# Designing and Implementing Cisco Service Provider Cloud Network Infrastructure Training

Duration: **5 Day**

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The **Designing and Implementing Cisco Service Provider Cloud Network Infrastructure** training teaches you how to design and implement virtualization cloud infrastructures in a service provider network. You will learn about virtualized network function infrastructures and how to use programmability and orchestration to manage virtualization cloud infrastructures. You will also learn about cloud computing and implementation of cloud interconnect and data center interconnect solutions. In addition, you will learn how to monitor and secure virtualization cloud infrastructures and provide optimization and high availability within the infrastructures.

**How You'll Benefit**

This training will help you:

- Design and implement virtualization cloud infrastructures in a service provider network
- Learn about virtualized network function infrastructures
- Learn how to use programmability and orchestration to manage virtualization cloud infrastructures
- Learn about cloud computing
- Learn about cloud interconnect and data center interconnect solutions
- Learn how to implement various interconnect solutions
- Learn how to monitor and secure virtualization cloud infrastructures and provide optimization and high availability within the infrastructures
- Earn 40 CE credits toward recertification

This training prepares you for the 300-540 SPCNI v1.0 exam. If passed, you earn the Cisco Certified Specialist – Service Provider Cloud Network Infrastructure certification and satisfy the concentration exam requirement for the Cisco Certified Network Professional Service Provider (CCNP SERVICE PROVIDER).

**What to Expect in the Exam**

300-540 SPCNI: Designing and Implementing Cisco Service Provider Cloud Network Infrastructure is a 90-minute exam associated with the Cisco Certified Specialist – Service Provider Cloud Network Infrastructure certification and satisfies the concentration exam requirement for the Cisco Certified Network Professional Service Provider (CCNP SERVICE PROVIDER).

The multiple-choice format tests your knowledge of:

- Designing and implementing virtualized architecture
- Cloud interconnect
- High availability
- Security
- Service assurance
- Optimization best practices

## Prerequisites

The knowledge and skills you are expected to have before attending this training are:

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- Routing protocol configuration experience with BGP, Intermediate System-to-Intermediate System (IS-IS), and Open Shortest Path First (OSPF)
- Knowledge of Layer 2 IEEE switching and related protocols, including MPLS configuration and troubleshooting of Cisco routers in a large network environment

These skills can be found in the following Cisco Learning Offerings:

- Implementing and Administering Cisco Solutions (CCNA)
- Understanding Cisco Service Provider Network Foundations (SPFNDU)
- Implementing and Operating Cisco Service Provider Network Core Technologies (SPCOR)

## What You Will Learn

- Get an overview of Cisco Network Function Infrastructure, Cisco Network Infrastructure Manager, Cisco Virtualized Infrastructure Manager (VIM), and Cisco Network Service Orchestrator (NSO) Virtualized Infrastructure Manager
- Understand the concept of networking and deployment operation in OpenStack platform
- Get an overview the security features available in Cisco Network Functions Virtualization (NFVI) solution
- Describe the application hosting architecture on a Cisco IOS XR router
- Introduce containers and describe container architecture
- Describe Kubernetes concepts, such as Kubernetes objects, and how nodes, pods, and clusters fit into them
- Describe cloud computing, cloud deployment models, cloud service models, and Carrier-Neutral Facilities (CNFs)
- Implement and configure Multi-Protocol Label Switching (MPLS), Segment Routing (SR), and SRv6
- Describe the operation and data flow of the Layer 3 Virtual Private Network (VPN) control plane
- Configure Label Distribution Protocol (LDP) and Border Gateway Protocol (BGP) security and optimization options
- Describe Interior Gateway Protocol (IGP) control plane security mechanisms
- Configure unicast reverse path forwarding, Media Access Control Security (MACsec), and remote-triggered black-hole filtering
- Get an overview of high-availability technologies and multi-homing scenarios in the service provider network
- Describe the benefits, enablement, implementation, and configuration of Segment Routing Traffic Engineering (SR-TE)
- Describe Quality of Service (QoS) options for public cloud connectivity
- Discuss high availability mechanisms used in routing (anycast) and services Domain Name System (DNS)
- Implement On-Demand Next Hop
- Comprehend and implement model-driven telemetry and use Cisco ThousandEyes for enhanced network visibility and management
- Describe the basic concepts, history, and purpose of telemetry, including the telemetry push model and telemetry collectors
- Discuss the efficiency and ease of use of various encoding methods, including Google Protocol Buffers (GPB), Compact GPB, and Key-value GPB, as well as JavaScript Object Notation (JSON) and transport protocols
- Describe gNMI subscription modes, gRPC outputs, performance with different encodings, and key ideas related to gRPC
- Describe features, the architecture, and components of Cisco Crosswork Network Controller (CNC)

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## Training Outline

- Cisco NFV Infrastructure
- Service Provider Model-Driven Programmability
- Network Orchestration using NSO
- Container Orchestration
- Cloud Computing
- MPLS and Segment Routing
- Cloud Interconnect Solutions
- Data Center Interconnect Solutions
- Service Provider Control Plane Security
- Service Provider Data Plane Security
- Service Provider High Availability
- Service Provider Core Optimization
- Service Provider Performance Monitoring
- Cisco Crosswork Network Controller