PALO ALTO NETWORKS EDU-210

Lab 5A: Content-ID

Document Version: 2021-08-24

Contents

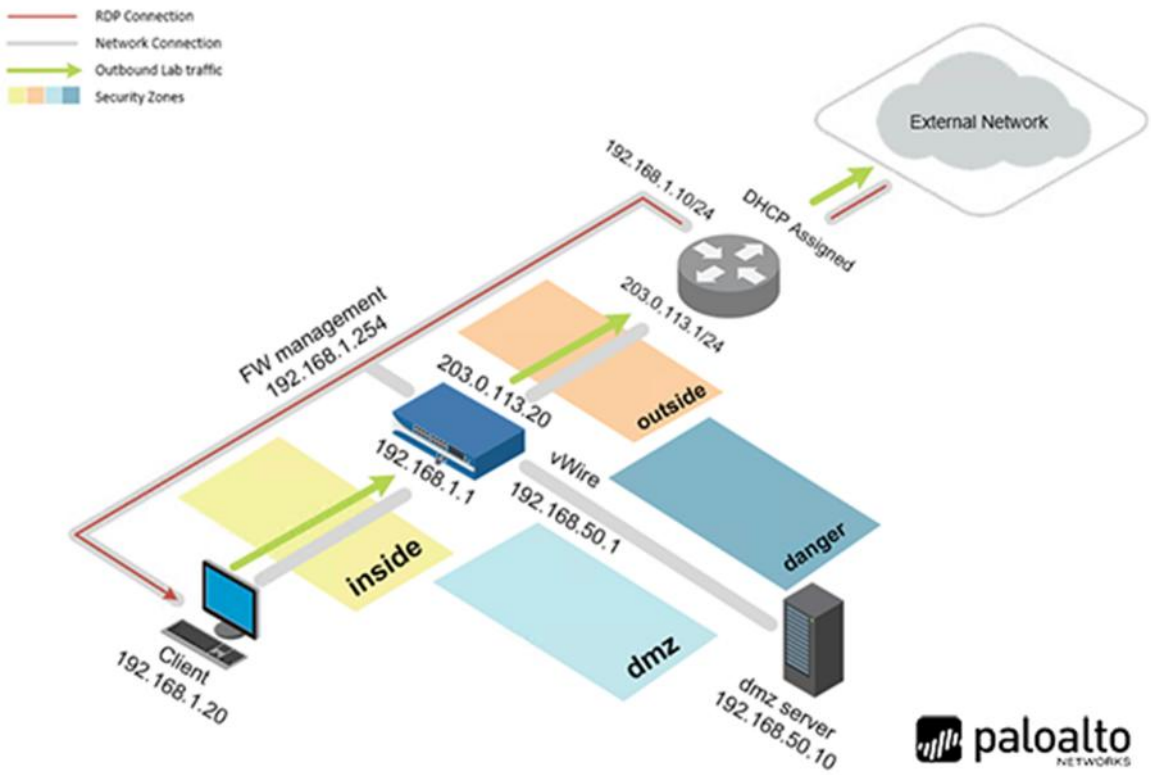
Introduction

The Palo Alto Networks next-generation firewall has been deployed. The company has set up policies to allow certain types of applications. Now, we need to begin scanning the traffic for threats as it passes through the firewall. We need to look for exploits, viruses, spyware, and other malicious threats.

