
AWS
re:Invent

NET201

AWS Outposts: Networking foundations

James Devine

Sr. Solutions Architect, Outposts

AWS

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Agenda

Outposts overview

Amazon Virtual Private Cloud (Amazon VPC) networking

Local network connectivity

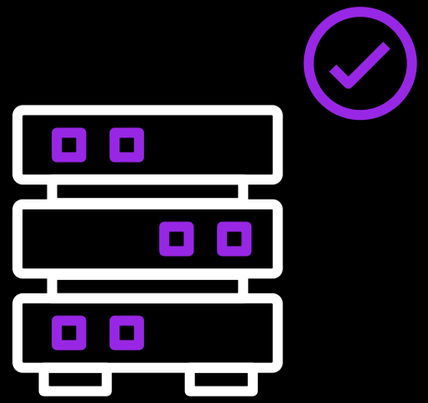
Region connectivity

Demo



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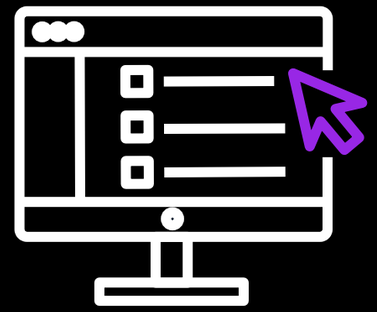
AWS Outposts: Bringing AWS on-premises



Same AWS-designed infrastructure as AWS data centers



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



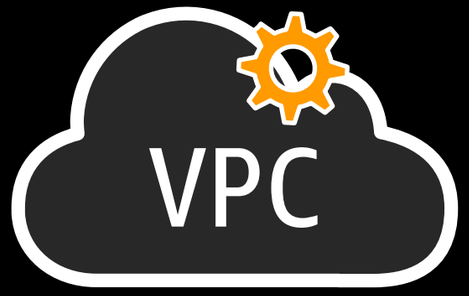
Single pane of management in the cloud, the same APIs and tools as AWS Regions

AWS Outposts rack

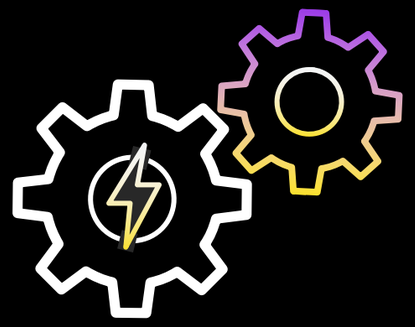
- Industry standard 42U rack
- Fully assembled, ready to be rolled into final position
- Installed by AWS, simply plugged into power and network
- Centralized redundant power conversion unit and DC distribution system for higher reliability, energy efficiency, easier serviceability
- Redundant active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



