

CCNA SERVICE PROVIDER (640-875) SPNGN1

Cisco Certified Network Associate - Service Provider (CCNA SP) focuses on the latest in Service Provider industry core networking technologies and trends, and validates the ability to configure and implement baseline Cisco Service Provider Next-Generation networks.

IP Networks

- Describe the purpose and functions of various network devices (at the core, distribution, and access layers)
- Identify the functional components required to meet a given network specification

IPv4 and IPv6 Addressing

- Describe the structure of IPv4 and IPv6 addresses
- Describe VLSM, CIDR and route summarization concepts
- Design an IP subnetting plan based on given requirements

Switched Network Technologies I

- Describe bridging concepts and Layer 2 Ethernet frames
- Configure basic Spanning Tree operations on Cisco IOS Switches
- Configure basic switch security (i.e, port security, securing unused ports)
- Describe Ethernet link bundling, LACP, and PAgP and Flex Links

Routed Network Technologies I

- Describe classful versus classless routing
- Describe RIPv1, RIPv2, RIPNG
- Implement EIGRPv4 and EIGRPv6 on Cisco IOS, IOS-XE and IOS-XR routers
- Describe route redistribution
- Describe VRF, GRE

IP Services

- Configure NAT (IPv4) on Cisco routers
- Configure DHCP (IPv4 and IPv6) operations on Cisco routers
- Describe DNS

Cisco Operating Systems and Platforms I

- Implement basic Cisco IOS, IOS-XE and IOS-XR CLI operations
- Implement basic Cisco IOS, IOS-XE and IOS-XR routers configurations

Transport Technologies

- Describe SONET and SDH
- Configure 10 Gigabit Ethernet, 40 Gigabit Ethernet, and 100 Gigabit Ethernet interfaces on Cisco routers
- Describe Frame Relay, ATM, DSL, Metro Ethernet
- Describe T1, T3, E1, E3, and ISDN
- Implement PPP encapsulation on Cisco routers serial and POS interfaces

Security in the Network

- Describe Layer 2 security features on Cisco IOS switches
- Configure management plane security on Cisco routers and IOS switches
- Describe IPsec
- Describe control plane security
- Configure basic AAA (TACACS+ and RADIUS) services on Cisco routers
- Configure routing protocols authentication between Cisco routers
- Describe common types of network attacks

Network Management

- Configure NTP server or client on Cisco routers
- Configure IP SLA on Cisco routers
- Configure CDP on Cisco routers and IOS switches
- Configure SNMP on Cisco routers
- Configure NetFlow on Cisco routers
- Configure logging to Syslog server on Cisco routers
- Describe Cisco TAC procedure and navigate Cisco support tools (CCO)
- Implement management access (SSH, telnet, and out-of-band management design)
- Implement SPAN, RSPAN, and ERSPAN
- Implement file transfers to manage network devices configurations and images using FTP, SCP, TFTP, SFTP, and RCP

CCNA SERVICE PROVIDER (640-878) SPNGN2

Cisco Certified Network Associate - Service Provider (CCNA SP) focuses on the latest in Service Provider industry core networking technologies and trends, and validates the ability to configure and implement baseline Cisco Service Provider Next-Generation networks.

IP NGN Architecture

- Identify the functional components that are required to meet a given network specification
- Troubleshoot common network problems at Layers 1, 2, 3, 4, and 7 using a layered-model approach

- Describe the different types of service providers
- Describe service provider principal and reference next-generation network (NGN) architecture
- Describe the IP address and autonomous system (AS) number allocation process via the Internet Assigned Numbers Authority (IANA) and Regional Internet Registries (RIRs)

Switched Network Technologies II

- Configure enhanced switching technologies (including Rapid Spanning Tree Protocol [RSTP], Multiple Spanning Tree [MST], and Per VLAN Spanning Tree [PVST]) on Cisco IOS Software switches
- Describe how VLANs create logically separate networks and the need for routing between them
- Configure VLANs on Cisco IOS Software switches
- Configure trunking on Cisco IOS Software switches
- Configure inter-VLAN routing
- Configure Resilient Ethernet Protocol (REP) on Cisco IOS Software switches
- Configure queue-in-queue (QinQ) on Cisco IOS Software switches

Routed Network Technologies II

- Configure basic single-area Open Shortest Path First version 2 (OSPFv2) and OSPF version 3 (OSPFv3) routing on Cisco routers
- Configure basic single-area Intermediate System-to-Intermediate System (IS-IS) routing on Cisco routers
- Describe the differences between static versus dynamic routing as well as distance vector versus link-state routing protocol operations
- Configure basic Border Gateway Protocol (BGP) routing on Cisco routers
- Describe the address family concept on Cisco routers
- Describe IPv6 transitioning technologies
- Configure First Hop Redundancy Protocol (FHRP) (including Hot Standby Router Protocol [HSRP], Virtual Router Redundancy Protocol [VRRP], and Gateway Load Balancing Protocol [GLBP]) on Cisco routers
- Implement access control list (ACL) on Cisco routers
- Describe carrier-grade NAT (CGN) and Network Address Translation 64 (NAT64)
- Describe Multiprotocol Label Switching (MPLS) functions in the service provider IP NGN
- Configure Label Distribution Protocol (LDP) on Cisco routers

Cisco Operating Systems and Platforms II

- Manage the Cisco IOS XR configurations and software packages
 - Describe Cisco IOS XE software packages
 - Describe Cisco service provider router platforms, their operating system, and their placement in the service provider IP NGN
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