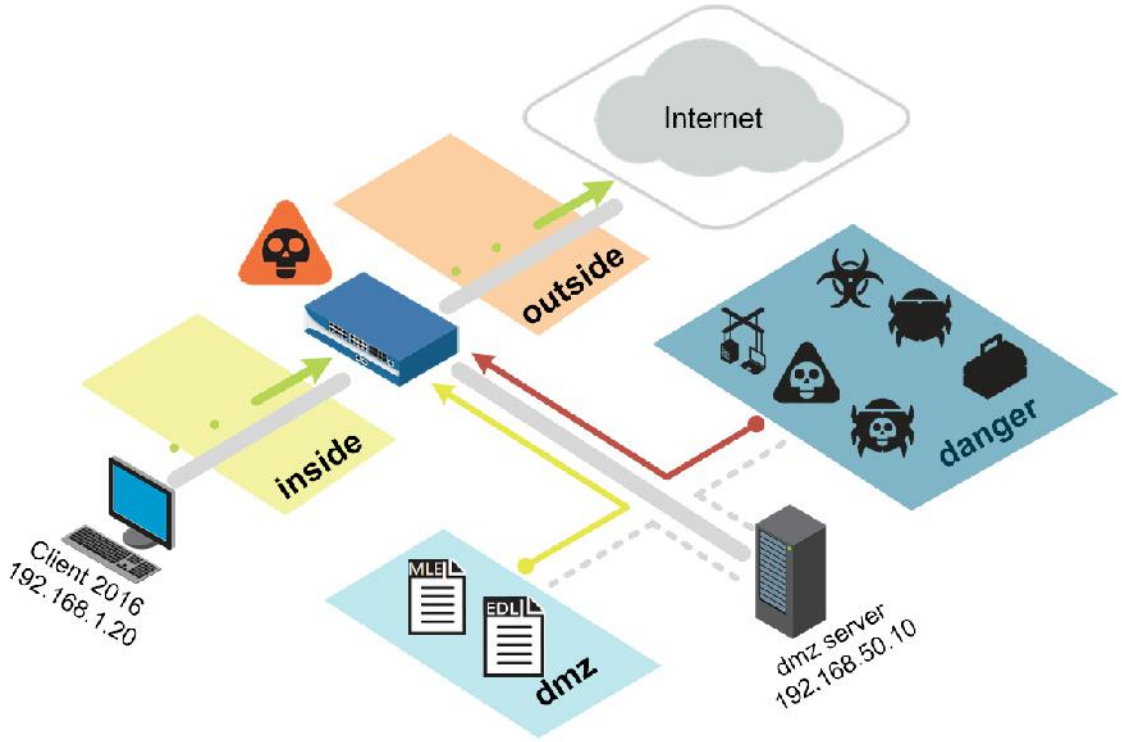
Objectives

- Configure and test an Antivirus Security Profile
- Configure and test an Anti-Spyware Security Profile
- Configure and test the DNS Sinkhole feature with an External Dynamic List

Lab Topology



Theoretical Lab Topology



Lab Settings

The information in the table below will be needed in order to complete the lab. The task sections below provide details on the use of this information.

Virtual Machine	IP Address	Account (if needed)	Password (if needed)
Client	192.168.1.20	`lab-user`	`Train1ng$`
Firewall	192.168.1.254	`admin`	`Train1ng$`

5 Content-ID

5.0 Load Lab Configuration

1. Launch the **Client** virtual machine to access the graphical login screen.

> To launch the console window for a virtual machine, you may access by either clicking on the machine's graphic image from the topology page or by clicking on the machine's respective tab from the navigation bar.

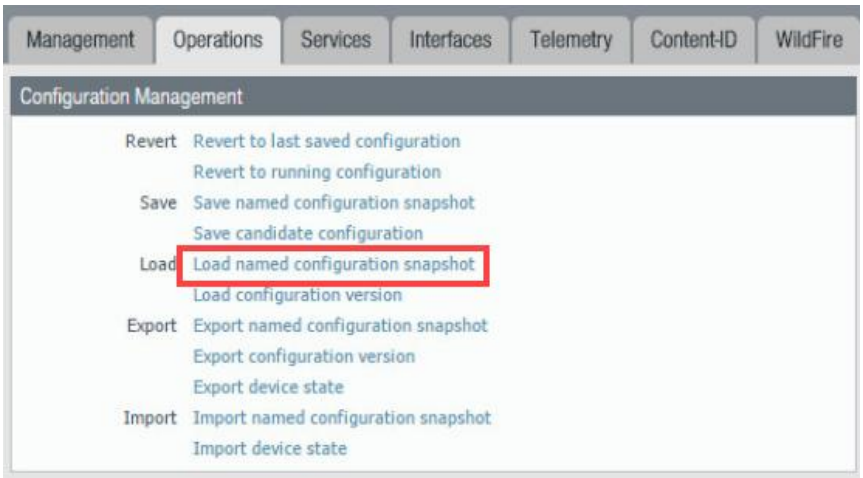
2. Log in as **`lab-user`** using the password **`Train1ng$`**.

3. Launch the **Chromium Web Browser** and connect to **`https://192.168.1.254.`**
4. If a security warning appears, click **Advanced** and proceed by clicking on **Proceed to 192.168.1.254 (unsafe)**.
5. Log in to the *Palo Alto Networks* firewall using the following:

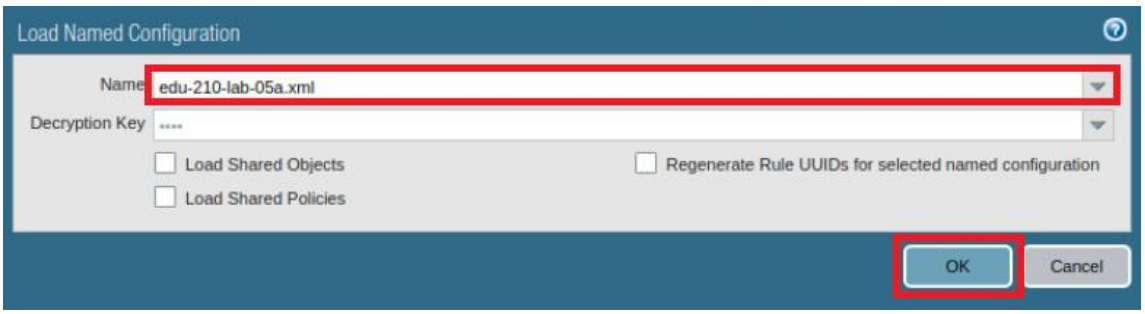
Parameter	Value
Name	**`admin`**
Password	**`Train1ng$`**