AWS Outposts: Three main network components



Amazon VPC networking



Local Area Network (LAN) connectivity



Region connectivity

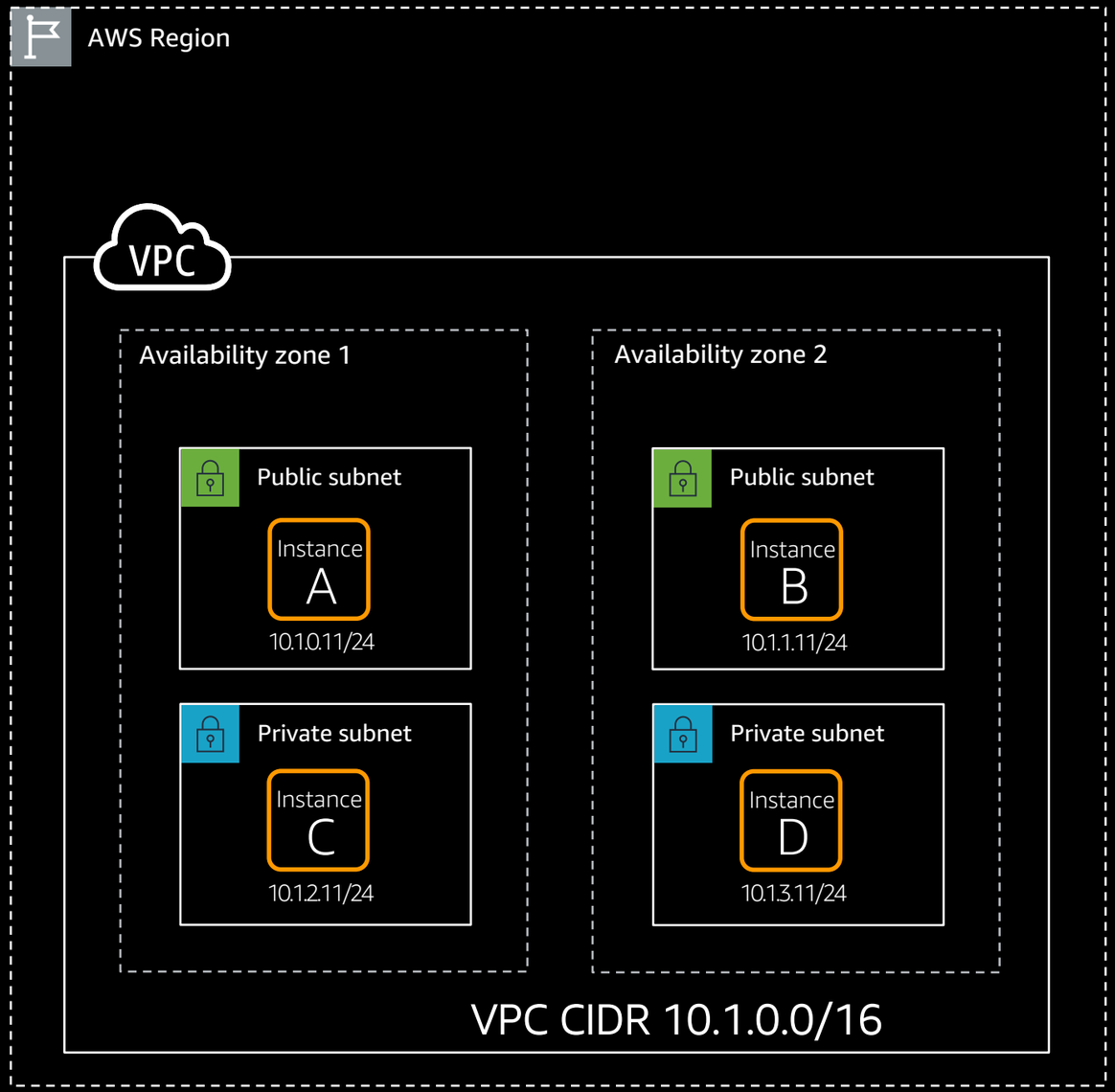
Amazon VPC networking



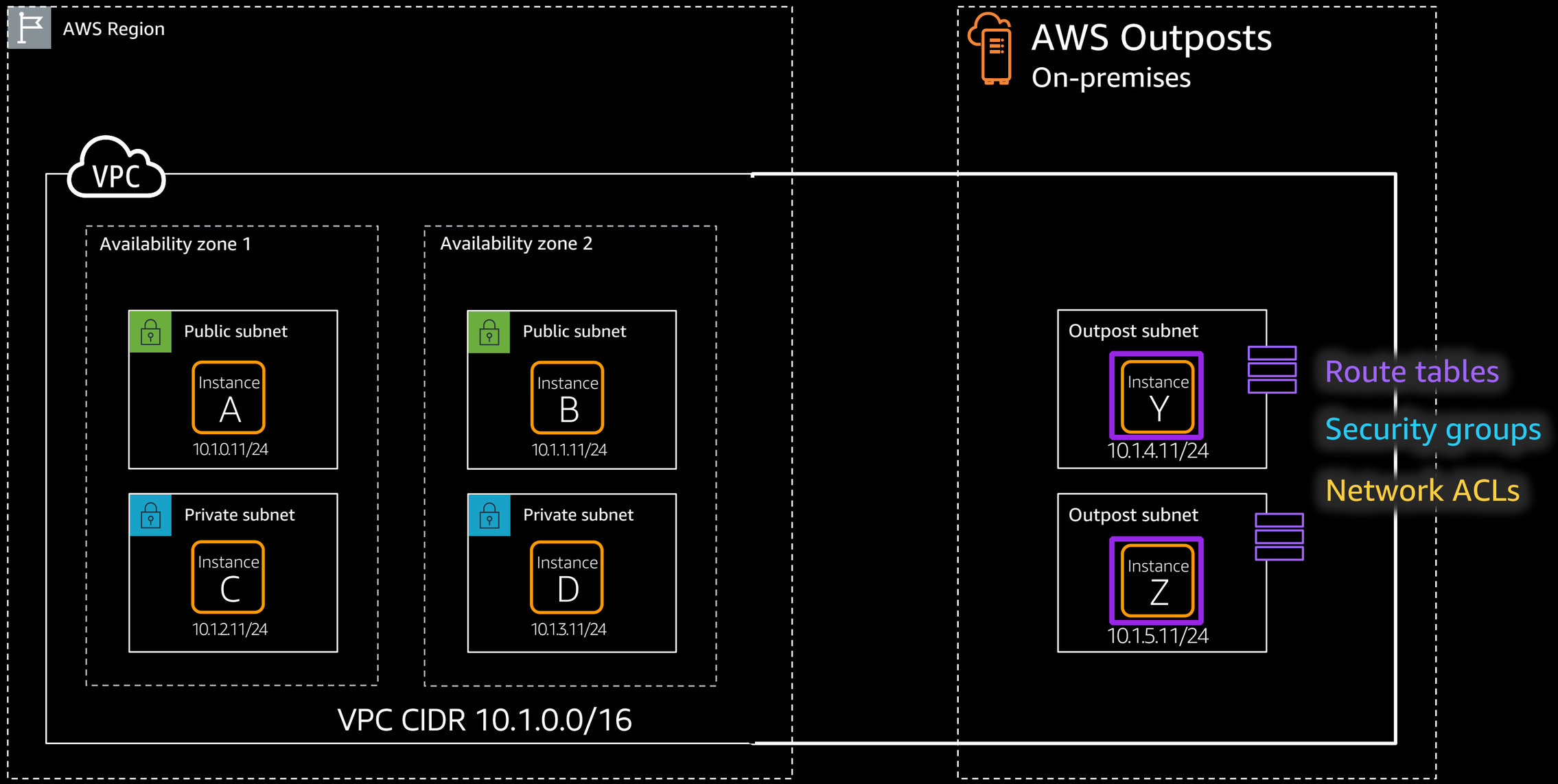
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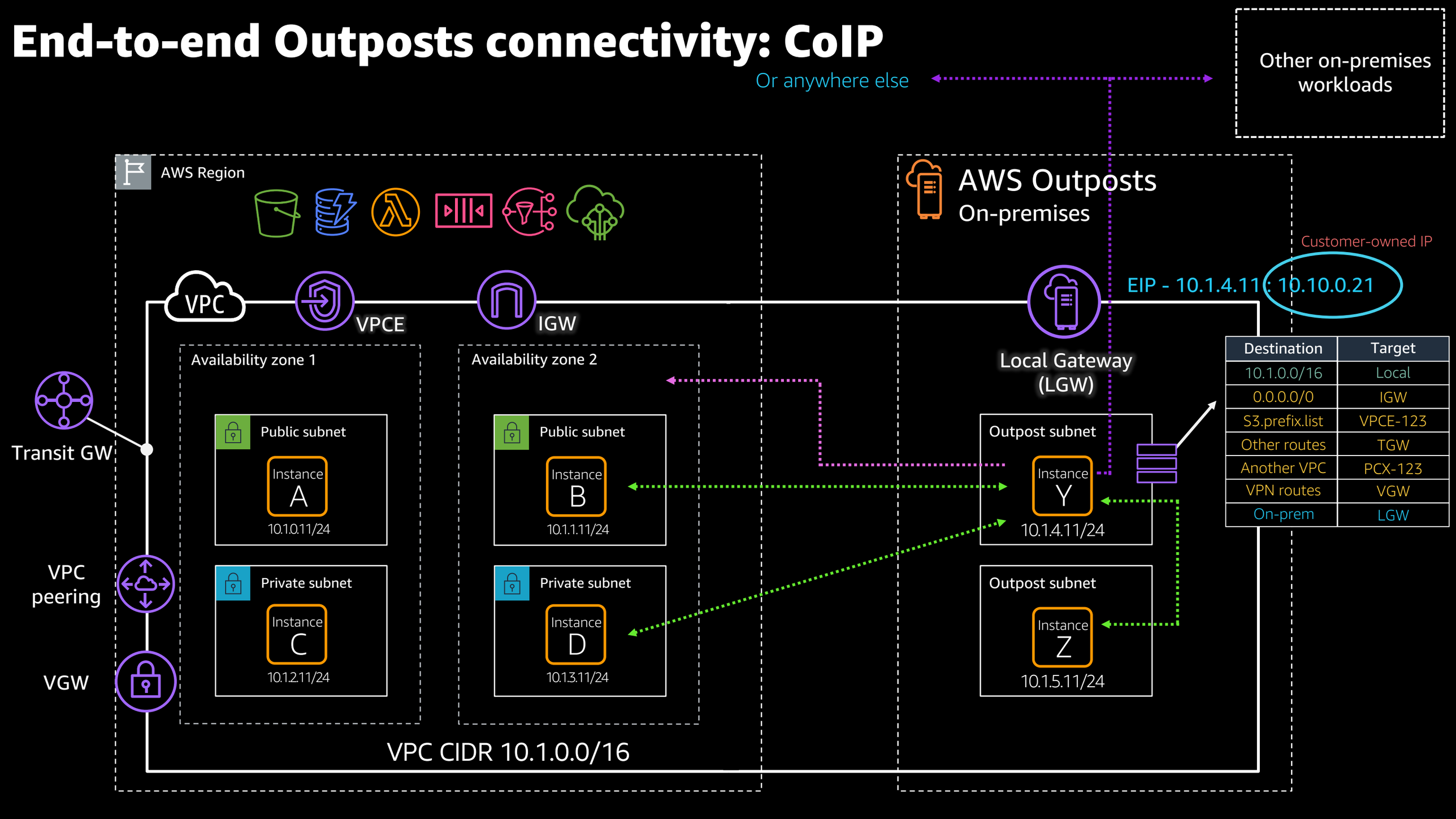
VPC architect from the region



