



Riyadh

Anver Vanker

Paul Maddox

Ahmed Raafat

Asif Abbasi

# Agenda

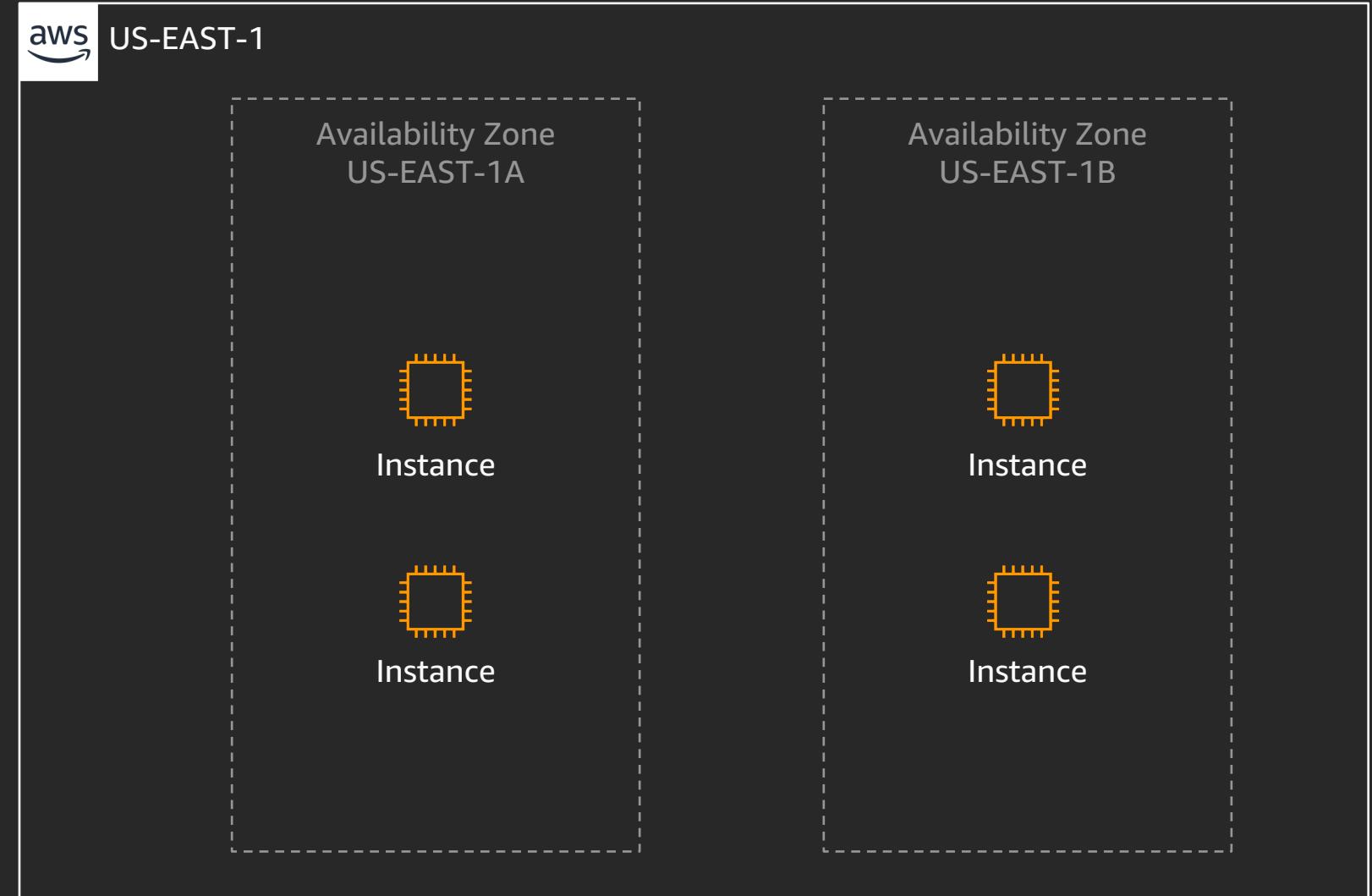
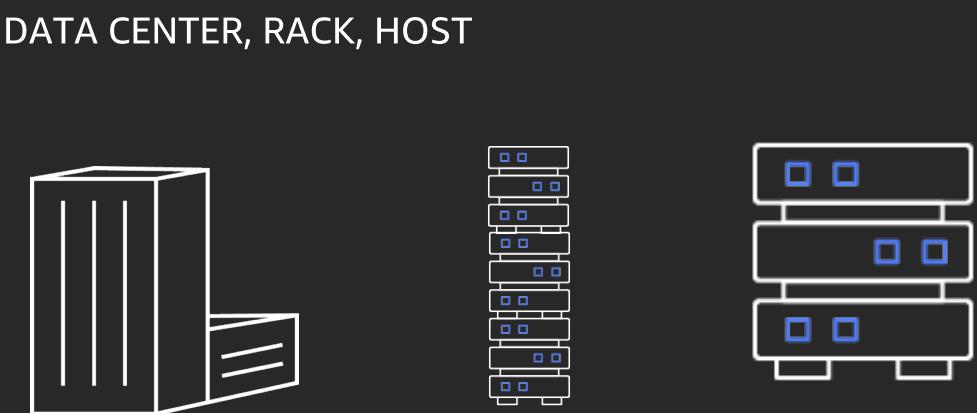
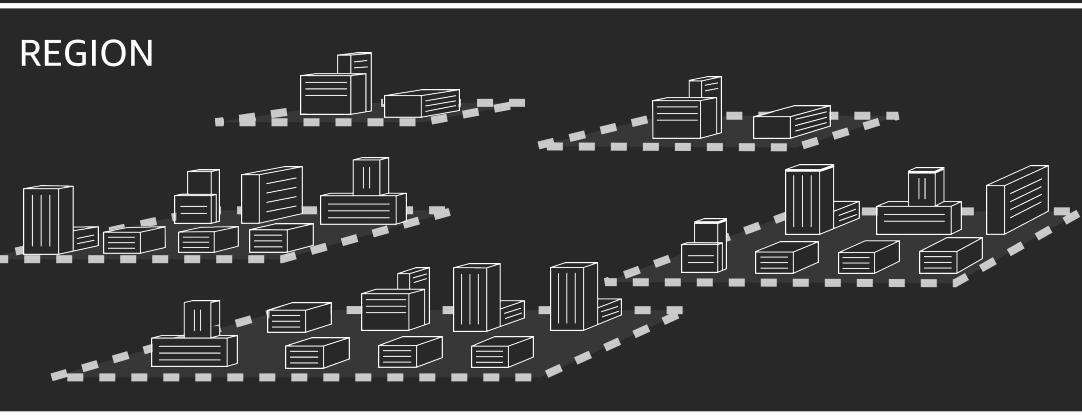
## Monday, 9 March

- Networking and Security – Anver Vanker (SA Manager)
  - Storage/Compute/Container/Serverless updates – Paul Maddox (Principal Architect)
- 

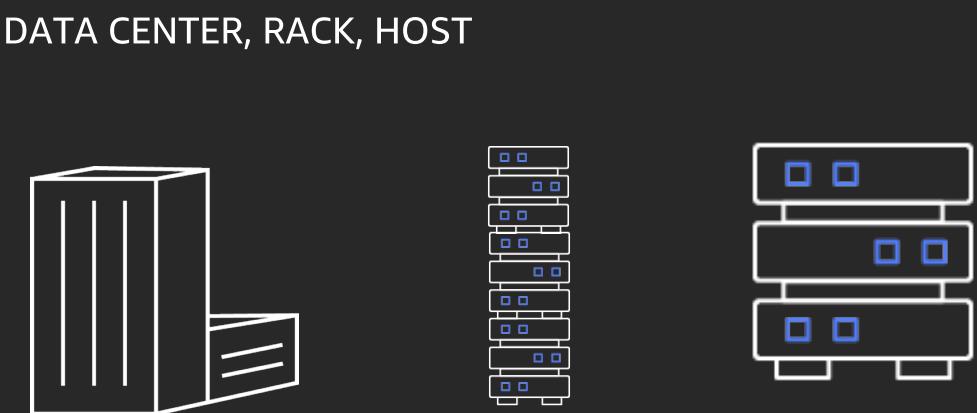
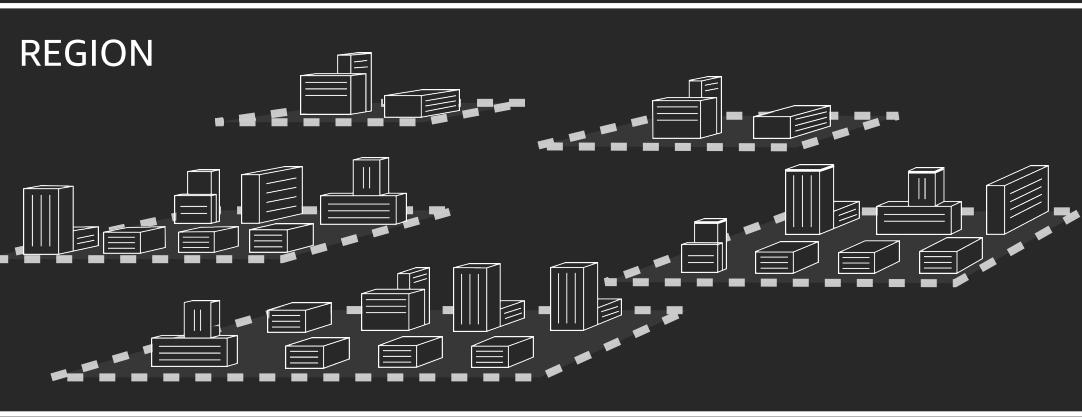
## Tuesday, 10 March

- Big Data and Analytics – Asif Abbasi (Specialist SA)
- AI & ML – Ahmed Raafat (Senior SA)

