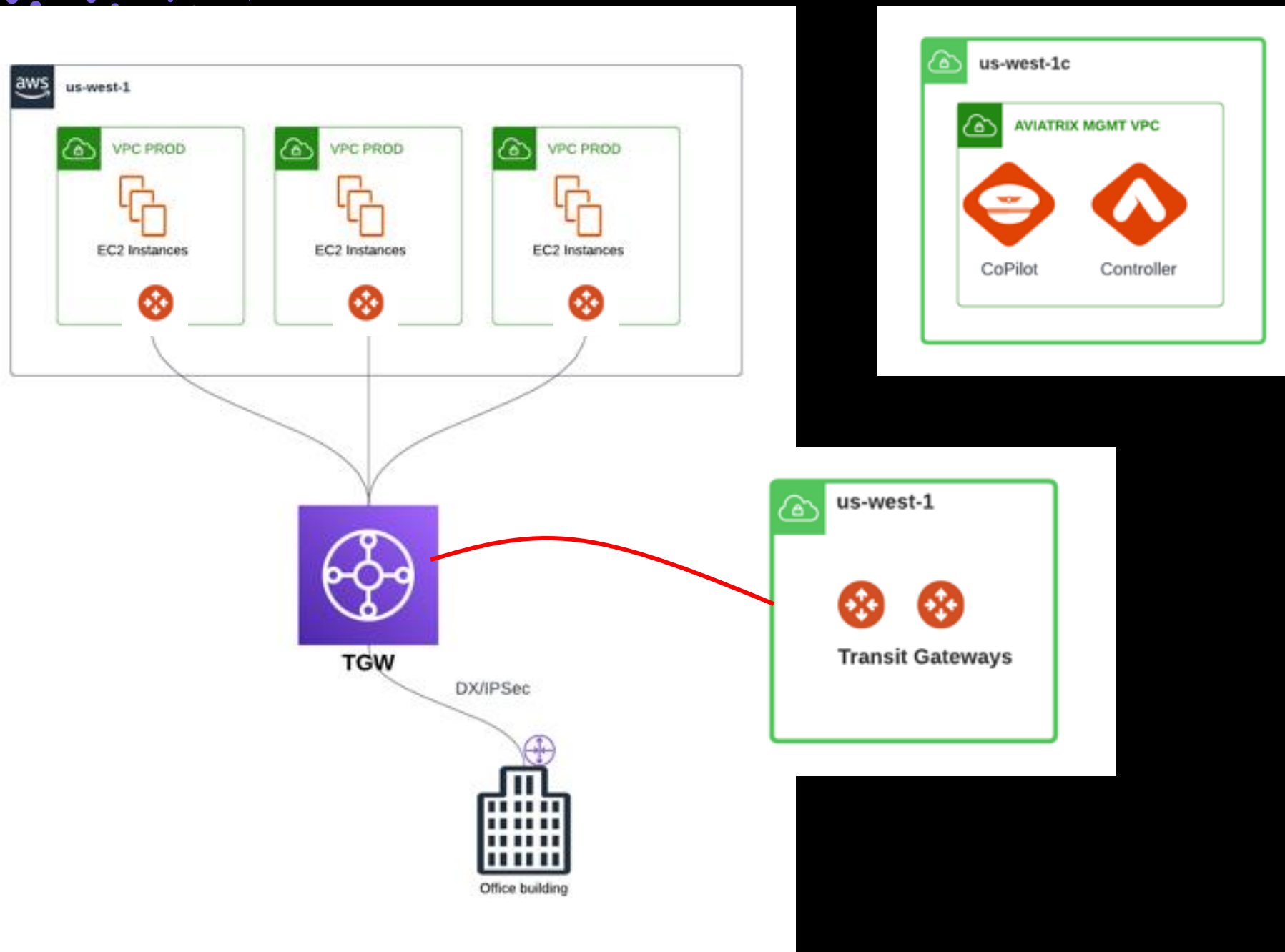
- Several Application VPCs that are connected to the TGW as attachments
- OnPrem connectivity (hybrid – can be DX/IPSec)

