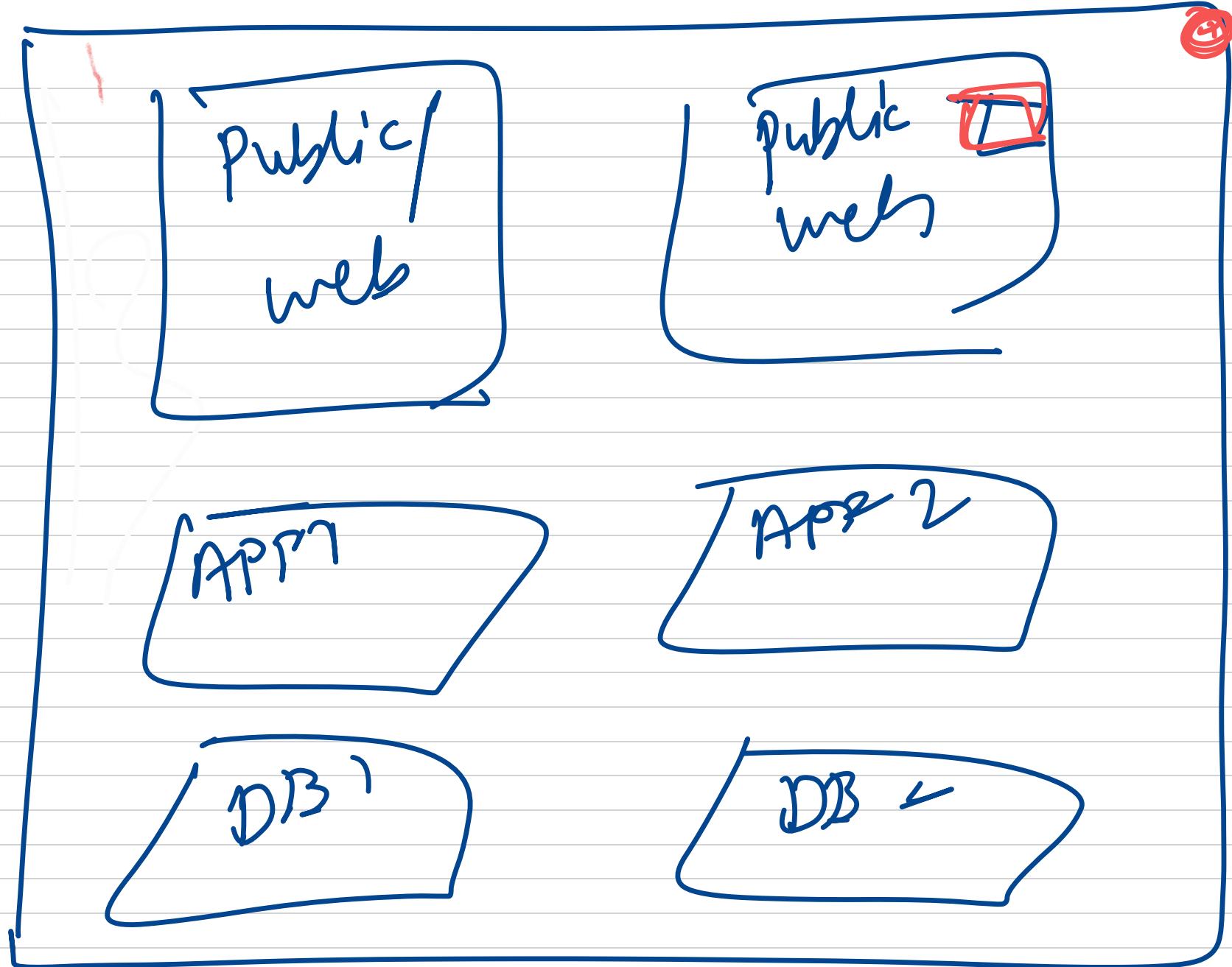
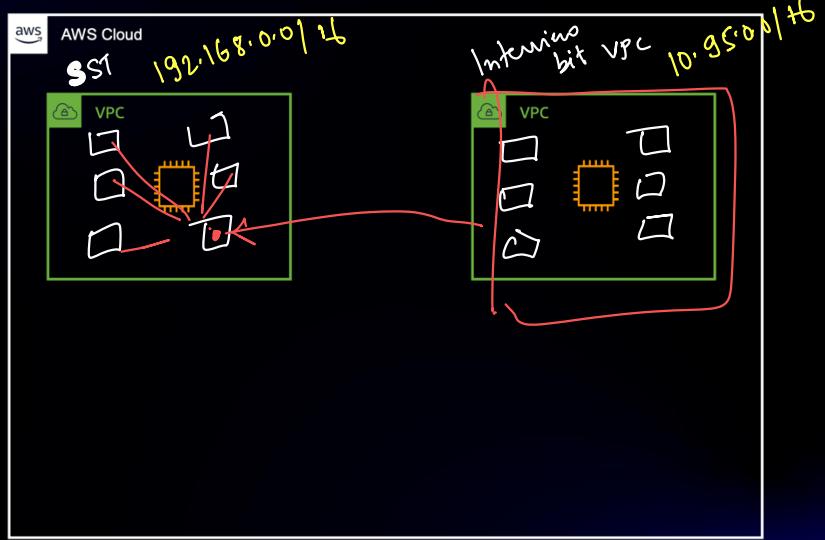