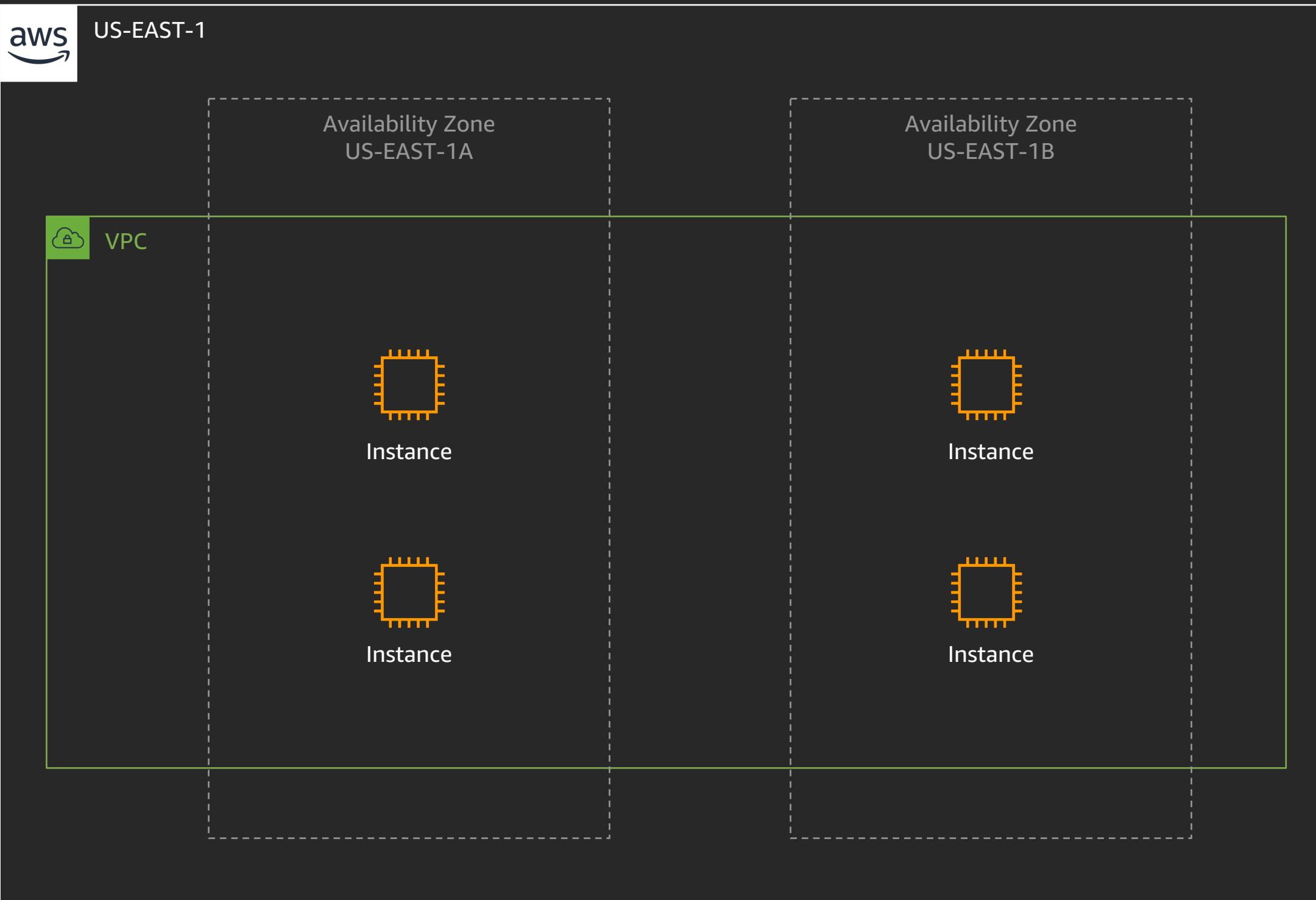
# Networking & Security



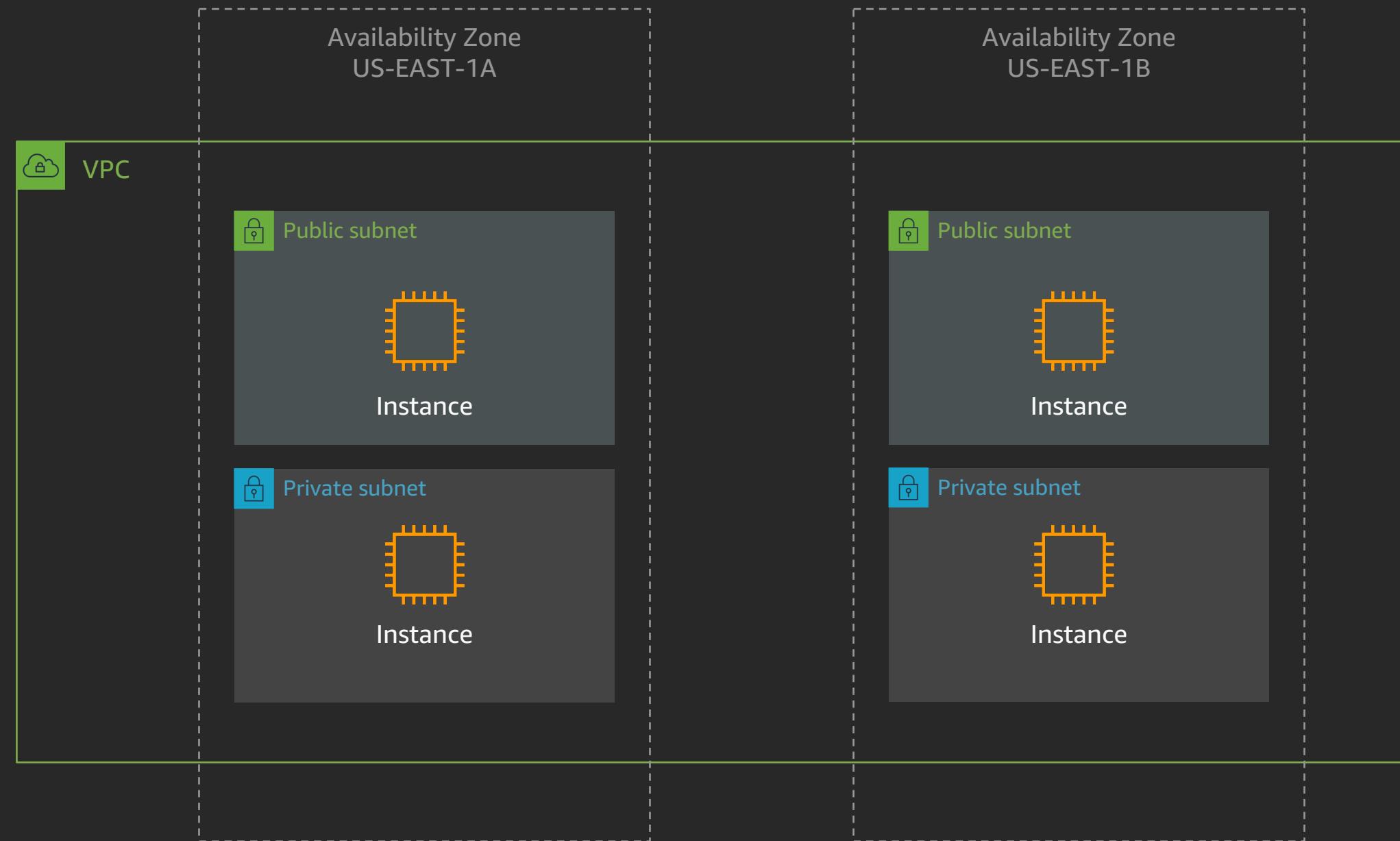
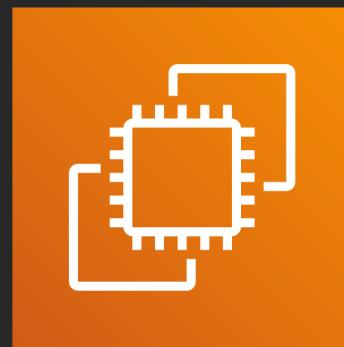
aws



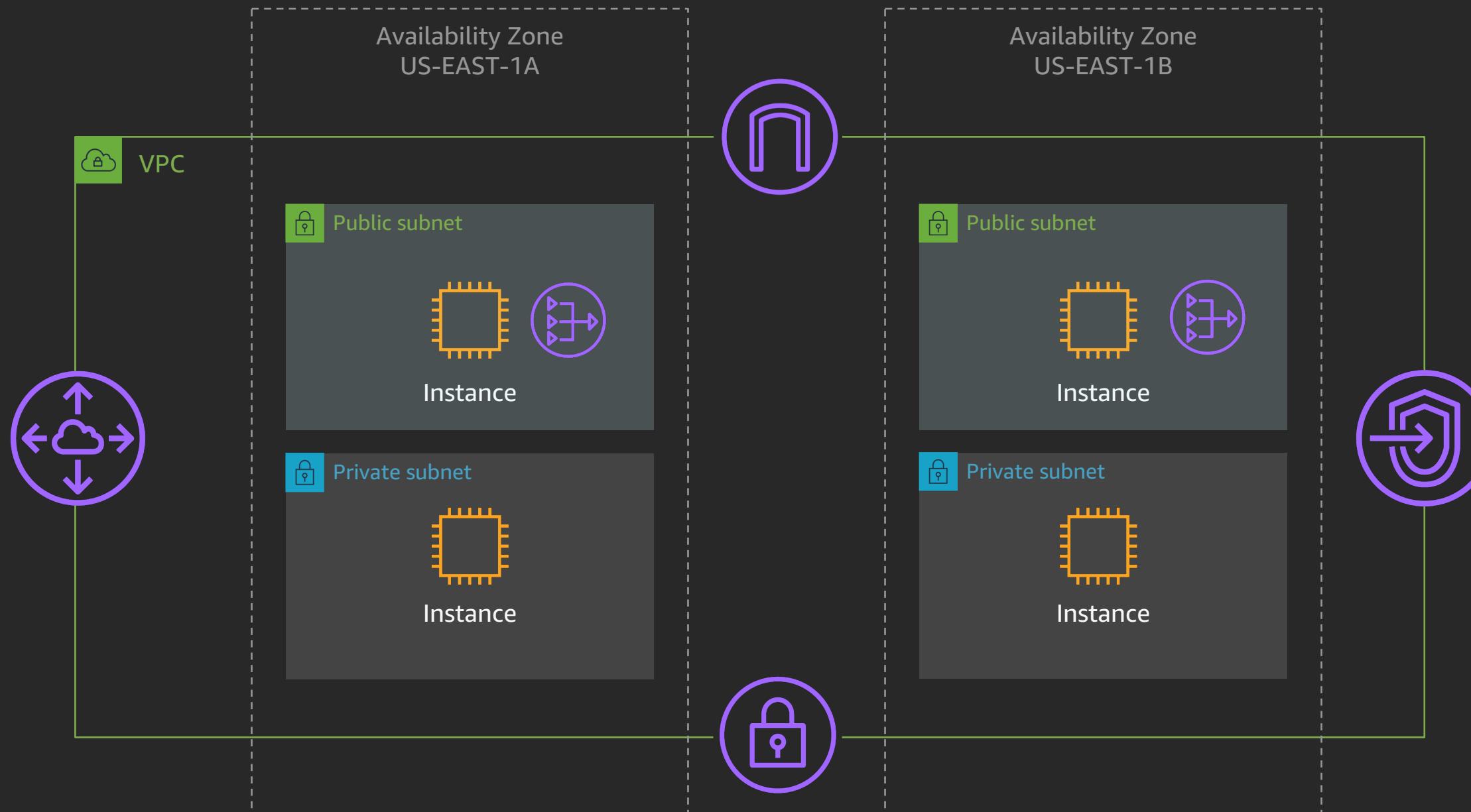
aws



# EC2 instances

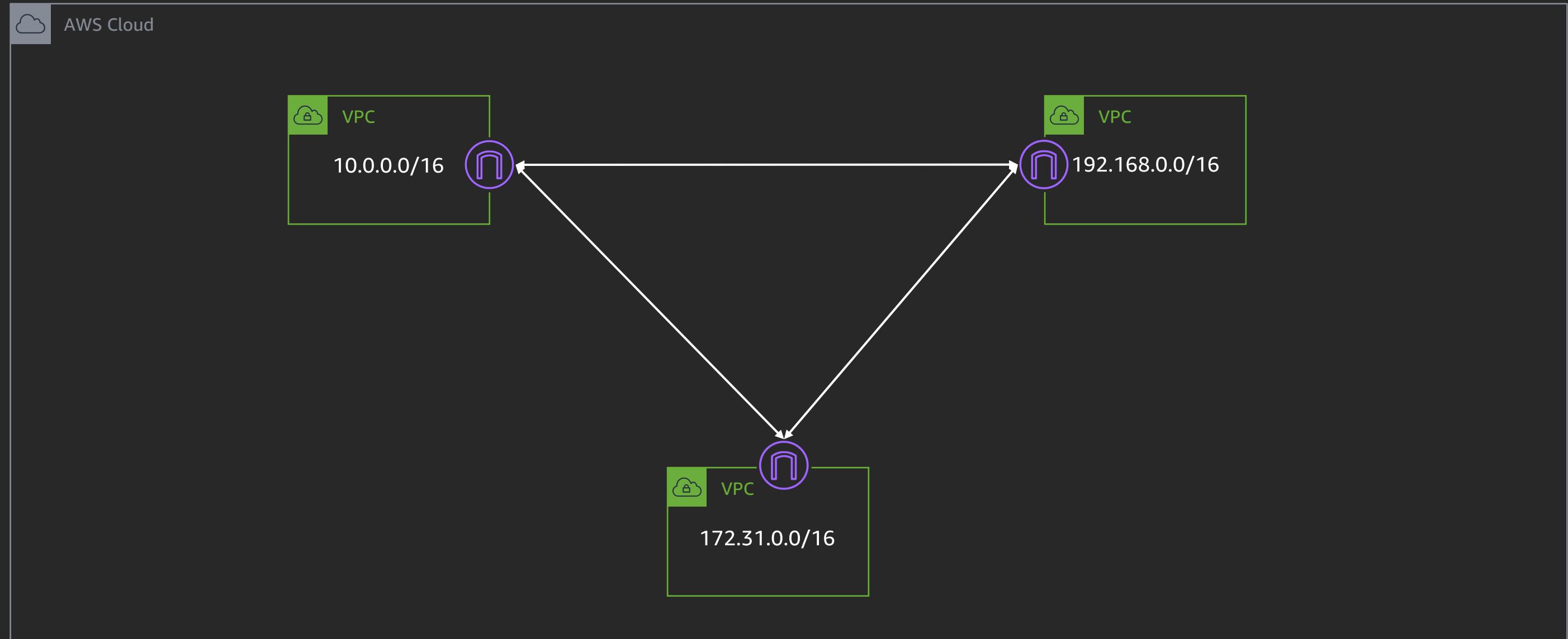


# Gateways, endpoints & peering



# Connecting to other VPCs

# Connecting between VPCs



# VPC peering – same region

AWS Cloud

### Create Peering Connection

Peering connection name tag: 10to172

Select a local VPC to peer with

VPC (Requester)\*: vpc-0af48868ceeb85b11

CIDR	Status	Status Reason
172.31.0.0/16	associated	

Select another VPC to peer with

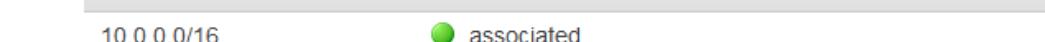
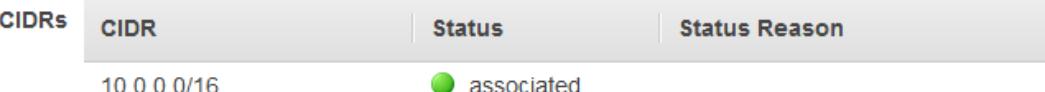
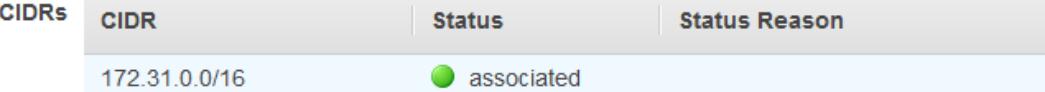
Account:  My account  Another account