Deploy the Aviatrix Controller and CoPilot in a dedicated VPC, in a different AZ where there are no gateways deployed (best practice)

Deploy a Transit VPC and deploy a pair of Transit Gateways

Establish a back-to-back connection between the Aviatrix Transit Gateways and the AWS TGW

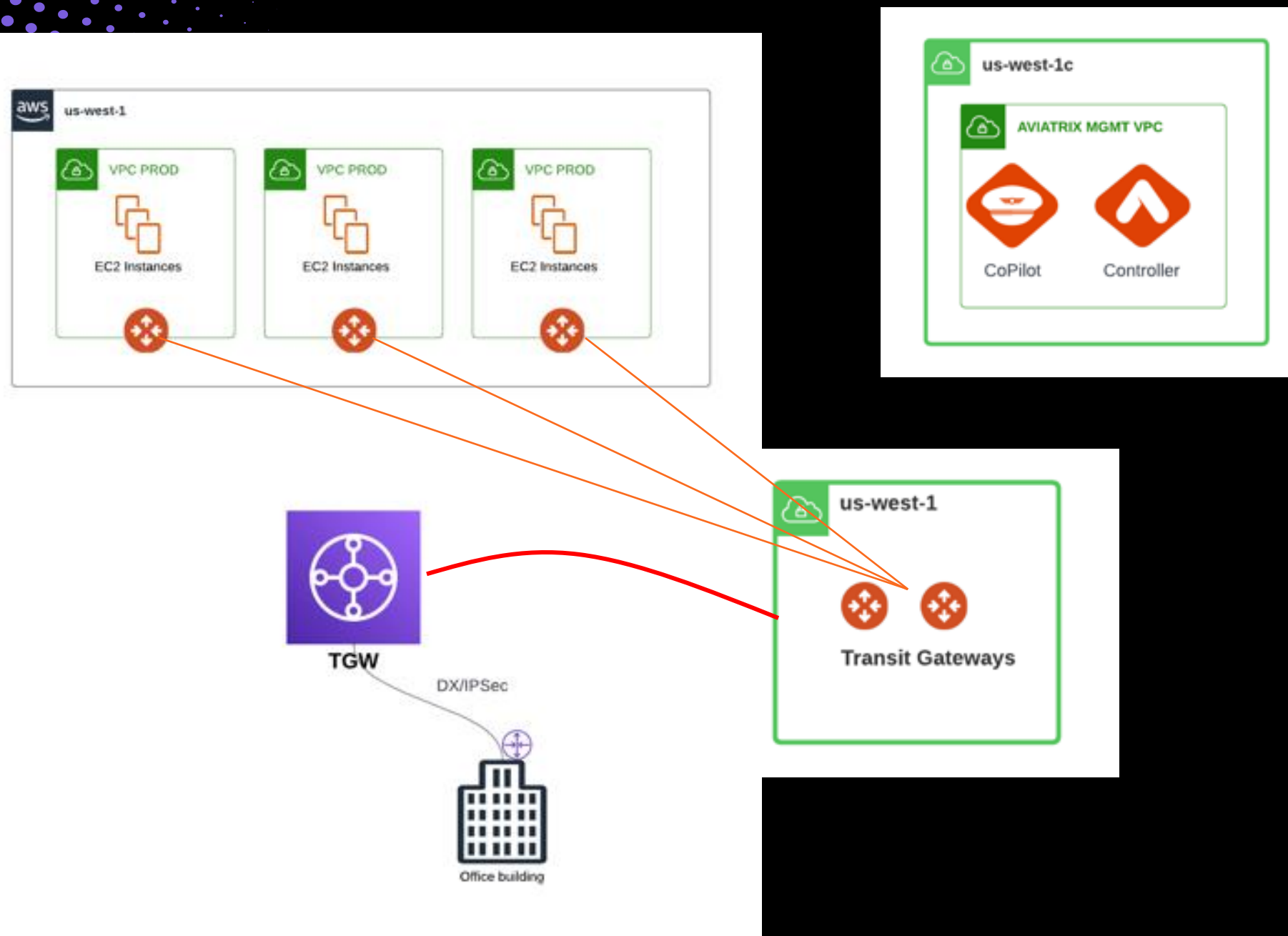
Migration Deployment: Example



Initial environment in a brownfield scenario:

- Several Application VPCs that are connected to the TGW as attachments