Agenda

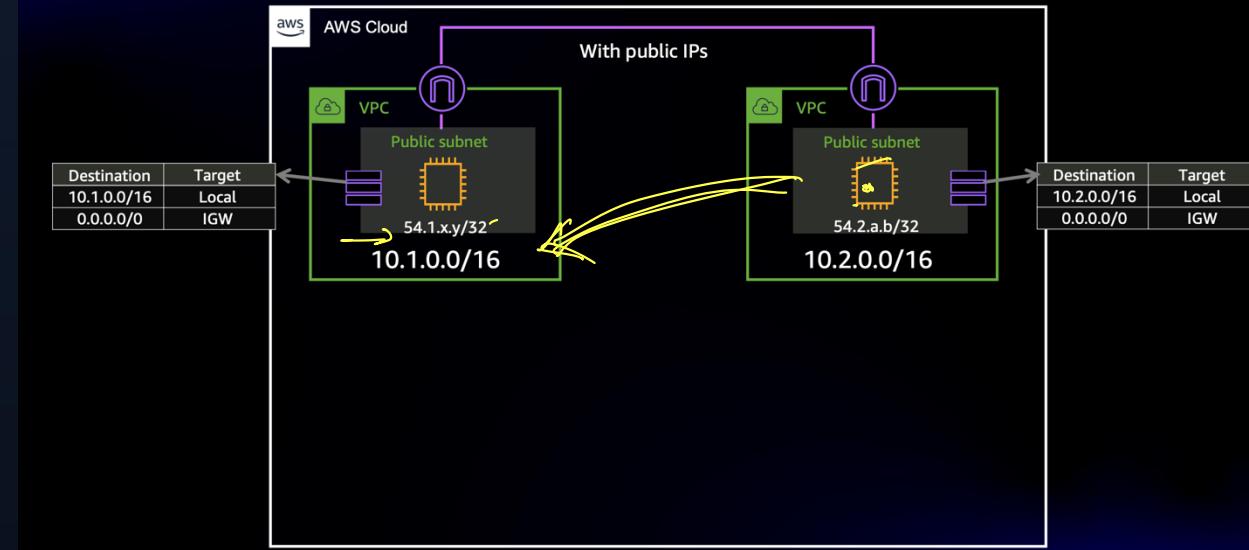
Quick Recap VPC



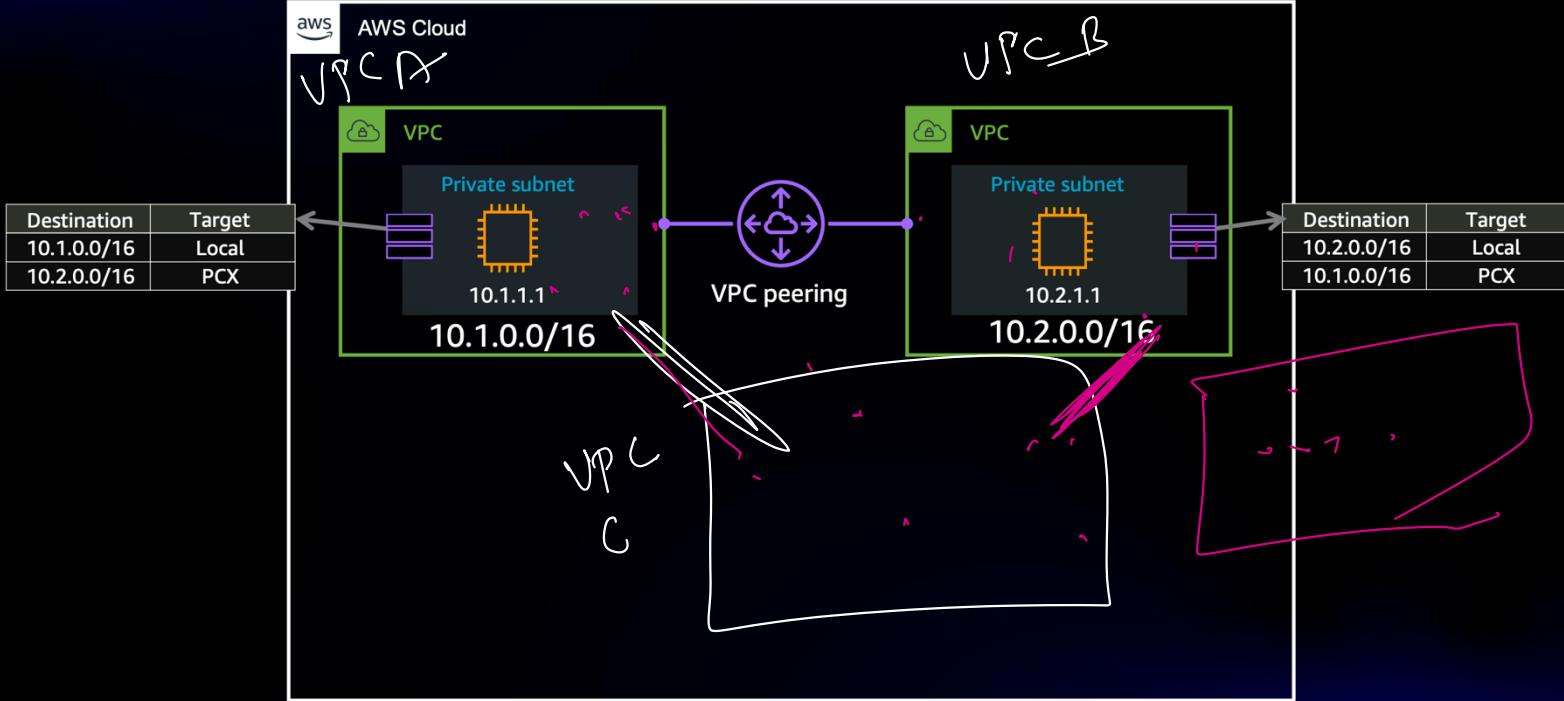
VPC-to-VPC connectivity options



VPC-to-VPC connectivity – Internet



VPC-to-VPC connectivity – VPC peering



Full mesh: How many Amazon VPC peering connections do I need to achieve full mesh?

