

TestOut®

TestOut Routing and Switching Pro – English 6.0.x

Objective Mappings:

- TestOut Routing Pro
- TestOut Switching Pro
- Cisco 100-105 ICND1
- Cisco 200-105 ICND2
- Cisco 200-125 CCNA

Contents

This document contains seven objective mappings. Click on a mapping to view its contents.

Objective Mapping: LabSim Section to TestOut Routing and Switching Pro Objectives	3
Objective Mapping: TestOut Switching Pro Objective to LabSim Section	16
Objective Mapping: TestOut Routing Pro Objective to LabSim Section.....	18
Objective Mapping: LabSim Section to Cisco 100-105 ICND1, 200-105 ICND2, and 200-125 CCNA Objectives	21
Objective Mapping: Cisco 100-105 ICND1 Objective to LabSim Section	41
Objective Mapping: Cisco 200-105 ICND2 Objective to LabSim Section	48
Objective Mapping: Cisco 200-125 CCNA Objective to LabSim Section.....	53

Objective Mapping: LabSim Section to TestOut Routing and Switching Pro Objectives

Section	Title	Objectives for Routing Pro	Objectives for Switching Pro
1.0	ICND1 Introduction		
1.1	ICND1 Introduction		
2.0	Networking Concepts		
2.1	Networking Fundamentals		
2.2	Network Devices		
2.3	TCP/IP Networking Model		
2.4	Data Encapsulation		
2.5	OSI Networking Model		
2.6	Data Communications		
2.7	Ethernet Networking		
3.0	IPv4 Addressing		
3.1	IPv4 Overview		
3.2	IPv4 Address Classes	3.0 IP routing implementation Calculate and configure subnet masks for network hosts	

3.3	Subnetting	3.0 IP routing implementation Calculate and configure subnet masks for network hosts	
3.4	Variable Length Subnet Masking (VLSM)		
3.5	Subnet Planning and Design	3.0 IP routing implementation Calculate and configure subnet masks for network hosts	
4.0	IPv6 Addressing		
4.1	IPv6 Addressing Overview		
4.2	IPv6 Host Configuration		
5.0	Cisco Device Basics		
5.1	Cisco Device Access		
5.2	System Startup	1.0 Router setup and configuration Manage router configuration files	1.0 Switch setup and configuration Manage switch configuration files
5.3	Command Line Interface (CLI)	1.0 Router setup and configuration View router configuration information Manage router configuration files Manage router IOS files	1.0 Switch setup and configuration View switch configuration information Manage switch configuration files

		<p>2.0 Router interface configuration</p> <p>View the status of router interfaces</p>	<p>Manage switch IOS files</p>
5.4	Command Line Help		
5.5	Basic Device Settings	<p>1.0 Router setup and configuration</p> <p>Configure router hostnames and interface descriptions Configure router banners</p> <p>2.0 Router interface configuration</p> <p>View the status of router interfaces View directly connected devices using CDP Configure Ethernet and serial router interfaces Configure TCP/IP settings on a router interface Configure a PPP connection between routers Configure PPPoE connections on a router</p>	<p>1.0 Switch setup and configuration</p> <p>Configure switch hostnames and interface descriptions Configure switch banners</p>
5.6	Device Passwords	<p>9.0 Router security configuration</p> <p>Restrict router access Configure router passwords</p>	<p>7.0 Switch security</p> <p>Restrict access to a switch Configure switch passwords</p>
5.7	System Message Log		
5.8	Network Communications Troubleshooting	<p>2.0 Router interface configuration</p> <p>View the status of router interfaces Troubleshoot router connections</p>	

6.0	LAN Switching		
6.1	Layer 2 Switching Overview		
6.2	Switch Interface Configuration		<p>1.0 Switch setup and configuration</p> <ul style="list-style-type: none"> View switch configuration information Configure switch hostnames and interface descriptions Configure switch banners Manage switch configuration files Manage switch IOS files <p>2.0 Switch interface configuration</p> <ul style="list-style-type: none"> Configure interface speed and duplex settings View the status of switch interfaces <p>4.0 VLAN configuration</p> <ul style="list-style-type: none"> View information about VLANs configured on a switch Manage default VLAN configuration settings Configure VLANs on a switch <p>7.0 Switch security</p> <ul style="list-style-type: none"> Disable switch interfaces
6.3	Switch IP Configuration	2.0 Router interface configuration	<p>1.0 Switch setup and configuration</p> <ul style="list-style-type: none"> View switch configuration information

		<p>Configure TCP/IP settings on a router interface</p> <p>9.0 Router security configuration</p> <p>Configure remote access to a router using SSH</p>	<p>Configure switch hostnames and interface descriptions</p> <p>Configure switch banners</p> <p>Manage switch configuration files</p> <p>2.0 Switch interface configuration</p> <p>View the status of switch interfaces</p> <p>3.0 TCP/IP configuration</p> <p>Configure switch TCP/IP settings</p> <p>Troubleshoot LAN communications</p> <p>4.0 VLAN configuration</p> <p>Manage default VLAN configuration settings</p>
6.4	Virtual LANs (VLANs)		<p>4.0 VLAN configuration</p> <p>View information about VLANs configured on a switch</p> <p>Configure VLANs on a switch</p>
6.5	Trunking		<p>4.0 VLAN configuration</p> <p>Extend VLANs to multiple switches using trunking</p>
6.6	Switch Security		<p>7.0 Switch security</p> <p>Enable switch port security</p>

6.7	Remote Switch Access	<p>9.0 Router security configuration</p> <p>Restrict router access Configure router passwords Configure remote access to a router using SSH</p>	<p>7.0 Switch security</p> <p>Restrict access to a switch Configure remote access to a switch using SSH</p>
6.8	Cisco Discovery Protocol (CDP)	<p>2.0 Router interface configuration</p> <p>View directly connected devices using CDP</p>	<p>2.0 Switch interface configuration</p> <p>View directly connected network devices using CDP Manage the CDP configuration</p>
6.9	Switch Troubleshooting		<p>3.0 TCP/IP configuration</p> <p>Configure switch TCP/IP settings Troubleshoot LAN communications</p> <p>4.0 VLAN configuration</p> <p>View information about VLANs configured on a switch. Manage default VLAN configuration settings. Configure VLANs on a switch. Extend VLANs to multiple switches using trunking. Troubleshoot VLAN issues. Troubleshoot trunking issues.</p>
7.0	IP Routing Technologies		
7.1	IPv4 Routing	<p>3.0 IP routing implementation</p> <p>Configure static routes on a router View the routing table on a router</p>	

7.2	IPv4 Routing Troubleshooting		
7.3	Routing Implementations	<p>3.0 IP routing implementation</p> <p>Configure static routes on a router Calculate and configure subnet masks for network hosts Configure static routes on a router View the routing table on a router</p> <p>4.0 OSPF routing configuration</p> <p>Enable OSPF routing Configure and manage OSPF routing</p>	
7.4	Static Routing	<p>3.0 IP routing implementation</p> <p>Configure static routes on a router</p>	
7.5	Route Summarization	<p>3.0 IP routing implementation</p> <p>Manage auto-summarization between networks</p>	
7.6	IPv6 Routing		
7.7	InterVLAN Routing Overview		
7.8	InterVLAN Routing Configuration	<p>3.0 IP routing implementation</p> <p>Configure router-on-a-stick interVLAN routing</p>	<p>5.0 InterVLAN routing</p> <p>Configure interVLAN routing</p>
8.0	IP Services		

8.1	Dynamic Host Configuration Protocol (DHCP)	8.0 DHCP server configuration Configure the DHCP service on a router Configure DHCP bindings Configure a DHCP relay agent	
8.2	Access Control Lists (ACLs)	6.0 Access control list configuration Implement standard, extended, and named ACLs Use wildcard masks in ACLs Use ACLs to manage network traffic <ul style="list-style-type: none"> ○ Permit allowed traffic ○ Block disallowed traffic 	○
8.3	ACL Configuration	6.0 Access control list configuration: Implement standard and named ACLs Use ACLs to manage network traffic <ul style="list-style-type: none"> ○ Permit allowed traffic ○ Block disallowed traffic 	○
8.4	ACL Troubleshooting	6.0 Access control list configuration: Implement standard, extended, and named ACLs Use wildcard masks in ACLs Use ACLs to manage network traffic <ul style="list-style-type: none"> ○ Permit allowed traffic ○ Block disallowed traffic 	○
8.5	Network Address Translation (NAT) Overview	7.0 NAT configuration Configure static NAT on a router Configure dynamic NAT on a router Configure overloaded PAT on a router	
8.6	NAT Configuration	7.0 NAT configuration Configure static NAT on a router Configure dynamic NAT on a router Configure overloaded PAT on a router	