6. In the web interface, navigate to **Device > Setup > Operations**.

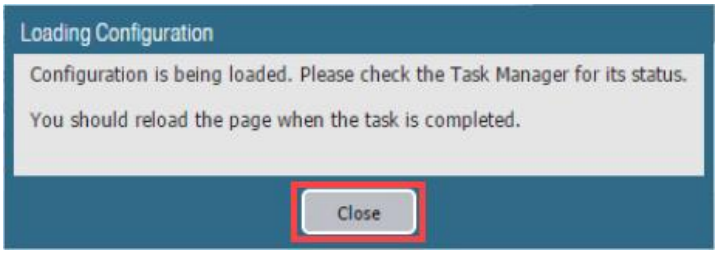
7. Click **Load named configuration snapshot**:



8. Click the dropdown list next to the *Name* text box and select **edu-210-lab-05a.xml**. Click **OK**.



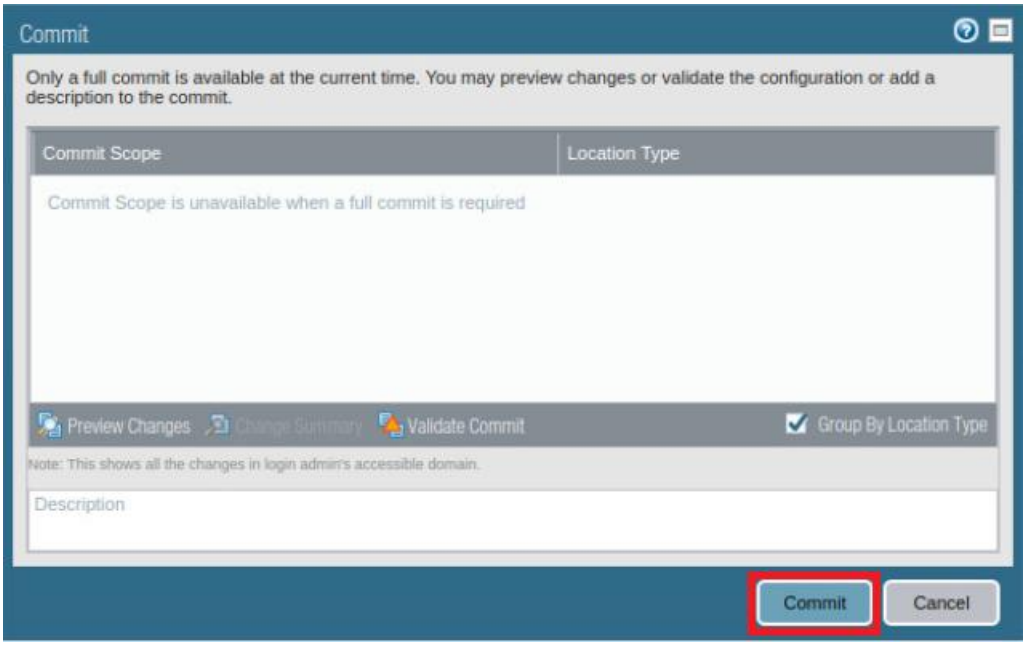
9. Click **Close**.



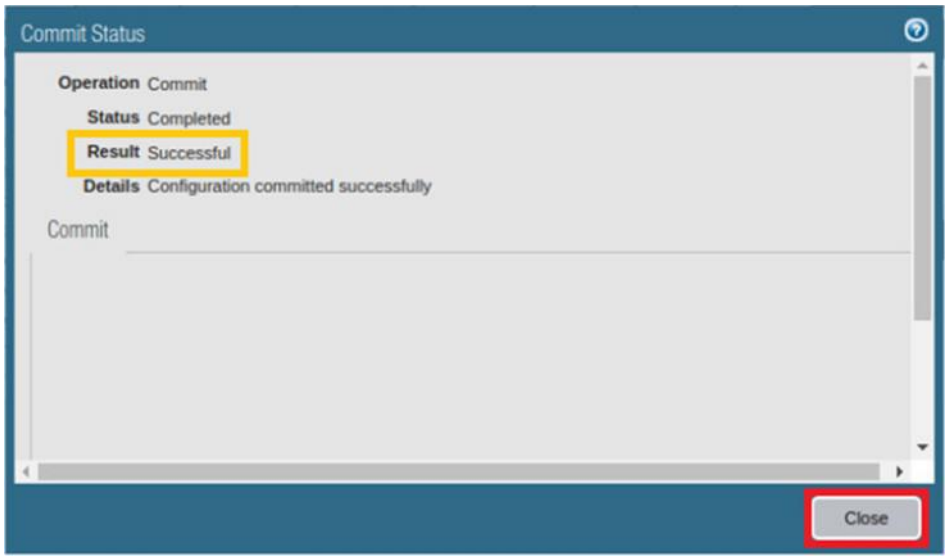
The following instructions are the steps to execute a **"Commit All"** as you will perform many times throughout these labs.

