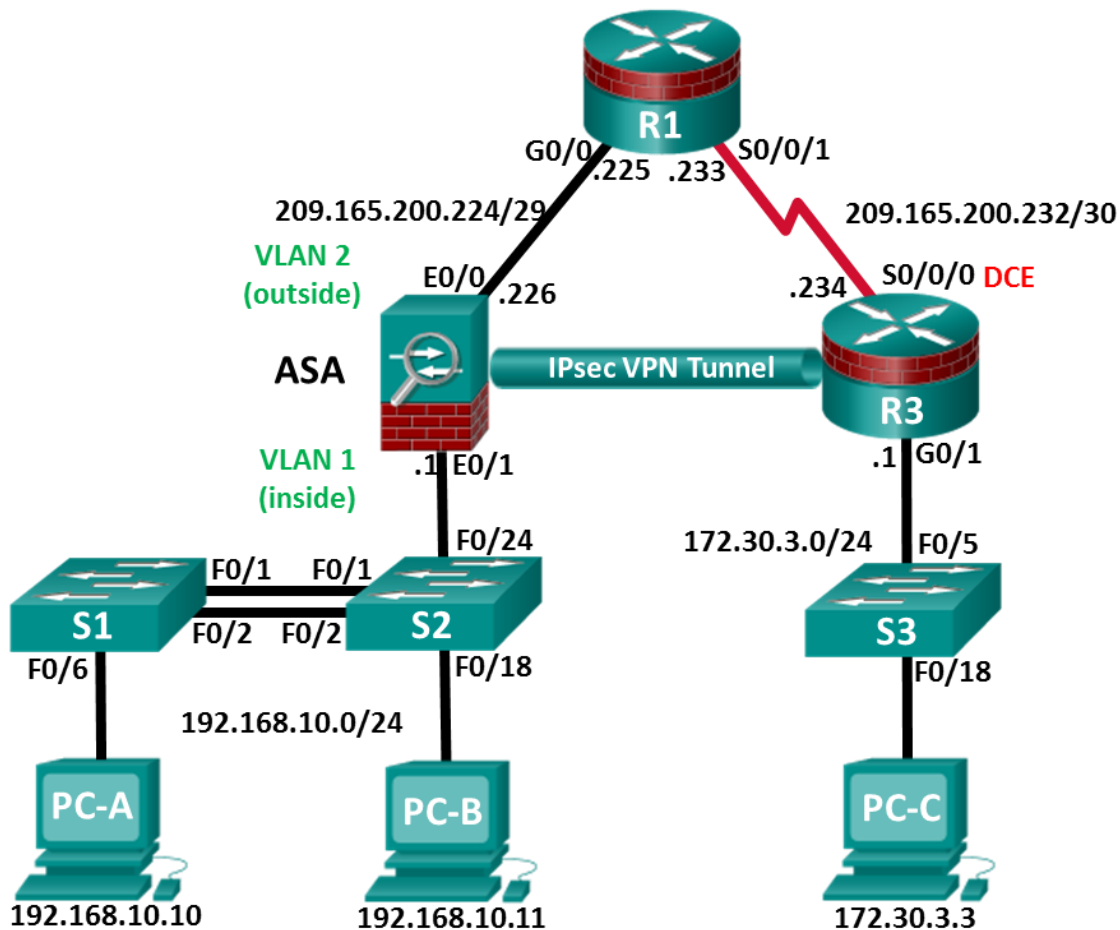


Skills Assessment Using ASA 5505 – Form B

Topology



Assessment Objectives

Part 1: Verify Network Connectivity (1 points, 5 minutes)

Part 2: Configure Secure Router Administrative Access (17 points, 15 minutes)

Part 3: Configure a Zone-Based Policy Firewall (14 points, 10 minutes)

Part 4: Secure Layer 2 Switches (22 points, 20 minutes)

Part 5: Configure ASA Basic Management and Firewall Settings (18 points, 15 minutes)

Part 6: Configure a Site-To-Site IPsec VPN (28 points, 25 minutes)

Scenario

This Skills Assessment (SA) is the final practical exam of student training for the CCNA Security course. The exam is divided into six parts. The parts should be completed sequentially and signed off by your instructor before moving on to the next part. In Part 1 you will verify that the basic device settings have been

preconfigured by the instructor. In Part 2, you will secure a network router using the command-line interface (CLI) to configure various IOS features including AAA and SSH. In Part 3, you will configure zone-based policy firewall (ZPF) on an integrated service router (ISR) using the CLI. In Part 4, you will configure and secure Layer 2 switches using the CLI. In Part 5, you will configure the ASA management and firewall settings using the CLI. In Part 6, you will configure a site-to-site IPsec VPN between R3 and the ASA using the CLI and ASDM.