8.7	Network Time Protocol (NTP)		
9.0	Device Configuration and Management		
9.1	Router Configuration Files	1.0 Router setup and configuration Manage router configuration files Manage router IOS files	1.0 Switch setup and configuration Manage switch configuration files Manage switch IOS files
9.2	IOS Licensing	1.0 Router setup and configuration Manage router IOS files	1.0 Switch setup and configuration Manage switch IOS files
9.3	NetFlow		
10.0	ICND2 Introduction		
10.1	ICND2 Introduction		
11.0	Advanced Switching		
11.1	Advanced Trunking		4.0 VLAN configuration Configure VLANs on a switch Extend VLANs to multiple switches using trunking
11.2	Spanning Tree Overview		6.0 Spanning tree configuration View STP configuration information
11.3	Spanning Tree Concepts		8.0 EtherChannel configuration

			<p>Configure EtherChannel using the following</p> <ul style="list-style-type: none"> ○ PAGP ○ LACP
11.4	Spanning Tree Protocol Configuration		<p>6.0 Spanning tree configuration</p> <p>View STP configuration information Manually configure a switch as a root bridge Configure Rapid PVST+ Troubleshoot STP issues</p>
11.5	Switch Troubleshooting		
12.0	Advanced Routing		
12.1	Dynamic Routing		
12.2	Layer 3 InterVLAN Routing		<p>5.0 InterVLAN routing</p> <p>Configure interVLAN routing Troubleshoot interVLAN routing issues</p>
12.3	Default Gateway Redundancy	<p>11.0 High availability configuration</p> <p>Configure HSRP</p>	
12.4	IPv6 and Extended IPv4 ACLs	<p>6.0 Access control list configuration</p> <p>Implement extended ACLs Use ACLs to manage network traffic</p> <ul style="list-style-type: none"> ○ Permit allowed traffic ○ Block disallowed traffic 	<ul style="list-style-type: none"> ○

12.5	IPv6 and Extended ACL Configuration	<p>6.0 Access control list configuration</p> <p>Implement extended ACLs Use wildcard masks in ACLs Use ACLs to manage network traffic</p> <ul style="list-style-type: none"> ○ Permit allowed traffic ○ Block disallowed traffic 	○
13.0	Wide Area Networks		
13.1	WAN Types		
13.2	Leased Line WAN Links	<p>2.0 Router interface configuration</p> <p>View the status of router interfaces Configure Ethernet and serial router interfaces</p>	
13.3	PPP and Multilink PPP	<p>2.0 Router interface configuration</p> <p>View the status of router interfaces Configure Ethernet and serial router interfaces Configure a PPP connection between routers</p>	
13.4	PPPoE Configuration	<p>2.0 Router interface configuration</p> <p>Configure PPPoE connections on a router</p>	
13.5	Virtual Private Networks		
13.6	WAN Troubleshooting	<p>2.0 Router interface configuration</p> <p>Troubleshoot router connections</p> <p>3.0 IP routing implementation</p> <p>Troubleshoot WAN communication issues using utilities such as ping and tracert</p>	
14.0	IPv4 Routing Protocols		

14.1	Open Shortest Path First (OSPF) Overview	4.0 OSPF routing configuration Enable OSPF routing Configure and manage OSPF routing	
14.2	OSPF for IPv4	4.0 OSPF routing configuration Enable OSPF routing Configure and manage OSPF routing	
14.3	OSPF Configuration	4.0 OSPF routing configuration Enable OSPF routing Configure and manage OSPF routing	
14.4	OSPF Areas and LSA Types	4.0 OSPF routing configuration Enable OSPF routing Configure and manage OSPF routing	
14.5	EIGRP for IPv4 Routing	5.0 EIGRP routing configuration Enable EIGRP routing Configure and manage EIGRP routing	
14.6	EIGRP for IPv4 Configuration	5.0 EIGRP routing configuration Enable EIGRP routing Configure and manage EIGRP routing	
14.7	eBGP for IPv4	5.0 EIGRP routing configuration Enable EIGRP routing Configure and manage EIGRP routing	
14.8	IPv4 Routing Protocol Troubleshooting	4.0 OSPF routing configuration Troubleshoot OSPF routing 5.0 EIGRP routing configuration Troubleshoot EIGRP routing	

15.0	IPv6 Routing Protocols		
15.1	IPv6 Routing	4.0 OSPF routing configuration Enable OSPF routing Configure and manage OSPF routing Troubleshoot OSPF routing	
15.2	OSPF for IPv6	4.0 OSPF routing configuration Enable OSPF routing Configure and manage OSPF routing Troubleshoot OSPF routing	
15.3	EIGRP for IPv6	5.0 EIGRP routing configuration Enable EIGRP routing Configure and manage EIGRP routing Troubleshoot EIGRP routing	
16.0	Network Management Using Cisco Devices		
16.1	Simple Network Management Protocol		
16.2	Quality of Service (QoS)		
16.3	Enterprise Networking		
16.4	Cloud Resources		
16.5	Network Security		

Objective Mapping: TestOut Switching Pro Objective to LabSim Section

Exam Objective	Module.Section
<p>1 Switch Setup and Configuration</p> <p>View switch configuration information. Configure switch hostnames and interface descriptions. Configure switch banners. Manage switch configuration files. Manage switch IOS files.</p>	<p>5.2, 5.3, 5.5 6.2, 6.3 9.1, 9.2</p>
<p>2 Switch Interface Configuration</p> <p>View directly-connected network devices using CDP. Manage the CDP configuration. Configure interface speed and duplex settings. View the status of switch interfaces.</p>	<p>6.2, 6.3, 6.8</p>
<p>3 TCP/IP Configuration</p> <p>Configure switch TCP/IP settings. Troubleshoot LAN communications.</p>	<p>6.3, 6.9</p>
<p>4 VLAN Configuration</p> <p>View information about VLANs configured on a switch. Manage default VLAN configuration settings. Configure VLANs on a switch. Use trunking to extend VLAN to multiple switches. Troubleshoot VLAN issues. Troubleshoot trunking issues.</p>	<p>6.2, 6.3, 6.4, 6.5, 6.9 11.1, 11.4</p>
<p>5 InterVLAN Routing</p>	<p>7.7, 7.8 12.2</p>

<p>Configure interVLAN routing. Troubleshoot interVLAN routing issues.</p>	
<p>6 Spanning Tree Configuration</p> <p>View STP configuration information. Manually configure a switch as a root bridge. Configure Rapid PVST+. Troubleshoot STP issues.</p>	<p>11.2, 11.3, 11.4</p>
<p>7 Switch Security</p> <p>Restrict access to a switch. Configure switch passwords. Disable switch interfaces. Enable switch port security. Configure remote access to a switch using SSH.</p>	<p>5.6 6.2, 6.6, 6.7</p>
<p>8 EtherChannel Configuration</p> <p>Configure EtherChannel using the following:</p> <ul style="list-style-type: none"> ○ PAGP ○ LACP 	<p>11.3</p>

Objective Mapping: TestOut Routing Pro Objective to LabSim Section

Exam Objective	Module.Section
<p>1 Router Setup and Configuration</p> <p>View router configuration information. Configure router hostnames and interface descriptions. Configure router banners. Manage router configuration files. Manage router IOS files.</p>	<p>5.2, 5.3, 5.5 9.1, 9.2</p>
<p>2 Router Interface Configuration</p> <p>View the status of router interfaces. View directly-connected devices using CDP. Configure Ethernet and serial router interfaces. Configure TCP/IP settings on a router interface. Configure a PPP connection between routers. Configure PPPoE connections on a router. Troubleshoot router connections.</p>	<p>5.3, 5.5, 5.8 6.3, 6.8 13.2, 13.3, 13.4, 13.6</p>
<p>3 IP Routing Implementation</p> <p>Calculate and configure subnet masks for network hosts. Configure static routes on a router. View the routing table on a router. Manage auto-summarization between networks. Configure router-on-a-stick interVLAN routing. Troubleshoot WAN communication issues using utilities such as ping and tracert.</p>	<p>3.2, 3.3, 3.5 7.1, 7.3, 7.4, 7.5, 7.8 13.6</p>
<p>4 OSPF Routing Configuration</p> <p>Enable OSPF routing. Configure and manage OSPF routing.</p>	<p>7.3 14.1, 14.2, 14.4, 14.8 15.1, 15.2</p>