Region:  This region (us-east-1)  Another Region

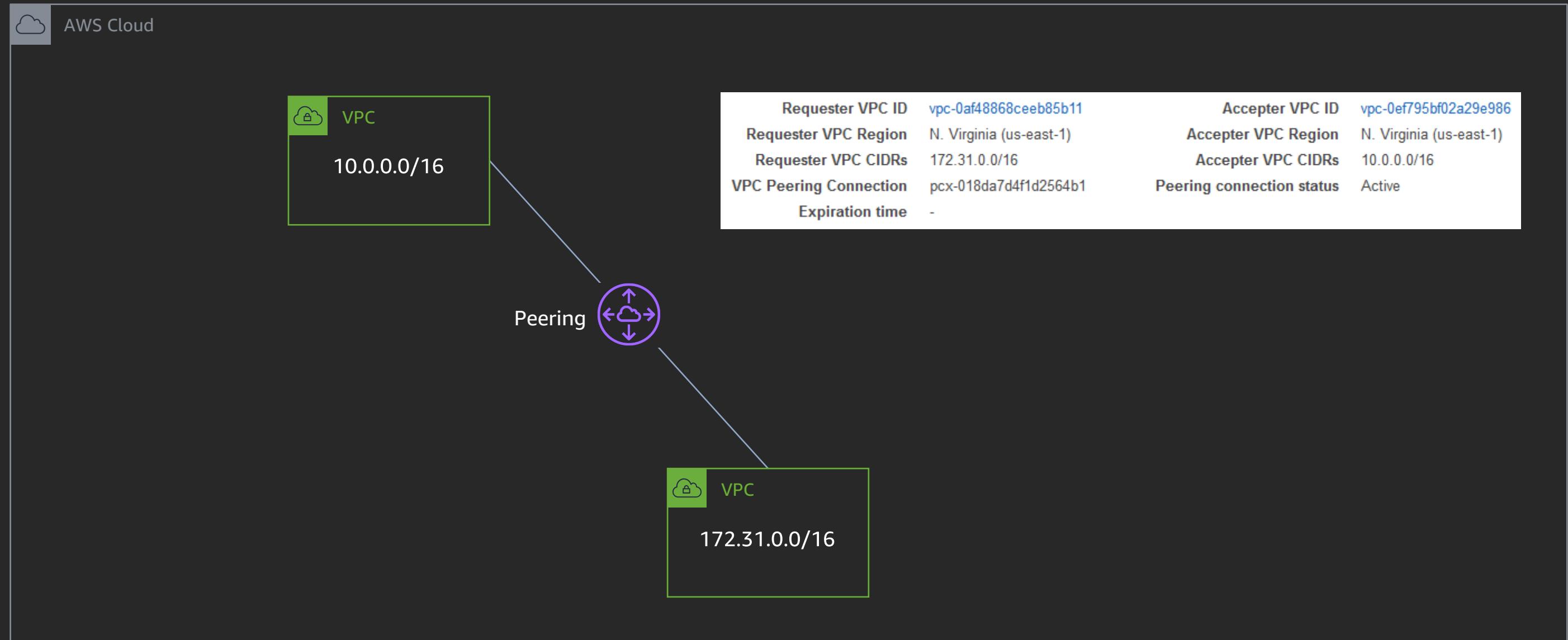
VPC (Acceptor)\*: vpc-0ef795bf02a29e986

CIDR	Status	Status Reason
10.0.0.0/16	associated	

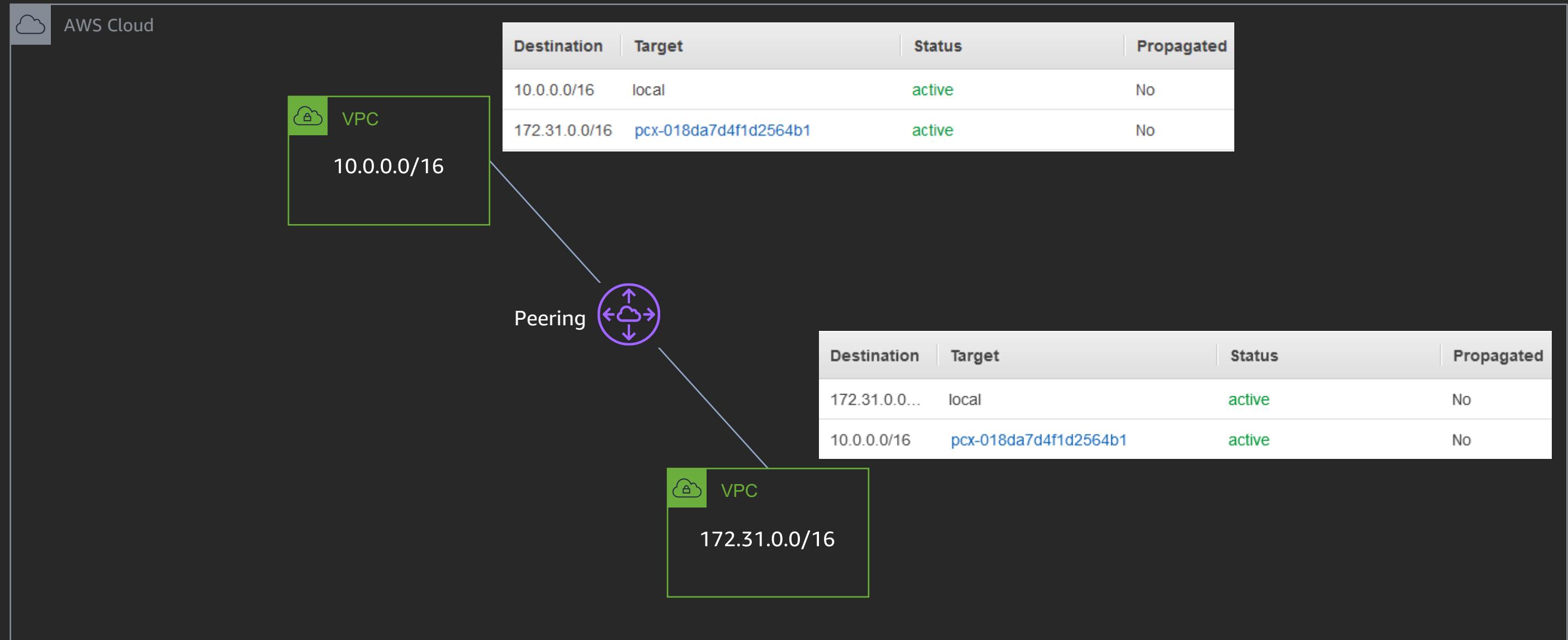
\* Required Cancel Create Peering Connection



