Table I-1 *ROUTE Exam Topic Coverage*

Topic #	Topic	Where Topic Is Covered
1.0	Network Principles	
1.1	Identify Cisco Express Forwarding concepts	
	FIB	Chapter 1
	Adjacency table	Chapter 1
1.2	Explain general network challenges	
	Unicast	ICND1 Chapter 5
	Out-of-order packets	ICND1 Chapter 9 (sequencing)
	Asymmetric routing	Chapter 1
1.3	Describe IP operations	
	ICMP unreachable and redirects	Chapter 1, and IPv6 in ICND1 Chapter 20
	IPv4 and IPv6 fragmentation	IPv4 in Chapter 1, IPv6 in Chapter 6 and ICND1 Chapter 20
	TTL	ICND1 Chapter 7 and Glossary
1.4	Explain TCP operations	
	IPv4 and IPv6 (P)MTU	IPv4 in Chapter 1, IPv6 in Chapter 6
	MSS	Chapter 1
	Latency	ICND1 Chapter 1
	Windowing	ICND1 Chapter 9
	Bandwidth-delay product	Chapter 1
	Global synchronization	ICND1 Chapter 9
1.5	Describe UDP operations	
	Starvation	Chapter 1
	Latency	Chapter 1
1.6	Recognize proposed changes to the network	
	Changes to routing protocol parameters	Chapter 4
	Migrate parts of a network to IPv6	Chapter 6
	Routing protocol migration	Chapter 4
2.0	Layer 2 Technologies	
2.1	Configure and verify PPP	
	Authentication (PAP, CHAP)	Chapter 1
	PPPoE (client side only)	Chapter 1

Topic #	Topic	Where Topic Is Covered
2.2	Explain Frame Relay	
	Operations	Chapter 1
	Point-to-point	Chapters 1, 2, and 3
	Multipoint	Chapters 1, 2, and 3
3.0	Layer 3 Technologies	
3.1	Identify, configure, and verify IPv4 addressing and subnetting	
	Address types (unicast, broadcast, multicast, and VLSM)	Appendix B
	ARP	Appendix B
	DHCP relay and server	Chapter 6
	DHCP protocol operations	Chapters 6 and ICND1 Chapter 16
3.2	Identify IPv6 addressing and subnetting	
	Unicast	Chapter 1
	EUI-64	Chapters 6 and ICND1 Chapter 20
	ND, RS/RA	Chapter 1
	Autoconfig (SLAAC)	Chapter 6
	DHCP relay and server	Chapter 6
	DHCP protocol operations	Chapter 6
3.3	Configure and verify static routing	Chapter 1
3.4	Configure and verify default routing	Chapter 1
3.5	Evaluate routing protocol types	
	Distance vector	Chapter 1
	Link state	Chapter 1
	Path vector	Chapter 1
3.6	Describe administrative distance	Chapter 4
3.7	Troubleshoot passive interfaces	Chapters 2 and 3
3.8	Configure and verify VRF-lite	Chapter 8
3.9	Configure and verify filtering with any protocol	Chapter 4
3.10	Configure and verify redistribution between any routing protocols or routing sources	Chapter 4
3.11	Configure and verify manual and autosummarization with any routing protocol	Chapters 1, 2, and 3
3.12	Configure and verify policy-based routing	Chapter 4
3.13	Identify suboptimal routing	Chapter 4