10. Click the **Commit** link at the top-right of the web interface.

11. Click **Commit** and wait until the commit process is complete.



12. Once completed successfully, click **Close** to continue.

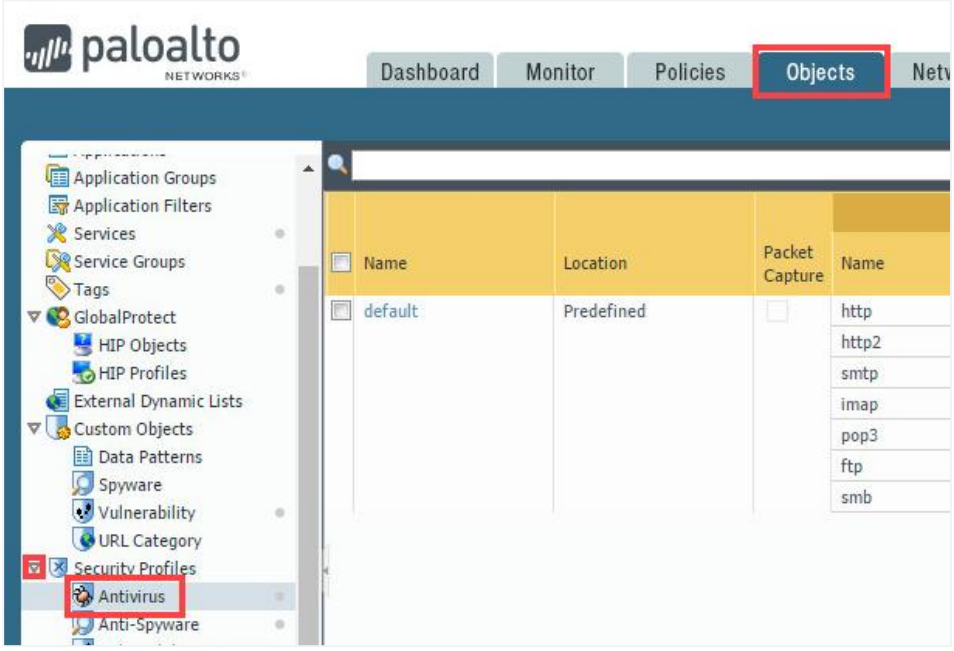


13. Leave the firewall web interface open to continue with the next task.

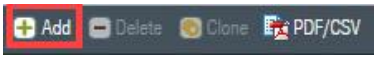
5.1 Create Security Policy Rule with an Antivirus Profile

Use an *Antivirus Profile* object to configure options to have the firewall scan for viruses on traffic matching a Security Policy Rule. Set the applications that should be inspected for viruses and the action to take when a virus is detected.