Required Resources

- 3 Routers (Cisco 1941 with Cisco IOS Release 15.2(4)M3 universal image or comparable)
- 3 Switches (Cisco 2960 with Cisco IOS Release 15.0(2) lanbasek9 image or comparable)
- 1 ASA 5505 (OS version 9.2(3) and ASDM version 7.4(1) and Base license or comparable)
- 3 PCs (Windows 7 with terminal emulation program, such as Tera Term)
- Console cable to configure the Cisco IOS devices via the console ports
- Ethernet and Serial cables as shown in the topology

Part 1: Verify Network Connectivity

Total points: 17

Time: 15 minutes

In the interest of time, your instructor has pre-configured basic settings on R1 and R3, and the static IP address information for the PC hosts in the topology. In Part 1, you will verify that PC-C can ping the G0/1 interface on R1.

Configuration Task	Specification	Points
Ping the G0/1 interface on R3 from PC-C.	See Topology for specific settings.	1/2
Ping the S0/0/1 interface on R1 from R3.	See Topology for specific settings.	1/2

Instructor Sign-Off Part 1: _____

Points: _____ of 1

Note: Do not proceed to Part 2 until your instructor has signed off on Part 1.

Part 2: Configure Secure Router Administrative Access

Total points: 17

Time: 15 minutes

In Part 2, you will secure administrative access on router R3 using the CLI. Configuration tasks include the following:

Configuration Item or Task	Specification	Points
Set minimum password length.	Minimum Length: 10 characters	1
Assign and encrypt a privileged EXEC password.	Password: cisco12345 Encryption type: 9 (scrypt)	1

Configuration Item or Task	Specification	Points
Add a user in the local database for administrator access	Username: Admin01 Privilege level: 15 Encryption type: 9 (script) Password: admin01pass	1
Configure MOTD banner.	Unauthorized Access is Prohibited!	1/2
Disable HTTP server services.		1/2
Configure SSH.	Domain name: ccnassecurity.com RSA Keys size: 1024 Version: 2 Timeout: 90 seconds Authentication retries: 2	4
Configure VTY lines to allow SSH access.	Allow only SSH access.	1
Configure AAA authentication and authorization settings.	Enable AAA Use local database as default setting.	2
Configure NTP.	Authentication Key: NTPpassword Encryption: MD5 Key: 1 NTP Server: 209.165.200.233 Configure for periodic calendar updates.	4
Configure syslog.	Enable timestamp service to log the date and time in milliseconds. Send syslog messages to: 172.30.3.3 Set message logging severity level: Warnings	2

Note: Before proceeding to Part 3, ask your instructor to verify R3's configuration and functionality.

Instructor Sign-Off Part 2: _____

Points: _____ of 17

Part 3: Configure a Zone-Based Policy Firewall

Total points: 14

Time: 10 minutes

In Part 3, you will configure a zone-based policy firewall on R3 using the CLI. Configuration tasks include the following:

Configuration Item or Task	Specification	Points
Create security zone names.	Inside zone name: INSIDE Outside zone name: INTERNET	2

Configuration Item or Task	Specification	Points
Create an inspect class map.	Class map name: INSIDE_PROTOCOLS Inspection type: match-any Protocols allowed: tcp, udp, icmp	3
Create an inspect policy map.	Policy map name: INSIDE_TO_INTERNET Bind the class map to the policy map. Matched packets should be inspected.	3
Create a zone pair.	Zone pair name: IN_TO_OUT_ZONE Source zone: INSIDE Destination zone: INTERNET	2
Apply the policy map to the zone pair.	Zone pair name: IN_TO_OUT_ZONE Policy map name: INSIDE_TO_INTERNET	2
Assign interfaces to the proper security zones.	Interface G0/1: INSIDE Interface S0/0/0: INTERNET	2

Troubleshoot as necessary to correct any issues discovered.

Note: Before proceeding to Part 4, ask your instructor to verify your ZPF configuration and functionality.