<p>Troubleshoot OSPF routing.</p>	
<p>5 EIGRP Routing Configuration</p> <p>Enable EIGRP routing. Configure and manage EIGRP routing. Troubleshoot EIGRP routing.</p>	<p>14.5, 14.6, 14.7, 14.8 15.3</p>
<p>6 Access Control List Configuration</p> <p>Implement standard, extended, and named ACLs. Use wildcard masks in ACLs. Use ACLs to manage network traffic:</p> <ul style="list-style-type: none"> o Permit allowed traffic. o Block disallowed traffic. 	<p>8.2, 8.3, 8.4, 8.5 12.4, 12.5</p>
<p>7 NAT Configuration</p> <p>Configure static NAT on a router. Configure dynamic NAT on a router. Configure overloaded PAT on a router.</p>	<p>8.6, 8.7</p>
<p>8 DHCP Server Configuration</p> <p>Configure the DHCP service on a router. Configure DHCP bindings. Configure a DHCP relay agent.</p>	<p>8.1</p>
<p>9 Router Security Configuration</p> <p>Restrict router access. Configure router passwords.</p>	<p>5.6 6.3, 6.7</p>

Use SSH to configure remote access to a router.	
10 High Availability Configuration Configure VRRP. Configure HSRP.	12.3

Objective Mapping: LabSim Section to Cisco 100-105 ICND1, 200-105 ICND2, and 200-125 CCNA Objectives

Section	Title	Objectives for ICND1	Objectives for ICND2	Objectives for CCNA
1.0	ICND1 Introduction			
1.1	ICND1 Introduction			
2.0	Networking Concepts			
2.1	Networking Fundamentals	1.6		1.7 Select the appropriate cabling type based on implementation requirements
2.2	Network Devices	1.3, 2.2		1.3 Describe the impact of infrastructure components in an enterprise network 1.3.a Firewalls 1.3.b Access points 1.3.c Wireless controllers 2.2 Interpret Ethernet frame format
2.3	TCP/IP Networking Model	1.1, 1.2		1.1 Compare and contrast OSI and TCP/IP models 1.2 Compare and contrast TCP and UDP protocols
2.4	Data Encapsulation	1.1		1.1 Compare and contrast OSI and TCP/IP models
2.5	OSI Networking Model	1.1		1.1 Compare and contrast OSI and TCP/IP models
2.6	Data Communications	1.1		1.1 Compare and contrast OSI and TCP/IP models
2.7	Ethernet Networking	1.1, 1.5, 1.6 2.2		1.1 Compare and contrast OSI and TCP/IP models

				<p>1.6 Compare and contrast network topologies</p> <p>1.6.a Star 1.6.b Mesh 1.6.c Hybrid</p> <p>1.7 Select the appropriate cabling type based on implementation requirements</p> <p>2.2 Interpret Ethernet frame format</p>
3.0	IPv4 Addressing			
3.1	IPv4 Overview	1.10		1.11 Describe the need for private IPv4 addressing
3.2	IPv4 Address Classes	1.10		1.11 Describe the need for private IPv4 addressing
3.3	Subnetting	1.10		1.11 Describe the need for private IPv4 addressing
3.4	Variable Length Subnet Masking (VLSM)	1.8		1.9 Configure, verify, and troubleshoot IPv4 addressing and subnetting
3.5	Subnet Planning and Design	1.10		1.11 Describe the need for private IPv4 addressing
4.0	IPv6 Addressing			
4.1	IPv6 Addressing Overview	1.9, 1.10, 1.11, 1.14		<p>1.10 Compare and contrast IPv4 address types</p> <p>1.10.a Unicast 1.10.b Broadcast 1.10.c Multicast</p> <p>1.11 Describe the need for private IPv4 addressing</p>

				<p>1.12 Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment</p> <p>1.15 Compare and contrast IPv6 address types:</p> <ul style="list-style-type: none"> 1.15.a Global unicast 1.15.b Unique local 1.15.c Link local 1.15.d Multicast 1.15.e Modified EUI 64 1.15.f Autoconfiguration 1.15.g Anycast
4.2	IPv6 Host Configuration	1.12, 1.13, 1.14		<p>1.13 Configure, verify, and troubleshoot IPv6 addressing</p> <p>1.14 Configure and verify IPv6 Stateless Address Auto Configuration</p> <p>1.15 Compare and contrast IPv6 address types:</p> <ul style="list-style-type: none"> 1.15.a Global unicast 1.15.b Unique local 1.15.c Link local 1.15.d Multicast 1.15.e Modified EUI 64 1.15.f Autoconfiguration 1.15.g Anycast
5.0	Cisco Device Basics			
5.1	Cisco Device Access	5.3		7.4 Configure and verify initial device configuration
5.2	System Startup	2.2		2.2 Interpret Ethernet frame format

5.3	Command Line Interface (CLI)	5.2, 5.3		<p>7.3 Configure and verify device management:</p> <ul style="list-style-type: none"> 7.3.a Backup and restore device configuration 7.3.b Using Cisco Discovery Protocol or LLDP for device discovery 7.3.c Licensing 7.3.d Logging 7.3.e Timezone 7.3.f Loopback <p>7.4 Configure and verify initial device configuration</p>
5.4	Command Line Help	5.3		7.4 Configure and verify initial device configuration
5.5	Basic Device Settings	5.2, 5.3		<p>7.3 Configure and verify device management:</p> <ul style="list-style-type: none"> 7.3.a Backup and restore device configuration 7.3.b Using Cisco Discovery Protocol or LLDP for device discovery 7.3.c Licensing 7.3.d Logging 7.3.e Timezone 7.3.f Loopback <p>7.4 Configure and verify initial device configuration</p>
5.6	Device Passwords	5.2, 5.3, 5.4		<p>6.5 Configure, verify, and troubleshoot basic device hardening:</p> <ul style="list-style-type: none"> Local authentication Secure password Access to device <ul style="list-style-type: none"> ○ Source address ○ Telnet/SSH Login banner <p>7.3 Configure and verify device management:</p> <ul style="list-style-type: none"> Backup and restore device configuration

				<p>Using Cisco Discovery Protocol or LLDP for device discovery</p> <p>Licensing</p> <p>Logging</p> <p>Timezone</p> <p>Loopback</p> <p>7.4 Configure and verify initial device configuration</p>
5.7	System Message Log	5.1		<p>7.1 Configure and verify device-monitoring protocols:</p> <p>Syslog</p>
5.8	Network Communications Troubleshooting	1.7 5.6	5.2, 5.3	<p>1.8 Apply troubleshooting methodologies to resolve problems</p> <p>Perform and document fault isolation</p> <p>Resolve or escalate</p> <p>Verify and monitor resolution</p> <p>7.2 Troubleshoot network connectivity issues using ICMP echo-based IP SLA</p> <p>7.6 Use Cisco IOS tools to troubleshoot and resolve problems</p> <p>Ping and traceroute with extended option</p> <p>Terminal monitor</p> <p>Log events</p> <p>Local SPAN</p>
6.0	LAN Switching			
6.1	Layer 2 Switching Overview	1.4 2.1		<p>1.5 Compare and contrast collapsed core and three-tier architectures</p> <p>2.1 Describe and verify switching concepts</p>