$\frac{n(n-1)}{2}$

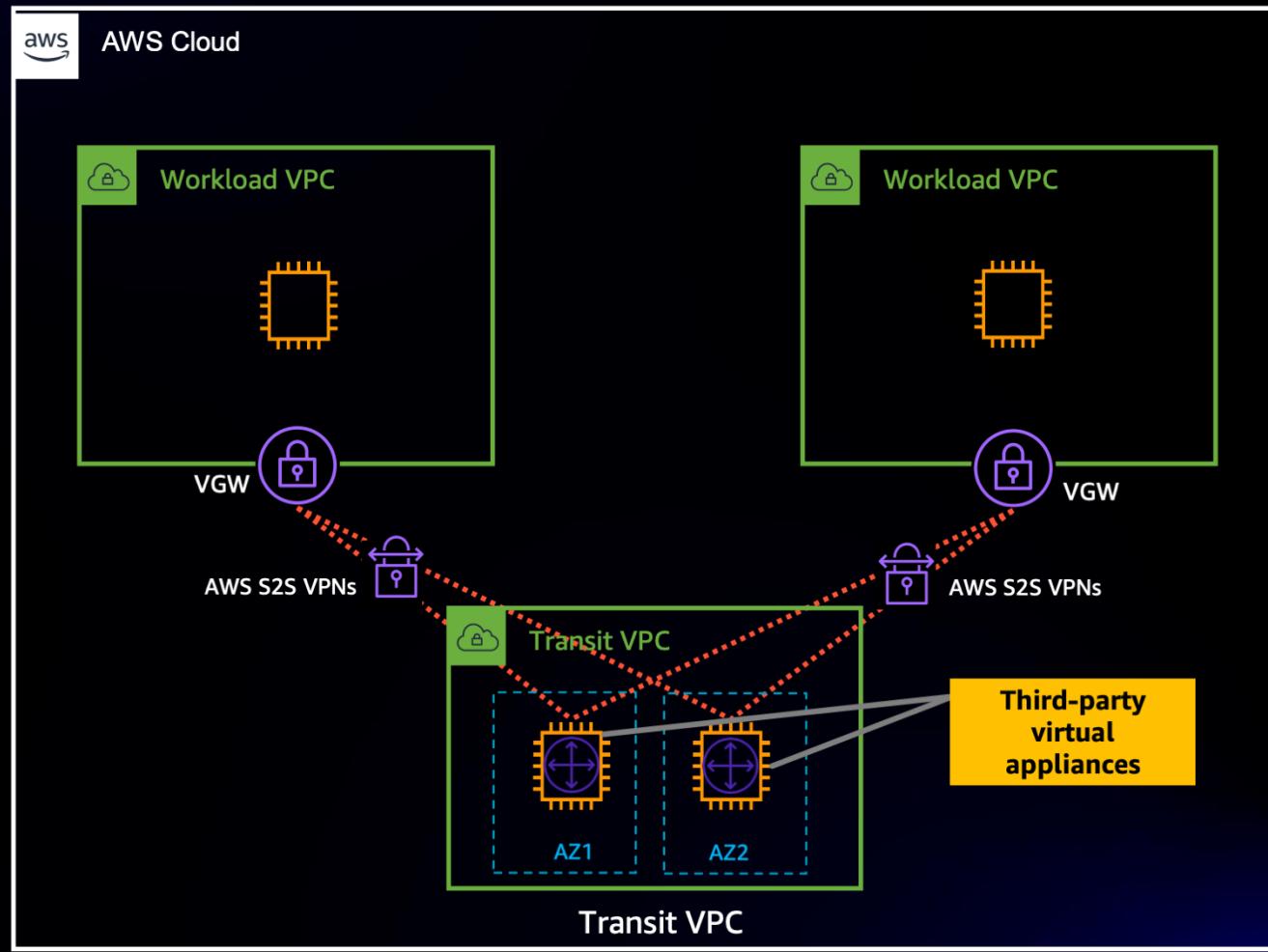
VPCs x 10

45

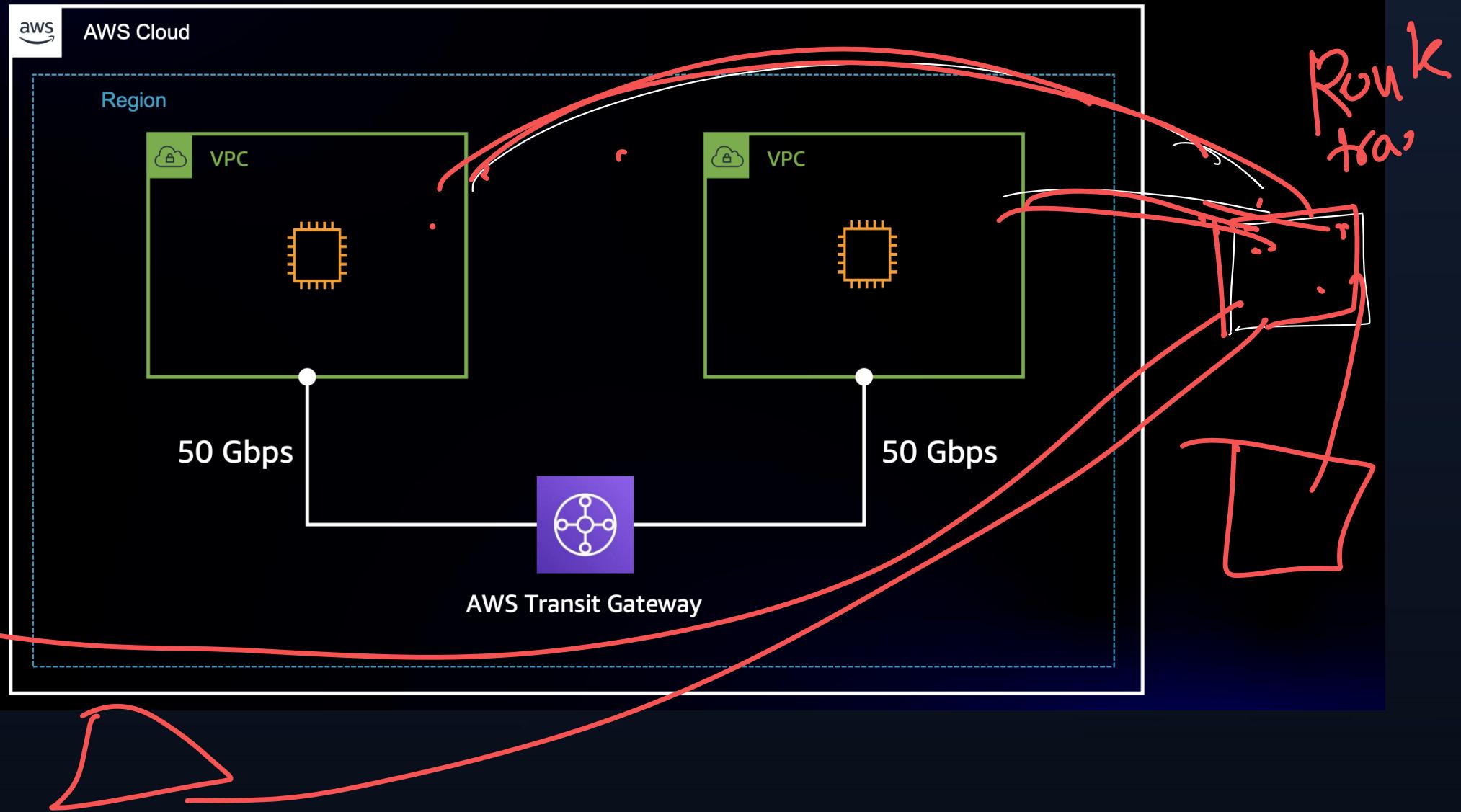
Full mesh: How many Amazon VPC peering connections do I need to achieve full mesh?

