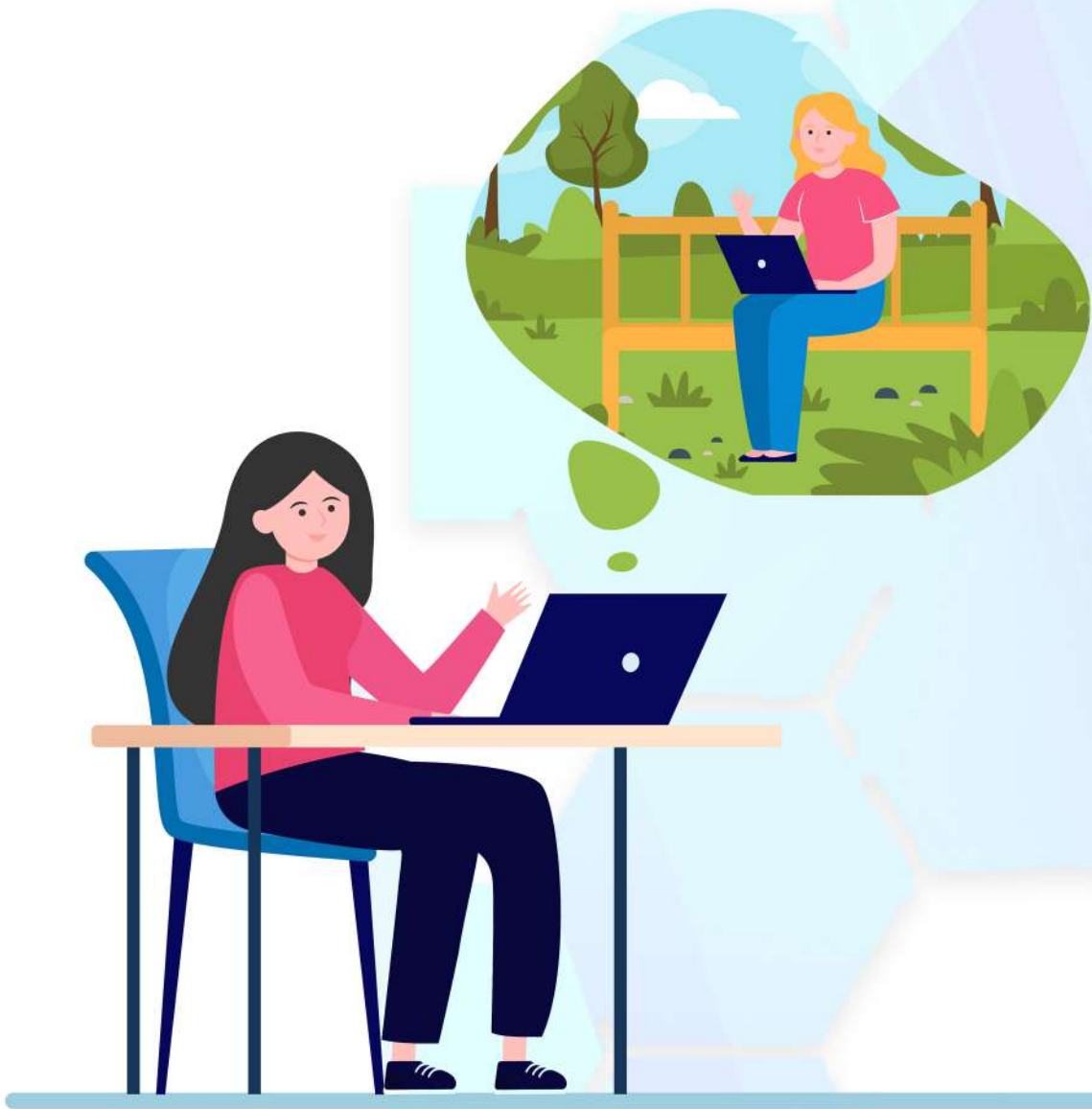


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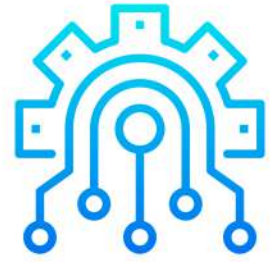


# Online Course

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# AWS Certified Advanced Networking Specialty

## Course Modules



### Network Design

#### 1. Design a solution that incorporates edge network services

- Design patterns for the usage of content distribution networks
- Design patterns for global traffic management
- Patterns for content distribution networks & global traffic management with other services

#### 2. DNS solutions that meet public, private, and hybrid requirements

- DNS protocol (DNS records, TTL, DNSSEC, etc)
- DNS logging and monitoring
- Amazon Route 53 features (alias records, traffic policies, etc)
- Route 53 with other AWS networking services
- Route 53 with hybrid, multi-account, and multi-Region options
- Domain registration

#### 3. Design solutions that integrate load balancing

- Load balancing works at layer 3, layer 4, and layer 7 of the OSI
- Different types of load balancers & how they meet requirements
- Connectivity patterns that apply to load balancing
- Scaling factors for load balancers
- Integrations of load balancers and other AWS services
- Configuration options for load balancers
- Configuration options for load balancer target groups