1. In the web interface, select **Objects > Security Profiles > Antivirus.**

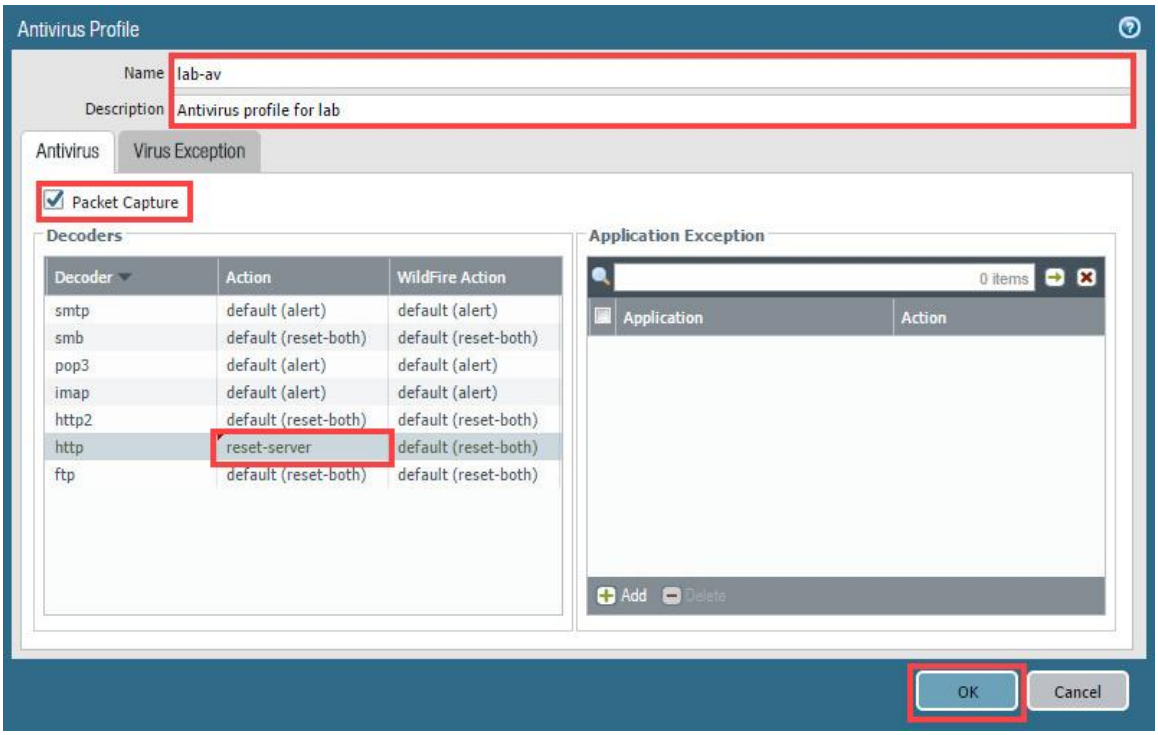


2. Click **Add** to create an Antivirus Profile.

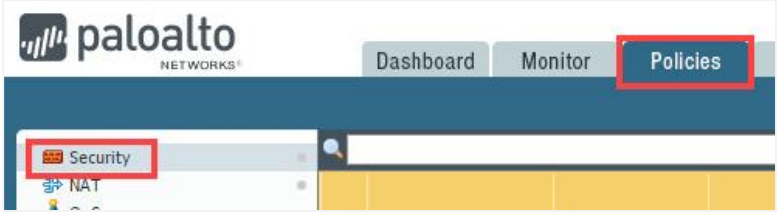


3. In the *Antivirus Profile* window, configure the following and then click **OK**.

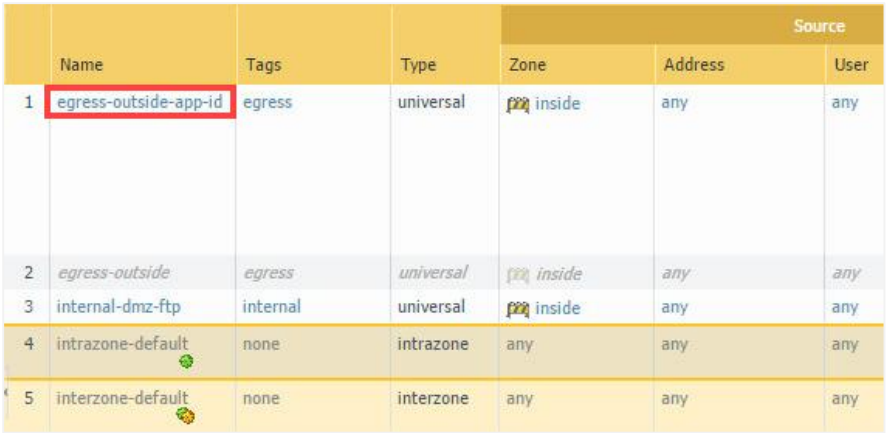
Parameter	Value
Name	`lab-av`
Description	Type `Antivirus profile for lab`
Packet Capture	Select **Packet Capture** checkbox
Decoder	Set the **Action** column for **http** to **reset-server**