 - OnPrem connectivity (hybrid – can be DX/IPSec)
- Deploy the Aviatrix Controller and CoPilot in a dedicated VPC, in a different AZ where there are no gateways deployed (best practice)
 - Deploy a Transit VPC and deploy a pair of Transit Gateways
 - Establish a back-to-back connection between the Aviatrix Transit Gateways and the AWS TGW
 - Deploy the Spoke Gateways inside the Application VPCs (this action will not change any routing)

Migration Deployment: Example



Initial environment in a brownfield scenario:

- Several Application VPCs that are connected to the TGW as attachments
- OnPrem connectivity (hybrid – can be DX/IPSec)

Deploy the Aviatrix Controller and CoPilot in a dedicated VPC, in a different AZ where there are no gateways deployed (best practice)

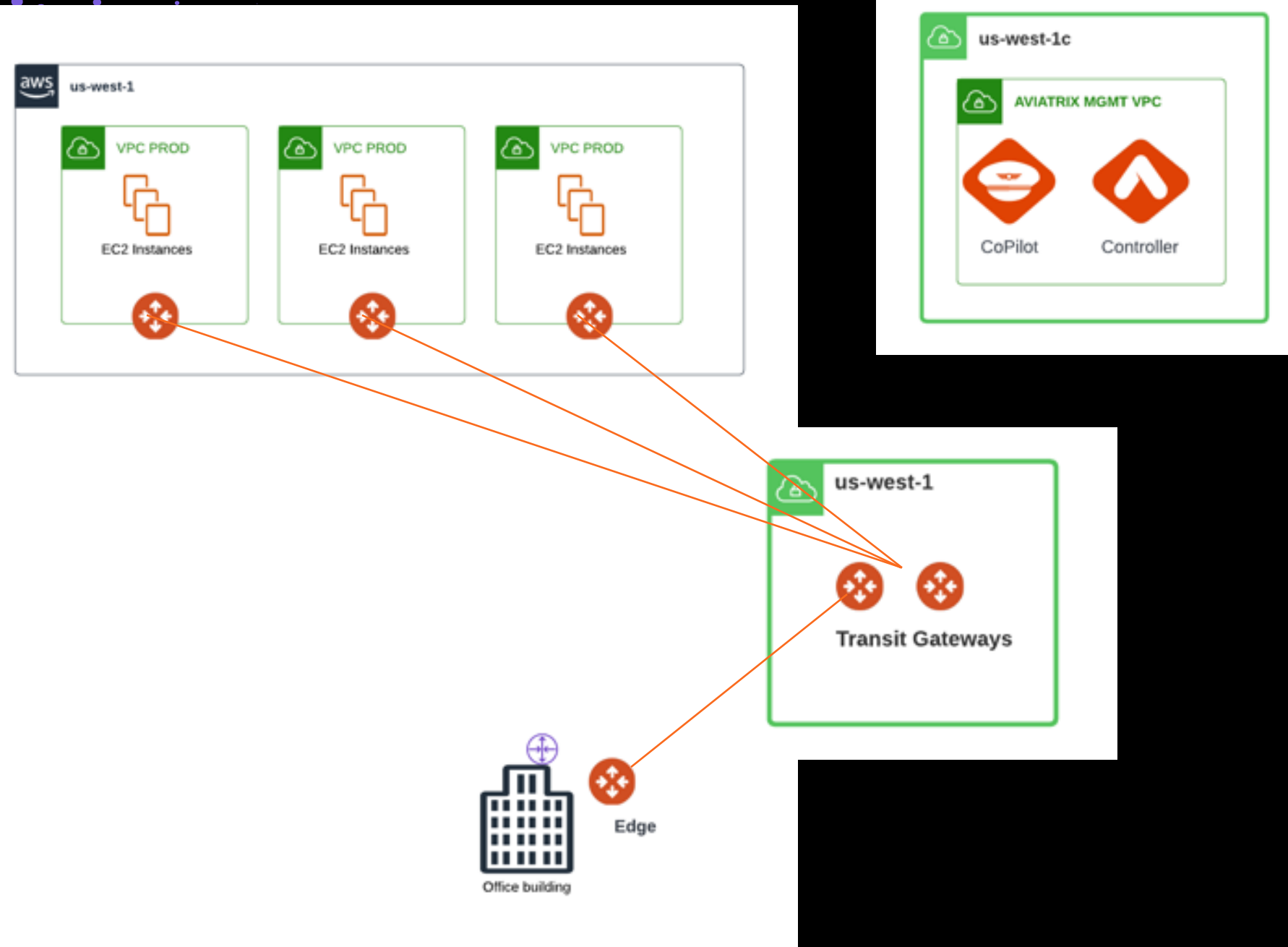
Deploy a Transit VPC and deploy a pair of Transit Gateways

