Google Cloud Network Engineer

Course Duration: 40 Hours **Course code: GCNE**

1. Course Overview

During this five-day course, you will learn how to design, implement, manage, and troubleshoot network architectures on Google Cloud Platform (GCP). This course focuses on Virtual Private Cloud (VPC), hybrid connectivity, network security, load balancing, and network optimization. You will gain hands-on experience in building scalable, secure, and highly available network infrastructures in cloud environments.

2. What you'll learn?

By the end of the course, you will be able to:

- Design and implement VPC networks in Google Cloud
- Configure subnets, routes, and IP addressing schemes
- Implement hybrid connectivity using VPN and Interconnect
- Manage and secure network traffic using firewall rules and policies
- Deploy and configure load balancing solutions
- Implement DNS and CDN services
- Monitor and troubleshoot network performance
- Design highly available and fault-tolerant network architectures
- Optimize network cost and performance

3. Target Audience

This course is ideal for:

- Network engineers and administrators
- Cloud network architects
- System engineers and DevOps professionals
- IT professionals working with enterprise networking

- Professionals preparing for Google Cloud Network Engineer certification

4. Pre-Requisites

Before taking this course, you should have:

- Strong understanding of networking fundamentals (TCP/IP, DNS, routing)
- Basic knowledge of cloud computing
- Familiarity with firewalls and security concepts
- Experience with Linux command line (recommended)

5. Course content

Module 1: Course Introduction

- Course overview and objectives
- Google Cloud certification path
- Role of a Cloud Network Engineer

Module 2: Google Cloud Networking Fundamentals

- Overview of GCP networking
- Global infrastructure (regions and zones)
- Software-defined networking in GCP
- Network design principles

Module 3: Virtual Private Cloud (VPC)

- VPC architecture and components
- Creating and managing VPC networks
- Subnets and IP addressing
- Routes and route priorities
- Shared VPC

Module 4: Network Security

- Firewall rules and policies

- Hierarchical firewall policies
- Private Google Access
- VPC Service Controls
- Identity-Aware Proxy (IAP)

Module 5: Hybrid Connectivity

- Cloud VPN (Classic and HA VPN)
- Cloud Interconnect (Dedicated and Partner)
- Designing hybrid architectures
- Routing with Cloud Router (BGP)

Module 6: Load Balancing

- Overview of Google Cloud Load Balancing
- Global vs regional load balancing
- HTTP(S), TCP/SSL, and UDP load balancing
- Internal load balancing
- Health checks and backend services

Module 7: DNS and Traffic Management

- Cloud DNS configuration
- Public and private DNS zones
- DNS forwarding and peering
- Traffic routing strategies

Module 8: Content Delivery and Edge Networking

- Cloud CDN
- Edge caching strategies
- Performance optimization
- Latency reduction techniques

Module 9: Network Monitoring and Logging

- VPC Flow Logs
- Cloud Monitoring for networks
- Packet Mirroring
- Network Intelligence Center
- Troubleshooting connectivity issues

Module 10: Network Automation and Infrastructure as Code

- Automating network deployment
- Using Terraform for networking
- Deployment Manager basics
- CI/CD integration

Module 11: High Availability and Disaster Recovery

- Designing resilient network architectures
- Multi-region and multi-zone deployments
- Failover strategies
- Redundancy and fault tolerance

Module 12: Security Best Practices and Compliance

- Network security architecture
- Encryption in transit
- Secure access design
- Compliance and governance

Module 13: Cost Optimization for Networking

- Understanding network pricing
- Cost monitoring and optimization
- Efficient architecture design
- Reducing egress costs

Module 14: Advanced Networking Concepts

- Private Service Connect
- Service networking
- Network peering strategies
- Advanced routing techniques

Module 15: Certification Preparation and Case Studies

- Exam preparation tips
- Scenario-based questions
- Real-world network architectures
- Final review and Q&A