4. In the web interface, select **Policies > Security**.



5. Click the **egress-outside-app-id** Security Policy Rule to configure the policy.

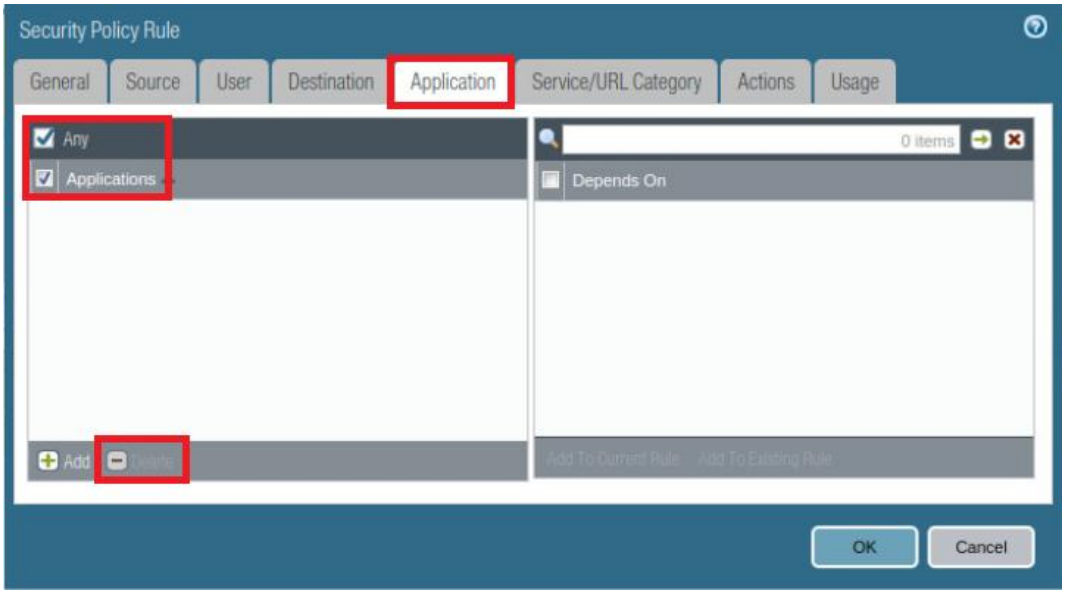


6. In the *Security Policy Rule* window under the *General* tab, configure the following.

Parameter	Value
Name	Rename policy to `egress-outside-av`
Audit Comment	Type `Created Antivirus Security Policy on <date> by admin`

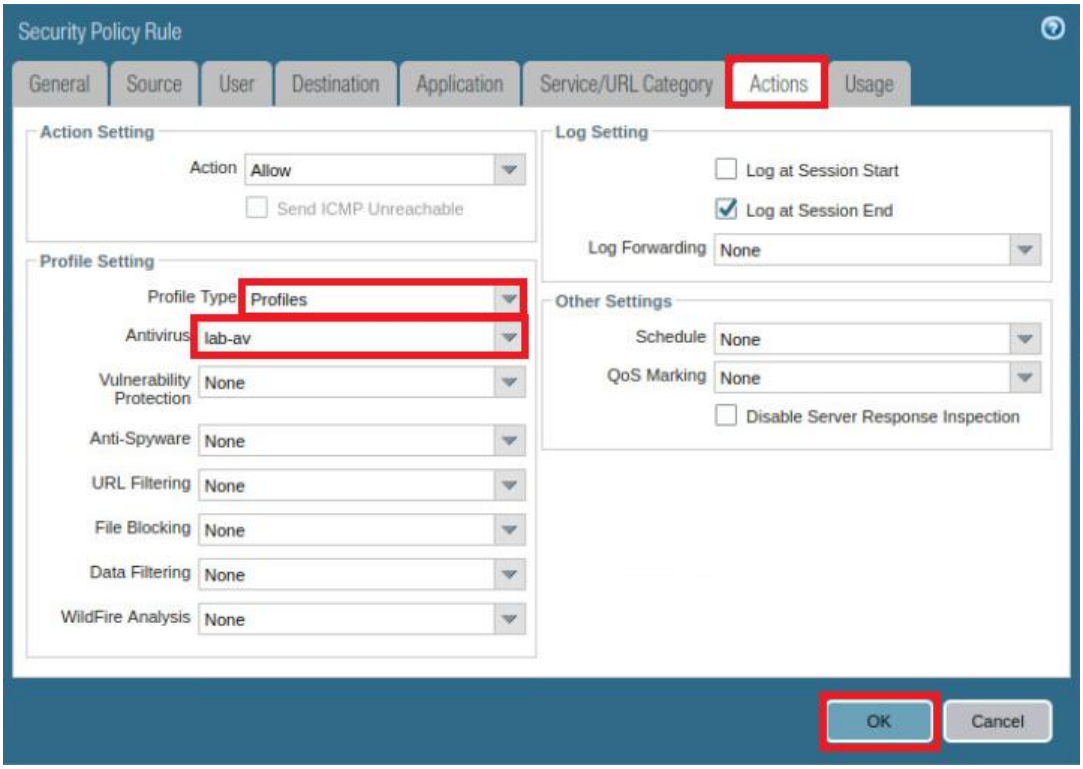
7. In the *Security Policy Rule* window, click the **Application** tab and configure the following:

Parameter	Value
Applications	Select the **Applications** checkbox and click **Delete**
Applications	Verify that the **Any** checkbox is selected



8. In the *Security Policy Rule* window, click the **Actions** tab and configure the following. Once finished, click **OK**.