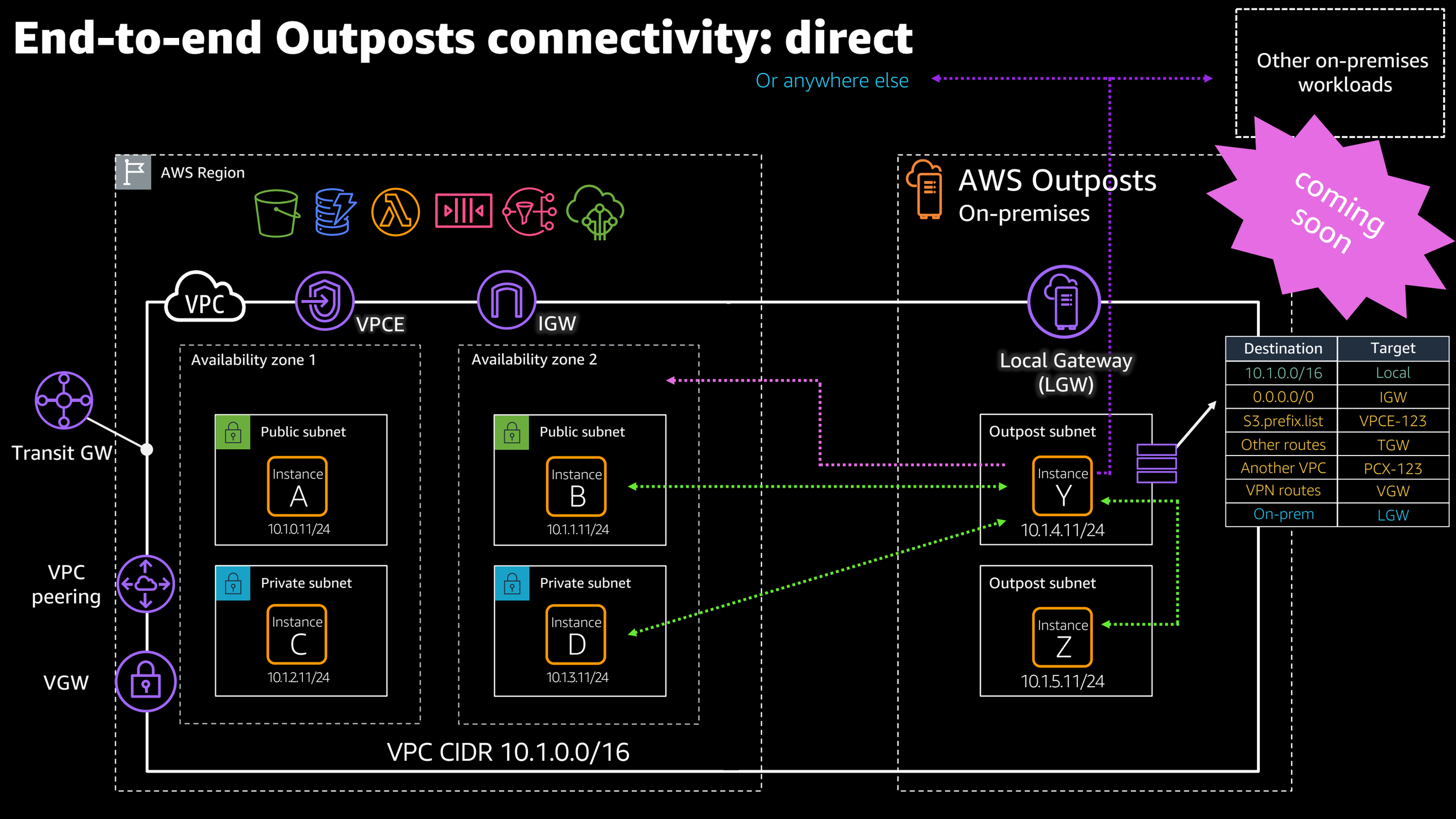
VPC architect from the region – extended to Outposts



