Designing and Implementing Cloud Connectivity (ENCC)

Course Duration: 40 Hours **Course code: ENCC**

1. Course Overview

The Designing and Implementing Cloud Connectivity training helps you develop the skills required to design and implement enterprise cloud connectivity solutions. Learn how to leverage both private and public internet-based connectivity to extend the enterprise network to cloud providers. Explore the basic concepts surrounding public cloud infrastructure and how services like Software as a Service (SaaS) can be integrated. You will practice how to analyze and recommend connectivity models that provide the best quality of experience for users. Implement both Internet Protocol Security (IPsec) and Software-Defined Wide-Area Network (SD-WAN) cloud connectivity, as well as build overlay routing with Open Shortest Path First (OSPF) and Border Gateway Protocol (BGP).

2. What you'll learn?

After completing this course you should be able to:

- Describe the fundamental components and concepts of cloud computing, including deployment models, cloud services, and cloud providers, to provide learners with a comprehensive overview of the subject
- Describe the options available for establishing connectivity to public cloud services, including point-to-point IPsec VPN and various Cisco Catalyst SD-WAN Cloud OnRamp deployment options
- Describe private connectivity options to public cloud provider infrastructure
- Describe the available options for connectivity to SaaS applications from a geographically distributed organization's premises

- Describe various cloud connectivity options and explore high availability, resiliency, and scalability capabilities with Cisco cloud connectivity
- Describe and explore public cloud security and its components comprehensively
- Describe regulatory compliance requirements
- Explain the available options and describe the procedures for implementing IPsec-driven internet-based public cloud connectivity
- Introduce overlay routing
- Introduce the Cisco Catalyst SD-WAN capabilities for internet-based public cloud connectivity
- Describe Cisco SD-WAN native and cloud security capabilities
- Introduce the Cloud OnRamp for SaaS
- Introduce the Catalyst Cisco SD-WAN Policies
- Introduce AppQoE
- Describe how to diagnose and troubleshoot common issues for connectivity to public cloud environments using internet-based connectivity
- Troubleshoot OSPF, BGP, route redistribution, and static routes deployed in cloud environments
- Describe Cisco SD-WAN and connectivity to public cloud providers

3. Target Audience

Individuals involved in extending the enterprise network to cloud providers.

4. Pre-Requisites

Attendees should meet the following prerequisites:

- Good understanding of enterprise routing
- Good understanding of WAN networking
- Good understanding of VPN technology
- Good understanding of Cisco Catalyst SD-WAN

- Good understanding of Public Cloud services. such as AWS, Microsoft Azure and Google Cloud Platform.

5. Course content

1- Public Cloud Fundamentals

- Cloud Computing
- Cloud Deployment Models
- Public Cloud Service Models
- Public Cloud Providers

2- Internet-Based Connectivity to Public Cloud

- Public Internet
- VPN
- Cisco SD-WAN
- Cisco SD-WAN Cloud Connectivity

3- Private Connectivity to Public Cloud

- Private Connectivity Overview
- Direct Connect and Private Peering
- Colocations, Cloud Exchange and Software-Defined Cloud Interconnect

4- SaaS Connectivity

- Centralized Internet Gateway
- Direct Internet Access
- Cloud Security Providers (Umbrella)
- Dedicated Connectivity (Webex)

5- Resilient and Scalable Public Cloud Connectivity

- Business and Technical Requirements
- High Availability and Resiliency

- Performance and Scalability
- Bandwidth (Dedicated and Shared)
- SLA and QoS
- Design Case Study Activity: Designing Enterprise Cloud Connectivity

6- Cloud-Native Security Policies

- Public Cloud Security Overview
- East-West Traffic Control
- North-South Traffic Control
- Inter-Region Connectivity
- Amazon Web Servces (AWS) Native Security
- Microsoft Azure Native Security
- Google Cloud Platform (GCP) Native Security

7- Regulatory Compliance Requirements

- Regulatory Compliance Requirements

8- Internet-Based Public Cloud Connectivity

- Underlay Transport Network
- Overlay VPN Tunnels to a Cloud Gateway in AWS
- Overlay VPN Tunnels to a Cloud Gateway im Azure
- Overlay VPN Tunnels to a Cloud Gateway in GCP
- Overlay VPN Tunnels to a Cloud-Hosted Cisco IOS XE Router

9- Overlay Routing Deployment

- Overlay Routing
- Configure OSPF
- Configure BGP
- Configure BGP in AWS
- Configure BGP in Azure Cloud

- Configure BGP in GCP
- Summary Configuration Example

10- Cisco SD-WAN Internet-Based Cloud Connectivity

- Cloud OnRamp Functionality
- Cloud OnRamp for Multicloud

11- Cisco SD-WAN Cloud Security

- Cisco vManage Security Policies
- Cisco Umbrella Cloud Security

12- Cloud OnRamp for Saas

- SaaS Applications Challenges
- Client-Side SaaS Path Performance Statistics
- Cloud OnRamp for SaaS over SIG Tunnels
- Cloud OnRamp for SaaS and Microsoft 365

13- Cisco SD-WAN Policies

- Policy Configuration Overview
- Data Policy Overview
- Centralized Data Policy
- Use case - Implementing Traffic Engineering
- AAR Overview
- AAR Components
- Implement AAR Policy for Cloud OnRamp for SaaS
- Configuring Traffic Category and Service Area for Specific Policies
- Enable Cloud OnRamp for SaaS for Specific Applications at Specific Sites

14- Application Quality of Experience

- Application Quality of Experience Overview
- TCP Optimization

- Data Redundancy Elimination
- Packet Duplication
- Forward Error Correction

15- Internet-Based Public Cloud Connectivity Diagnostics

- Diagnose Underlay Transport Network
- Diagnose Overlay VPN Tunnel Connectivity to a Cloud Gateway
- Troubleshoot AWS VPN Gateways
- Troubleshoot Azure VPN Gateways
- Troubleshoot GCP VPN Gateways

16- Overlay Routing Diagnostics

- Overlay Network Basics
- Open Shortest Path First
- Border Gateway Protocol (BGP)
- Overlay Routing in Cloud Environments

17- Cisco SD-WAN Public Cloud Connectivity Diagnostics

- Troubleshoot Underlay Connectivity
- Troubleshoot Overlay Routing
- Troubleshoot Cisco SD-WAN Cloud OnRamp