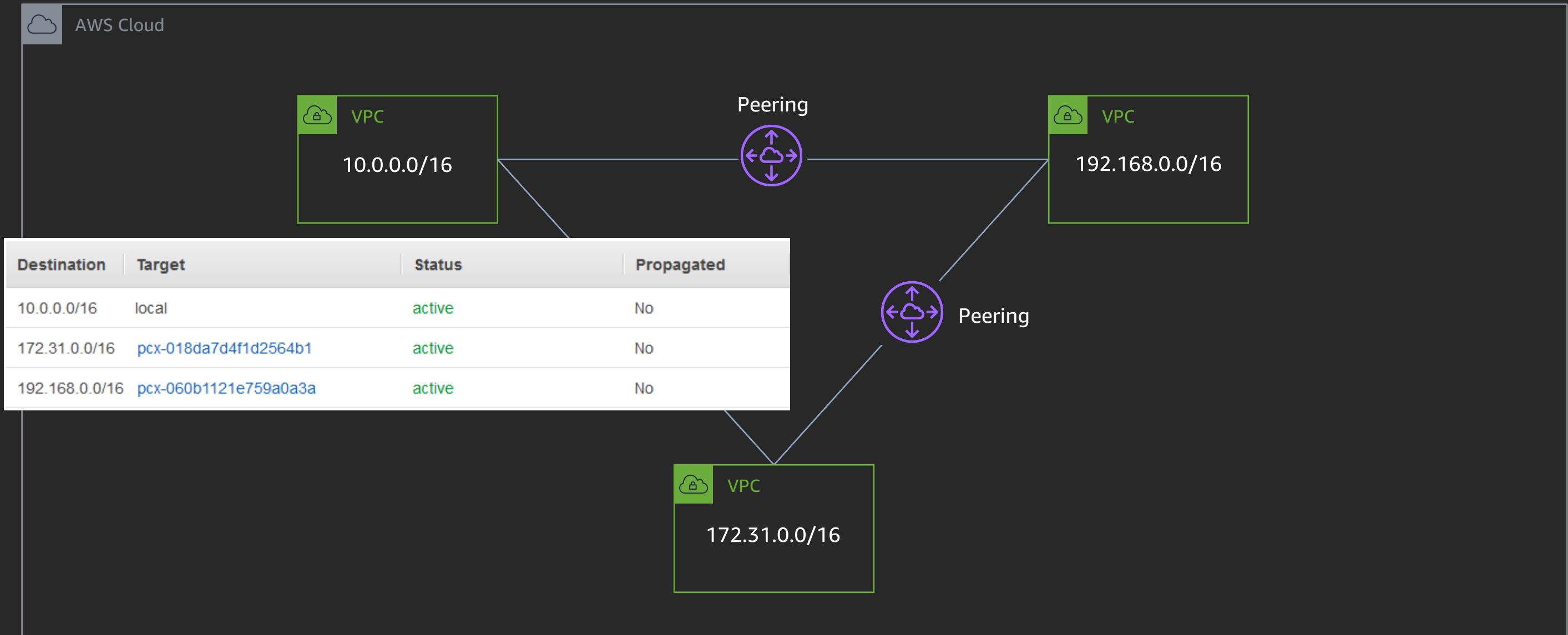
# VPC peering – same region



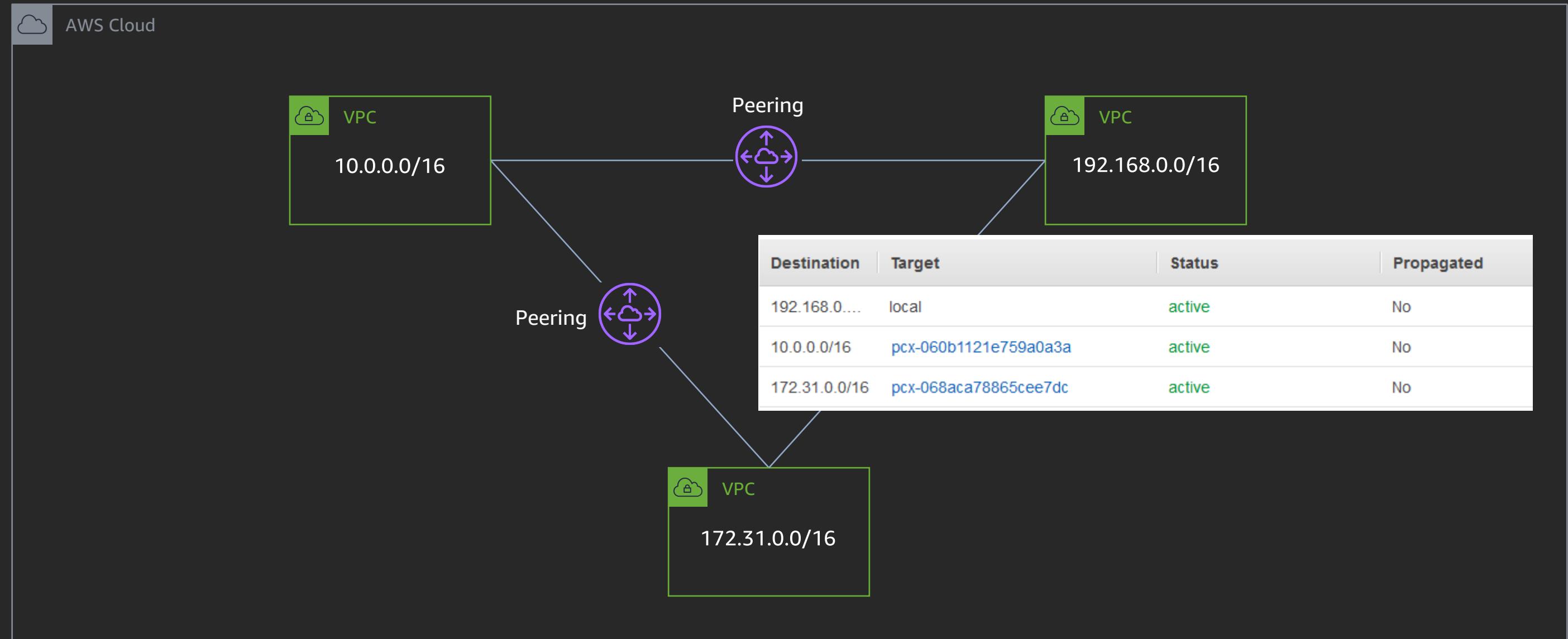
# VPC peering – same region



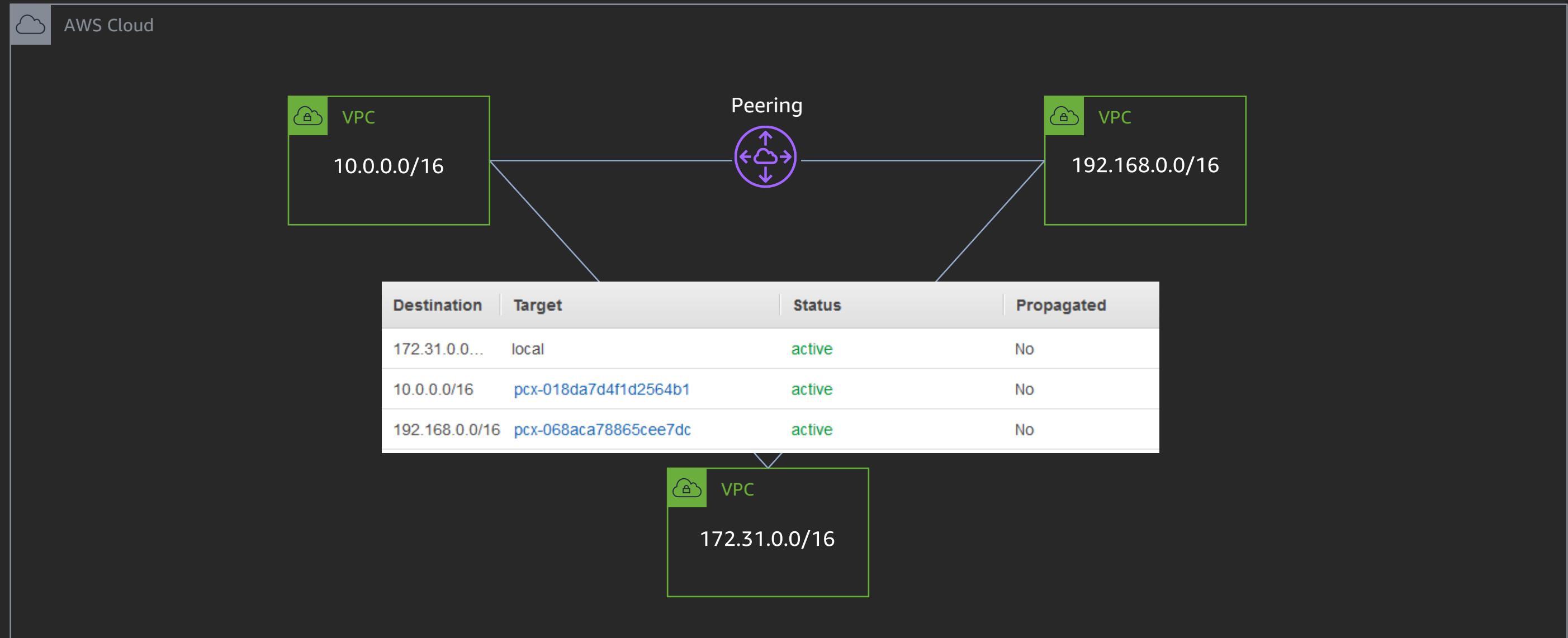
# VPC peering – same region



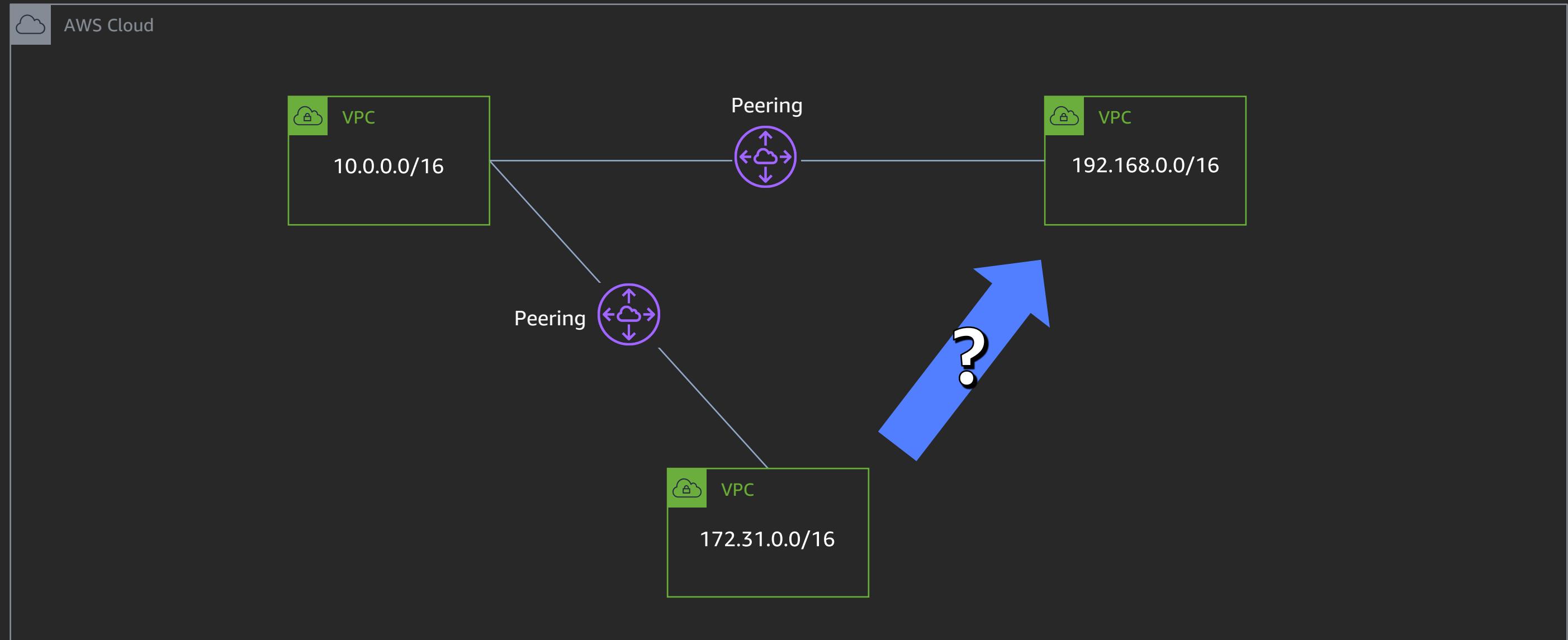
# VPC peering – same region



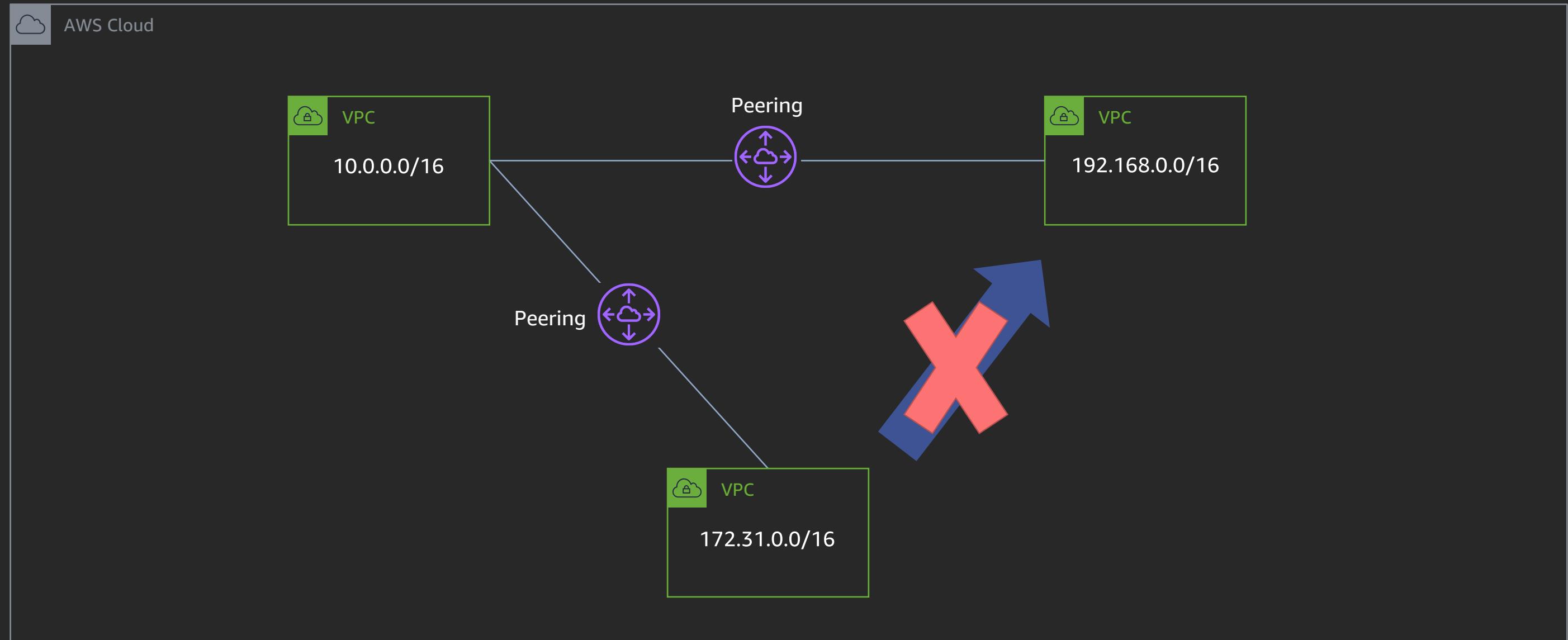
# VPC peering – same region



# VPC peering – same region

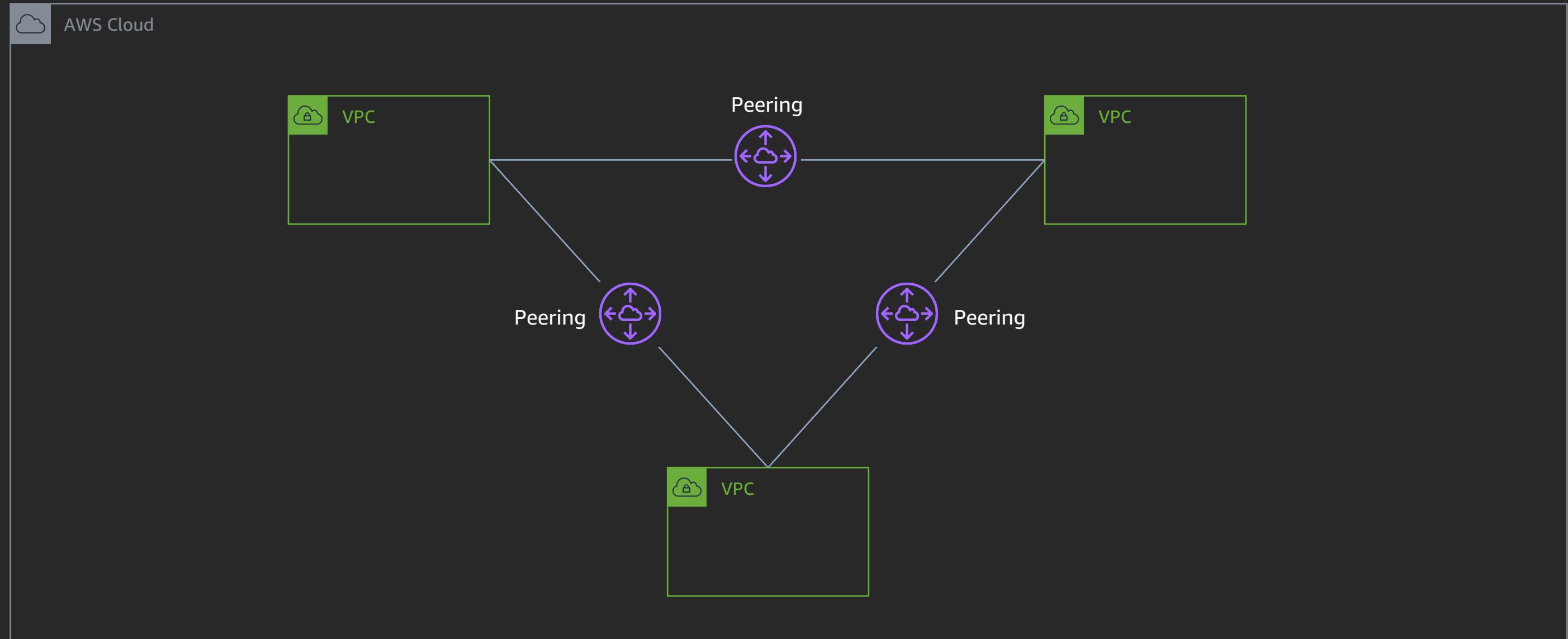


# VPC peering – same region

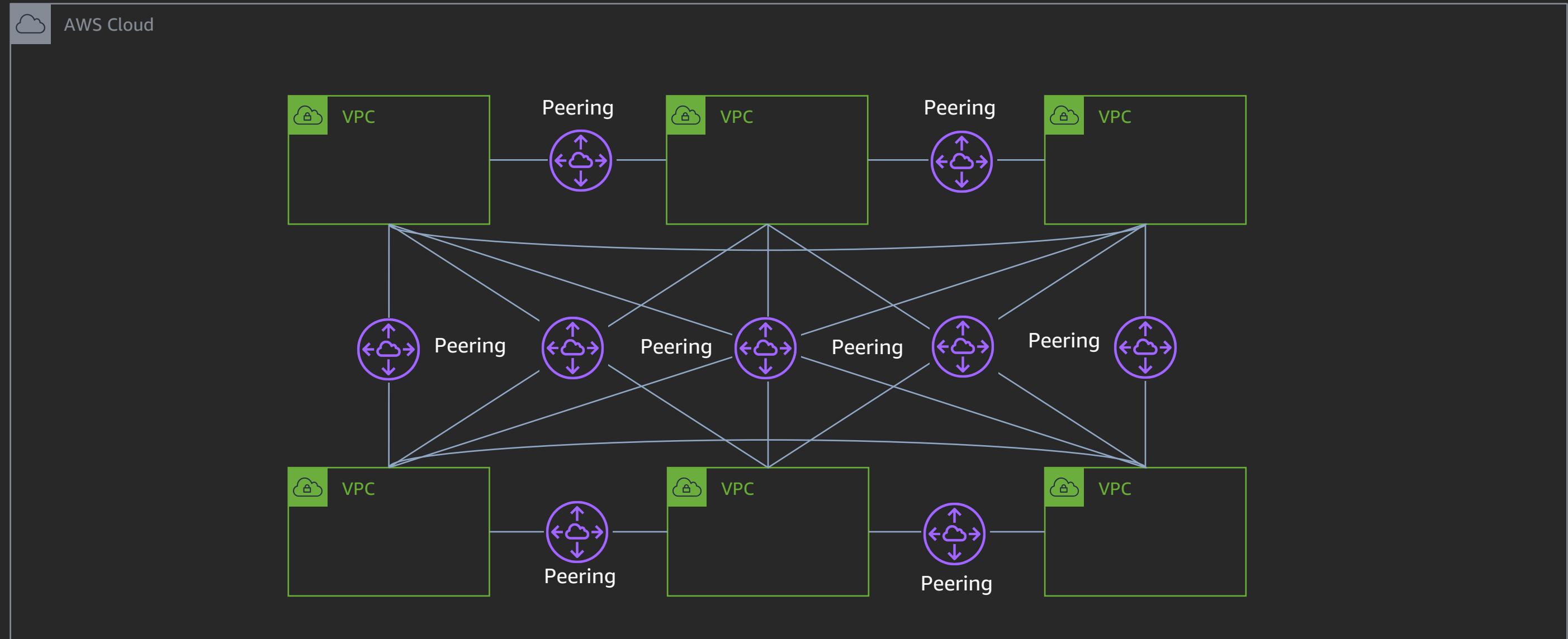


# AWS Transit Gateway

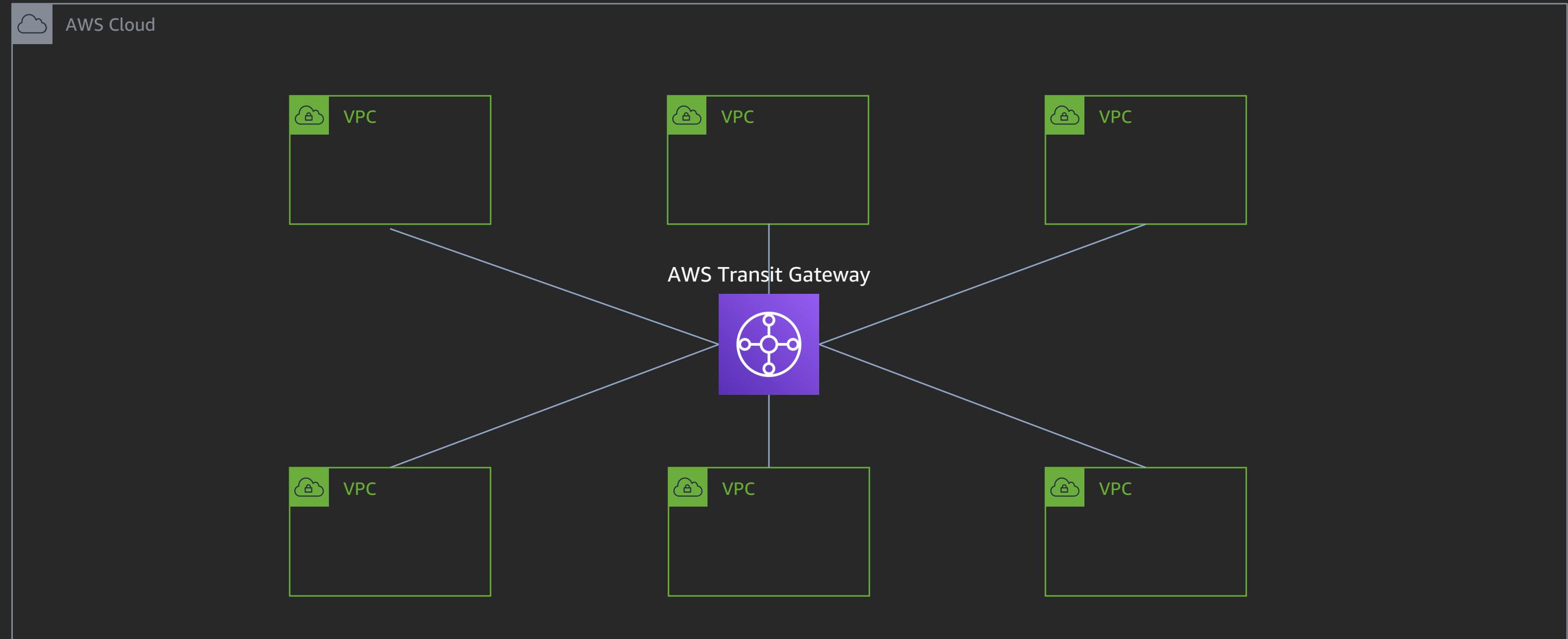
# Interconnecting VPCs at scale – VPC peering