				<p>MAC learning and aging Frame switching Frame flooding MAC address table</p>
6.2	Switch Interface Configuration	5.3		7.4 Configure and verify initial device configuration
6.3	Switch IP Configuration	5.3, 5.4		<p>6.5 Configure, verify, and troubleshoot basic device hardening:</p> <ul style="list-style-type: none"> 6.5.a Local authentication 6.5.b Secure password 6.5.c Access to device <ul style="list-style-type: none"> o 6.5.c (i) Source address o 6.5.c (ii) Telnet/SSH 6.5.d Login banner <p>7.4 Configure and verify initial device configuration</p>
6.4	Virtual LANs (VLANs)	2.4, 2.5		<p>2.4 Configure, verify, and troubleshoot VLANs (normal/extended range) spanning multiple switches:</p> <ul style="list-style-type: none"> 2.4.a Access ports (data and voice) 2.4.b Default VLAN <p>2.5 Configure, verify, and troubleshoot interswitch connectivity:</p> <ul style="list-style-type: none"> 2.5.a Trunk ports 2.5.b Add and remove VLANs on a trunk 2.5.c DTP, VTP (v1&v2), and 802.1Q 2.5.d Native VLAN
6.5	Trunking	2.4, 2.5		<p>2.4 Configure, verify, and troubleshoot VLANs (normal/extended range) spanning multiple switches:</p> <ul style="list-style-type: none"> 2.4.a Access ports (data and voice)

				<p>2.4.b Default VLAN</p> <p>2.5 Configure, verify, and troubleshoot interswitch connectivity:</p> <p>2.5.a Trunk ports 2.5.c 802.1Q 2.5.d Native VLAN</p>
6.6	Switch Security	2.5, 2.7 5.3		<p>2.5 Configure, verify, and troubleshoot interswitch connectivity:</p> <p>2.5.a Trunk ports 2.5.c DTP, VTP (v1&v2), and 802.1Q 2.5.d Native VLAN</p> <p>6.1 Configure, verify, and troubleshoot port security:</p> <p>6.1.a Static 6.1.b Dynamic 6.1.c Sticky 6.1.d Max MAC addresses 6.1.e Violation actions 6.1.f Err-disable recovery</p> <p>7.4 Configure and verify initial device configuration</p>
6.7	Remote Switch Access	5.4		<p>2.5 Configure, verify, and troubleshoot interswitch connectivity:</p> <p>2.5.a Trunk ports 2.5.c DTP, VTP (v1&v2), and 802.1Q 2.5.d Native VLAN</p> <p>6.1 Configure, verify, and troubleshoot port security:</p> <p>6.1.a Static 6.1.b Dynamic 6.1.c Sticky 6.1.d Max MAC addresses 6.1.e Violation actions 6.1.f Err-disable recovery</p>

				<p>6.5 Configure, verify, and troubleshoot basic device hardening:</p> <ul style="list-style-type: none"> 6.5.a Local authentication 6.5.b Secure password 6.5.c Access to device <ul style="list-style-type: none"> ○ 6.5.c (i) Source address ○ 6.5.c (ii) Telnet/SSH 6.5.d Login banner <p>7.4 Configure and verify initial device configuration</p>
6.8	Cisco Discovery Protocol (CDP)	2.6 5.2, 5.4		<p>2.8 Configure and verify Layer 2 protocols:</p> <ul style="list-style-type: none"> 2.8.a Cisco Discovery Protocol 2.8.b LLDP <p>6.5 Configure, verify, and troubleshoot basic device hardening:</p> <ul style="list-style-type: none"> 6.5.a Local authentication 6.5.b Secure password 6.5.c Access to device <ul style="list-style-type: none"> ○ 6.5.c (i) Source address ○ 6.5.c (ii) Telnet/SSH 6.5.d Login banner <p>7.3 Configure and verify device management:</p> <ul style="list-style-type: none"> 7.3.b Using Cisco Discovery Protocol or LLDP for device discovery
6.9	Switch Troubleshooting	2.3, 2.5 5.2		<p>2.3 Troubleshoot interface and cable issues (collisions, errors, duplex, speed)</p> <p>6.5 Configure, verify, and troubleshoot interswitch connectivity:</p> <ul style="list-style-type: none"> 2.5.a Trunk ports 2.5.b Add and remove VLANs on a trunk 2.5.c DTP, VTP (v1&v2), and 802.1Q 2.5.d Native VLAN

				<p>7.3 Configure and verify device management:</p> <ul style="list-style-type: none"> 7.3.a Backup and restore device configuration 7.3.b Using Cisco Discovery Protocol or LLDP for device discovery 7.3.c Licensing 7.3.d Logging 7.3.e Timezone 7.3.f Loopback
7.0	IP Routing Technologies			
7.1	IPv4 Routing	3.1, 3.2, 3.3, 3.6		<p>3.1 Describe the routing concepts:</p> <ul style="list-style-type: none"> 3.1.a Packet handling along the path through a network 3.1.b Forwarding decision based on route lookup 3.1.c Frame rewrite <p>3.2 Interpret the components of a routing table:</p> <ul style="list-style-type: none"> 3.2.a Prefix 3.2.b Network mask 3.2.c Next hop 3.2.d Routing protocol code 3.2.e Administrative distance 3.2.f Metric 3.2.g Gateway of last resort <p>3.3 Describe how a routing table is populated by different routing information sources:</p> <ul style="list-style-type: none"> 3.3.a Admin distance <p>3.8 Configure, verify, and troubleshoot IPv4 and IPv6 static routing:</p> <ul style="list-style-type: none"> 3.8.a Default route 3.8.b Network route

				<p>3.8.c Host route 3.8.d Floating static</p>
7.2	IPv4 Routing Troubleshooting	<p>1.8 3.3, 3.5, 3.6 5.6</p>		<p>1.9 Configure, verify, and troubleshoot IPv4 addressing and subnetting</p> <p>3.14 Troubleshoot basic Layer 3 end-to-end connectivity issues</p> <p>7.6 Use Cisco IOS tools to troubleshoot and resolve problems</p> <p>7.6.a Ping and traceroute with extended option 7.6.b Terminal monitor 7.6.c Log events 7.6.d Local SPAN</p>
7.3	Routing Implementations	3.3, 3.5, 3.6		<p>3.3 Describe how a routing table is populated by different routing information sources:</p> <p>3.3.a Admin distance</p> <p>3.5 Compare and contrast static routing and dynamic routing</p> <p>3.8 Configure, verify, and troubleshoot IPv4 and IPv6 static routing:</p> <p>3.8.a Default route 3.8.b Network route 3.8.c Host route 3.8.d Floating static</p>
7.4	Static Routing	3.5, 3.6		<p>3.5 Compare and contrast static routing and dynamic routing</p> <p>3.8 Configure, verify, and troubleshoot IPv4 and IPv6 static routing:</p> <p>3.8.a Default route</p>

				<p>3.8.b Network route 3.8.c Host route 3.8.d Floating static</p>
7.5	Route Summarization	1.8 3.7		<p>1.9 Configure, verify, and troubleshoot IPv4 addressing and subnetting</p> <p>3.13 Configure, verify, and troubleshoot RIPv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution)</p>
7.6	IPv6 Routing	1.11, 1.14		<p>1.12 Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment</p> <p>1.15 Compare and contrast IPv6 address types:</p> <p>1.15.a Global unicast 1.15.b Unique local 1.15.c Link local 1.15.d Multicast 1.15.e Modified EUI 64 1.15.f Autoconfiguration 1.15.g Anycast</p> <p>3.14 Troubleshoot basic Layer 3 end-to-end connectivity issues</p>
7.7	InterVLAN Routing Overview	2.4 3.4		<p>2.4 Configure, verify, and troubleshoot VLANs (normal/extended range) spanning multiple switches:</p> <p>2.4.a Access ports (data and voice) 2.4.b Default VLAN</p> <p>3.4 Configure, verify, and troubleshoot inter-VLAN routing</p> <p>3.4.a Router on a stick 3.4.b SVI</p>

