

Week 1 18.03.2017

- * Class Introduction
 - * Instructor introduction
 - * Class organization, schedule, rules
 - * Basic Student Assessment, background and expectations
- * Your POD and LAB Topology
 - * Topologies, address allocation
- * Service Provider Certification
 - * CCxx Service provider program information and review
- * Changing landscape of Service Provider technologies and networks
 - label-based forwarding evolution (MPLS, Segment Routing)
 - overlays
 - typical Service Provider topologies (access, core, MPLS/overlay networks)
- * IOS, IOS-XE, IOS-XR introduction and hardware architectures
- * IP Address fundamentals IPv4/v6

Week 2 25.03.2017

- * Link state protocols: OSPF LSA/area types, ISIS area/router types, single-, multi-area
 - Describe, implement, and troubleshoot OSPFv2 and OSPFv3
 - Describe, implement, and troubleshoot IS-IS
 - Describe and optimize IGP scale and performance
 - Describe and implement IGP fast convergence, detection, propagation, switchover, IP LFA
 - Describe and implement route redistribution, route filtering, aggregation, loop prevention
- * Labs

Week 3 1.04.2017

- * BGP basics
 - Describe, implement, and troubleshoot IBGP, EBGP, and MP-BGP
 - Describe, implement, and troubleshoot BGP route policy enforcement
 - Describe BGP path attribute
 - Describe and optimize BGP scale and performance
- * RPL language and policies
- * Labs

Week 4 8.04.2017

* BGP advanced

- Describe, implement, and troubleshoot advanced BGP features
- Describe, implement, and troubleshoot BGP prefix suppression
- Describe, implement, and troubleshoot BGP prefix based filtering
- Describe, implement, and troubleshoot BGP RPKI
- Describe, implement, and troubleshoot routing protocol security: BGP

GTSH & protocol authentication

* MPLS basics:

- Describe MPLS forwarding and control plane mechanisms
- Describe, implement, and troubleshoot LDP
- Describe and optimize LDP scale and performance
- Describe, implement, and troubleshoot LDP security: authentication and

label allocation filtering

* Labs

Week 5 22.04.2017

* MPLS L3 services

- Describe MP-BGP, BGP AFI VPNv4, VPNv6
- Describe, implement, and troubleshoot L3VPN
- Describe, implement, and troubleshoot Inter-AS L3VPN
- Describe, implement, and troubleshoot shared services, Extranet and

Internet access

- Describe unified MPLS and CSC
- Describe, implement, and troubleshoot static routing, OSPF, EIGRP and

BGP as PE-CE connectivity

- Describe and implement route redistribution, route filtering, aggregation, loop prevention

* Labs

Week 6 29.04.2017

* MPLS L2 services

- Describe Carrier Ethernet services
- Describe, implement, and troubleshoot E-LINE, for example: VPWS,

L2TPv3

- Describe, implement, and troubleshoot E-LAN and E-TREE, for example: VPLS and H-VPLS
- Describe, implement, and troubleshoot EVPN
- Describe IEEE 802.1ad (Q-in-Q), IEEE 802.1ah (Mac-in-Mac), and ITU G.8032 (REP)
- Describe an integration with Spanning-Tree.
- * Labs

Week 7 06.05.2017

- * MPLS Traffic Engineering:
 - Describe, implement, and troubleshoot RSVP
 - Describe, implement, and troubleshoot ISIS and OSPF extensions
 - Describe, implement, and troubleshoot MPLS TE policy enforcement
 - Describe MPLS TE attributes
 - Describe and optimize MPLS TE scale and performance
- * Quality of Service
 - Describe, implement, and troubleshoot classification and marking
 - Describe, implement, and troubleshoot congestion management and scheduling
 - Describe, implement, and troubleshoot congestion avoidance
 - Describe, implement, and troubleshoot MPLS QoS models (Pipe, Short Pipe, and Uniform)
 - Describe, implement, and troubleshoot MPLS TE QoS (MAM, RDM, CBTS, PBTS, and DS-TE)
- * Labs

Week 8 - 13.05.2017 / we may have a conflict here with already scheduled CCDE class in US!

- * IPv6 and SP - coexistence and migrations
 - Describe, implement, and troubleshoot IPv6 transition mechanism, for example: NAT44, NAT64, 6RD, MAP, and DS Lite
- * Fast Convergence
 - System level HA
 - Describe Multichassis/clustering HA
 - Describe, implement, and troubleshoot SS0/NSF, NSR, and GR

- Layer 1/2/3 failure detection techniques
 - Describe Layer 1 failure detection
 - Describe, implement, and troubleshoot Layer 2 failure detection
 - Describe, implement, and troubleshoot Layer 3 failure detection
- * Labs

Week 9 20.05.2017 / we may have a conflict here with already scheduled CCDE class in US!

- * Multicast
- Describe, implement, and troubleshoot PIM (PIM-SM, PIM-SSM, and PIM-BIDIR)
 - Describe, implement, and troubleshoot RP (Auto-RP, BSR, Static, Anycast RP, and MSDP)
 - Describe, implement, and troubleshoot mVPN
 - Describe multicast scale and performance
- * Labs

Week 10 27.05.2017

- * System tasks: HA, monitoring, diagnostics & Labs
- Describe, implement, and troubleshoot syslog and logging functions
 - Describe, implement, and troubleshoot SNMP traps, RMON, EEM, and EPC
 - Describe, implement, and troubleshoot NetFlow and IPFIX
 - Describe, implement, and troubleshoot IP SLA
 - Describe configuration change, implementation, and rollback
- * System and network security
- Describe, implement, and troubleshoot control plane protection: LPTS and CoPP
 - Describe, implement, and troubleshoot device management, for example: MPP, SSH, VTY
 - Describe, implement, and troubleshoot logging and SNMP security
 - Describe, implement, and troubleshoot uRPF, iACL
 - Describe, implement, and troubleshoot RTBH and BGP FlowSpec
 - Describe, implement, and troubleshoot MPLS OAM and Ethernet OAM
- * Labs