Establish a back-to-back connection between the Transit Gateways and the TGW

Deploy the Spoke Gateways inside the Application VPCs (this action will not change any routing)

Remove the connections between the VPCs and the TGW and deploy the attachments between the Spoke Gateways and the Transit Gateways

Migration Deployment: Example



Initial environment in a brownfield scenario:

- Several Application VPCs that are connected to the TGW as attachments
- OnPrem connectivity (hybrid – can be DX/IPSec)

Deploy the Aviatrix Controller and CoPilot in a dedicated VPC, in a different AZ where there are no gateways deployed (best practice)

Deploy a Transit VPC and deploy a pair of Transit Gateways

Establish a back-to-back connection between the Transit Gateways and the TGW

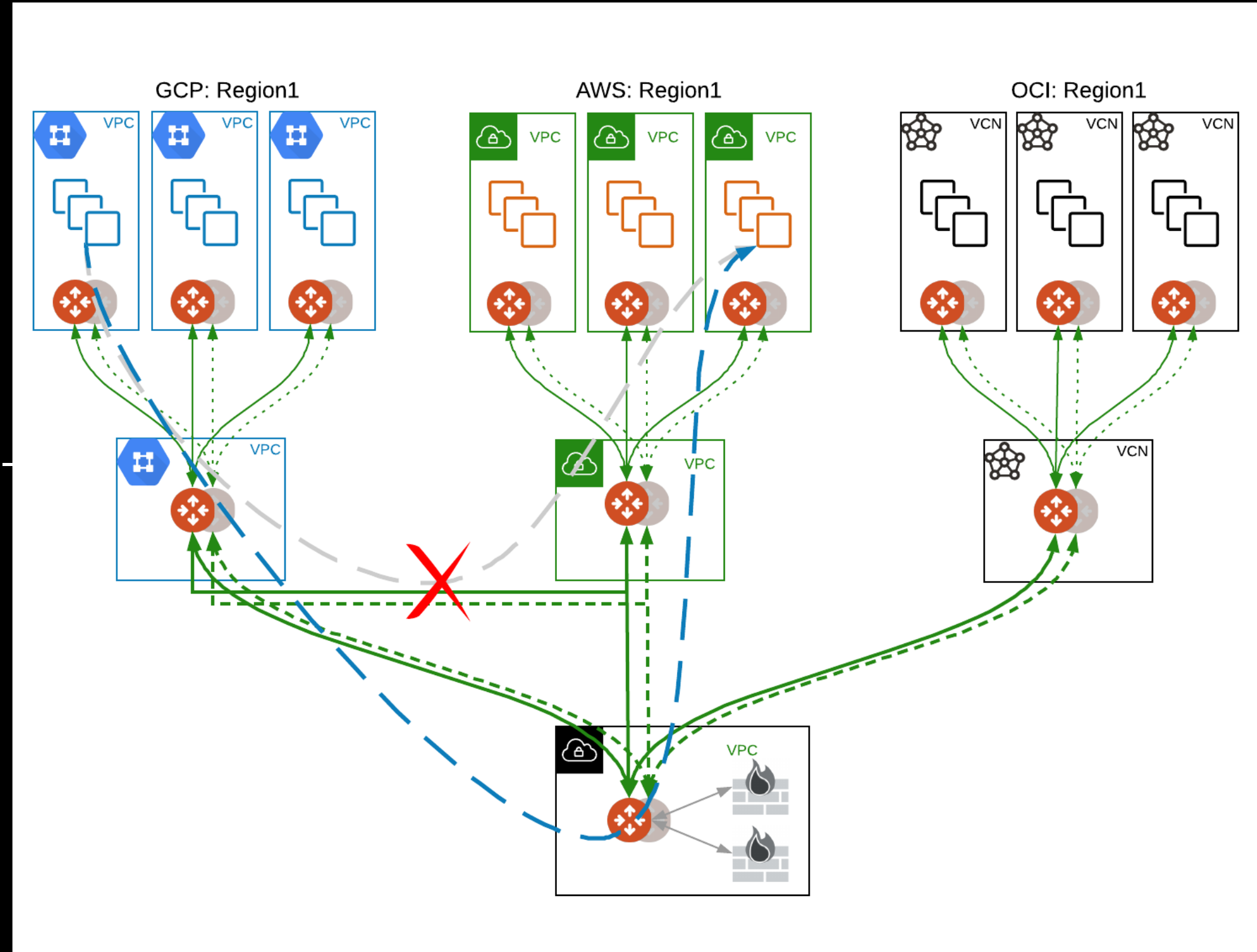
Deploy the Spoke Gateways inside the Application VPCs (this action will not change any routing)

Remove the connections between the VPCs and the TGW and deploy the attachments between the Spoke Gateways and the Transit Gateways