End-to-end Outposts connectivity: CoIP



End-to-end Outposts connectivity: direct



Destination	Target
10.1.0.0/16	Local
0.0.0.0/0	IGW
S3.prefix.list	VPCE-123
Other routes	TGW
Another VPC	PCX-123
VPN routes	VGW
On-prem	LGW

Local network connectivity

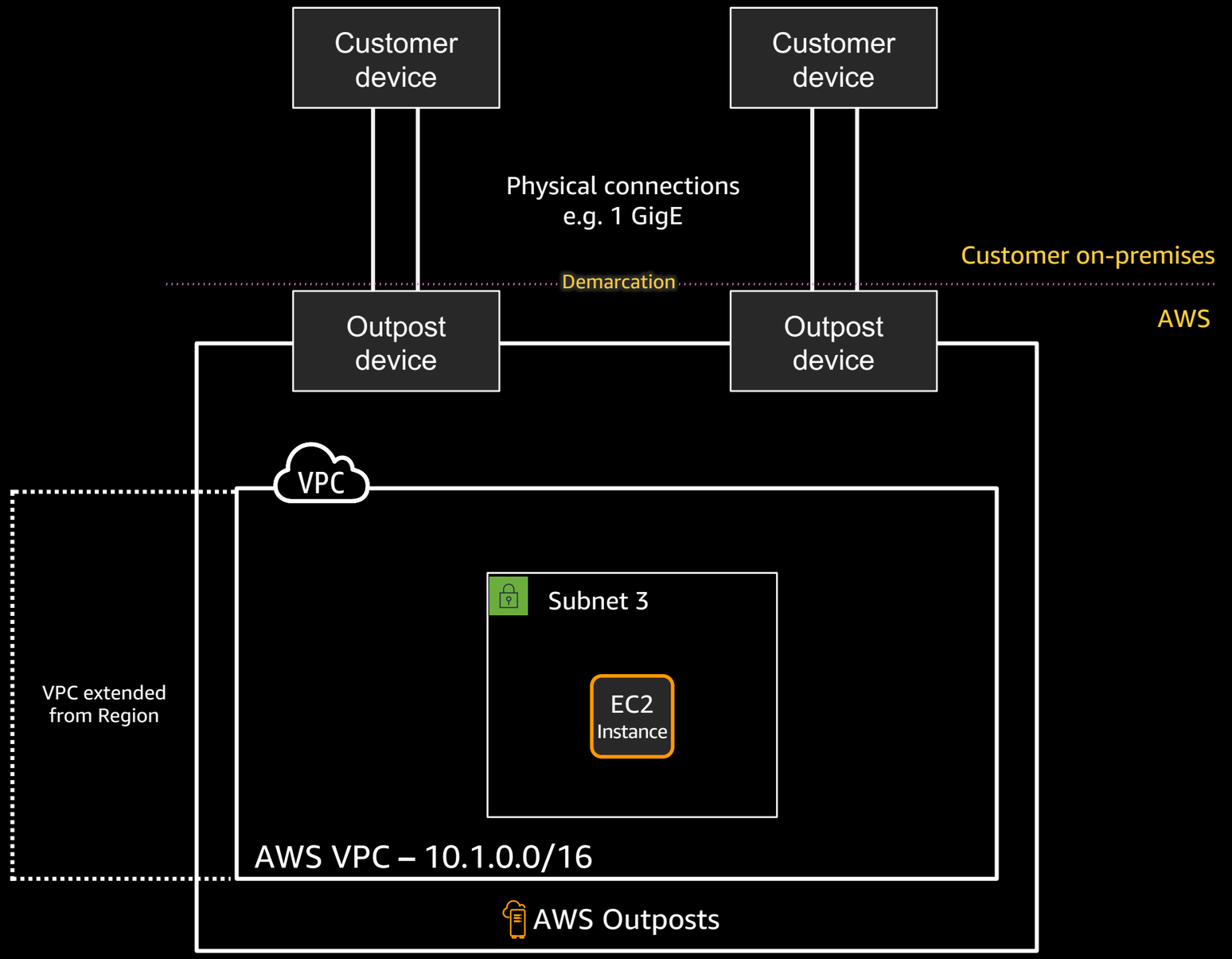


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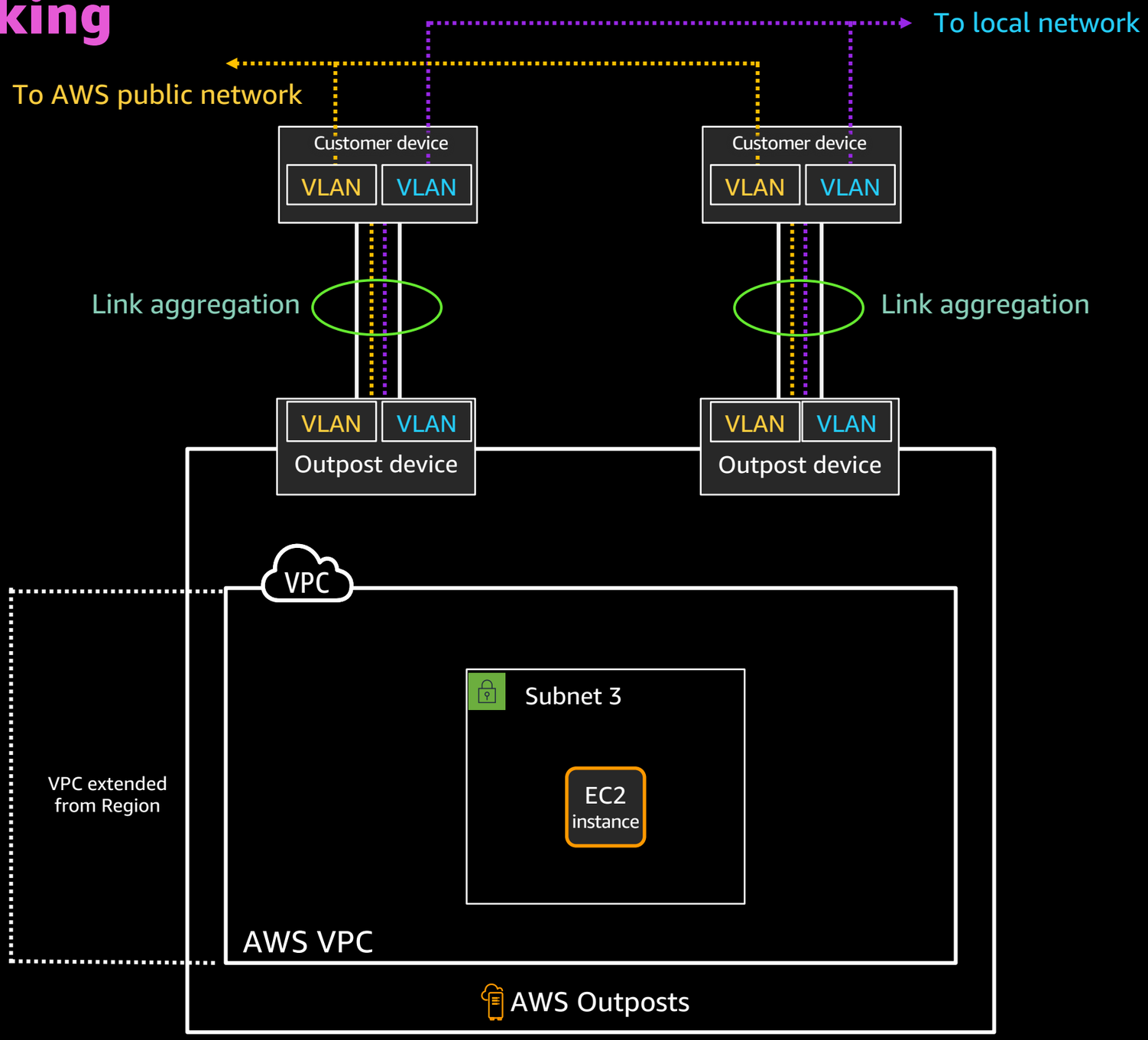
AWS Outposts – LAN access