VPCs x 10

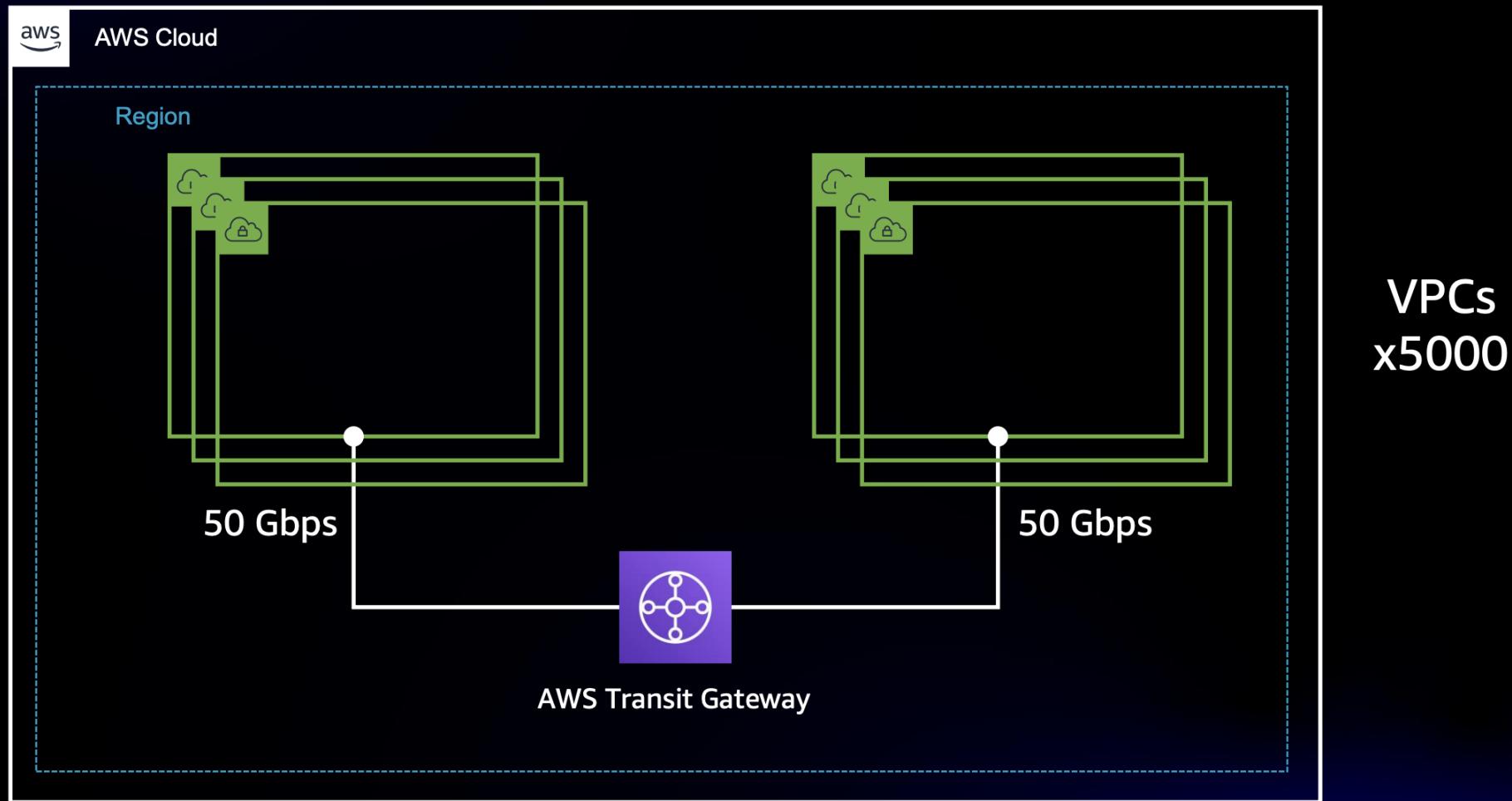
VPC-to-VPC connectivity – Transit VPC



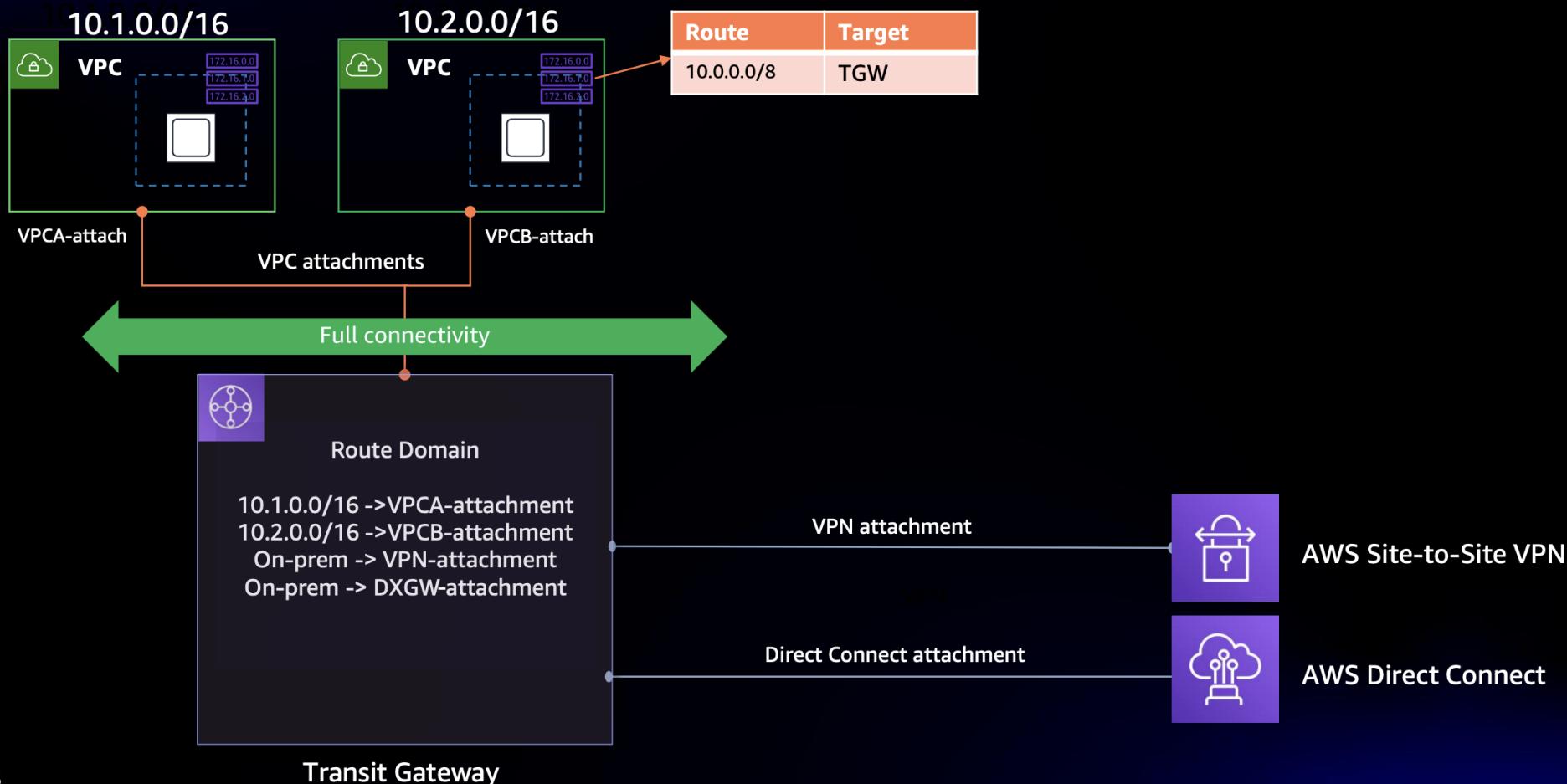