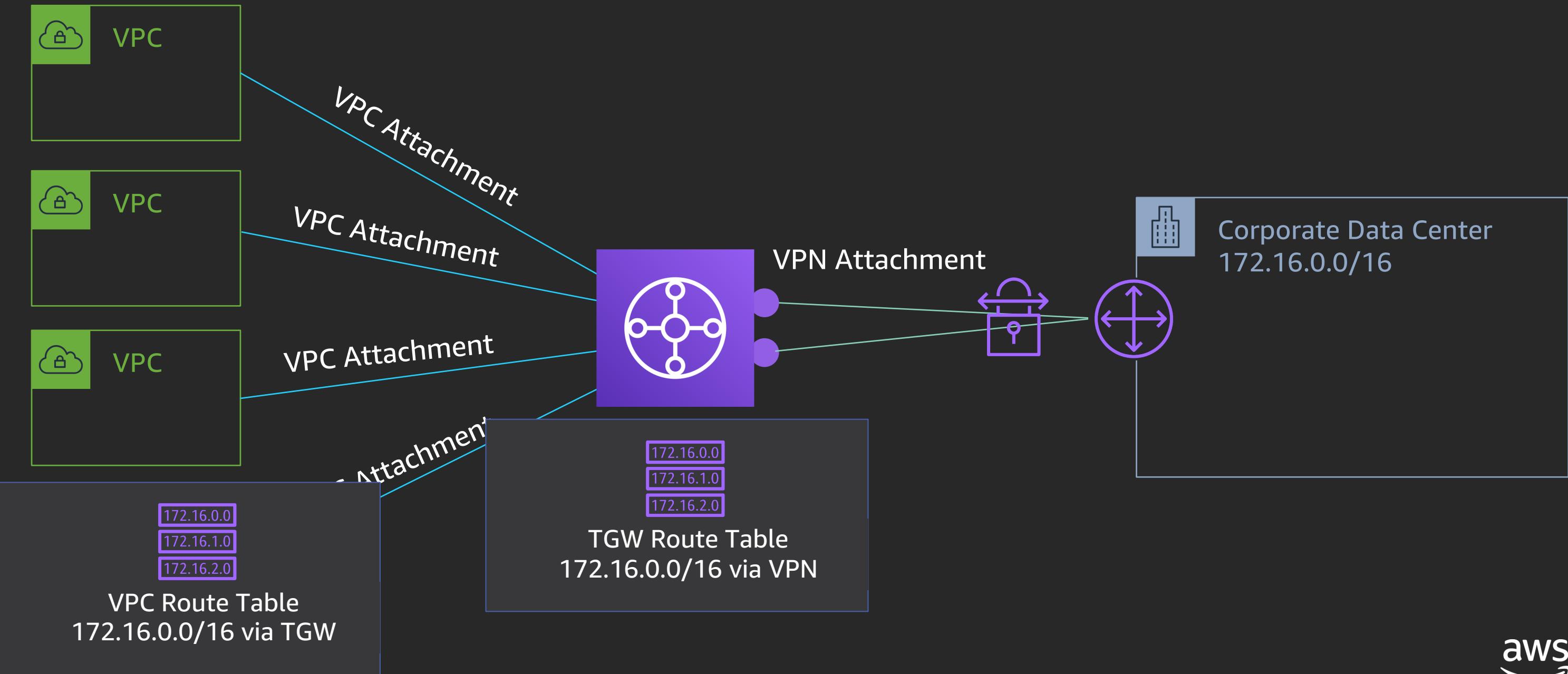
# Interconnecting VPCs at scale – VPC peering



# Multiple VPCs access models – AWS Transit Gateway

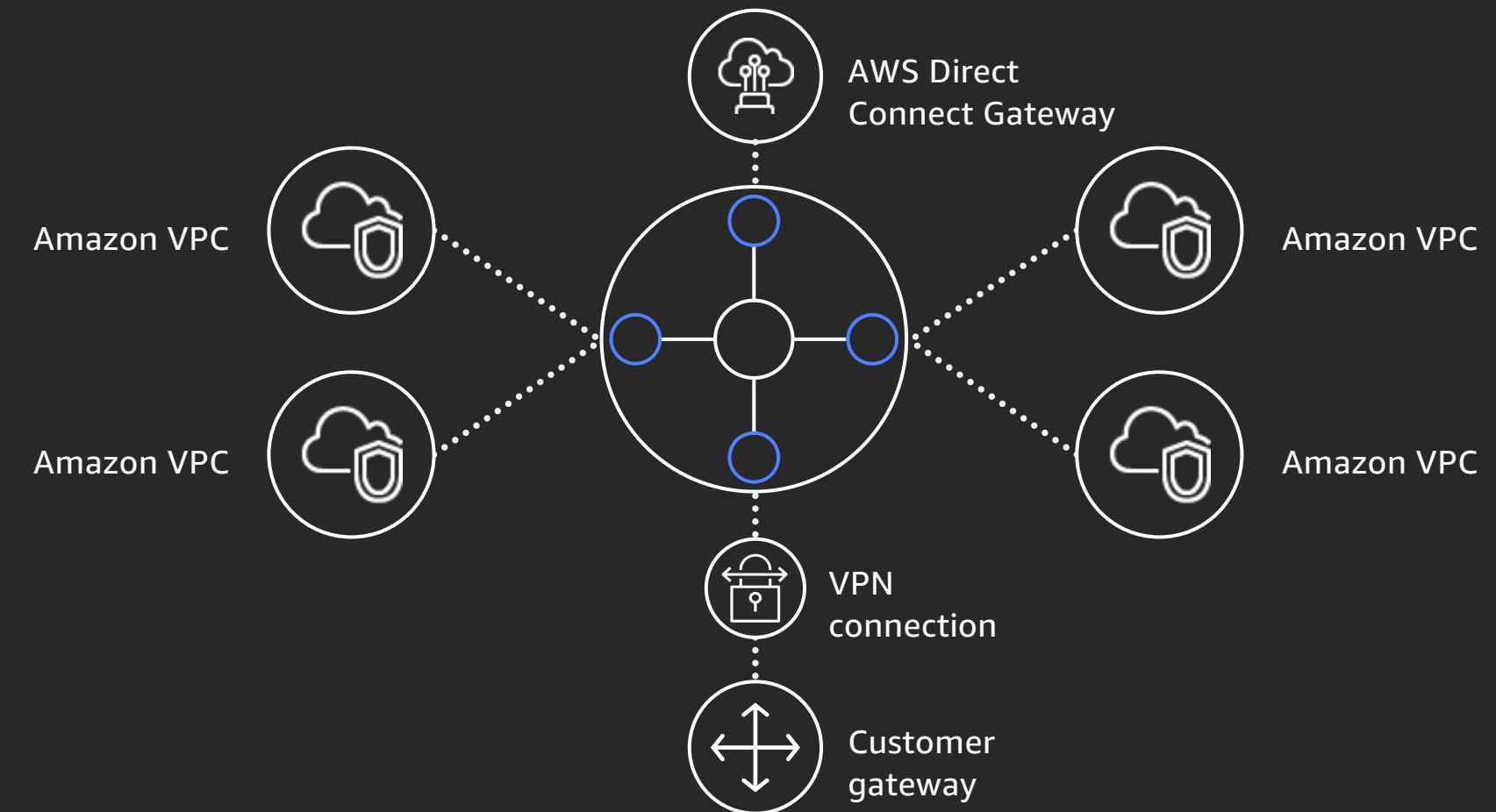


# AWS Transit Gateway with AWS site-to-site VPN



# AWS Transit Gateway

Scale connectivity across thousands of Amazon VPCs, AWS accounts, and on-premises networks



New Feature

General Availability – December 3

# AWS Transit Gateway Inter-Region Peering

Build global networks by connecting transit gateways across multiple AWS Regions



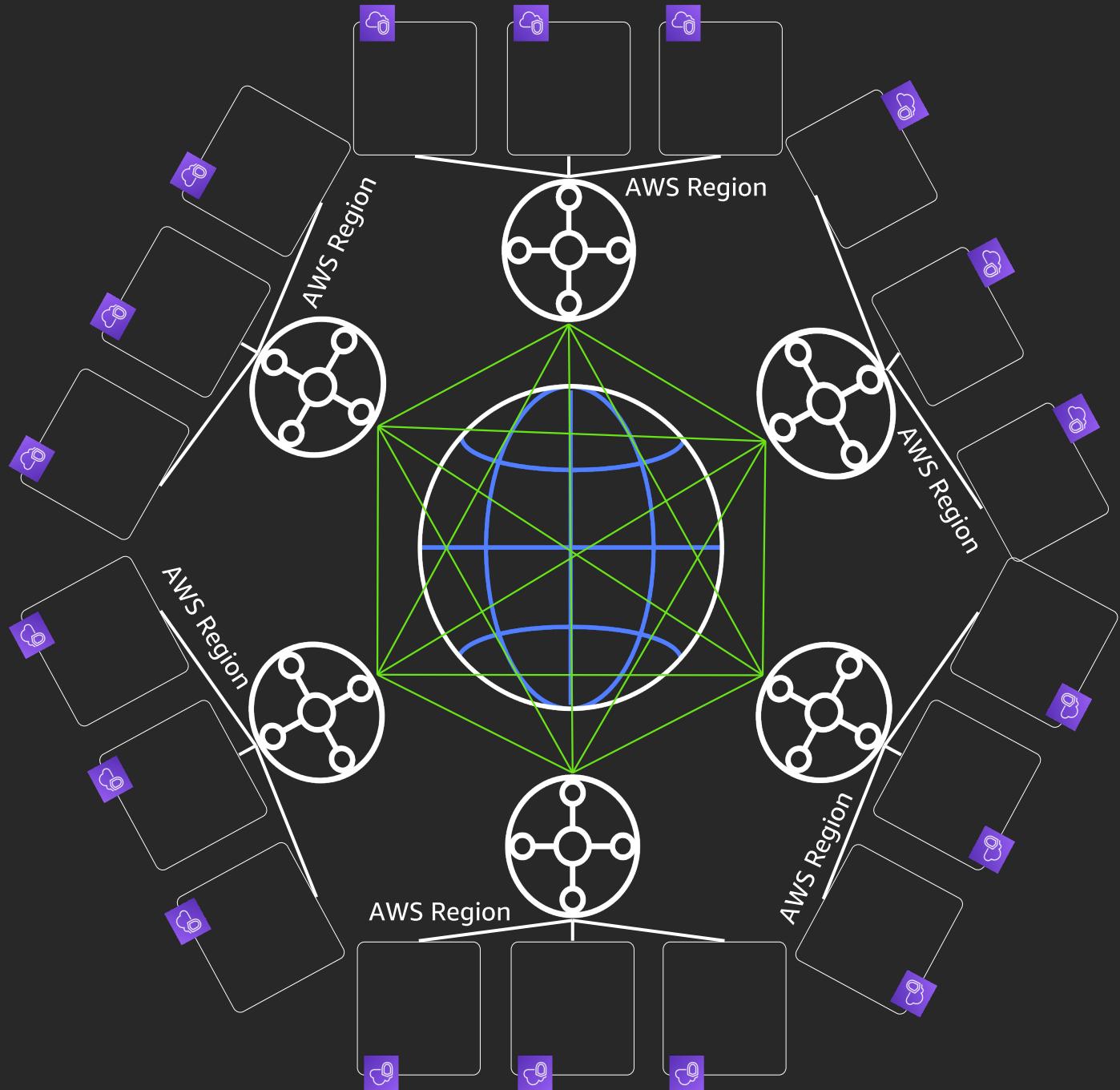
Share resources between regions or replicate data for geographic redundancy

Encrypt inter-region traffic with no single point of failure or bandwidth bottleneck

Scale your network in a hub and spoke model to thousands of VPCs across multiple AWS Regions