- Fiber: Single mode or multi-mode fiber with LC connectors
- Connection types: 1, 10, 40, 100 GigE
- Connection number: Minimum of two (1x per outpost device)



AWS Outposts – LAN networking

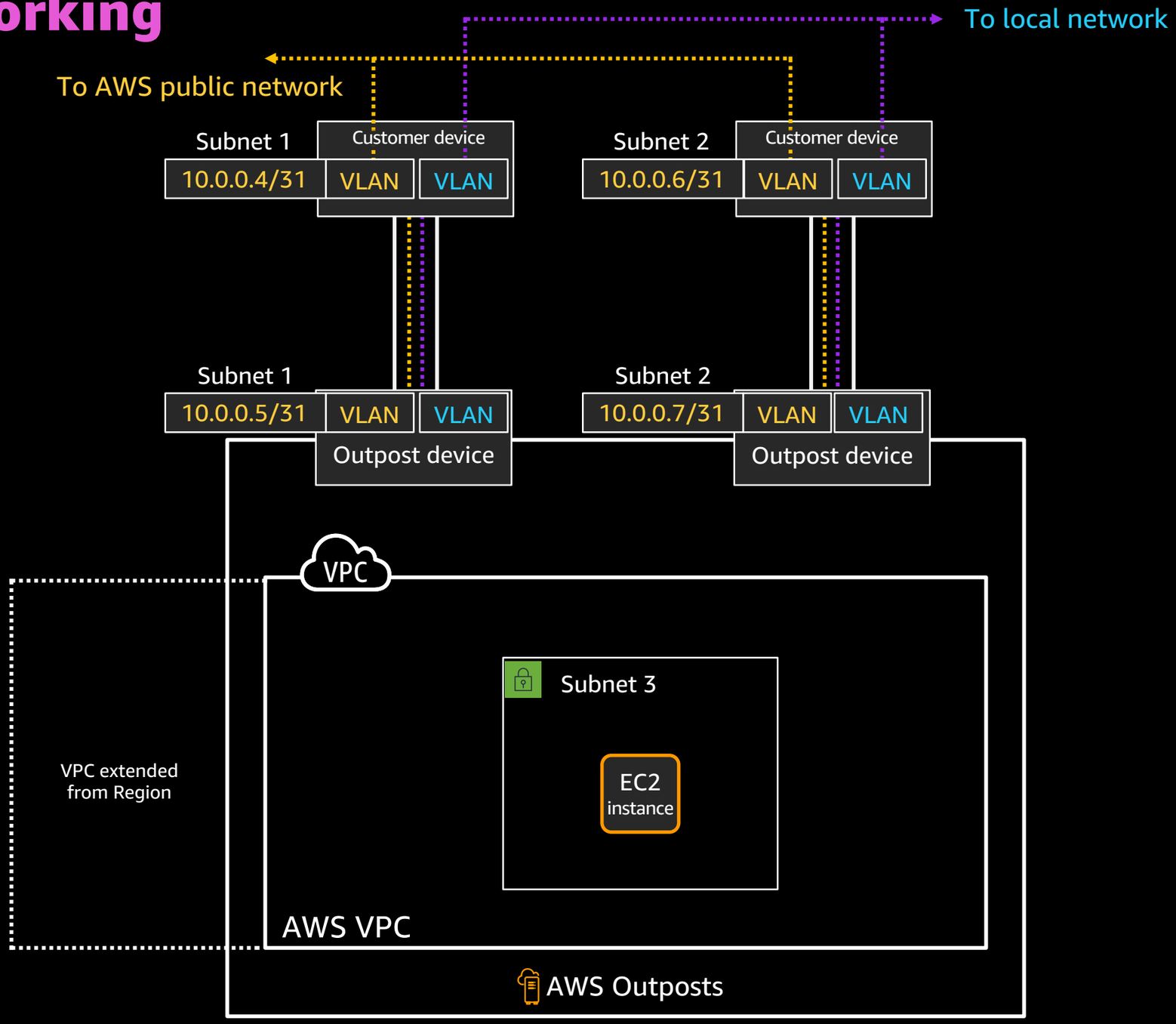
- Link aggregation: Link Aggregation Control Protocol (LACP)
- Service link VLAN: Connectivity for AWS Outposts back to AWS Region
- LGW VLAN: Connectivity to local customer network