Parameter	Value
Profile Type	Select **Profiles** from the dropdown list
Antivirus	Select **lab-av** from the dropdown list

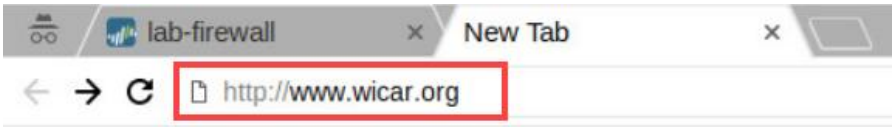


9. **Commit** all changes.

5.2 Test Security Policy Rule

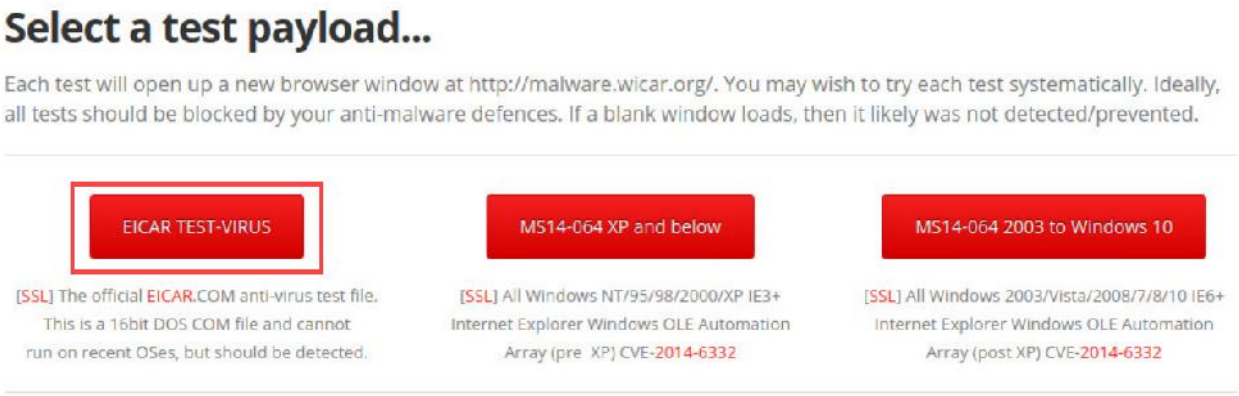
In this task, you will test your Antivirus Security Profile.

1. Open a new tab in **Chromium Web Browser** and browse to `http://www.wicar.org`.



2. Click the **Test Malware!** menu option located at the top.

3. On the option to select a test payload, click on the **EICAR TEST-VIRUS** button.



4. Notice that a message appears, showing the file download was blocked. **Close** the browser tab.

5.3 Review Logs

1. In the web interface, select **Monitor > Logs > Threat**.

2. Make sure that the filter is cleared and find the log message that detected the **Eicar Test File**. Notice that the action for the file is *reset-server*.

		Receive Time	Type	Name	From Zone	To Zone	Source address	Source User	Action
		02/22 19:10:30	virus	Eicar Test File	inside	outside	192.168.1.20		reset-server

3. Notice the download icon on the left side of the entry for the *Eicar Test File*. It indicates that there is a packet capture (*pcap*). To display the packet capture through the *Detailed Log View*, first, click the **Detailed Log View icon** to open the *Detailed Log View* of the threat entry.

		Receive Time	Type	Name	From Zone	To Zone
		02/22 19:10:30	virus	Eicar Test File	inside	outside

4. From the *Detailed Log View* window, click the **download icon** underneath the *PCAP* column to open the packet capture.

Detailed Log View

General

Session ID	251
Action	reset-server
Application	web-browsing
Rule	egress-outside-av
Rule UUID	7a4f9659-4910-4940-a1d2-db26909ad290
Device SN	
IP Protocol	tcp
Log Action	
Generated Time	2021/02/22 19:10:30
Receive Time	2021/02/22 19:10:30
Tunnel Type	N/A

Source

Source User	
Source	192.168.1.20
Country	192.168.0.0-192.168.255.255
Port	55954
Zone	inside
Interface	ethernet1/2
NAT IP	203.0.113.20
NAT Port	23442

Destination

Destination User	
Destination	208.94.116.21
Country	United States
Port	80
Zone	outside
Interface	ethernet1/1
NAT IP	208.94.116.21
NAT Port	80