# AWS Transit Gateway Cross-Region Peering

New



Full mesh network across multiple regions with static peering

Private and performant connectivity across the AWS Global Network

All traffic across Transit Gateway Cross-Region peering is encrypted

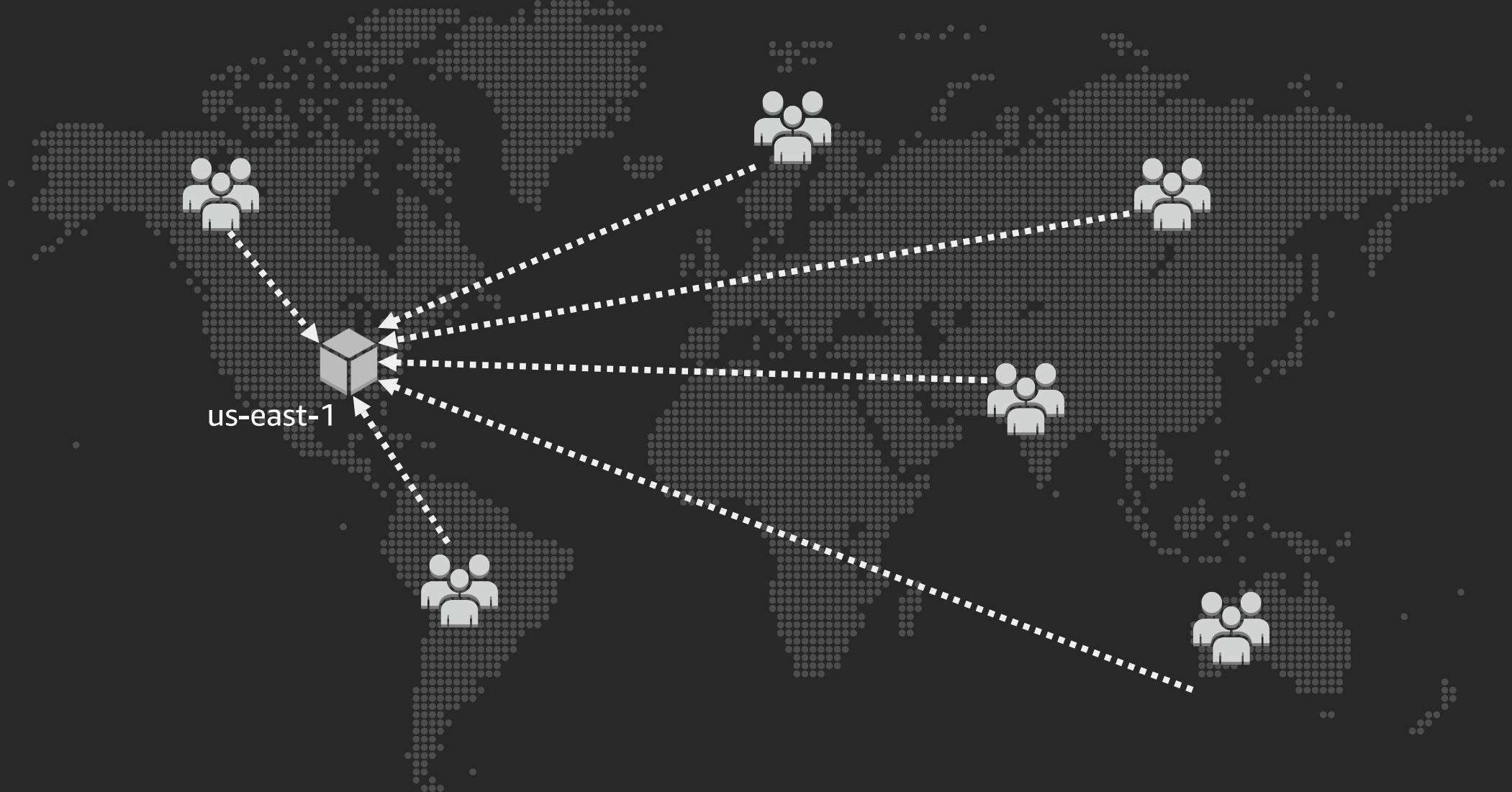
Horizontally scalable



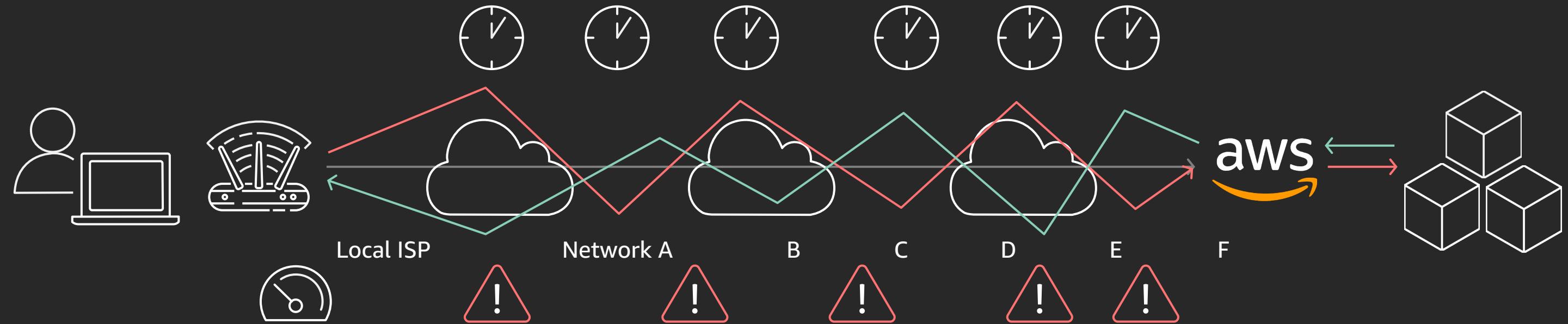
Because we open the internet, it's accessible from everywhere.



But all of our users other than us will have to experience the due to internet weather...



# Internet weather

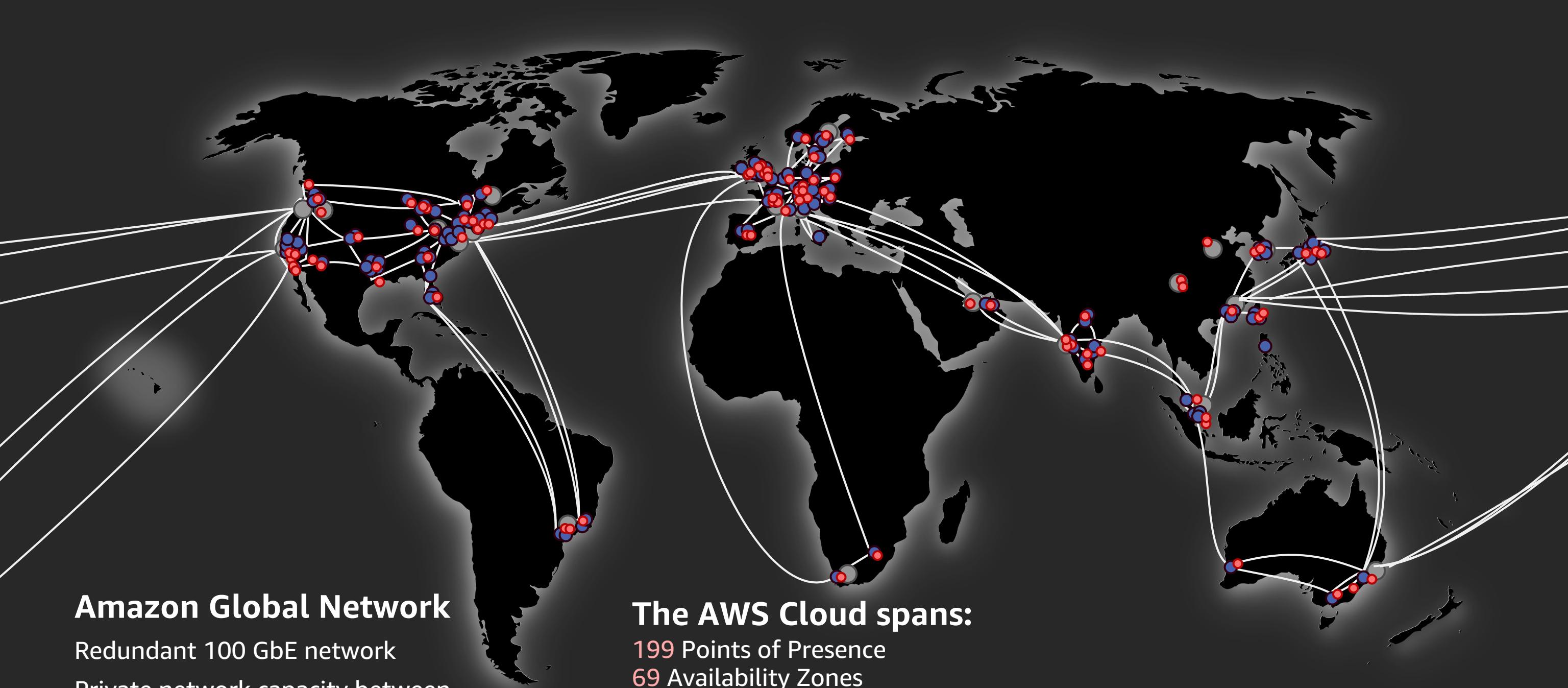


Accessing your application is not this straightforward  
It can take many networks to reach the application  
Paths to and from the application may differ  
Each hop impacts performance and can introduce risk

# This lets us reduce jitter and latency



Traffic enters the AWS global network at edge locations  
Leverages the Global AWS network  
Resulting in improved performance



## Amazon Global Network

Redundant 100 GbE network

Private network capacity between  
all AWS Regions, except China

## The AWS Cloud spans:

199 Points of Presence

69 Availability Zones

22 Geographic Regions around the world\*

\*With announced plans for 13 more Availability Zones and four more AWS Regions in [Cape Town](#), [Jakarta](#), [Milan](#), and [Spain](#).

New Feature

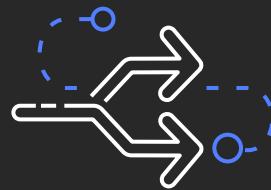
General Availability – December 3

# AWS Accelerated Site-to-Site VPN

High availability and improved performance of site-to-site VPN



Securely connect multiple sites using the AWS Global Network



Improve performance of your VPN connections



Built on top of Global Accelerator

Introducing

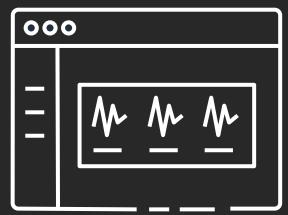
General Availability – December 3

# AWS Transit Gateway Network Manager



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Visibility and health  
of your global  
network



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Management across  
cloud and remote  
sites



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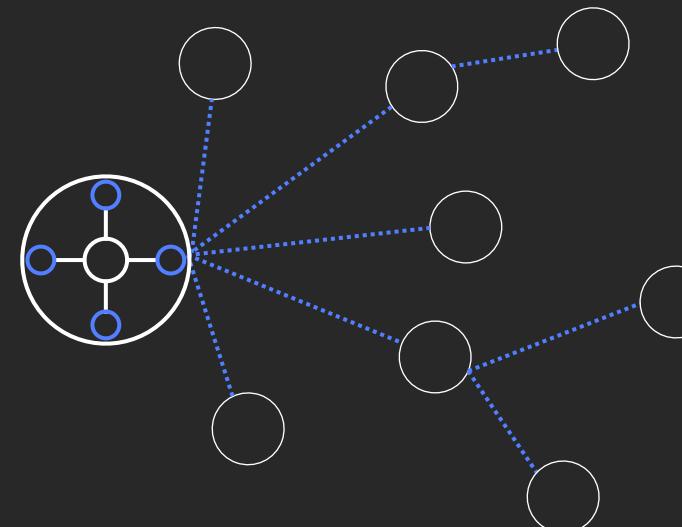
Optimized remote  
site connections  
with the AWS  
Global Network

New Feature

General Availability – December 3

# Transit Gateway Multicast

Build and deploy multicast applications in the cloud



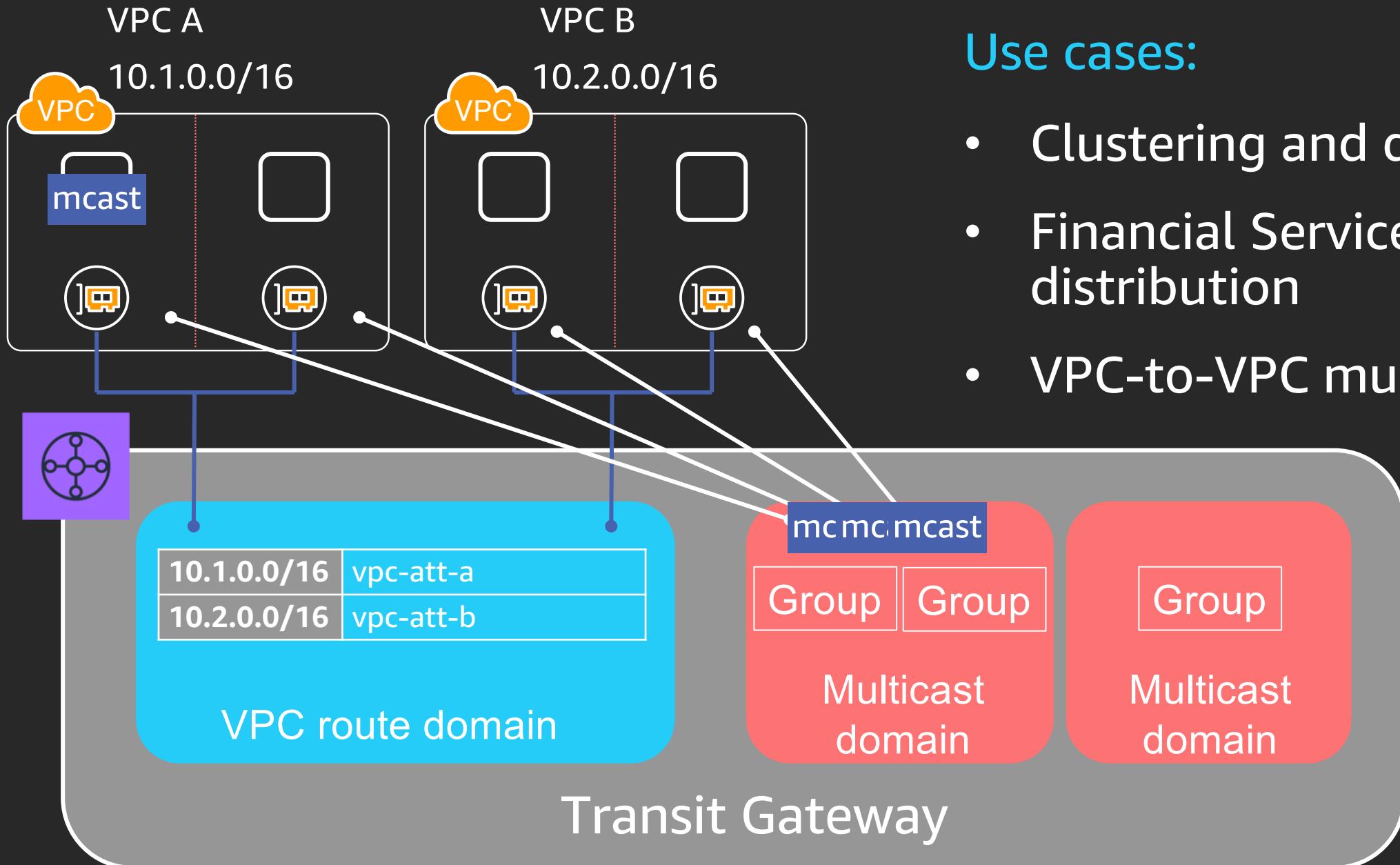
Scale multicast applications up or down based on demand

No need to buy and maintain custom hardware to support peak loads

Fine grain control of who can produce, and who can consume, multicast traffic through authenticated APIs

# Multicast on AWS Transit Gateway

New

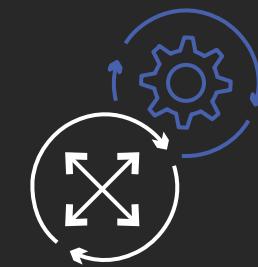


## Use cases:

- Clustering and databases
- Financial Services and Media distribution
- VPC-to-VPC multicast

# Amazon VPC Ingress Routing

Route inbound and outbound traffic through a third party or AWS service

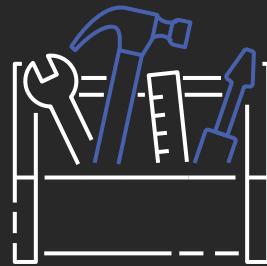


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Pass all inline traffic  
through a single  
appliance



Inline traffic inspection  
helps you screen and  
secure your traffic  
before it reaches your  
workload



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Helps you extend your  
capabilities with third-  
party solutions

Introducing

Announced – November 21

# AWS CloudTrail Insights

Identify unusual (write) activity in your AWS accounts



- Unexpected spikes in resource provisioning
- Bursts of IAM management actions
- Gaps in periodic maintenance activity

- ✓ Save time sifting through logs
- ✓ Get ahead of issues before they impact your business

Introducing

# Amazon Detective

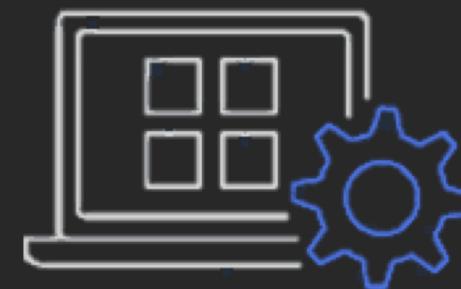
Analyze, investigate, and identify the root cause of security findings and suspicious activities. Integrated with AWS Security Hub.



