

## **AWS Advanced Networking – Specialty**

**Duration: 4 Days**

### **Prerequisites**

Participants should:

- Have strong networking fundamentals (routing, DNS, VPN, firewalls)
- Have hands-on AWS experience
- Have completed Architecting on AWS OR hold SAA certification

## **Day 1 – Advanced VPC Design & Connectivity**

### **Module 1: VPC Deep Dive**

- VPC architecture and design strategies
- CIDR planning and IP addressing best practices
- IPv4 vs IPv6 design considerations
- Route tables and routing behavior
- Longest prefix match concept
- Blackhole routes and route priorities
- Prefix lists usage
- VPC Monitoring & Security
  - Flow Logs deep analysis
  - Traffic Mirroring use cases
- VPC Security
  - Security Groups vs NACL troubleshooting scenarios

**Hands-On Lab:** Introduction to Amazon Virtual Private Cloud (VPC)

### **Module 2: Network Performance & Optimization**

- MTU, PPS, throughput tuning
- Placement Groups design decisions
- ENA vs EFA performance use cases
- Jumbo frames and latency optimization

### **Module 3: VPC Connectivity Patterns**

- VPC Peering architecture and limitations
- PrivateLink design patterns
- VPC Endpoints deep dive

- Transit Gateway routing behavior
- Transit Gateway route tables
- Inter-Region Peering
- ECMP routing concepts
- Centralized vs decentralized networking models

**Hands-On Lab:** Comparing Amazon Virtual Private Cloud (VPC) Peering and AWS Transit Gateway

## **Day 2 – Hybrid Connectivity & Enterprise Networking**

### **Module 4: Hybrid Networking – VPN**

- Site-to-Site VPN architecture
- Static vs dynamic routing (BGP)
- Tunnel redundancy and failover
- Dead Peer Detection (DPD)
- Transit VPC pattern
- Client VPN design

**Hands-On Lab:** Connecting On-Premises Networks

### **Module 5: Hybrid Networking – Direct Connect**

- Direct Connect architecture and components
- Dedicated vs Hosted connections
- Virtual Interfaces (Private/Public/Transit)
- Direct Connect Gateway design
- Advanced Direct Connect Concepts
  - BGP communities
  - Link Aggregation Groups (LAG)
  - Bidirectional Forwarding Detection (BFD)
  - Jumbo frames
  - High availability Direct Connect architectures

### **Module 6: Hybrid Architecture Design Strategies**

- Choosing the right connectivity option:
  - VPN vs Direct Connect
  - Transit architectures

- Multi-region connectivity patterns

## **Day 3 – DNS, Load Balancing & Edge Networking**

### **Module 7: Elastic Load Balancing Deep Dive**

- ALB vs NLB vs GWLB architecture
- TLS termination strategies
- Sticky sessions
- Cross-zone load balancing
- Health check optimization
- Gateway Load Balancer inspection architectures

#### **Hands-On Lab: ELB Implementation**

### **Module 8: Advanced DNS Architecture**

- Route 53 architecture
- Public vs Private Hosted Zones
- Routing policies deep dive
- Route 53 Resolver endpoints
- Route53- Security considerations

#### **Hands-On Lab: DNS Implementation**

### **Module 9: Edge Networking & Global Services**

- CloudFront architecture and caching
- Global Accelerator performance benefits
- DDoS protection strategies
- Creating a Global Accelerator

#### **Hands-on Lab - Content Delivery Networks**

### **Module 10: EKS & Container Networking**

- EKS networking architecture
- VPC CNI deep dive
- Pod networking models
- Service networking

## **Day 4 – Security, Automation, Troubleshooting & Multi-Account Networking**

### **Module 11: Network Security Architecture**

- AWS WAF architecture
- Shield Standard vs Advanced

- Network Firewall inspection models

**Hands-On Lab:** Intelligent Application Protection

**Module 12: Monitoring & Troubleshooting (High Exam Weight)**

- CloudWatch networking metrics
- CloudTrail auditing
- Log analysis using CloudWatch Logs Insights

**Hands-On Lab:** Collecting and Analyzing Logs with Amazon CloudWatch Logs Insights

**Module 13: Multi-Account Networking & Governance**

- AWS Organizations networking model
- Shared VPC architecture
- Centralized networking account design
- Cross-account resource sharing

**Module 14: Automation & Infrastructure as Code**

- CloudFormation networking deployments
- Infrastructure automation patterns
- Network configuration versioning

**Module 15: Threat Detection & Compliance**

- GuardDuty networking detections
- AWS Config compliance monitoring
- Security Hub integration
- Amazon Inspector overview