7.8	InterVLAN Routing Configuration	3.4		<p>3.4 Configure, verify, and troubleshoot inter-VLAN routing:</p> <p>3.4.a Router on a stick 3.4.b SVI</p> <p>6.2 Describe common access layer threat mitigation techniques:</p> <p>6.2.a 802.1x 6.2.b DHCP snooping 6.2.c Nondefault native VLAN</p>
8.0	IP Services			
8.1	Dynamic Host Configuration Protocol (DHCP)	4.3		<p>5.3 Configure and verify DHCP on a router (excluding static reservations):</p> <p>5.3.a Server 5.3.b Relay 5.3.c Client 5.3.d TFTP, DNS, and gateway options</p>
8.2	Access Control Lists (ACLs)	4.6		<p>6.3 Configure, verify, and troubleshoot IPv4 and IPv6 access list for traffic filtering:</p> <p>6.3.a Standard 6.3.b Extended 6.3.c Named</p>
8.3	ACL Configuration	4.6		<p>6.3 Configure, verify, and troubleshoot IPv4 and IPv6 access list for traffic filtering:</p> <p>6.3.a Standard 6.3.b Extended 6.3.c Named</p> <p>6.4 Verify ACLs using the APIC-EM Path Trace ACL Analysis tool</p>

				<p>6.5 Configure, verify, and troubleshoot basic device hardening:</p> <ul style="list-style-type: none"> 6.5.a Local authentication 6.5.b Secure password 6.5.c Access to device <ul style="list-style-type: none"> ○ 6.5.c. (i) Source address ○ 6.5.c. (ii) Telnet/SSH 6.5.d Login banner
8.4	ACL Troubleshooting	5.4		<p>6.3 Configure, verify, and troubleshoot IPv4 and IPv6 access list for traffic filtering:</p> <ul style="list-style-type: none"> 6.3.a Standard 6.3.b Extended 6.3.c Named
8.5	Network Address Translation (NAT) Overview	4.7		<p>5.6 Configure, verify, and troubleshoot inside source NAT:</p> <ul style="list-style-type: none"> 5.6.a Static 5.6.b Pool 5.6.c PAT
8.6	NAT Configuration	4.7		<p>5.6 Configure, verify, and troubleshoot inside source NAT:</p> <ul style="list-style-type: none"> 5.6.a Static 5.6.b Pool 5.6.c PAT
8.7	Network Time Protocol (NTP)	4.5		5.7 Configure and verify NTP operating in a client/server mode
9.0	Device Configuration and Management			
9.1	Router Configuration Files	5.5		7.5 Perform device maintenance:

				<p>7.5.a Cisco IOS upgrades and recovery (SCP, FTP, TFTP, and MD5 verify)</p> <p>7.5.b Password recovery and configuration register</p> <p>7.5.c File system management</p>
9.2	IOS Licensing	5.2		<p>7.3 Configure and verify device management:</p> <p>7.3.a Backup and restore device configuration</p> <p>7.3.b Using Cisco Discovery Protocol or LLDP for device discovery</p> <p>7.3.c Licensing</p> <p>7.3.d Logging</p> <p>7.3.e Timezone</p> <p>7.3.f Loopback</p>
9.3	NetFlow	5.6		<p>7.6 Use Cisco IOS tools to troubleshoot and resolve problems</p> <p>7.6.a Ping and traceroute with extended option</p> <p>7.6.b Terminal monitor</p> <p>7.6.c Log events</p> <p>7.6.d Local SPAN</p>
10.0	ICND2 Introduction			
10.1	ICND2 Introduction			
11.0	Advanced Switching			
11.1	Advanced Trunking		1.1, 1.2	<p>2.4 Configure, verify, and troubleshoot VLANs (normal/extended range) spanning multiple switches</p> <p>2.4.a Access ports (data and voice)</p> <p>2.5 Configure, verify, and troubleshoot interswitch connectivity</p> <p>2.5.b Add and remove VLANs on a trunk</p>

				2.5.c DTP, VTP (v1&v2), and 802.1Q
11.2	Spanning Tree Overview		1.3	2.6 Configure, verify, and troubleshoot STP protocols: 2.6.a STP mode (PVST+ and RPVST+) 2.6.b STP root bridge selection
11.3	Spanning Tree Concepts		1.5	2.9 Configure, verify, and troubleshoot (Layer 2/Layer 3) EtherChannel: 2.9.a Static 2.9.b PAGP 2.9.c LACP
11.4	Spanning Tree Protocol Configuration		1.3	2.6 Configure, verify, and troubleshoot STP protocols: 2.6.a STP mode (PVST+ and RPVST+) 2.6.b STP root bridge selection
11.5	Switch Troubleshooting		1.3, 1.4 5.6	2.6 Configure, verify, and troubleshoot STP protocols: 2.6.a STP mode (PVST+ and RPVST+) 2.6.b STP root bridge selection 2.7 Configure, verify and troubleshoot STP related optional features 2.7.a PortFast 2.7.b BPDU guard 3.14 Troubleshoot basic Layer 3 end-to-end connectivity issues
12.0	Advanced Routing			
12.1	Dynamic Routing	4.1, 4.2, 4.4	2.2, 2.3	3.6 Compare and contrast distance vector and link state routing protocols

				<p>3.7 Compare and contrast interior and exterior routing protocols</p> <p>5.1 Describe DNS lookup operation</p> <p>5.2 Troubleshoot client connectivity issues involving DNS</p> <p>5.4 Troubleshoot client- and router-based DHCP connectivity issues</p>
12.2	Layer 3 InterVLAN Routing		2.1 5.6	<p>3.4 Configure, verify, and troubleshoot inter-VLAN routing</p> <p>3.4.a Router on a stick 3.4.b SVI</p> <p>3.14 Troubleshoot basic Layer 3 end-to-end connectivity issues</p>
12.3	Default Gateway Redundancy		4.1	<p>5.5 Configure, verify, and troubleshoot basic HSRP:</p> <p>5.5.a Priority 5.5.b Preemption 5.5.c Version</p>
12.4	IPv6 and Extended IPv4 ACLs		4.4, 4.5 5.3	<p>3.14 Troubleshoot basic Layer 3 end-to-end connectivity issues</p> <p>6.3 Configure, verify, and troubleshoot IPv4 and IPv6 access list for traffic filtering</p> <p>6.3.b Extended</p> <p>6.4 Verify ACLs using the APIC-EM Path Trace ACL Analysis tool</p>
12.5	IPv6 and Extended ACL Configuration	4.6	4.4	<p>6.3 Configure, verify, and troubleshoot IPv4 and IPv6 access list for traffic filtering</p> <p>6.3.a Standard 6.3.b Extended 6.3.c Named</p>
13.0	Wide Area Networks			

13.1	WAN Types		3.4	4.4 Describe WAN topology options 4.4.a Point-to-point 4.4.b Hub and spoke 4.4.c Full mesh 4.4.d Single vs dual-homed
13.2	Leased Line WAN Links			
13.3	PPP and Multilink PPP		3.1	4.1 Configure and verify PPP and MLPPP on WAN interfaces using local authentication Configure Ethernet and serial router interfaces
13.4	PPPoE Configuration		3.2, 3.5	4.2 Configure, verify, and troubleshoot PPPoE client-side interfaces using local authentication 4.5 Describe WAN access connectivity options 4.5.c Broadband PPPoE
13.5	Virtual Private Networks		3.3, 3.5	3.3 Configure, verify, and troubleshoot GRE tunnel connectivity 4.5 Describe WAN access connectivity options 4.5.d Internet VPN (DMVPN, site-to-site VPN, client VPN)
13.6	WAN Troubleshooting			
14.0	IPv4 Routing Protocols			

14.1	Open Shortest Path First (OSPF) Overview		2.4	3.9 Configure, verify, and troubleshoot single area and multi-area OSPFv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)
14.2	OSPF for IPv4		2.4	3.9 Configure, verify, and troubleshoot single area and multi-area OSPFv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)
14.3	OSPF Configuration		2.4	3.9 Configure, verify, and troubleshoot single area and multi-area OSPFv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)
14.4	OSPF Areas and LSA Types		2.4	3.9 Configure, verify, and troubleshoot single area and multi-area OSPFv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)
14.5	EIGRP for IPv4 Routing		2.6	3.11 Configure, verify, and troubleshoot EIGRP for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub)
14.6	EIGRP for IPv4 Configuration		2.6	3.11 Configure, verify, and troubleshoot EIGRP for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub)
14.7	eBGP for IPv4		3.6	4.6 Configure and verify single-homed branch connectivity using eBGP IPv4 (limited to peering and route advertisement using Network command only)
14.8	IPv4 Routing Protocol Troubleshooting		5.6	3.14 Troubleshoot basic Layer 3 end-to-end connectivity issues
15.0	IPv6 Routing Protocols			