Automatically distills & organizes data into a graph model



Easy to use visualizations for faster & effective investigation



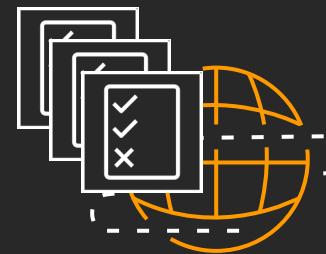
Continuously updated as new telemetry becomes available

Introducing

General Availability – December 2

# AWS IAM Access Analyzer

Continuously ensure that policies provide the intended public and cross-account access to resources, such as Amazon S3 buckets, AWS KMS keys, & AWS Identity and Access Management roles.



## Quickly analyze resource policies

Analyzes resource policies for public or cross-account access



## Continuously monitor and analyze permissions

Analyzes new or updated resource policies to help you understand potential security implications



## Provides the highest levels of security assurance

Uses automated reasoning, a form of mathematical logic, to determine all possible access paths allowed by a resource policy

New Feature

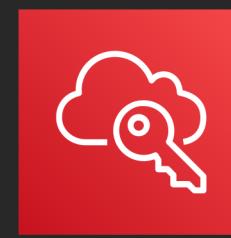
Announced – November 25

# AWS Single Sign-On - Azure AD Support

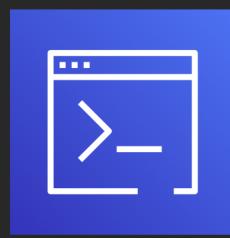
Create or use existing identities, including Azure AD, and manage access centrally to multiple AWS accounts and business applications, for easy browser, command line, or mobile single sign-on access by employees.



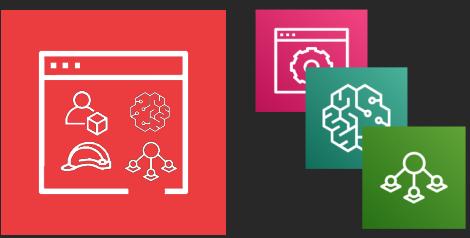
Choose  
identity  
source



Manage  
access  
centrally



Increase CLI  
security,  
productivity



Browser and mobile  
portal access to  
accounts/roles/apps

# OutPosts

Now Available

# AWS Outposts

Fully managed service that extends AWS infrastructure, AWS services, APIs, and tools to virtually any connected customer site. Truly consistent hybrid experience for applications across on-premises and cloud environments. Ideal for low latency or local data processing application needs.



**Same AWS-designed infrastructure**  
as in AWS regional data centers  
(built on AWS Nitro System)  
delivered to customer facilities



**Fully managed, monitored, and  
operated by AWS**  
as in AWS Regions



**Single pane of management**  
in the cloud providing the  
**same APIs and tools** as  
in AWS Regions

# Customers want the **same** experience across on-premises and the cloud



Same reliable,  
secure, and high  
performance  
infrastructure



Same  
operational  
consistency



Same services  
and APIs



Same tools for  
automation,  
deployments, and  
security controls



Same pace of  
innovation as in  
the cloud

# Applications that need to remain on premises



## Applications that are sensitive to latency and variability in latency

Need for near real time responses to end user applications

Need to control on-site equipment

Need to communicate with other on-premises systems



## Applications that process data locally

Need to ensure integrity of ingested signal (e.g., at live events before broadcasting)

Need to reliably process messages from industrial equipment to monitor production

Need for managing local data stores

# AWS Outposts rack

- Industry standard **42U** rack
- **Fully assembled**, ready to be rolled into final position
- **Installed by AWS**, simply plugged into power and network
- **Centralized redundant power conversion unit** and DC distribution system for higher reliability, energy efficiency, easier serviceability
- **Redundant active components** including top of rack switches and hot spare hosts



# Supported countries at GA



# Supported regions



# Available in two variants

## Native AWS

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AWS APIs, services, and features  
as in the AWS cloud

EC2 and EBS with support for  
services including RDS, ECS, EKS,  
EMR, ALB, others

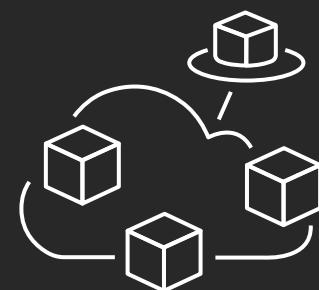
## VMware Cloud on AWS

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VMware APIs and services to  
leverage existing skills, automation,  
and governance policies

For customers running VMware  
SDDC on-premises

# Services supported on Outposts (additionally to EC2 & EBS)



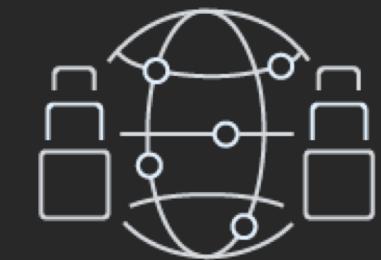
Amazon ECS,  
EKS & App Mesh



Amazon EMR



Amazon RDS

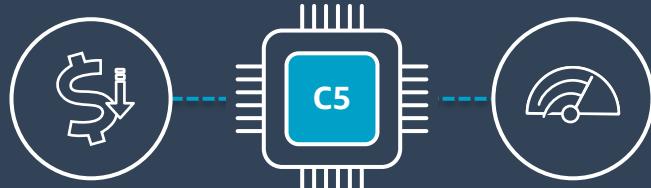


Amazon S3  
(Coming in 2020)

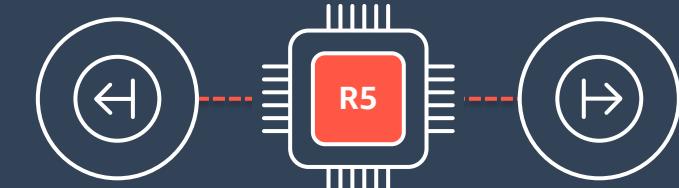
# Build on the same EC2 Instances & EBS Volumes



For general purpose  
applications



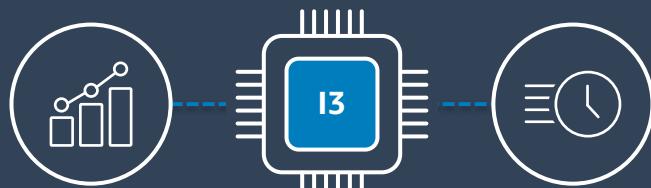
For compute intensive  
(media transcoding, gaming servers,  
machine learning inference)



For memory intensive applications  
(databases, in-memory caches,  
real time data analytics)



For machine learning inference  
and graphics workstations



For I/O intensive applications  
(NoSQL databases, in-memory  
or transactional databases,  
distributed file systems)



Local Instance Storage and EBS  
gp2 volumes for temporary  
and persistent storage

# Pre-validated catalog of Outposts configurations

Configurations (19)							
<input type="text"/> Find configurations							
Outpost resource ID	Available EC2 capacity	Total EC2 capacity	EBS capacity (TB)	Network uplink optics (Gbps)	Description	Power draw (kVA)	Weight (Lbs)
OR-ODKC70D	3 m5.24xlarge 7 c5.24xlarge	4 m5.24xlarge 8 c5.24xlarge	11+	10, 40, 100	Compute and general purpose large unit used for applications that have some high performance compute needs, like a financial services app that provides a web interface and high-speed data analysis.	14.9	1656
OR-HSZHMMF	11 r5.24xlarge	12 r5.24xlarge	11+	10, 40, 100	Memory optimized large unit	15	1656
OR-LR4DI6P	4 m5.24xlarge 3 c5.24xlarge 2 r5.24xlarge	5 m5.24xlarge 4 c5.24xlarge 3 r5.24xlarge	11+	10, 40, 100	Mixed capacity large unit, often used by teams who are sharing capacity for different applications on a single Outpost.	14.9	1656
OR-KPUCKWN	11 m5.24xlarge	12 m5.24xlarge	11+	10, 40, 100	General purpose large unit, for example used for IoT applications storing and managing sensor data.	14.8	1656
OR-HUZEI16	7 m5.24xlarge 3 c5.24xlarge	8 m5.24xlarge 4 c5.24xlarge	11+	10, 40, 100	General purpose and compute large unit used for manufacturing or hospital system modernization where there is a need for compute-intensive instances.	14.9	1656
OR-REM3UIH	11 c5.24xlarge	12 c5.24xlarge	11+	10, 40, 100	Compute optimized large unit, can be used for financial services applications with high performance compute needs.	14.9	1656
OR-H7KSNN0	6 m5.24xlarge 2 g4dn.12xlarge	7 m5.24xlarge 4 g4dn.12xlarge	11+	10, 40, 100	Graphics large unit that is ideal for graphics analysis for local rendering or running ML inference on images.	14.2	1622
OR-MJV0E2L	5 r5.24xlarge	6 r5.24xlarge	11+	10, 40, 100	Memory optimized medium unit used for applications like running local databases with in-memory analytics.	9.9	1572
OR-R2XVM9Q	1 m5.24xlarge 1 c5.24xlarge 1 r5.24xlarge	2 m5.24xlarge 2 c5.24xlarge 2 r5.24xlarge	11+	10, 40, 100	Mixed capacity medium unit for running applications from several teams on the same Outpost.	9.9	1572
OR-P7M7Y0S	1 m5.24xlarge 3 c5.24xlarge	2 m5.24xlarge 4 c5.24xlarge	11+	10, 40, 100	Compute and general purpose medium unit used for applications that have some high performance compute needs, for example an industrial automation application that runs batch process analysis on manufacturing line data.	9.9	1572

# Pre-requisites

Standard data center space (24" X 48" x 80" aisle clearance and rack position) and power (minimum 5 kVA)

## **Network connection to an AWS region**

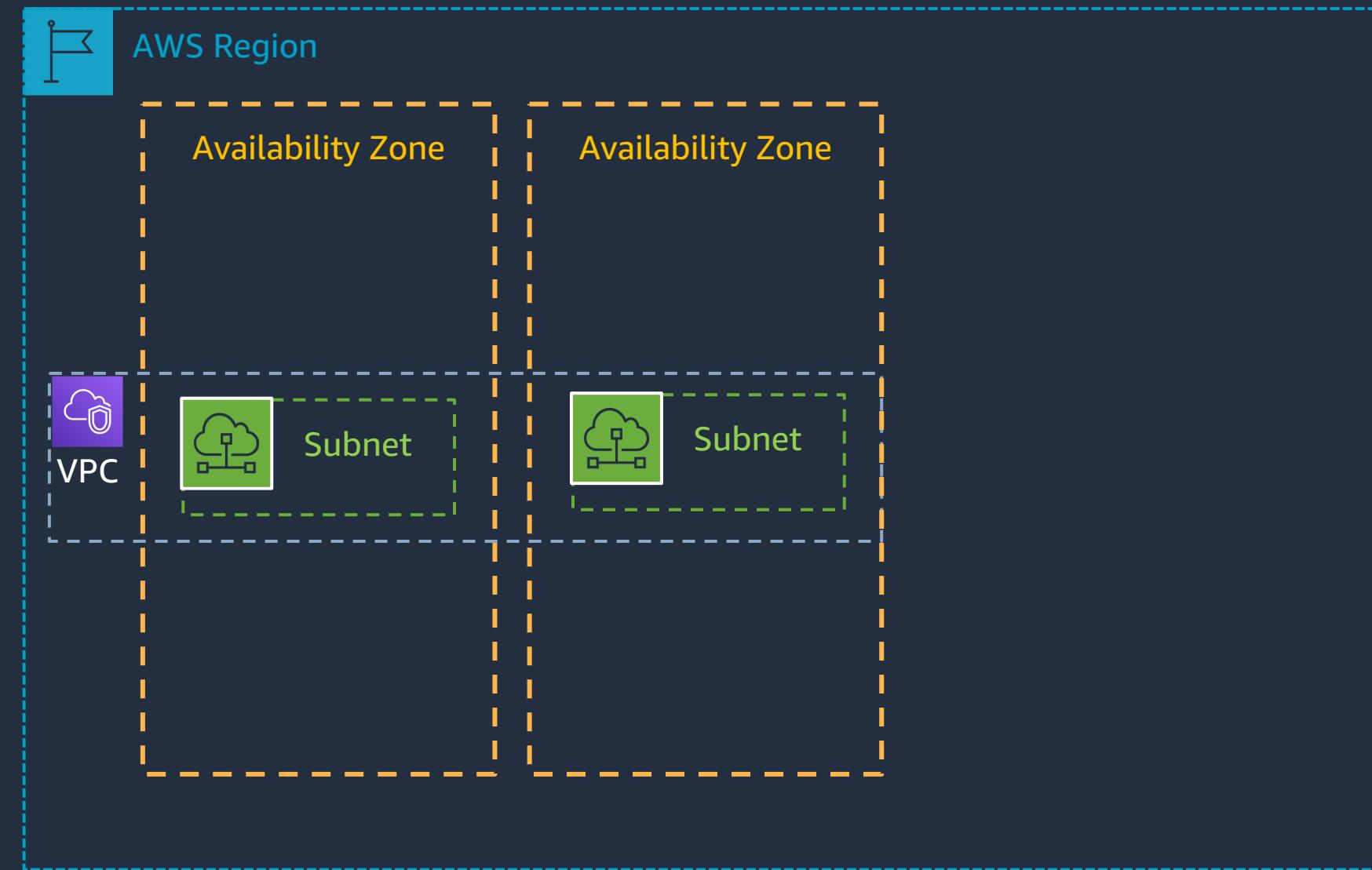
- AWS Direct Connect with public VIF or
- Internet Connection via ISP