AWS Outposts – LAN networking

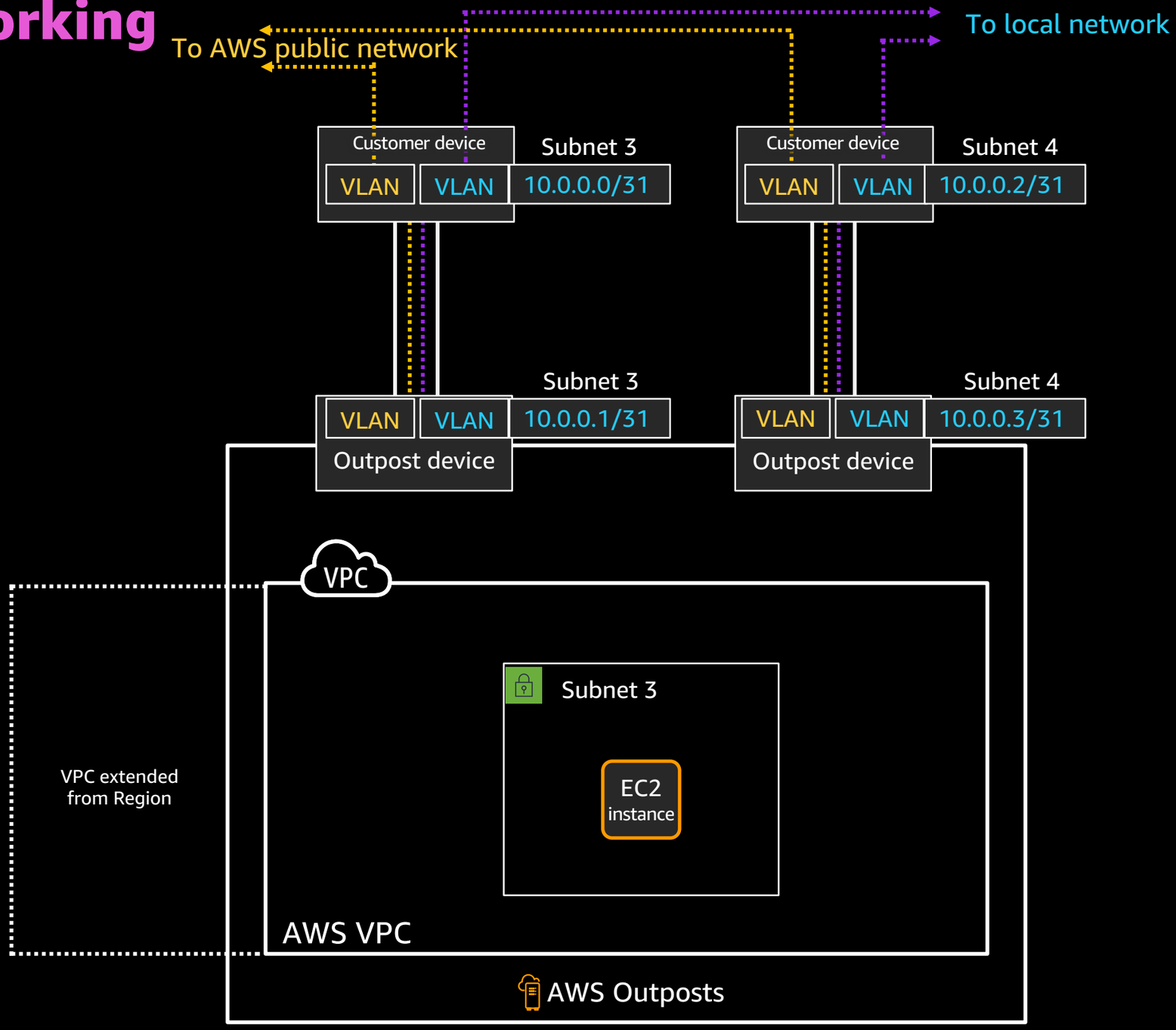
- Service link VLAN subnet 1: /30 or /31 subnet between customer device and outpost device

- Service link VLAN subnet 2: /30 or /31 subnet between customer device and outpost device