Instructor Sign-Off Part 2: _____

Points: _____ of 14

Part 4: Secure Layer 2 Switches

Total points: 22

Time: 20 minutes

Note: Not all security features in this part of the exam will be configured on all switches. However, in a production network, all security feature will be configured on all switches. In the interest of time, the security features are configured on just S2, except where noted.

In Part 4, you will configure security settings on the indicated switch using the CLI. Configuration tasks include the following:

Configuration Item or Task	Specification	Points
Assign and encrypt a privileged EXEC password.	Switch: S2 Password: cisco12345 . Encryption type: 9 (scrypt)	1/2
Add a user in the local database for administrator access	Switch: S2 Username: Admin01 Privilege level: 15 Encryption type: 9 (scrypt) Password: admin01pass	1
Configure MOTD banner.	Switch: S2 Banner: Unauthorized Access is Prohibited!	1/2

Configuration Item or Task	Specification	Points
Disable HTTP and HTTP secure server.	Switch: S2	1
Configure SSH.	Switch: S2 Domain name: ccnassecurity.com RSA Keys size: 1024 Version: 2 Timeout: 90 seconds Authentication retries: 2	2
Configure VTY lines to allow SSH access.	Switch: S2 Allow SSH access only.	1/2
Configure AAA authentication and authorization settings.	Switch: S2 Enable AAA Use local database as default setting	2
Create VLAN list.	Switches: S1 & S2 VLAN: 2 , Name: NewNative VLAN: 10 , Name: LAN VLAN: 99 , Name: Blackhole	1/2
Configure trunk ports.	Switches: S1 & S2 Interfaces: F0/1, F0/2 Native VLAN: 2 Prevent DTP.	2
Disable trunking.	Switch: S2 Ports: F0/18, F0/24 VLAN assignment: 10	2
Enable PortFast and BPDU guard.	Switch: S2 Ports: F0/18, F0/24	2
Configure basic port security.	Switch: S2 Port: F0/18 Maximum limit: 1 Remember MAC Address Violation Action: Shutdown	3
Disable unused ports on S2, and assign ports to VLAN 99.	Switch: S2 Ports: F0/3-17, F0/19-23, G0/1-2	1
Configure Loop guard.	Switch: S2 Loop guard: Default	1
Configure DHCP snooping.	Enable DHCP Snooping globally Enable DHCP for VLAN: 10 DHCP trusted interface: F0/24	3

NETLAB+ Note: Use a Maximum limit of **2** when configuring basic port security. Otherwise, the hidden Control Switch will cause a violation to occur and the port will be shutdown.

Troubleshoot as necessary to correct any issues discovered.

Note: Before proceeding to Part 5, ask your instructor to verify your switch configuration and functionality.

Instructor Sign-Off Part 4: _____

Points: _____ of 22

Part 5: Configure ASA Basic Management and Firewall Settings

Total points: 18

Time: 15 minutes

Note: By default, the privileged EXEC password is blank. Press **Enter** at the password prompt.

In Part 5, you will configure the ASA's basic setting and firewall using the CLI. Configuration tasks include the following:

Configuration Item or Task	Specification	Points
Configure the ASA hostname.	Name: CCNAS-ASA	1/2
Configure the domain name.	Domain Name: ccnasecurity.com	1/2
Configure the privileged EXEC password.	Password: cisco12345	1/2
Add a user to the local database for administrator console access.	User: Admin01 Password: admin01pass	1/2
Configure AAA to use the local database for SSH user authentication for console access.		1
Configure VLAN 1.	VLAN: 1 Name: inside IP address: 192.168.10.1 Subnet Mask: 255.255.255.0 Security Level: 100	2
Configure VLAN 2.	VLAN: 2 Name: outside IP address: 209.165.200.226 Subnet Mask: 255.255.255.248 Security Level: 0 Activate the VLAN	3
Assign VLANs to interfaces and activate each interface.	VLAN 1 interface: E0/1 VLAN 2 interface: E0/0	2
Generate an RSA key pair to support the SSH connections.	Key: RSA Modulus size: 1024	1

Configuration Item or Task	Specification	Points
Configure ASA to accept SSH connections from hosts on the inside LAN.	Inside Network: 192.168.10.0/24 Timeout: 10 minutes Version: 2	1
Configure the default route.	Default route IP address: 209.165.200.225	1
Configure ASDM access to the ASA.	Enable HTTPS server services. Enable HTTPS on the inside network.	2
Create a network object to identify internal addresses for PAT. Bind interfaces dynamically by using the interface address as the mapped IP.	Object name: INSIDE-NET Subnet: 192.168.10.0/24 Interfaces: inside, outside	2
Modify the default global policy to allow returning ICMP traffic through the firewall.	Policy-map: global_policy Class: inspection_default Inspect: icmp	1

Troubleshoot as necessary to correct any issues discovered.