## **Enterprise Support (24x7 Customer Support and entitlements)**

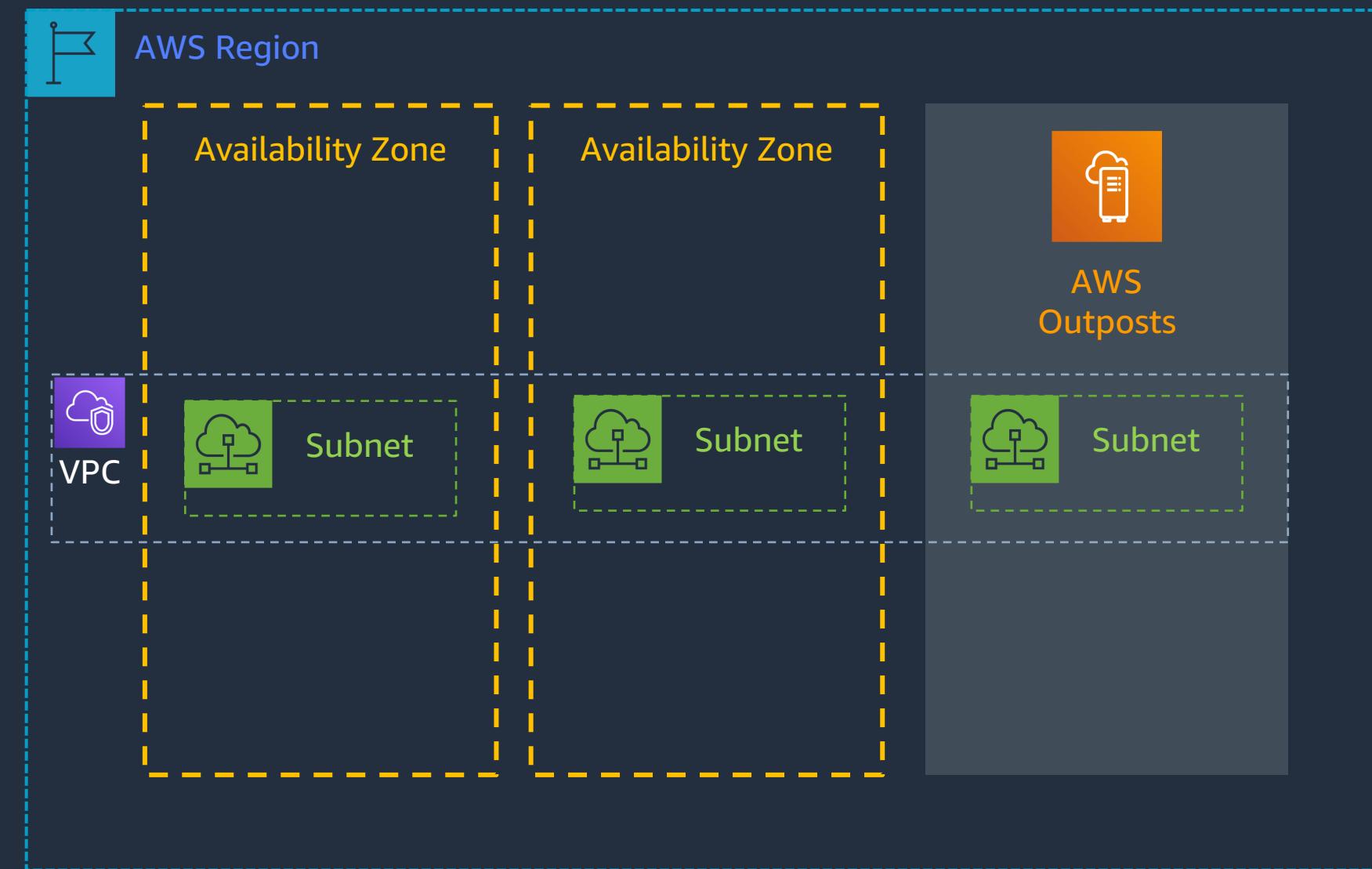
# Pricing of Outposts configurations

- Priced for EC2 and EBS capacity in the SKU
- 3-year term with **partial upfront**,  
**all upfront**, and **no upfront** options
- Price includes delivery, installation, servicing,  
and removal at the end of term
- EC2 capacity and EBS storage  
upgrades available
- EDP discounts eligible

# Seamlessly extend your regional VPC

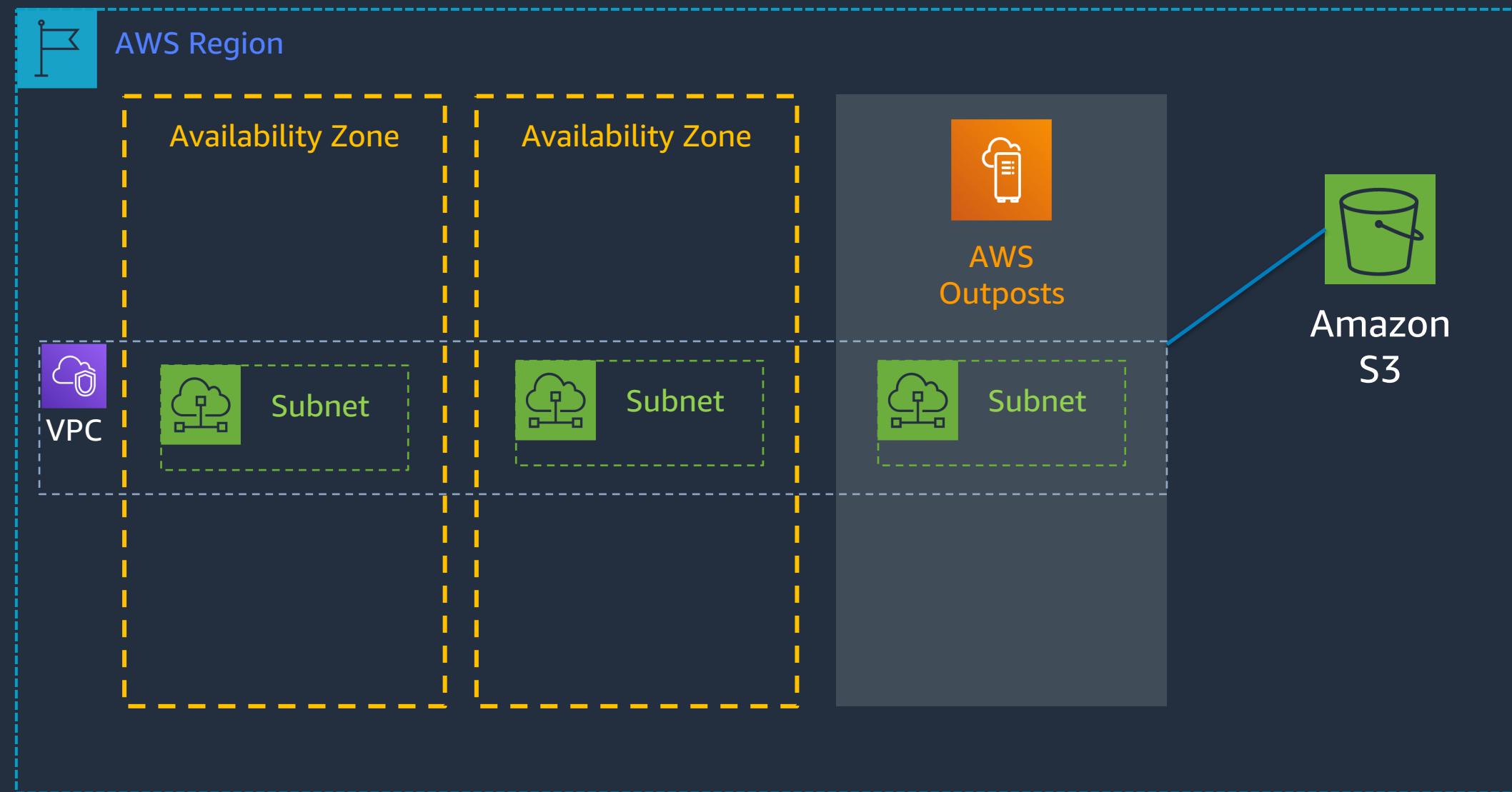


# Seamlessly extend your regional VPC



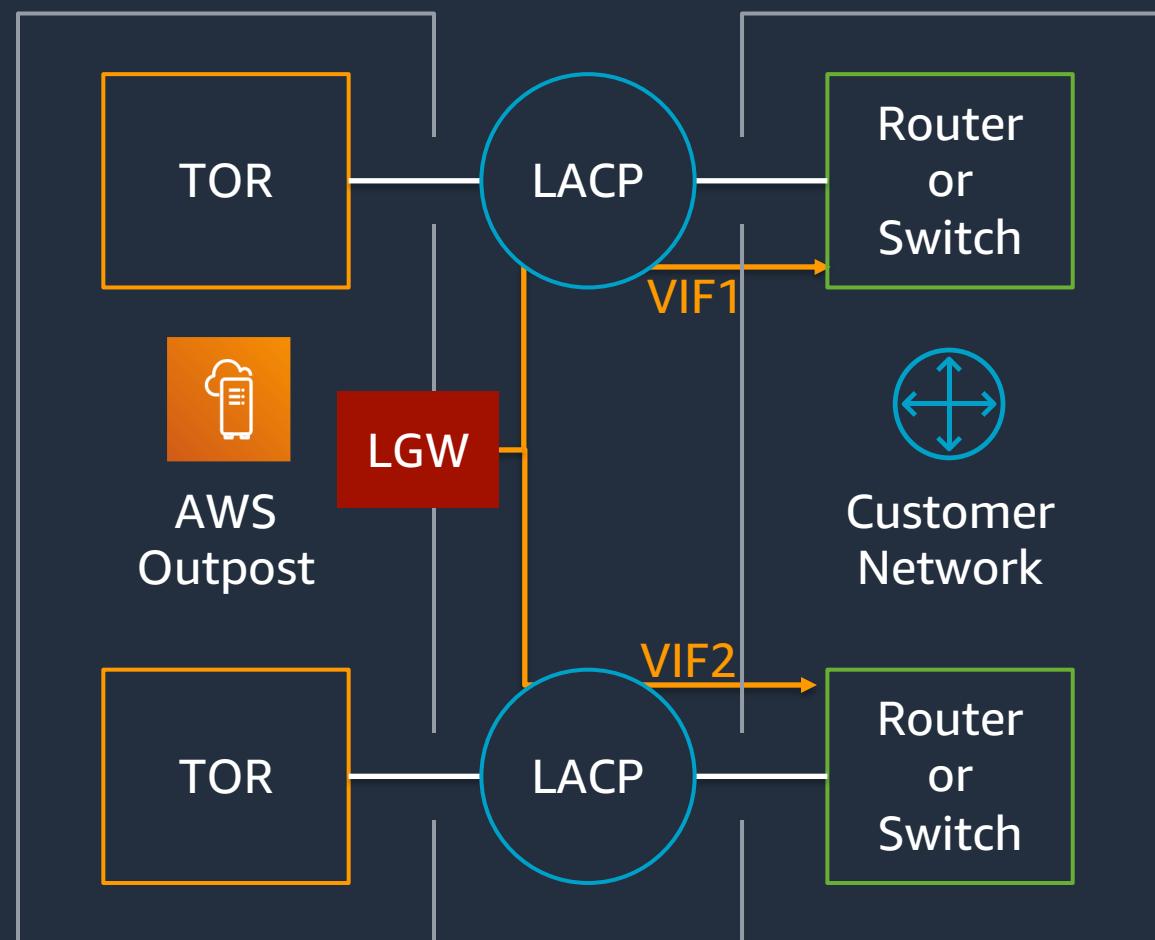
Instances in the Outpost can securely talk to other instances in the VPC via private IP addresses

# Seamlessly extend your regional VPC



Use **Interface Endpoints** (powered by Private Link) to access all regional AWS services such as DynamoDB and S3 in your private VPC environment

# Connect to your local network



- Connect to local network equipment via ports provided in the Outpost's top of rack (TOR) switches
- Configure Virtual Interfaces (VIFs) mapping to your VLANs using Link Aggregation Control Protocol (LACP)
- Configure the new local gateway (LGW) on the Outpost to route traffic to and from your local network using these VIFs

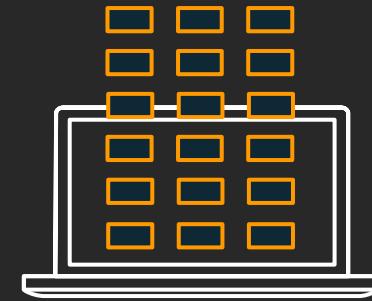
Introducing

# Local Zones

Extend the AWS Cloud to more locations and closer to your end-users to support ultra low latency application use cases. Use familiar AWS services and tools and pay only for the resources you use.



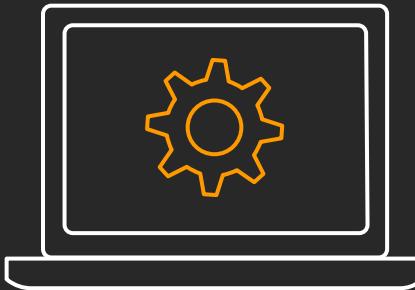
AWS infrastructure  
at the edge



Local compute,  
storage, database,  
and other services



Connect to services  
in AWS Regions



Deliver new low  
latency apps

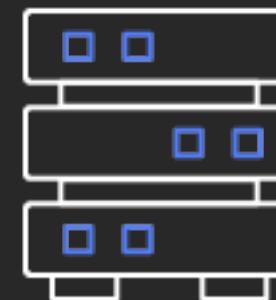
The first Local Zone to be released will be located in Los Angeles.

Introducing

Announcement – December 3

# AWS Wavelength

Embeds AWS compute and storage inside telco providers' 5G networks. Enables mobile app developers to deliver applications with single-digit millisecond latencies. Pay only for the resources you use.



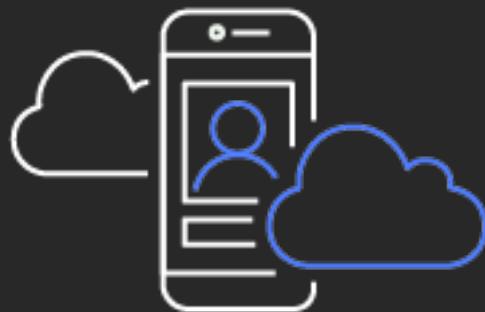
AWS  
infrastructure in  
5G networks



Local compute,  
storage, database,  
and other services



Connect to  
services in AWS  
Regions



Deliver new  
mobile app  
experiences

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Embeds AWS compute and storage inside telco providers' 5G networks. Enables mobile app developers to deliver applications with single-digit millisecond latencies. Pay only for the resources you use.



# **Time for a Break! Back at 7:30 pm!!!**

<https://aws.amazon.com/new/reinvent>



Here to help you build  
**Go Build!**