Implementing Cisco Enterprise Advanced Routing and Services v1.0 (300-410)	OCG	CBT	Min	Weeks
4.0 Infrastructure Services				
4.4 Troubleshoot IPv4 and IPv6 DHCP (DHCP client, IOS DHCP server, DHCP relay, DHCP options)	1	Troubleshoot IPv4 and IPv6 DHCP	40	
1.0 Layer 3 Technologies				
1.1 Troubleshoot administrative distance (all routing protocols)	1			
1.9 Troubleshoot EIGRP (classic and named mode)				
1.9.a Address families (IPv4, IPv6)	2,3,4,5	EIGRP Address Families	30	
1.9.b Neighbor relationship and authentication	2,4,5	EIGRP Neighbor Relationships and Authentication	22	
1.9.e Load balancing (equal and unequal cost)	2			
1.9.f Metrics	2			
1.9.c Loop-free path selections (RD, FD, FC, successor, feasible successor, stuck in active)	3, 4	Fundamentals of EIGRP	75	
1.5 Troubleshoot manual and auto-summarization with any routing protocol	3,4,5,7,8,9,10,12	Troubleshoot Sumarization	29	
1.9 Troubleshoot EIGRP (classic and named mode)	4,5	Troubleshoot EIGRP	38	
1.9.d Stubs	4	EIGRP Stub Routing	24	EIGRP
1.10 Troubleshoot OSPF (v2/v3)				
		Troubleshoot OSPF Authentication for IPv4	53	
1.10.b Neighbor relationship and authentication	6,8,10	Troubleshoot OSPF Authentication for IPv6	41	
1.10.c Network types, area types, and router types				
1.10.c (i) Point-to-point, multipoint, broadcast, nonbroadcast	6,8,10			
1.10.c (iii) Internal router, backbone router, ABR, ASBR	6,8,10			
1.10.c (ii) Area type: backbone, normal, transit, stub, NSSA, totally stub	7,8,10	Troubleshoot IPv4 OSPF Areas	57	
		Troubleshoot IPv6 OSPF Areas	31	
1.10.c (iv) Virtual link	7,8	Troubleshoot IPv4 OSPF Virtual Links	49	
		Troubleshoot IPv6 OSPF Virtual Links	34	
1.10.d Path preference	7	OSPF Path Preference	22	
1.10 Troubleshoot OSPF (v2/v3)	6,7,8,9,10			
1.10.a Address families (IPv4, IPv6)	8,10	OSPF Address Families	22	
1.10.c Network types, area types, and router types	8,10	Troubleshoot IPv4 Network Types	36	
		Troubleshoot IPv6 OSPF Network Types	48	
1.11 Troubleshoot BGP (Internal and External)				OSPF
1.11.a Address families (IPv4, IPv6)	10,14	Break Through BGP Basics with Address Families	61	
1.11.b Neighbor relationship and authentication (next-hop, mulithop, 4-byte AS, private AS, route refresh, synchronization, operation, peer group, states and timers)	10,14			
1.11.d Route reflector (excluding multiple route reflectors, confederations, dynamic peer)	10	Solve BGP Scalability Issues	53	
1.11 Troubleshoot BGP (Internal and External)	11,12,13,14	Troubleshoot Common BGP Issues	23	
1.11.e Policies (inbound/outbound filtering, path manipulation)	11,14	Filter Routes in BGP	40	
1.11.c Path preference (attributes and best-path)	13,14	Understand the BGP Best Path Algorithm	38	
1.6 Configure and verify policy-based routing	15	Configure and Verify Policy-Based Routing	34	
1.4 Troubleshoot redistribution between any routing protocols or routing sources	16,17			

1.2	Troubleshoot route map for any routing protocol (attributes, tagging, filtering)	17	Tools for Route Manipulation and Control	82
1.3	Troubleshoot loop prevention mechanisms (filtering, tagging, split horizon, route poisoning)	17		
1.7	Configure and verify VRF-Lite	18	Configure and Verify VRF-Lite	28

2.0 VPN Technologies

2.1	Describe MPLS operations (LSR, LDP, label switching, LSP)	18	Describe MPLS Operations	35
2.2	Describe MPLS Layer 3 VPN	18	Describe MPLS Layer 3 VPNs	100
2.3	Configure and verify DMVPN (single hub)	19,20		
2.3.a	GRE/mGRE	19		
2.3.b	NHRP	19		
2.3.d	Dynamic neighbor	19		
2.3.e	Spoke-to-spoke	19		
2.3.c	IPsec	20	Configure and Verify DMVPN Networks	65

3.0 Infrastructure Security

3.2	Troubleshoot router security features			
3.2.a	IPv4 access control lists (standard, extended, time-based)	21		
3.2.b	IPv6 traffic filter	21	Troubleshoot Router Security Features	61
3.1	Troubleshoot device security using IOS AAA (TACACS+, RADIUS, local database)	22	Troubleshoot Device Security using IOS AAA	35
3.2	Troubleshoot router security features			
3.2.c	Unicast reverse path forwarding (uRPF)	22		
3.3	Troubleshoot control plane policing (CoPP) (Telnet, SSH, HTTP(S), SNMP, EIGRP, OSPF, BGP)	22	Configure and Verify Control Plane Policing (CoPP)	25
			Troubleshoot Control Place Policing	31
3.4	Describe IPv6 First Hop Security features (RA Guard, DHCP Guard, binding table, ND inspection/snooping, Source Guard)	22	Describe IPv6 First Hop Security Features	19

1.0 Layer 3 Technologies

1.8	Describe Bidirectional Forwarding Detection	23	Bidirectional Forwarding Detection	31

4.0 Infrastructure Services

4.1	Troubleshoot device management	23		
4.1.a	Console and VTY	23		
4.1.b	Telnet, HTTP, HTTPS, SSH, SCP	23		
4.1.c	(T)FTP	23	Troubleshoot Device Management Protocols	27
4.2	Troubleshoot SNMP (v2c, v3)	23	Troubleshoot SNMP	39
4.3	Troubleshoot network problems using logging (local, syslog, debugs, conditional debugs, timestamps)	23	Troubleshoot Network Problems using Logging	24
4.5	Troubleshoot network performance issues using IP SLA (jitter, tracking objects, delay, connectivity)	23	Troubleshoot Network Performance Issues using IP SLA	40
4.6	Troubleshoot NetFlow (v5, v9, flexible NetFlow)	23	Troubleshoot Netflow	24
4.7	Troubleshoot network problems using Cisco DNA Center assurance (connectivity, monitoring, device health, network health)	23	Troubleshoot Enterprise Networks with DNA Center Assurance	29

BGP

VPN

Security

Services