Note: Before proceeding to Part 6, ask your instructor to verify your ASA configuration and functionality.

Instructor Sign-Off Part 5: _____

Points: _____ of 18

Part 6: Configure a Site-to-Site VPN

Total points: 28

Time: 25 minutes

In Part 6, you will configure a Site-to-Site IPsec VPN between R3 and the ASA. You will use the CLI to configure R3 and use ASDM to configure the ASA.

Step 1: Configure Site-to-Site VPN on R3 using CLI.

Configuration parameters include the following:

Configuration Item or Task	Specification	Points
Enable IKE.		1
Create an ISAKMP policy.	ISAKMP Policy Priority: 1 Authentication type: pre-share Encryption: 3des Hash algorithm: sha Diffie-Hellman Group Key Exchange: 2	5
Configure the pre-shared key.	Preshare key: ciscopreshare Address: 209.165.200.226	2

Configuration Item or Task	Specification	Points
Configure the IPsec transform set.	Tag: TRNSFRM-SET ESP transform: ESP_3DES Hash function: ESP_SHA_HMAC	3
Define interesting traffic.	ACL: 101 Source Network: 172.30.3.0 0.0.0.255 Destination Network: 192.168.10.0 0.0.0.255	1
Create a crypto map.	Crypto map name: CMAP Sequence number: 1 Type: ipsec-isakmp ACL to match: 101 Peer: 209.165.200.226 Transform-set: TRNSFRM-SET	5
Apply crypto map to the interface.	Interface: S0/0/0 Crypto map name: CMAP	1

Step 2: Configure Site-to-Site VPN on ASA using ASDM

Use a browser on PC-B to establish an ASDM session to the ASA. When the session is established, use the **Site-to-Site VPN Wizard** to configure the ASA for IPsec Site-to-Site VPN. Configuration parameters include the following:

Configuration Item or Task	Specification	Points
Use a browser on PC-B, connect to the ASA, and run ASDM.	Connection: HTTPS IP Address: 192.168.10.1 Username: Admin01 Password: admin01pass Note: You will need to accept all security messages.	2
Use the Site-to-site VPN Wizard to configure the site-to-site VPN settings on the ASA.	Peer IP Address: 209.165.200.234 VPN Access Interface: outside Local Network: inside-network/24 Remote Network: 172.30.3.0/24 Pre-shared Key: ciscopreshare Exempt ASA side/host network from NAT: Enable	5
Ping PC-B from PC-C.	This should generate interesting traffic and start site-to-site VPN.	1/2
Ping PC-C from PC-B.		1/2
Display the ISAKMP and IPsec SAs on R3.		1
Verify that a site-to-site session has been established using ASDM from PC-B.		1

Troubleshoot as necessary to correct any issues discovered.

Instructor Sign-Off Part 6: _____

Points: _____ of 28

Router Interface Summary

Router Interface Summary				
Router Model	Ethernet Interface #1	Ethernet Interface #2	Serial Interface #1	Serial Interface #2
1800	Fast Ethernet 0/0 (F0/0)	Fast Ethernet 0/1 (F0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)
1900	Gigabit Ethernet 0/0 (G0/0)	Gigabit Ethernet 0/1 (G0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)
2801	Fast Ethernet 0/0 (F0/0)	Fast Ethernet 0/1 (F0/1)	Serial 0/1/0 (S0/1/0)	Serial 0/1/1 (S0/0/1)
2811	Fast Ethernet 0/0 (F0/0)	Fast Ethernet 0/1 (F0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)
2900	Gigabit Ethernet 0/0 (G0/0)	Gigabit Ethernet 0/1 (G0/1)	Serial 0/0/0 (S0/0/0)	Serial 0/0/1 (S0/0/1)
Note: To find out how the router is configured, look at the interfaces to identify the type of router and how many interfaces the router has. There is no way to effectively list all the combinations of configurations for each router class. This table includes identifiers for the possible combinations of Ethernet and Serial interfaces in the device. The table does not include any other type of interface, even though a specific router may contain one. An example of this might be an ISDN BRI interface. The string in parenthesis is the legal abbreviation that can be used in Cisco IOS commands to represent the interface.				