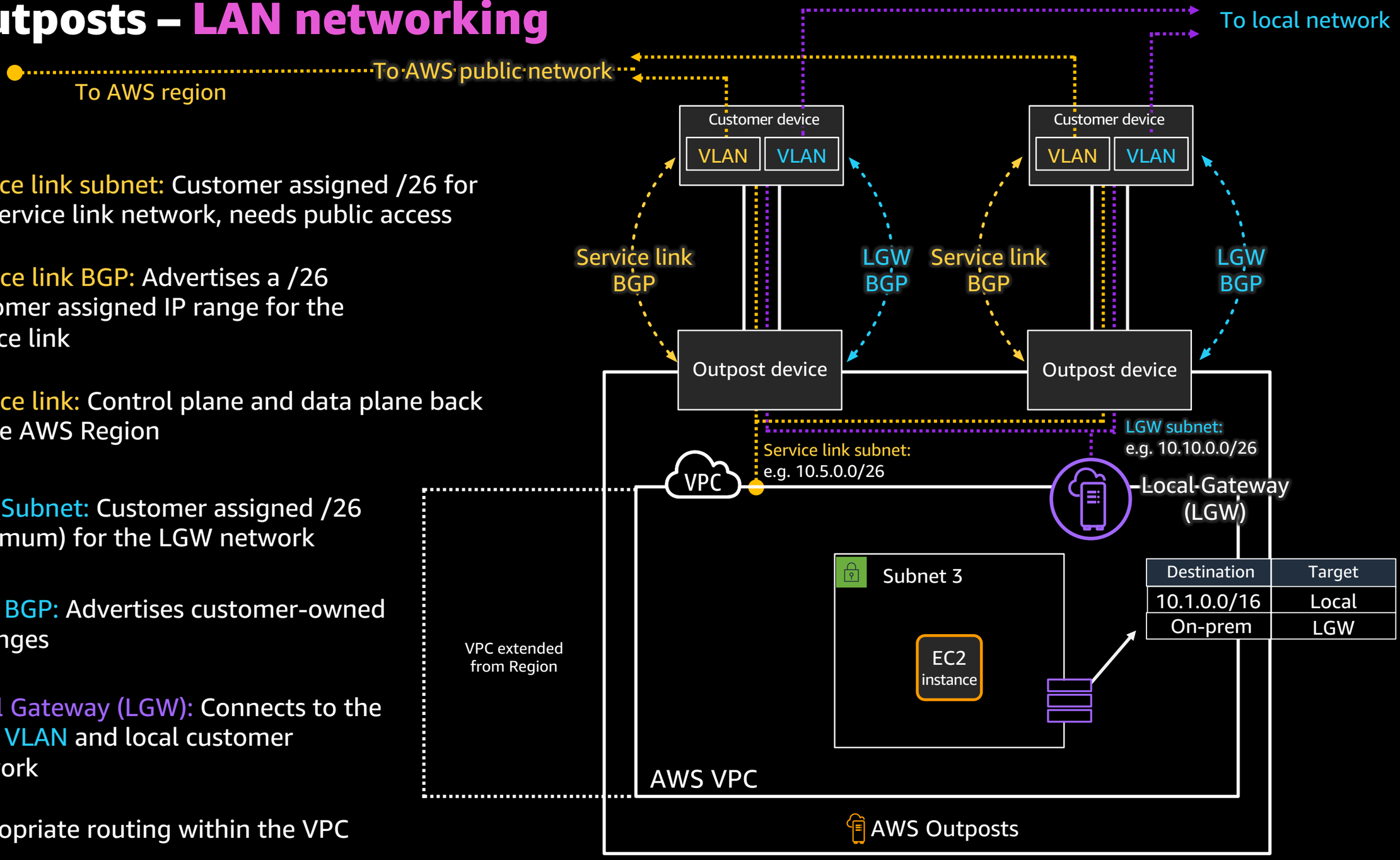
AWS Outposts – LAN networking

- LGW VLAN subnet 3: /30 or /31 subnet between customer device and outpost device
- LGW VLAN subnet 4: /30 or /31 subnet between customer device and outpost device



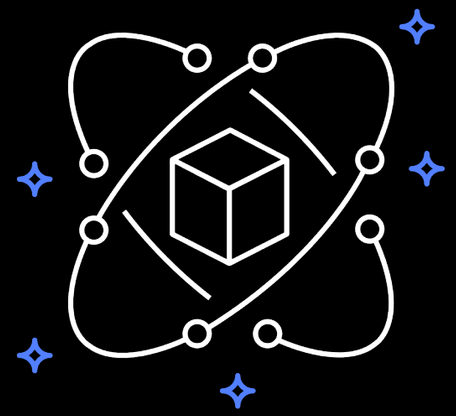
AWS Outposts – LAN networking

- Service link subnet: Customer assigned /26 for the service link network, needs public access
- Service link BGP: Advertises a /26 customer assigned IP range for the service link
- Service link: Control plane and data plane back to the AWS Region
- LGW Subnet: Customer assigned /26 (minimum) for the LGW network
- LGW BGP: Advertises customer-owned IP ranges
- Local Gateway (LGW): Connects to the LGW VLAN and local customer network
- Appropriate routing within the VPC



LAN connectivity – Best practices

- Use LACP for bandwidth aggregation
- Use BGP for HA
- Ensure redundant connectivity