Topic #	Topic	Where Topic Is Covered
3.14	Explain route maps	Chapter 4
3.15	Configure and verify loop prevention mechanisms	
	Route tagging and filtering	Chapter 4
	Split horizon	Chapters 1 and 2
	Route poisoning	Chapter 1
3.16	Configure and verify RIPv2	Chapter 1
3.17	Describe RIPng	Chapter 1
3.18	Describe EIGRP packet types	Chapter 2
3.19	Configure and verify EIGRP neighbor relationship and authentication	Chapters 2 and 8
3.20	Configure and verify EIGRP stubs	Chapter 2
3.21	Configure and verify EIGRP load balancing	
	Equal cost	Chapter 2
	Unequal cost	Chapter 2
3.22	Describe and optimize EIGRP metrics	Chapter 2
3.23	Configure and verify EIGRP for IPv6	Chapter 2
3.24	Describe OSPF packet types	Chapter 3
3.25	Configure and verify OSPF neighbor relationship and authentication	Chapters 3 and 8
3.26	Configure and verify OSPF network types, area types, and router types	
	Point-to-point, multipoint, broadcast, nonbroadcast	Chapter 3
	LSA types, area type: backbone, normal, transit, stub, NSSA, totally stub	Chapter 3
	Internal router, backbone router, ABR, ASBR	Chapter 3
	Virtual link	Chapter 3
3.27	Configure and verify OSPF path preference	Chapter 3
3.28	Configure and verify OSPF operations	Chapter 3
3.29	Configure and verify OSPF for IPv6	Chapter 3
3.30	Describe, configure, and verify BGP peer relationships and authentication	
	Peer group	Chapter 7
	Active, passive	Chapter 7 (But there is no “passive” in BGP; it’s “established.”)
	States and timers	Chapter 7

Topic #	Topic	Where Topic Is Covered
3.31	Configure and verify eBGP (IPv4 and IPv6 address families)	
	eBGP	Chapter 7
	4-byte AS number	Chapter 6
	Private AS	Chapter 6
3.32	Explain BGP attributes and best-path selection	Chapter 7
4.0	VPN Technologies	
4.1	Configure and verify GRE	Chapter 1 for GRE tunnels; configuration and verification in ICND2 Chapter 5.
4.2	Describe DMVPN (single hub)	Chapter 1
4.3	Describe Easy Virtual Networking (EVN)	Chapter 8
5.0	Infrastructure Security	
5.1	Describe IOS AAA using local database	Chapter 8
5.2	Describe device security using IOS AAA with TACACS+ and RADIUS	
	AAA with TACACS+ and RADIUS	Chapter 8
	Local privilege authorization fallback	Chapter 8
5.3	Configure and verify device access control	
	Lines (VTY, AUX, console)	Chapter 8
	Management plane protection	Chapter 8
	Password encryption	Chapter 8
5.4	Configure and verify router security features	
	IPv4 access control lists (standard, extended, time-based)	Appendix B
	IPv6 traffic filter	Chapter 6
	Unicast reverse path forwarding	Chapter 8
6.0	Infrastructure Services	
6.1	Configure and verify device management	
	Console and vty	Chapter 8
	Telnet, HTTP, HTTPS, SSH, SCP	Chapter 8
	(T)FTP	Chapter 8

Topic #	Topic	Where Topic Is Covered
6.2	Configure and verify SNMP	
	v2	Chapter 8 and ICND2 Chapter 6
	v3	Chapter 8 and ICND2 Chapter 6
6.3	Configure and verify logging	
	Local logging, syslog, debugs, conditional debugs	Chapter 8 and ICND2 Chapter 6
	Timestamps	ICND2 Chapter 6
6.4	Configure and verify Network Time Protocol	
	NTP master, client, version 3, version 4	Chapter 8
	NTP authentication	Chapter 8
6.5	Configure and verify IPv4 and IPv6 DHCP	
	DHCP Client, IOS DHCP server, DHCP relay	Chapter 6
	DHCP options (describe)	Chapter 6
6.6	Configure and verify IPv4 Network Address Translation	
	Static NAT, dynamic NAT, PAT	Chapter 6
6.7	Describe IPv6 NAT	
	NAT64	Chapter 6
	NPTv6	Chapter 6
6.8	Describe SLA architecture	Chapter 5
6.9	Configure and verify IP SLA	
	ICMP	Chapter 5
6.10	Configure and verify tracking objects	
	Tracking object	Chapter 5
	Tracking different entities (for example, interfaces, IP SLA results)	Chapter 5
6.11	Configure and verify Cisco NetFlow	
	NetFlow v5, v9	ICND2 Chapter 6
	Local retrieval	ICND2 Chapter 6
	Export (configuration only)	ICND2 Chapter 6