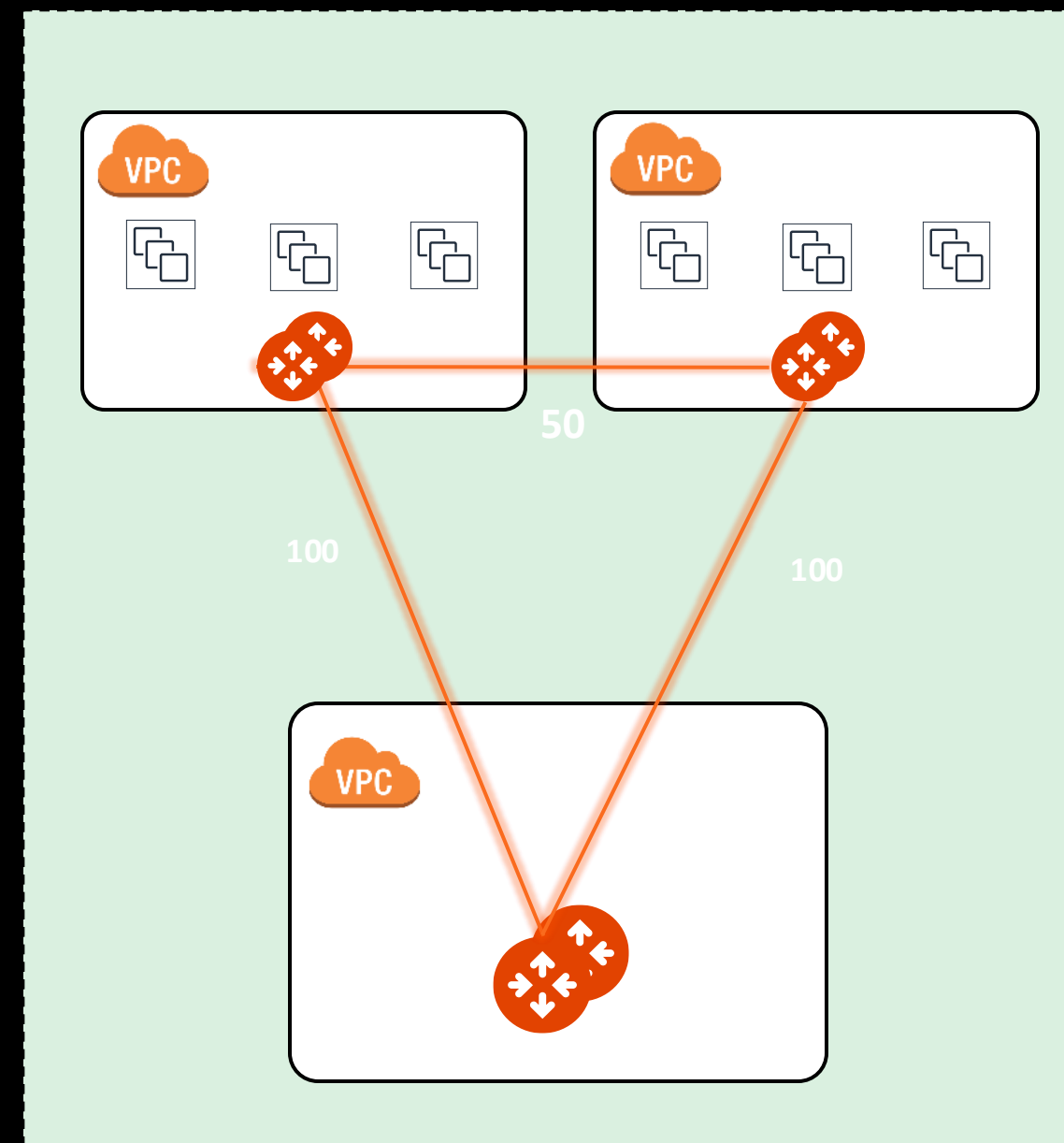
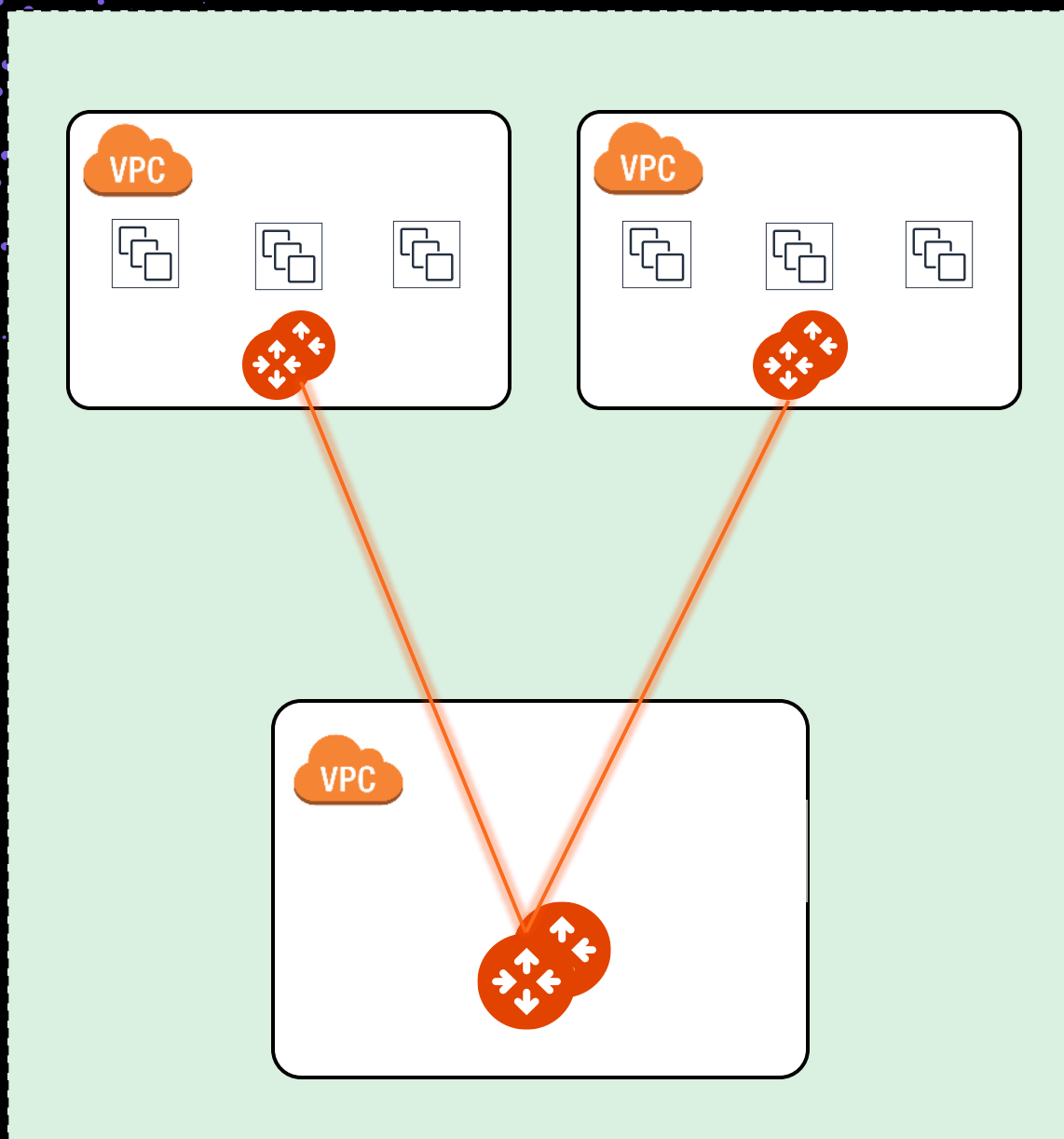
Deploy an Aviatrix Edge and then connect the Edge to the Transit Gateways. If you are not looking for HPE, you can also connect the WAN router as an IPSec connectivity to the Transit Gateways. Last but not least, remove the TGW.