15.1	IPv6 Routing		2.4, 2.5	<p>3.9 Configure, verify, and troubleshoot single area and multi-area OSPFv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)</p> <p>3.10 Configure, verify, and troubleshoot single area and multi-area OSPFv3 for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)</p>
15.2	OSPF for IPv6		2.4, 2.5	<p>3.9 Configure, verify, and troubleshoot single area and multi-area OSPFv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)</p> <p>3.10 Configure, verify, and troubleshoot single area and multi-area OSPFv3 for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)</p>
15.3	EIGRP for IPv6		2.6, 2.7	<p>3.11 Configure, verify, and troubleshoot EIGRP for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub)</p> <p>3.12 Configure, verify, and troubleshoot EIGRP for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub)</p>
16.0	Network Management Using Cisco Devices			
16.1	Simple Network Management Protocol		5.1	<p>7.1 Configure and verify device-monitoring protocols:</p> <p>7.1.a SNMPv2</p> <p>7.1.b SNMPv3</p>
16.2	Quality of Service (QoS)		4.3	<p>4.7 Describe basic QoS concepts</p> <p>4.7.a Marking</p> <p>4.7.b Device trust</p> <ul style="list-style-type: none"> ○ 4.7.c Prioritization ○ 4.7.c. (i) Voice ○ 4.7.c. (ii) Video ○ 4.7.c. (iii) Data

				<p>4.7.d Shaping 4.7.e Policing 4.7.f Congestion management</p>
16.3	Enterprise Networking		<p>1.6 5.5</p>	<p>2.10 Describe the benefits of switch stacking and chassis aggregation</p> <p>7.7 Describe network programmability in enterprise network architecture</p> <p>7.7.a Function of a controller 7.7.b Separation of control plane and data plane 7.7.c Northbound and southbound APIs</p>
16.4	Cloud Resources		4.2	<p>1.4 Describe the effects of cloud resources on enterprise network architecture</p> <p>1.4.a Traffic path to internal and external cloud services 1.4.b Virtual services 1.4.c Basic virtual network topologies</p>
16.5	Network Security		<p>1.7 5.4</p>	<p>6.2 Describe common access layer threat mitigation techniques</p> <p>1.7.a 802.1x 1.7.b DHCP snooping 1.7.c Nondefault native VLAN</p> <p>6.6 Describe device security using AAA with TACACS+ and RADIUS</p>

Objective Mapping: Cisco 100-105 ICND1 Objective to LabSim Section

#	Exam Objective	Module.Section
1.0	Network Fundamentals	
1.1	Compare and contrast OSI and TCP/IP models	2.3, 2.4, 2.5, 2.6, 2.7
1.2	Compare and contrast TCP and UDP protocols	2.3
1.3	Describe the impact of infrastructure components in an enterprise network 1.3.a Firewalls 1.3.b Access points 1.3.c Wireless controllers	2.2
1.4	Compare and contrast collapsed core and three-tier architectures	6.1
1.5	Compare and contrast network topologies 1.5.a Star 1.5.b Mesh 1.5.c Hybrid	2.7
1.6	Select the appropriate cabling type based on implementation requirements	2.1, 2.7
1.7	Apply troubleshooting methodologies to resolve problems 1.7.a Perform fault isolation and document 1.7.b Resolve or escalate 1.7.c Verify and monitor resolution	5.8

1.8	Configure, verify, and troubleshoot IPv4 addressing and subnetting	3.4 7.2, 7.5
1.9	Compare and contrast IPv4 address types 1.9.a Unicast 1.9.b Broadcast 1.9.c Multicast	4.1
1.10	Describe the need for private IPv4 addressing	3.1, 3.2, 3.3, 3.5 4.1
1.11	Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment	4.1 7.6
1.12	Configure, verify, and troubleshoot IPv6 addressing	4.2
1.13	Configure and verify IPv6 Stateless Address Auto Configuration	4.2
1.14	Compare and contrast IPv6 address types 1.14.a Global unicast 1.14.b Unique local 1.14.c Link local 1.14.d Multicast 1.14.e Modified EUI 64 1.14.f Autoconfiguration 1.14.g Anycast	4.1, 4.2 7.6
2.0	LAN Switching Fundamentals	
2.1	Describe and verify switching concepts	6.1

	<ul style="list-style-type: none"> 2.1.a MAC learning and aging 2.1.b Frame switching 2.1.c Frame flooding 2.1.d MAC address table 	
2.2	Interpret Ethernet frame format	2.2, 2.7 5.2
2.3	Troubleshoot interface and cable issues (collisions, errors, duplex, speed)	6.9
2.4	<p>Configure, verify, and troubleshoot VLANs (normal range) spanning multiple switches</p> <ul style="list-style-type: none"> 2.4.a Access ports (data and voice) 2.4.b Default VLAN 	6.4, 6.5 7.7
2.5	<p>Configure, verify, and troubleshoot interswitch connectivity</p> <ul style="list-style-type: none"> 2.5.a Trunk ports 2.5.b 802.1Q 2.5.c Native VLAN 	6.4, 6.5, 6.6, 6.9
2.6	<p>Configure and verify Layer 2 protocols</p> <ul style="list-style-type: none"> 2.6.a Cisco Discovery Protocol 2.6.b LLDP 	6.8
2.7	<p>Configure, verify, and troubleshoot port security</p> <ul style="list-style-type: none"> 2.7.a Static 2.7.b Dynamic 2.7.c Sticky 2.7.d Max MAC addresses 	6.6

	<p>2.7.e Violation actions 2.7.f Err-disable recovery</p>	
3.0	Routing Fundamentals	
3.1	<p>Describe the routing concepts</p> <p>3.1.a Packet handling along the path through a network 3.1.b Forwarding decision based on route lookup 3.1.c Frame rewrite</p>	7.1
3.2	<p>Interpret the components of routing table</p> <p>3.2.a Prefix 3.2.b Network mask 3.2.c Next hop 3.2.d Routing protocol code 3.2.e Administrative distance 3.2.f Metric 3.2.g Gateway of last resort</p>	7.1
3.3	<p>Describe how a routing table is populated by different routing information sources</p> <p>3.3.a Admin distance</p>	7.1, 7.2, 7.3
3.4	<p>Configure, verify, and troubleshoot inter-VLAN routing</p> <p>3.4.a Router on a stick</p>	7.7, 7.8
3.5	Compare and contrast static routing and dynamic routing	7.2, 7.3, 7.4

3.6	<p>Configure, verify, and troubleshoot IPv4 and IPv6 static routing</p> <ul style="list-style-type: none"> 3.6.a Default route 3.6.b Network route 3.6.c Host route 3.6.d Floating static 	7.1, 7.2, 7.3, 7.4
3.7	Configure, verify, and troubleshoot RIPv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution)	7.5
4.0	Infrastructure Services	
4.1	Describe DNS lookup operation	6.3 12.1
4.2	Troubleshoot client connectivity issues involving DNS	7.2 12.1
4.3	<p>Configure and verify DHCP on a router (excluding static reservations)</p> <ul style="list-style-type: none"> 4.3.a Server 4.3.b Relay 4.3.c Client 4.3.d TFTP, DNS, and gateway options 	8.1
4.4	Troubleshoot client- and router-based DHCP connectivity issues	12.1
4.5	Configure and verify NTP operating in client/server mode	8.7
4.6	Configure, verify, and troubleshoot IPv4 standard numbered and named access list for routed interfaces	8.2, 8.3 12.5

4.7	<p>Configure, verify, and troubleshoot inside source NAT</p> <ul style="list-style-type: none"> 4.7.a Static 4.7.b Pool 4.7.c PAT 	8.5, 8.6
5.0	Infrastructure Maintenance	
5.1	Configure and verify device-monitoring using syslog	5.7
5.2	<p>Configure and verify device management</p> <ul style="list-style-type: none"> 5.2.a Backup and restore device configuration 5.2.b Using Cisco Discovery Protocol and LLDP for device discovery 5.2.c Licensing 5.2.d Logging 5.2.e Timezone 5.2.f Loopback 	5.3, 5.5, 5.6 6.8, 6.9 9.2
5.3	Configure and verify initial device configuration	5.1, 5.3, 5.4, 5.5, 5.6 6.2, 6.3, 6.6
5.4	<p>Configure, verify, and troubleshoot basic device hardening</p> <ul style="list-style-type: none"> 5.4.a Local authentication 5.4.b Secure password 5.4.c Access to device <ul style="list-style-type: none"> ○ 5.4.c (i) Source address ○ 5.4.c (ii) Telnet/SSH 5.4.d Login banner 	5.6 6.3, 6.7, 6.8 8.4
5.5	Perform device maintenance	9.1