VPC-to-VPC connectivity – AWS Transit Gateway



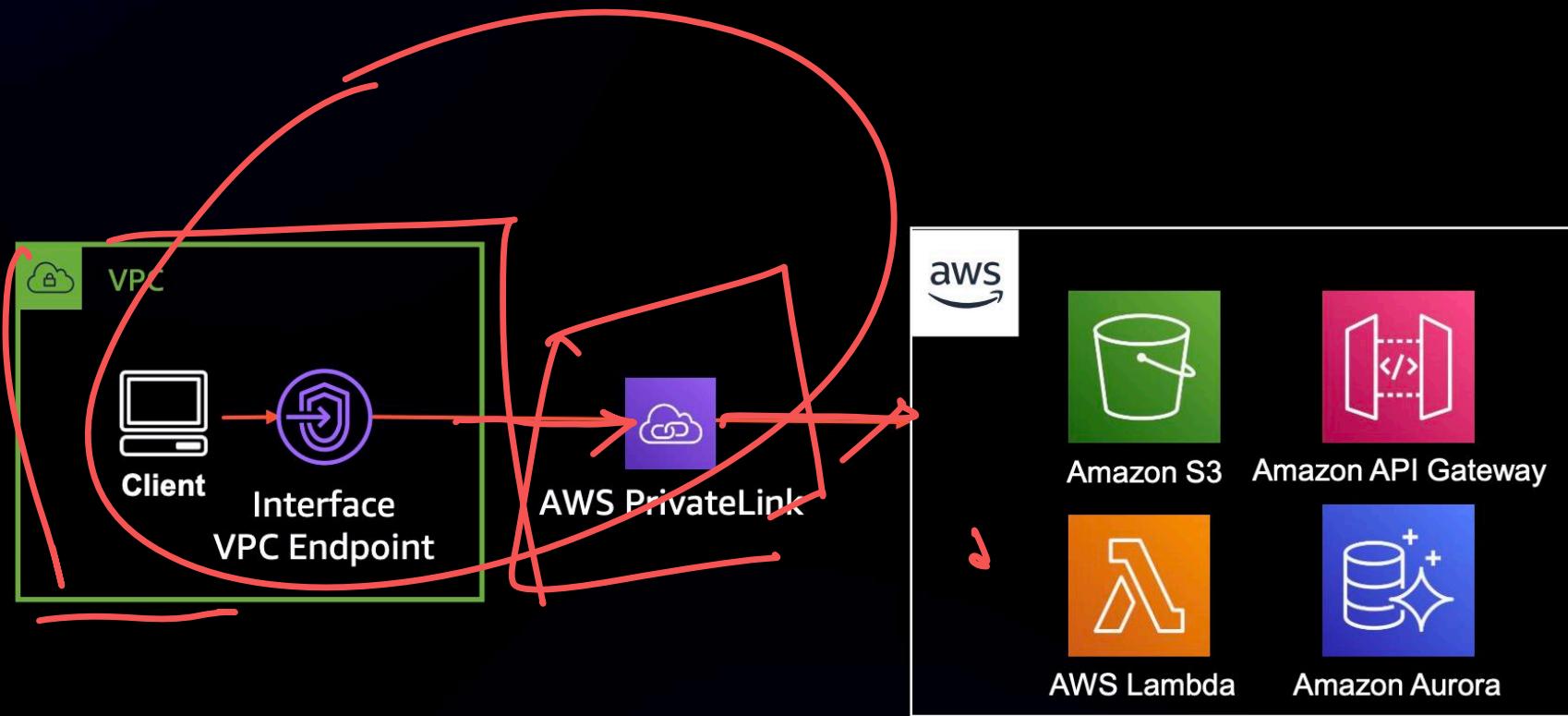
VPC-to-VPC connectivity – AWS Transit Gateway