Multi-Tier Transit (MTT)

- *Is the full mesh compulsory on the transit layer? NO*
- Improves operational simplicity by aggregating multiple Aviatrix Transits (no need for full mesh between transits)
- Additional failover option (pictured in the diagram)
- Allows for centralized firewall design for multiple Aviatrix-Transits in a single region, which allows intra-cloud traffic without any inspection
- To configure Multi-Tier Transit, go to Multi-cloud Transit -> Advanced Config. Select the Transit Gateway and enable the Multi-Tier Transit feature



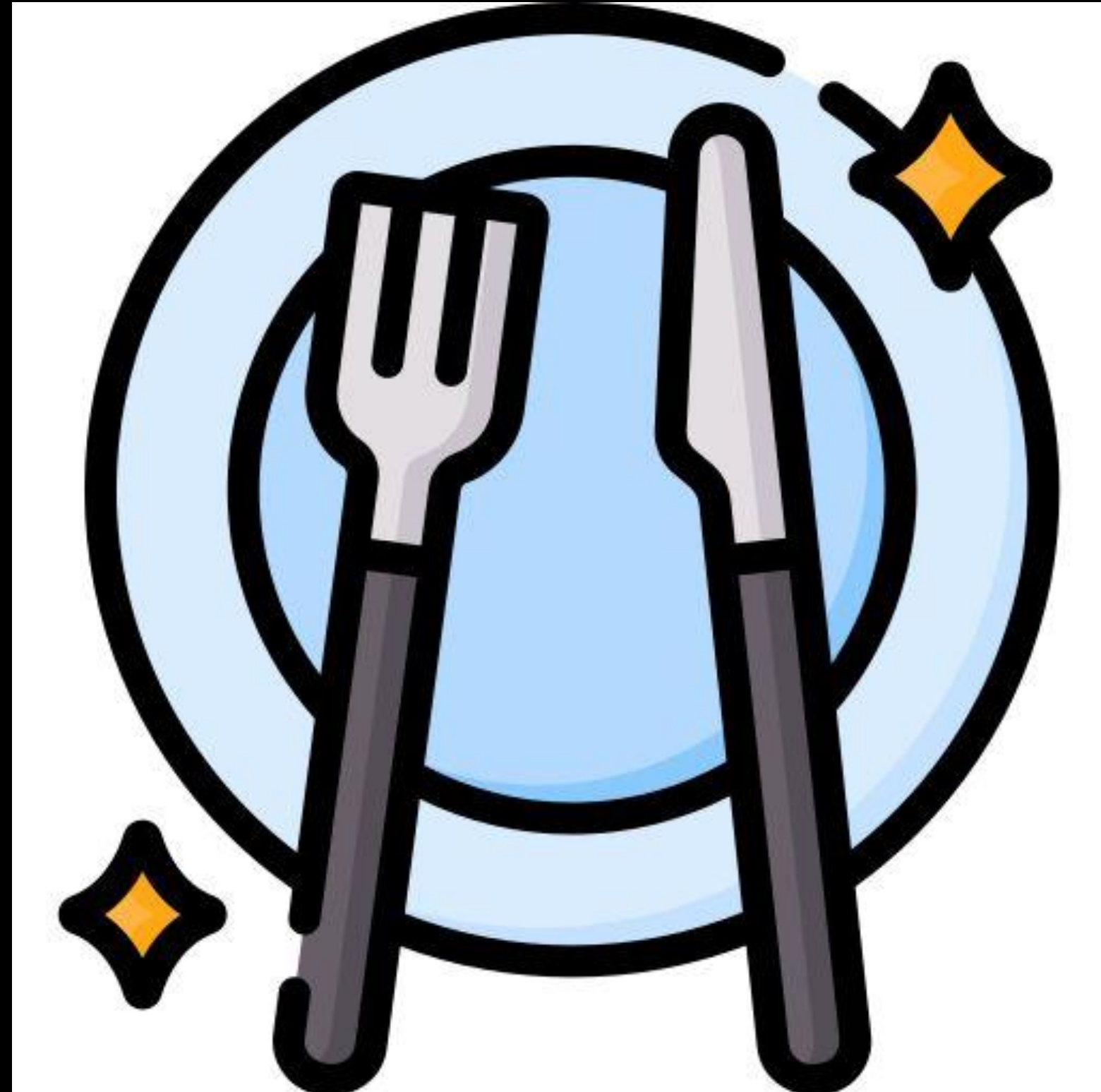
Spoke-to-Spoke Attachment



- The *Hub and Spoke* model is the default design, however, is NOT compulsory.
- If you require **direct Spoke to Spoke communication**, you can establish an attachment between two Spoke GWs deployed in two different VPCs. The Aviatrix Controller will configure a metric equal to 50.

Aviatrix Cloud Lunch break

- Core feature: 1 hour break



Next: Network Segmentation

