AWS VPC Peering

vs.

Transit Gateway

Technical Comparison

Architecture

VPC Peering

- Direct point-to-point connection between two VPCs
- Requires manual configuration for each pair (full-mesh model)

Transit Gateway

- Hub-and-spoke model
- Centralized gateway connecting multiple VPCs, VPNs, and on-premises networks

Scalability

VPC Peering

- Complexity grows exponentially
- For N VPCs, requires N(N-1)/2 connections (e.g., 10 VPCs = 45 connections, 20 VPCs would be a nightmare to manage)

Transit Gateway

- Scales linearly
- Each VPC connects once to the hub (10 VPCs = 10 attachments)

Transitive Routing

VPC Peering

- Not supported
- Traffic cannot route through intermediate VPCs (e.g., VPC A ⇔ VPC B ⇔ VPC C ≠ A⇔C)

Transit Gateway

- Supported
- All connected VPCs communicate via the hub

Cost

VPC Peering

- Only data transfer charges
- Cost-effective for small-scale setups

Transit Gateway

- Hourly fees per attachment + data processing costs
- Economical for large networks due to simplified management

Latency

VPC Peering

- Lower latency (direct path, no extra hops)

Transit Gateway

- Slightly higher latency due to central hub processing

Management

VPC Peering

- Decentralized
- Each peering connection managed independently

Transit Gateway

- Centralized
- Single point for routing policies, monitoring (CloudWatch), and security

Security

VPC Peering

- Supports cross-referencing security groups between peered VPCs

Transit Gateway

- No security group cross-referencing
- Relies on NACLs and route tables

Bandwidth

VPC Peering

- No bandwidth limits (dependent on instance types)

Transit Gateway

- 100 Gbps burst per availability zone per attachment

Use Cases

VPC Peering

- Small-scale architectures (2–3 VPCs)
- Low-latency requirements (e.g., app-to-database communication)

Transit Gateway

- Large enterprises with 10+ VPCs
- Hybrid cloud (VPN/Direct Connect integration)

Hybrid Connectivity

VPC Peering

- No native support
- Requires VPN/Direct Connect per VPC

Transit Gateway

- Single VPN/Direct Connect attachment serves all connected VPCs

Why Choose?

VPC Peering

- Simple setups with few VPCs
- Cost-sensitive environments with low cross-VPC traffic
- Low-latency critical workloads

Transit Gateway

- Scalability for growing networks
- Centralized management of multi-VPC, multi-region, or hybrid architectures
- Transitive routing requirements

Final Takeaway

VPC Peering

- Simplicity
- Low cost
- Direct connections

Transit Gateway

- Scalability
- Centralized control
- Hybrid readiness

Ready to level up your Network Game?

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