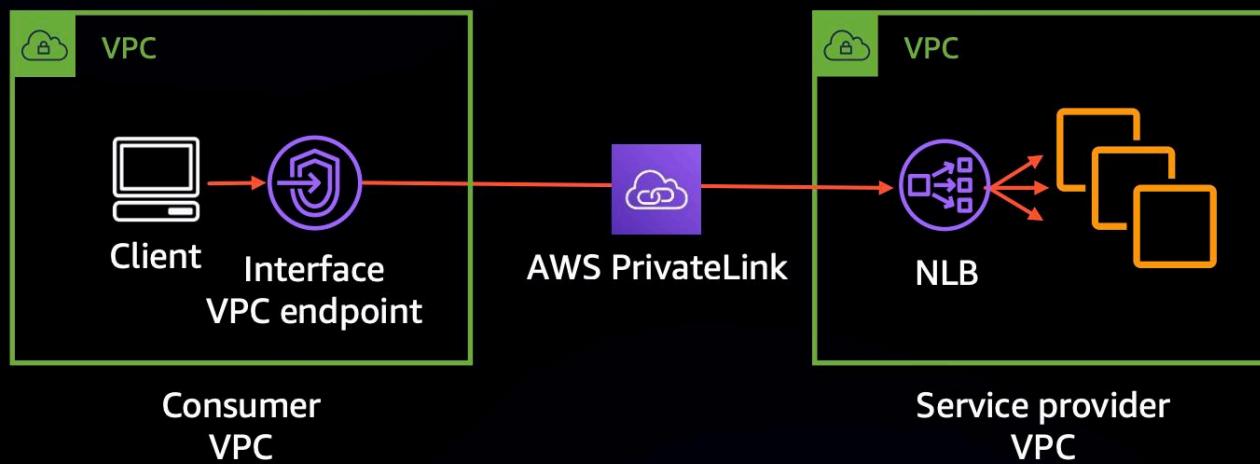
Transit Gateway – Flat network



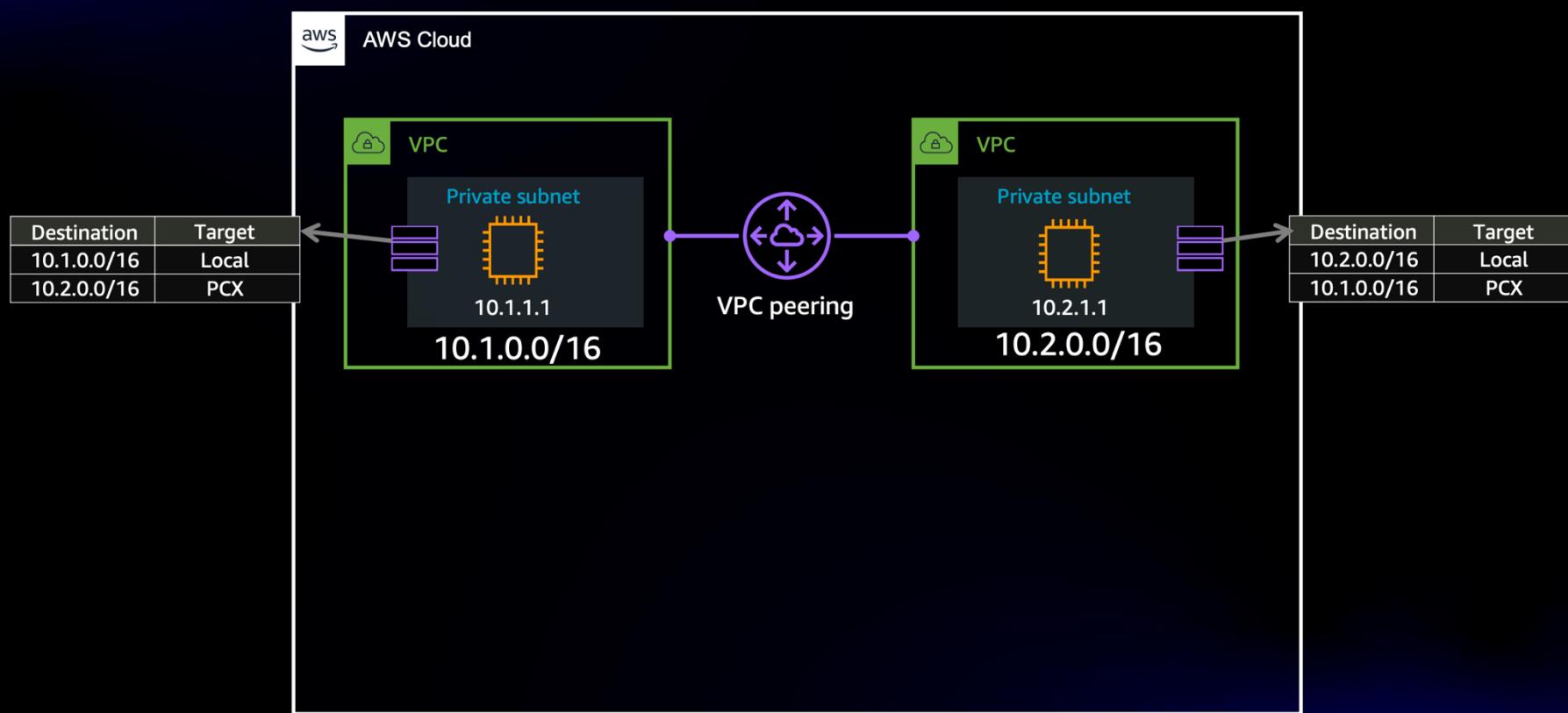
AWS PrivateLink



AWS PrivateLink



VPC Connectivity Options (Peering)



Full mesh: How many Amazon VPC peering connections do I need to achieve full mesh?

$$\frac{n(n-1)}{2}$$

VPCs x 10

VPC Connectivity Options (Peering)

Connecting VPCs and On-Premises Networks

AWS offers multiple options to connect your VPC to other networks.