	<p>5.5.a Cisco IOS upgrades and recovery (SCP, FTP, TFTP, and MD5 verify)</p> <p>5.5.b Password recovery and configuration register</p> <p>5.5.c File system management</p>	
5.6	<p>Use Cisco IOS tools to troubleshoot and resolve problems</p> <p>5.6.a Ping and traceroute with extended option</p> <p>5.6.b Terminal monitor</p> <p>5.6.c Log events</p>	<p>5.8</p> <p>7.2</p> <p>9.3</p>

Objective Mapping: Cisco 200-105 ICND2 Objective to LabSim Section

#	Exam Objective	Module.Section
1.0	LAN Switching Technologies	
1.1	Configure, verify, and troubleshoot VLANs (normal/extended range) spanning multiple switches 1.1.a Access ports (data and voice) 1.1.b Default VLAN	11.1
1.2	Configure, verify, and troubleshoot interswitch connectivity 1.2.a Add and remove VLANs on a trunk 1.2.b DTP and VTP (v1&v2)	11.1
1.3	Configure, verify, and troubleshoot STP protocols 1.3.a STP mode (PVST+ and RPVST+) 1.3.b STP root bridge selection	11.2, 11.4, 11.5
1.4	Configure, verify, and troubleshoot STP-related optional features 1.4.a PortFast 1.4.b BPDU guard	11.5
1.5	Configure, verify, and troubleshoot (Layer 2/Layer 3) EtherChannel 1.5.a Static 1.5.b PAGP 1.5.c LACP	11.3

1.6	Describe the benefits of switch stacking and chassis aggregation	16.3
1.7	Describe common access layer threat mitigation techniques 1.7.a 802.1x 1.7.b DHCP snooping 1.7.c Nondefault native VLAN	16.5
2.0	Routing Technologies	
2.1	Configure, verify, and troubleshoot Inter-VLAN routing 2.1.a Router on a stick 2.1.b SVI	12.2
2.2	Compare and contrast distance vector and link-state routing protocols	12.1
2.3	Compare and contrast interior and exterior routing protocols	12.1
2.4	Configure, verify, and troubleshoot single area and multiarea OSPFv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)	14.1, 14.2, 14.3, 14.4 15.1, 15.2
2.5	Configure, verify, and troubleshoot single area and multiarea OSPFv3 for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)	15.1, 15.2
2.6	Configure, verify, and troubleshoot EIGRP for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub)	14.5, 14.6 15.3

2.7	Configure, verify, and troubleshoot EIGRP for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub)	15.3
3.0	WAN Technologies	
3.1	Configure and verify PPP and MLPPP on WAN interfaces using local authentication	13.3
3.2	Configure, verify, and troubleshoot PPPoE client-side interfaces using local authentication	13.4
3.3	Configure, verify, and troubleshoot GRE tunnel connectivity	13.5
3.4	Describe WAN topology options <ul style="list-style-type: none"> 3.4.a Point-to-point 3.4.b Hub and spoke 3.4.c Full mesh 3.4.d Single vs dual-homed 	13.1
3.5	Describe WAN access connectivity options <ul style="list-style-type: none"> 3.5.a MPLS 3.5.b MetroEthernet 3.5.c Broadband PPPoE 3.5.d Internet VPN (DMVPN, site-to-site VPN, client VPN) 	13.4, 13.5
3.6	Configure and verify single-homed branch connectivity using eBGP IPv4 (limited to peering and route advertisement using Network command only)	14.7
4.0	Infrastructure Services	
4.1	Configure, verify, and troubleshoot basic HSRP	12.3

	<ul style="list-style-type: none"> 4.1.a Priority 4.1.b Preemption 4.1.c Version 	
4.2	<p>Describe the effects of cloud resources on enterprise network architecture</p> <ul style="list-style-type: none"> 4.2.a Traffic path to internal and external cloud services 4.2.b Virtual services 4.2.c Basic virtual network infrastructure 	16.4
4.3	<p>Describe basic QoS concepts</p> <ul style="list-style-type: none"> 4.3.a Marking 4.3.b Device trust 4.3.c Prioritization <ul style="list-style-type: none"> ○ 4.3.c (i) Voice ○ 4.3.c (ii) Video ○ 4.3.c (iii) Data 4.3.d Shaping 4.3.e Policing 4.3.f Congestion management 	16.2
4.4	<p>Configure, verify, and troubleshoot IPv4 and IPv6 access list for traffic filtering</p> <ul style="list-style-type: none"> 4.4.a Standard 4.4.b Extended 4.4.c Named 	12.4, 12.5
4.5	Verify ACLs using the APIC-EM Path Trace ACL analysis tool	12.4
5.0	Infrastructure Maintenance	

5.1	<p>Configure and verify device-monitoring protocols</p> <p>5.1.a SNMPv2 5.1.b SNMPv3</p>	16.1
5.2	Troubleshoot network connectivity issues using ICMP echo-based IP SLA	5.8
5.3	Use local SPAN to troubleshoot and resolve problems	5.8
5.4	Describe device management using AAA with TACACS+ and RADIUS	16.5
5.5	<p>Describe network programmability in enterprise network architecture</p> <p>5.5.a Function of a controller 5.5.b Separation of control plane and data plane 5.5.c Northbound and southbound APIs</p>	16.3
5.6	Troubleshoot basic Layer 3 end-to-end connectivity issues	11.5 12.2, 12.4 14.8

Objective Mapping: Cisco 200-125 CCNA Objective to LabSim Section

1.0	Network Fundamentals	
1.1	Compare and contrast OSI and TCP/IP models	2.3, 2.4, 2.5, 2.6, 2.7
1.2	Compare and contrast TCP and UDP protocols	2.3
1.3	Describe the impact of infrastructure components in an enterprise network 1.3.a Firewalls 1.3.b Access points 1.3.c Wireless controllers	2.2
1.4	Describe the effects of cloud resources on enterprise network architecture 1.4.a Traffic path to internal and external cloud services 1.4.b Virtual services 1.4.c Basic virtual network infrastructure	16.4
1.5	Compare and contrast collapsed core and three-tier architectures	6.1
1.6	Compare and contrast network topologies 1.6.a Star 1.6.b Mesh 1.6.c Hybrid	2.7
1.7	Select the appropriate cabling type based on implementation requirements	2.1, 2.7

1.8	<p>Apply troubleshooting methodologies to resolve problems</p> <p>1.8.a Perform and document fault isolation 1.8.b Resolve or escalate 1.8.c Verify and monitor resolution</p>	5.8
1.9	Configure, verify, and troubleshoot IPv4 addressing and subnetting	3.4 7.2, 7.5
1.10	<p>Compare and contrast IPv4 address types</p> <p>1.10.a Unicast 1.10.b Broadcast 1.10.c Multicast</p>	4.1
1.11	Describe the need for private IPv4 addressing	3.1, 3.2, 3.3, 3.5 4.1
1.12	Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment	4.1 7.6
1.13	Configure, verify, and troubleshoot IPv6 addressing	4.2
1.14	Configure and verify IPv6 Stateless Address Auto Configuration	4.2
1.15	<p>Compare and contrast IPv6 address types</p> <p>1.15.a Global unicast 1.15.b Unique local 1.15.c Link local 1.15.d Multicast 1.15.e Modified EUI 64</p>	4.1, 4.2 7.6

