

CCIE Service Provider Outline

OSPF

- Basic OSPF Implementations
- Advanced OSPF Implementation
 - OSPF Single Area Configuration
 - Authentication
 - Summarization
 - Filtering
 - OSPF Area Types

IS-IS

- Basic IS-IS Implementations
- Advanced IS-IS Implementation
 - IS-IS Level-1 Implementation
 - IS-IS Level-1-2 Implementation
 - IS-IS Multi-Area
 - IS-IS Metric Types
 - Authentication
 - Summarization
 - Route-Leaking with IS-IS

IPv6 Overview & Implementation

- Addressing
- EIGRP v6
- OSPF v3
- IS-IS
- Tunneling
- NAT64

BGP

- eBGP
- iBGP
 - Update-source
 - Next-hop-self
 - route-reflector
 - Authentication
- BGP Advanced Features
 - Filtering
 - Summarization / Aggregation
 - Confederations
 - Attributes

BFD Overview & Implementation

- Implementing BFD
 - OSPF
 - IS-IS
 - BGP

MPLS - Intra-AS Design & Implementation

- Overview
- MPLS Unicast Routing
- MPLS VPNs
 - PE-CE Routing Protocols [RIPv2,OSPF,EIGRP,BGP]
 - RD & RT
 - MPLS Extranet VPNs
 - Export Maps
- MPLS VPNs for IPv6 networks

MPLS - Inter-AS Design & Implementation

- Overview
- MPLS Inter-AS VPNs
 - Option A
 - Option B
 - Option C
 - Non-VPN Transit Provider

Large Scale MPLS

- Overview
- Segment Routing Control Plane Protocols
 - OSPF
 - IS-IS
 - BGP
- LDP & SR Interworking – Segment Routing Mapping Server
- Unified MPLS

Multicast Routing

- Multicast Overview
- PIM Sparse Mode
- Multicast over MPLS VPN [M-VPN]
 - PIM
 - mLDP

MPLS - Traffic Engineering

- Overview
- Static Tunnels
- Dynamic Tunnel with OSPF/IS-IS
- Dynamic Tunnel - Preemption
- Configuring Fast-Reroute with MPLS-TE

Segment Routing - Traffic Engineering

- Overview
- Configuring Color
- SR-TE using Automated Steering (AS)
- SR-TE using On-Demand Next-Hop (ODN)
- Configuring TE Metrics
- SR-TE using Affinity Attribute
- SR-TE using Flex-Algo

Quality of Service [QoS]

- Overview
- QoS Type and Implementation
 - Policing
 - CB-WFQ
 - CB-LLQ
 - Shaping
 - RSVP
- MPLS QoS [Uniform & Pipe Modes]

MPLS - Layer 2 VPNs

- Overview
- Design and Implementation considerations
 - ATOM [Ethernet, PPP, Interworking]
 - VPLS
 - EVPN