- VPC Peering**
- AWS VPN
- Direct Connect
- Transit Gateway

The diagram illustrates VPC Peering. It shows two separate boxes labeled "VPC A" and "VPC B". VPC A has the IP range 10.0.0.0/16 and VPC B has the IP range 172.16.0.0/16. A central purple circular icon with a double-headed arrow symbol connects the two VPCs, indicating a direct networking connection between them.

VPC Peering

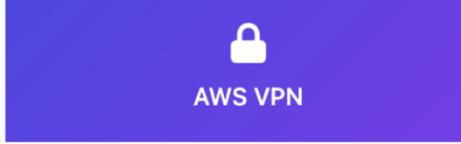
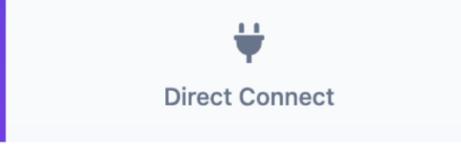
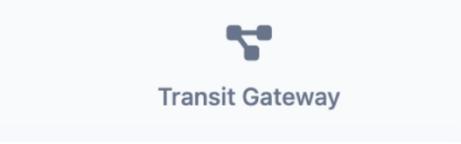
A VPC peering connection is a networking connection between two VPCs that enables you to route traffic between them using private IPv4 addresses or IPv6 addresses.

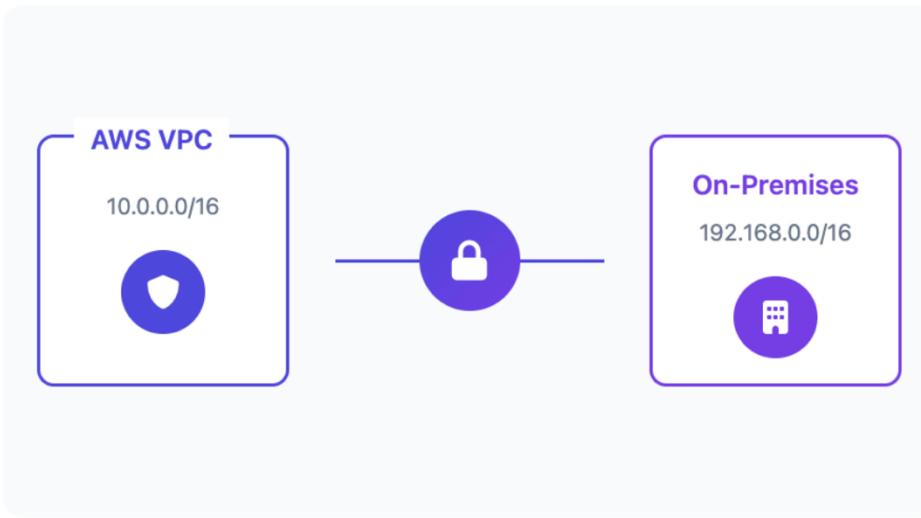
- ✓ Direct network route between two VPCs
- ✓ No gateway or VPN connection required
- ✓ No single point of failure or bandwidth bottleneck
- ✓ Traffic stays on the AWS global network

VPC Connectivity Options (VPN)

Connecting VPCs and On-Premises Networks

AWS offers multiple options to connect your VPC to other networks.

 VPC Peering  AWS VPN  Direct Connect  Transit Gateway



AWS VPN

AWS Virtual Private Network (VPN) solutions establish secure connections between your on-premises networks, remote offices, client devices, and the AWS global network.

- ✓ Site-to-Site VPN connects on-premises to AWS
- ✓ Client VPN connects remote users to AWS
- ✓ Encrypted connection over the internet
- ✓ Supports IPsec protocol

VPC Connectivity Options (Direct Connect)

Connecting VPCs and On-Premises Networks

AWS offers multiple options to connect your VPC to other networks.

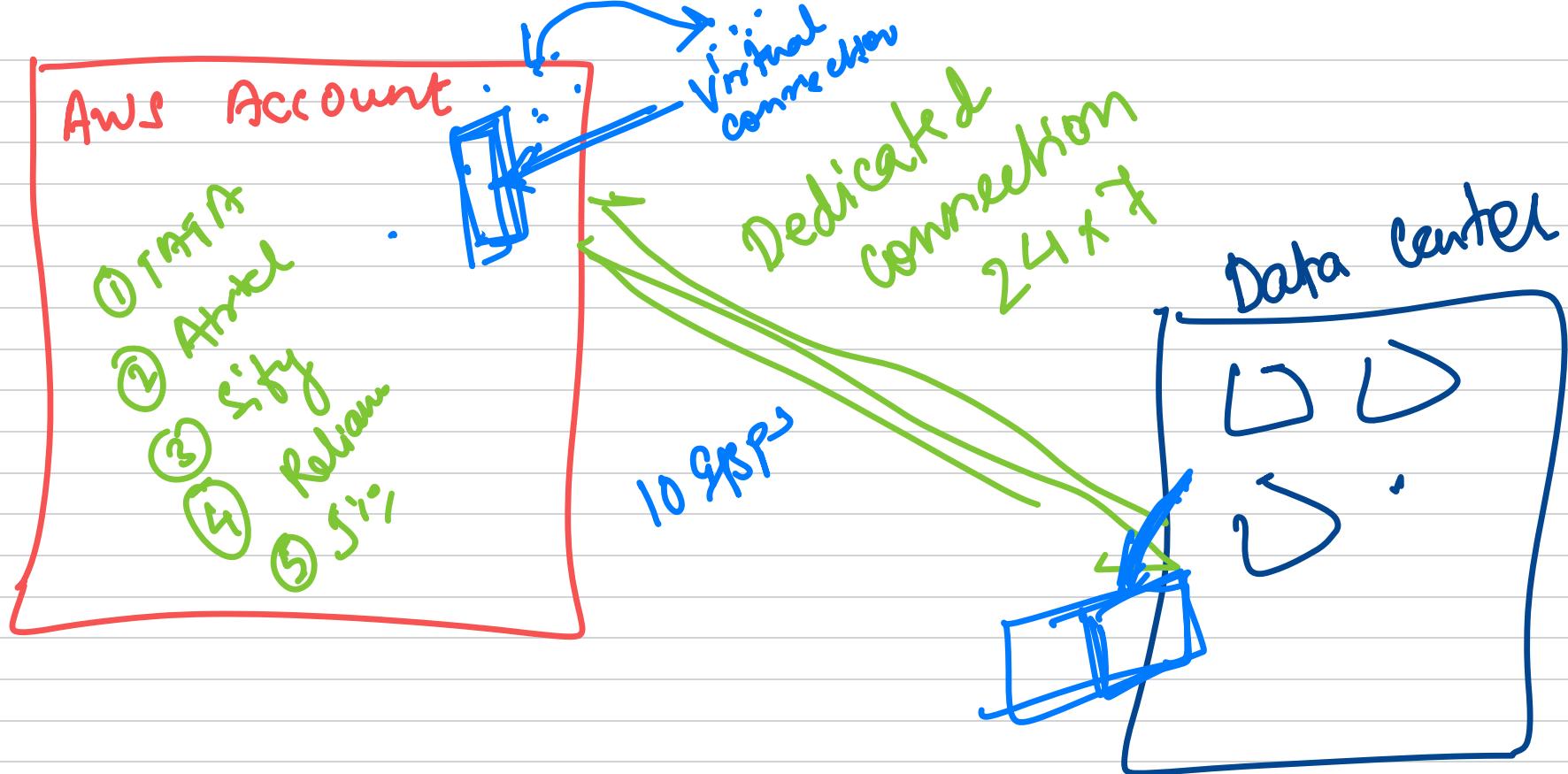
- VPC Peering
- AWS VPN
- Direct Connect**
- Transit Gateway

