

Assessment Authoring - Table of Specification (TOS)

The Table of Specification (TOS) is a high-level design template for a given assessment. It identifies the claims, components skills, targeted number tasks needed, and the knowledge or skill level desired for each task. Scoping information is also provided, in most cases, and indicates the environment, features and details associated with the specified claims.

Assessment design specifications in the TOS allow us to make inferences about what the students can actually do. Because some outcomes are more important than others in making those judgments, each claim is weighted based on course content, required job skills and certification coverage. Using the TOS helps to ensure that assessed tasks are relevant to the environment in which the student will work.

In the example below, 25% of the Network Fundamentals Final exam should cover skills from claim 0.1.0. For a 50 question exam, approximately 13 tasks should cover skills that support claim 0.1.0. Distribution of tasks amongst the component skills is determined during the design phase. Tasks for each claim or component skill can be either declarative, simple procedural or complex procedural depending on the purpose of exam and the type of claim.

CCNA Exploration Network Fundamentals Assessment Claims rev 1				
Final Exam				
Claim#	Claim/Component skill	Scope	% Coverage on Exam forms	Targeted # of tasks on exam form
0.1.0	Use the OSI and TCP/IP models and their associated protocols and applications to explain how data flows in a network.	process of encapsulation, source and destination address identification	25%	13
0.1.1	Explain how data is delivered in common applications such as email, web browsers, FTP software and Telnet.	Telnet, browser apps, email,		
0.1.2	Describe the encapsulation/decapsulation processes			
0.1.3	Describe the purpose and basic operation of the Application Layer services and protocols.	telnet, DNS, HTTP, SMTP, POP, DHCP, HTML		
0.1.4	Determine the source and destination address and other important fields of a protocol data unit as it is processed in a network.			
0.1.5	Explain the operation and benefits of Transport Layer services and protocols.	TCP and UDP		

Claim
desired outcome

Component Skill
supporting skill

Desired Claim Coverage

CCNA Exploration v4.0

Accessing the WAN Claims rev 1

Final Exam

Claim#	Claim/Component skill	Scope	Targeted % Coverage on Exam forms	Targeted # of tasks on exam form
0.1.0	Implement IP addressing schemes and Application layer services (DHCP, NAT , IPv6)		15%	8
0.1.1	Describe IPv6			
0.1.2	Configure IPv6.			
0.1.3	Describe the operation and benefits of using DHCP.			
0.1.4	Configure, verify and troubleshoot DHCP on a router and DHCP client.	(CLI/SDM)		
0.1.5	Describe the operation and benefits of NAT			
0.1.6	Select, configure, verify and troubleshoot static NAT, dynamic NAT, and NAT with overload	(CLI/SDM)		
0.2.0	Identify the characteristics and determine the appropriate use of various WAN topologies, encapsulations, and technologies.		10%	5
0.2.1	Describe WAN Network Models			
0.2.2	Describe WAN devices, encapsulations, and technologies			
0.2.3	Describe and select the appropriate WAN protocol and service for a specific network requirement.			
0.2.4	Describe serial communications	Time Division Multiplexing, Demarcation Point, DTE, DCE		
0.2.5	Configure a basic WAN serial connection.	HDLC		
0.2.6	Verify and troubleshoot a basic WAN serial connection using basic utilities, SHOW & DEBUG commands.	ping, traceroute,telnet,SSH,arp, ipconfig		
0.3.0	Describe and Implement PPP		10%	5
0.3.1	Describe the features, benefits and operation of PPP	Explain the roles of LCP and NCPs in PPP, determine the stages of PPP session negotiation,PPP authentication		
0.3.2	Configure a PPP connection			

0.3.3	Verify and troubleshoot a PPP connection using basic utilities, SHOW & DEBUG commands.	ping, traceroute, and telnet or SSH, arp, ipconfig, debug ppp negotiation, debug ppp negotiation, debug ppp packet, debug ppp authentication		
0.4.0	Implement a simple WAN using Frame Relay		15%	8
0.4.1	Describe the features, benefits and operation of Frame Relay encapsulation	topologies, DLCI, PVC, FR maps, LMI, CIR, Burst Rate, DE, FECN, BECN		
0.4.2	Configure Frame Relay on Cisco routers			
0.4.3	Verify and troubleshoot Frame Relay on Cisco routers using basic utilities, SHOW & DEBUG commands.	ping, traceroute, and telnet or SSH, arp, ipconfig, show frame-relay lmi, show frame-relay pvc, show frame-relay map, debug frame-relay packet, debug frame-relay lmi		
0.5.0	Describe teleworker services.		5%	3
0.5.1	Describe the features, benefits and operation of cable, DSL and broadband wireless services and select the appropriate service for given teleworker requirements.			
0.5.2	Describe the features, benefits and operation of VPN technology	tunneling, encryption, site-site, remote access, identify issues and types of services that conflict with VPN implementations		
0.6.0	Implement network security		10%	5
0.6.1	Describe today's increasing network security threats and explain the need to implement a comprehensive security policy to mitigate the threats			
0.6.2	Explain general methods to mitigate common security threats to network devices, hosts, and applications.	turning off unnecessary services, user education, etc, describe the functions of common security appliances and applications		
0.6.3	Implement basic router security	secure passwords, ssh/telnet, router update authentication, using SDM		
0.6.4	Manage IOS images	save, upgrade, restore, password recovery		
0.7.0	Implement ACLs for network security and basic traffic control		15%	8
0.7.1	Describe the purpose, types and operation of access control lists.			
0.7.2	Configure and apply access control lists based on network filtering requirements.	standard, extended, named, to limit telnet/ssh access, complex		

0.7.3	Verify and monitor ACL's in a network environment.			
0.7.4	Troubleshoot ACL implementation issues using basic utilities, SHOW & DEBUG commands.	ping, traceroute, and telnet or SSH, arp, ipconfig		
0.8.0	Troubleshoot a network.		10%	5
0.8.1	Establish the Network Performance Baseline	documentation, measuring performance		
0.8.2	Describe common WAN Implementation Issues	topology and bandwidth		
0.8.3	Describe general troubleshooting methodologies and tools.	Physical-Application layer, software and hardware tools, gathering symptoms		
0.9.0	Configure, verify and troubleshoot a small network.		10%	5
0.9.1	Select the appropriate media, cables, ports, and connectors to connect switches and routers to other network devices and hosts.	choose straight through, crossover and rollover as appropriate, serial connections		
0.9.2	Create and apply an addressing scheme to a network.	subnetting		
0.9.3	Perform, save and verify initial switch configuration tasks including remote access management.	hostname, passwords, vty, con, aux lines, banner, service password encryption, ssh		
0.9.3	Configure, verify, and troubleshoot VLANs, trunking and interVLAN routing on Cisco switches and routers.	dot1q (isl only for comparison)		
0.9.4	Configure, verify, and troubleshoot VTP			
0.9.5	Configure, verify, and troubleshoot RSTP operation			
0.9.6	Perform, save and verify initial router configuration tasks including remote access management.	hostname, passwords, vty, con, aux lines, banner, service password encryption, ssh		
0.9.7	Configure verify and troubleshoot routing protocols on a router.	RIP v1, RIP v2, EIGRP, OSPF		
			100%	50