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## 4. Logging & monitor requirements across AWS & hybrid networks

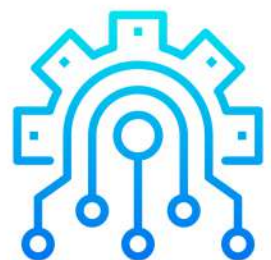
- Amazon CloudWatch metrics, agents, logs, alarms, etc)
- AWS Transit Gateway Network Manager in architectures
- VPC Reachability Analyzer in architectures to provide visibility
- Flow logs & traffic mirroring in architectures to provide visibility
- Access logging (for example, load balancers, CloudFront)

## 5. Routing strategy and connectivity architecture

- Routing fundamentals (dynamic compared with static, BGP)
- Layer 1 and layer 2 concepts for physical interconnects
- Encapsulation and encryption technologies
- Resource sharing across AWS accounts
- Overlay networks

## 6. Design a routing strategy and connectivity architecture

- Different connectivity patterns and use cases
- Capabilities and advantages of VPC sharing
- IP subnets and solutions accounting for IP address overlaps



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## Network Implementation

### 7. Routing and connectivity bet on-premises netws & the AWS Cloud

- Routing protocols (for example, static, dynamic)
- VPNs (for example, security, accelerated VPN)
- Layer 1 and types of hardware to use
- Layer 2 and layer 3 (VLANs, IP addressing, gateways, etc)
- Traffic management and SD-WAN (Transit Gateway Connect)
- DNS (conditional forwarding, hosted zones, resolvers)
- Security appliances (for example, firewalls)
- Load balancing (layer 4 compared with layer 7, etc)
- Infrastructure automation
- AWS Organizations and AWS Resource Access Manager
- Test connectivity (Route Analyzer, Reachability Analyzer)
- Networking services of VPCs

### 8. Implement routing & connectivity across multiple AWS accounts

- Inter-VPC and multi-account connectivity
- Private application connectivity (for example, PrivateLink)
- Methods of expanding AWS networking connectivity
- Host and service name resolution for applications and clients
- Infrastructure automation
- Authentication and authorization (SAML, Active Directory)
- Security (security groups, network ACLs, AWS Network Firewall)
- Test connectivity (Route Analyzer, Reachability Analyzer, tooling)



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## 9. Implement complex hybrid and multi-account DNS architectures

- When to use private hosted zones and public hosted zones
- Methods to alter traffic mngmtt (latency, geography, weighting)
- DNS delegation and forwarding (conditional forwarding)
- Different DNS record types (A, AAAA, TXT, pointer records, etc)
- DNSSEC
- How to share DNS services between accounts (AWS RAM)
- Implementation options for outbound and inbound endpoints

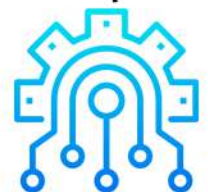
## 10. Automate and configure network infrastructure

- Infrastructure code(IaC) ([AWS CDK],AWS CloudFormation,etc)
- Event-driven network automation
- Common problems of using hardcoded instructions

## Network Management and Operation

## 11. Maintain routing and connectivity on AWS and hybrid networks

- Industry-standard routing protocols
- Connectivity methods for AWS and hybrid networks
- How limits and quotas affect AWS networking services
- Available private and public access methods for custom services
- Available inter-Regional & intra-regional communication patterns



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## 12. Network traffic to troubleshoot & optimize connectivity patterns

- Network performance metrics and reachability constraints
- Appropriate logs and metrics to assess network performance
- Tools to collect and analyze logs and metrics
- Tools to analyze routing patterns and issues



## 13. AWS networks for performance, reliability, & cost-effectiveness

- Situations in which VPC peer or a transit gateway are appropriate
- Different methods to reduce bandwidth utilization
- Cost-effective connectivity options
- Different types of network interfaces on AWS
- High-availability features in Route 53
- Availability of options from Route 53 that provide reliability
- Load balancing and traffic distribution patterns
- VPC subnet optimization
- Frame size optimization for bandwidth across different connection types

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## Network Security, Compliance, and Governance

## 14. Network features to meet security and compliance needs & requirements

- Different threat models based on application architecture
- Common security threats
- Mechanisms to secure different application flows
- AWS network architecture that meets security & compliance requirements



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## **15. Security by using network monitoring and logging services**

- Network monitoring & logging services that are available in AWS
- Alert mechanisms Log creation in different AWS services
- Log delivery mechanisms (Amazon Kinesis, Route 53, CloudWatch)
- Mechanisms to audit network security configurations



## **16. Confidentiality of data and communications of the network**

- Network encryption options that are available on AWS
- VPN connectivity over Direct Connect
- Encryption methods for data in transit (for example, IPsec)
- Network encryption under the AWS shared responsibility model
- Security methods for DNS communications (DNSSEC)

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