The diagram illustrates the AWS Direct Connect connection. It shows two boxes: 'AWS VPC' (IP range 10.0.0.0/16) and 'On-Premises' (IP range 192.168.0.0/16). They are connected by a line that ends in a purple plug icon. A blue oval highlights the plug icon, with the handwritten text '50 Gbps' written over it. The 'Direct Connect' option is highlighted with a purple background.

AWS Direct Connect

AWS Direct Connect is a cloud service that establishes a dedicated network connection from your premises to AWS, providing consistent network performance and reducing bandwidth costs.

- ✓ Dedicated private connection
- ✓ Reduced network costs
- ✓ Consistent network performance
- ✓ Compatible with all AWS services



VPC Connectivity Options (Mixed Connect)

Connecting VPCs and On-Premises Networks

AWS offers multiple options to connect your VPC to other networks.

- VPC Peering**
- AWS VPN**
- Direct Connect**
- Transit Gateway**

The diagram illustrates the AWS Transit Gateway architecture. At the top center is a purple circle containing a white camera icon labeled "Transit Gateway". Below it, five blue rounded rectangles represent different network components: "VPC A", "VPC B", "VPC C", "VPN", and "Direct Connect". Arrows show connections from each of these components to the central "Transit Gateway" circle.

AWS Transit Gateway

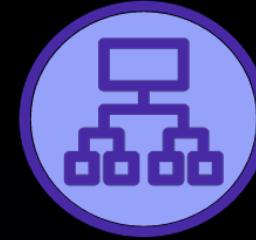
AWS Transit Gateway is a service that enables customers to connect their Amazon Virtual Private Clouds (VPCs) and their on-premises networks to a single gateway.

- ✓ Hub-and-spoke connectivity model
- ✓ Simplifies network architecture
- ✓ Centralized control and management
- ✓ Supports thousands of connections

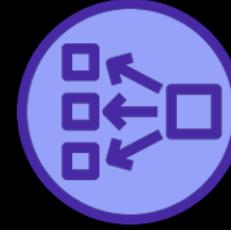
Types of Load balancer

 Application Load Balancer (ALB)	 Network Load Balancer (NLB)	 Gateway Load Balancer (GWLB)	 Classic Load Balancer (CLB)	 AWS Global Accelerator
Layer 7	Layer 4	Layer 3 gateway/ 4 load balancer	Layer 4/7	TCP/UDP
Targets IP, instances, AWS Lambda, containers	Targets IP, instances, ALB, containers	Targets IP, instances	Targets EC2-Classic	Targets IP, ALB, NLB
Protocols HTTP, HTTPS, gRPC	Protocols TCP, UDP, TLS	Protocols IP	Protocols TCP, SSL/TLS, HTTP, HTTPS	Protocols TCP, UDP

Which load balancing technology should we use?

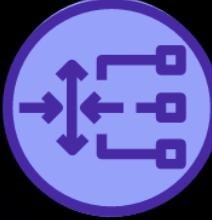
Targets	Requires	
 Instances	Layer 7 routing HTTP2/gRPC	
 AWS Lambda	Redirects, web sockets	
 Containers	Fixed response Authentication	Application Load Balancer
 IP	Web application firewall, AWS Outposts/AWS Local Zones Cookie stickiness, HTTP Desync mitigation Best option for the AWS Load Balancer Controller for containers	

Which load balancing technology should we use?

Targets	Requires	
 Instances	Low latency Zonal isolation	
 ALB	Long-lived TCP connections	
 Containers	Connection-based Layer 4 load balancing PrivateLink support	Network Load Balancer
 IP	Elastic IP support Hybrid architecture support AWS Fargate support direct to K8s pod	

aws

Which load balancing technology should we use?

Targets	Requires	
<input type="checkbox"/> Instances	Bump in the wire Auto scaling for packet processing devices (firewall, IdP)	 Gateway Load Balancer
○→ IP	Packet preservation for inspection PrivateLink GWLB endpoint Multi-port to same instance Route table entry	

Which load balancing technology should we use?

Targets	Requires	
 NLB	Accelerate latency-sensitive applications	
 ALB	Improve resiliency and availability on a global scale	
 IP	Simplified global traffic management Global set of anycast static IP addresses	