	<p>1.15.f Autoconfiguration 1.15.g Anycast</p>	
2.0	LAN Switching Technologies	
2.1	<p>Describe and verify switching concepts</p> <p>2.1.a MAC learning and aging 2.1.b Frame switching 2.1.c Frame flooding 2.1.d MAC address table</p>	6.1
2.2	Interpret Ethernet frame format	2.2, 2.7 5.2
2.3	Troubleshoot interface and cable issues (collisions, errors, duplex, speed)	6.9
2.4	<p>Configure, verify, and troubleshoot VLANs (normal/extended range) spanning multiple switches</p> <p>2.4.a Access ports (data and voice) 2.4.b Default VLAN</p>	6.4, 6.5 7.7 11.1
2.5	<p>Configure, verify, and troubleshoot interswitch connectivity</p> <p>2.5.a Trunk ports 2.5.b Add and remove VLANs on a trunk 2.5.c DTP, VTP (v1&v2), and 802.1Q 2.5.d Native VLAN</p>	6.4, 6.5, 6.6, 6.9 11.1
2.6	<p>Configure, verify, and troubleshoot STP protocols</p> <p>2.6.a STP mode (PVST+ and RPVST+)</p>	11.2, 11.4, 11.5

	2.6.b STP root bridge selection	
2.7	Configure, verify and troubleshoot STP related optional features 2.7.a PortFast 2.7.b BPDU guard	11.5
2.8	Configure and verify Layer 2 protocols 2.8.a Cisco Discovery Protocol 2.8.b LLDP	6.8
2.9	Configure, verify, and troubleshoot (Layer 2/Layer 3) EtherChannel 2.9.a Static 2.9.b PAGP 2.9.c LACP	11.3
2.10	Describe the benefits of switch stacking and chassis aggregation	16.3
3.0	Routing Technologies	
3.1	Describe the routing concepts 3.1.a Packet handling along the path through a network 3.1.b Forwarding decision based on route lookup 3.1.c Frame rewrite	7.1
3.2	Interpret the components of a routing table 3.2.a Prefix 3.2.b Network mask	7.1

	<ul style="list-style-type: none"> 3.2.c Next hop 3.2.d Routing protocol code 3.2.e Administrative distance 3.2.f Metric 3.2.g Gateway of last resort 	
3.3	<p>Describe how a routing table is populated by different routing information sources</p> <p>3.3.a Admin distance</p>	7.1, 7.2, 7.3
3.4	<p>Configure, verify, and troubleshoot inter-VLAN routing</p> <p>3.4.a Router on a stick</p> <p>3.4.b SVI</p>	7.7, 7.8 12.2
3.5	Compare and contrast static routing and dynamic routing	7.2, 7.3, 7.4
3.6	Compare and contrast distance vector and link state routing protocols	12.1
3.7	Compare and contrast interior and exterior routing protocols	12.1
3.8	<p>Configure, verify, and troubleshoot IPv4 and IPv6 static routing</p> <p>3.8.a Default route</p> <p>3.8.b Network route</p> <p>3.8.c Host route</p> <p>3.8.d Floating static</p>	7.1, 7.2, 7.3, 7.4
3.9	Configure, verify, and troubleshoot single area and multi-area OSPFv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)	14.1, 14.2, 14.3, 14.4 15.1, 15.2

3.10	Configure, verify, and troubleshoot single area and multi-area OSPFv3 for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub, virtual-link, and LSAs)	15.1, 15.2
3.11	Configure, verify, and troubleshoot EIGRP for IPv4 (excluding authentication, filtering, manual summarization, redistribution, stub)	14.5, 14.6 15.3
3.12	Configure, verify, and troubleshoot EIGRP for IPv6 (excluding authentication, filtering, manual summarization, redistribution, stub)	15.3
3.13	Configure, verify, and troubleshoot RIPv2 for IPv4 (excluding authentication, filtering, manual summarization, redistribution)	7.5
3.14	Troubleshoot basic Layer 3 end-to-end connectivity issues	7.2, 7.6 14.8
4.0	WAN Technologies	
4.1	Configure and verify PPP and MLPPP on WAN interfaces using local authentication	13.3
4.2	Configure, verify, and troubleshoot PPPoE client-side interfaces using local authentication	13.4
4.3	Configure, verify, and troubleshoot GRE tunnel connectivity	13.5
4.4	Describe WAN topology options 4.4.a Point-to-point 4.4.b Hub and spoke 4.4.c Full mesh 4.4.d Single vs dual-homed	13.1

4.5	Describe WAN access connectivity options 4.5.a MPLS 4.5.b Metro Ethernet 4.5.c Broadband PPPoE 4.5.d Internet VPN (DMVPN, site-to-site VPN, client VPN)	13.4, 13.5
4.6	Configure and verify single-homed branch connectivity using eBGP IPv4 (limited to peering and route advertisement using Network command only)	14.7
4.7	Describe basic QoS concepts 4.7.a Marking 4.7.b Device trust 4.7.c Prioritization <ul style="list-style-type: none"> ○ 4.7.c (i) Voice ○ 4.7.c (ii) Video ○ 4.7.c (iii) Data 4.7.d Shaping 4.7.e Policing 4.7.f Congestion management	16.2
5.0	Infrastructure Services	
5.1	Describe DNS lookup operation	12.1
5.2	Troubleshoot client connectivity issues involving DNS	12.1
5.3	Configure and verify DHCP on a router (excluding static reservations) 5.3.a Server 5.3.b Relay 5.3.c Client	8.1

	5.3.d TFTP, DNS, and gateway options	
5.4	Troubleshoot client- and router-based DHCP connectivity issues	12.1
5.5	Configure, verify, and troubleshoot basic HSRP 5.5.a Priority 5.5.b Preemption 5.5.c Version	12.3
5.6	Configure, verify, and troubleshoot inside source NAT 5.6.a Static 5.6.b Pool 5.6.c PAT	8.5, 8.6
5.7	Configure and verify NTP operating in a client/server mode	8.7
6.0	Infrastructure Security	
6.1	Configure, verify, and troubleshoot port security 6.1.a Static 6.1.b Dynamic 6.1.c Sticky 6.1.d Max MAC addresses 6.1.e Violation actions 6.1.f Err-disable recovery	6.6
6.2	Describe common access layer threat mitigation techniques 6.2.a 802.1x	7.8 16.5

	6.2.b DHCP snooping 6.2.c Nondefault native VLAN	
6.3	Configure, verify, and troubleshoot IPv4 and IPv6 access list for traffic filtering 6.3.a Standard 6.3.b Extended 6.3.c Named	8.2, 8.3, 8.4 12.4, 12.5
6.4	Verify ACLs using the APIC-EM Path Trace ACL Analysis tool	8.4 12.4
6.5	Configure, verify, and troubleshoot basic device hardening 6.5.a Local authentication 6.5.b Secure password 6.5.c Access to device <ul style="list-style-type: none"> o 6.5.c (i) Source address o 6.5.c (ii) Telnet/SSH 6.5.d Login banner	5.6 6.3, 6.7, 6.8 8.4
6.6	Describe device security using AAA with TACACS+ and RADIUS	16.5
7.0	Infrastructure Management	
7.1	Configure and verify device-monitoring protocols 7.1.a SNMPv2 7.1.b SNMPv3 7.1.c Syslog	5.7 16.1
7.2	Troubleshoot network connectivity issues using ICMP echo-based IP SLA	5.8

7.3	<p>Configure and verify device management</p> <p>7.3.a Backup and restore device configuration 7.3.b Using Cisco Discovery Protocol or LLDP for device discovery 7.3.c Licensing 7.3.d Logging 7.3.e Timezone 7.3.f Loopback</p>	<p>5.3, 5.5, 5.6 6.8, 6.9 9.2</p>
7.4	<p>Configure and verify initial device configuration</p>	<p>5.1, 5.3, 5.4, 5.5, 5.6 6.2, 6.3, 6.6</p>
7.5	<p>Perform device maintenance</p> <p>7.5.a Cisco IOS upgrades and recovery (SCP, FTP, TFTP, and MD5 verify) 7.5.b Password recovery and configuration register 7.5.c File system management</p>	<p>9.1</p>
7.6	<p>Use Cisco IOS tools to troubleshoot and resolve problems</p> <p>7.6.a Ping and traceroute with extended option 7.6.b Terminal monitor 7.6.c Log events 7.6.d Local SPAN</p>	<p>5.8 7.2 9.3</p>
7.7	<p>Describe network programmability in enterprise network architecture</p> <p>7.7.a Function of a controller 7.7.b Separation of control plane and data plane 7.7.c Northbound and southbound APIs</p>	<p>16.3</p>