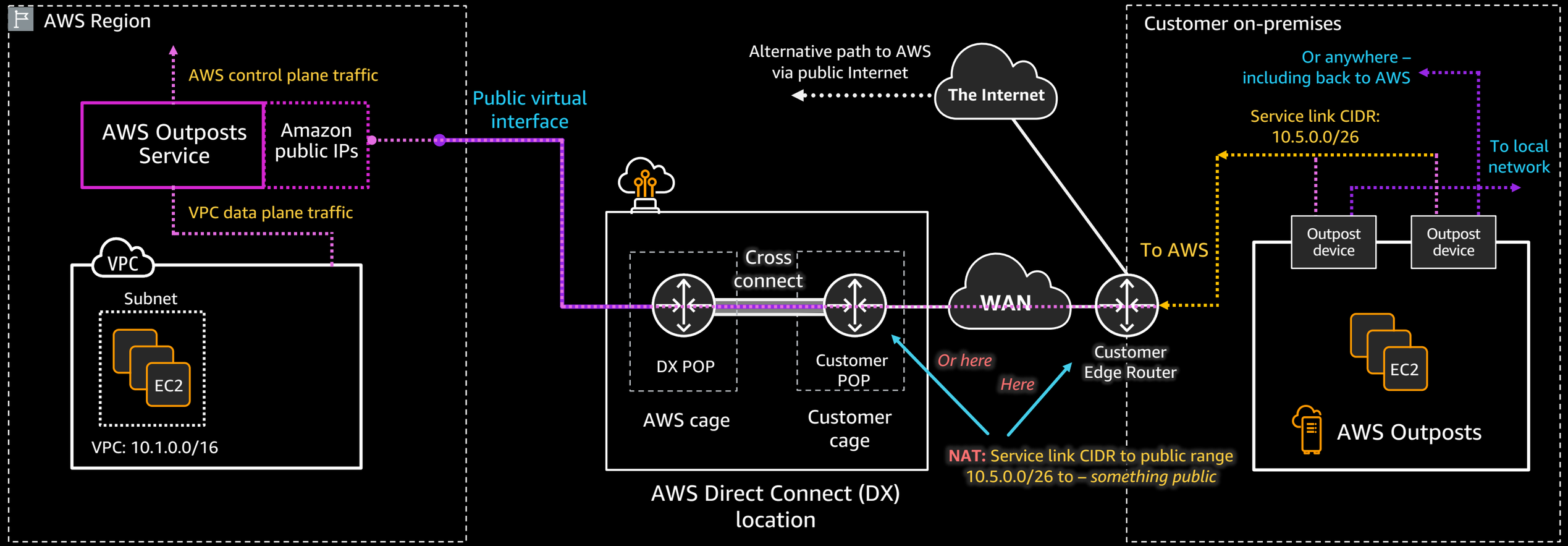


Region connectivity

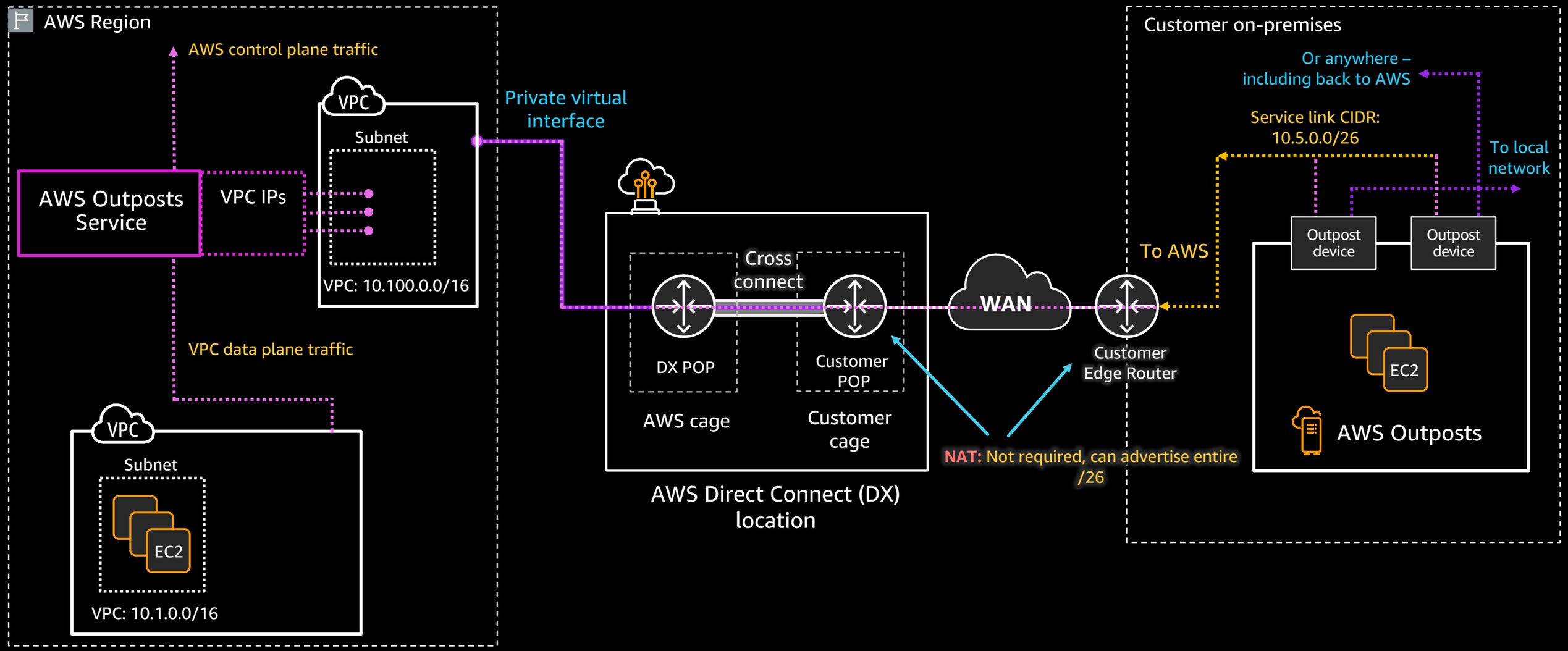


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Region connectivity – WAN access



Region connectivity – private access



Regional connectivity – Best practices

- Ensure 1Gbps connectivity
- Segment service link traffic
  - No need to be routable more broadly
- Ensure redundant external connectivity (DX or internet)
  - DX – two links for 99.9% SLA
  - DX – four links for 99.99% SLA



Resources

Outposts networking requirements: https://amzn.to/2SAK8pn

Other Outposts re:Invent sessions:

- CMP208 - AWS Outposts: Cloud where you want it
- CMP309 - AWS Outposts: Bringing the AWS experience on premises
- CMP310 - AWS Outposts: An in-depth look at hybrid cloud use cases
- STG211 - Extend Amazon S3 to on-premises environments with AWS Outposts

Cisco integration guide: https://bit.ly/35kToVR

Juniper integration guide: https://juni.pr/3eS9Tfo

Thank you!

James Devine

linkedin.com/in/jamesdevine/

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