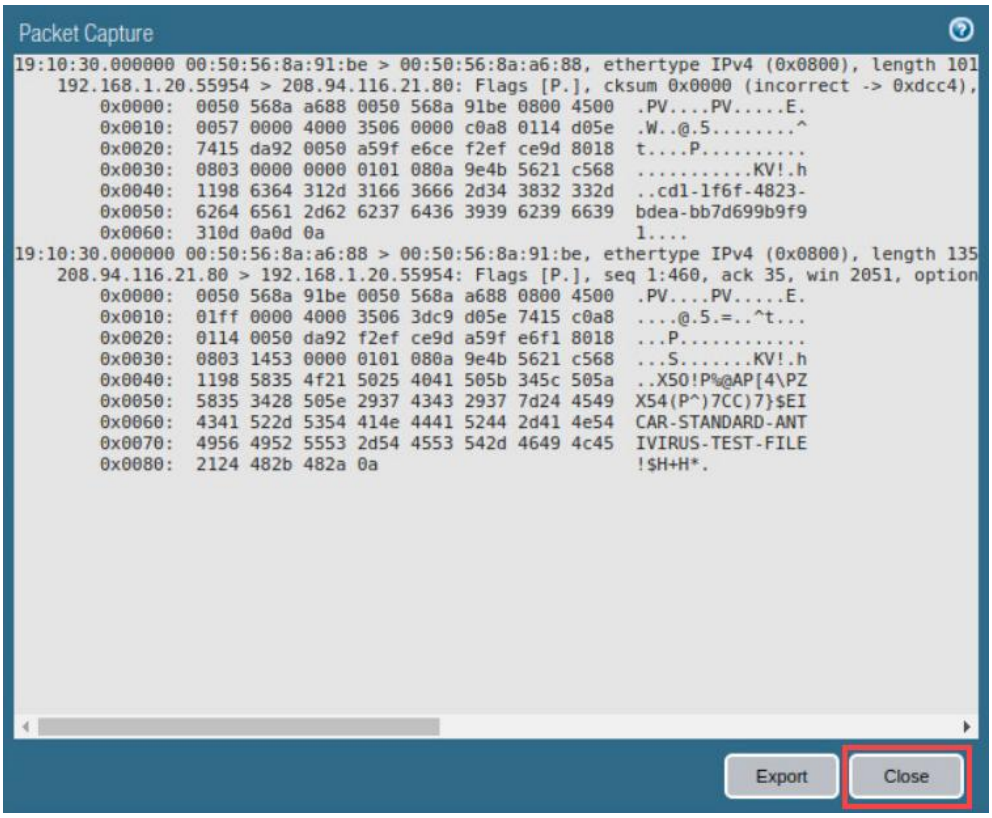
Details

Threat Type	virus

PCAP	Receive Time	Type	Application	Action	Rule	Rule UUID	Byt...	Severity	Categ...	URL Categ... List	Verdict	URL	File Name
	2021/02/22 19:10:30	virus	web-browsing	reset-server	egress-outside-av	7a4f9...		medium	any				eicar.c...
	2021/02/22 19:12:00	end	web-browsing	allow	egress-outside-av	7a4f9...	1855		any				

Close

5. After viewing the pcap, click **Close**.



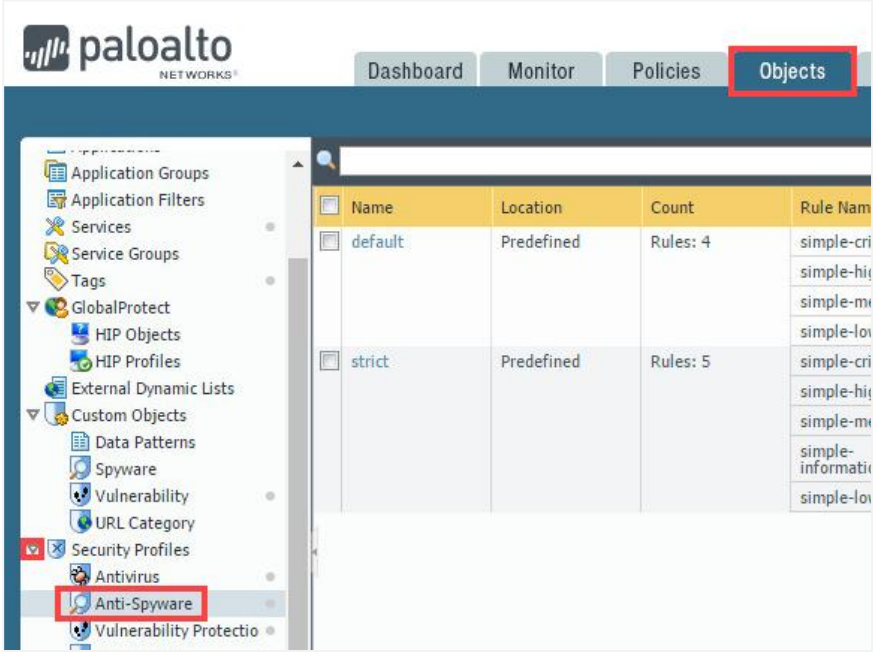
Captured packets can be exported in pcap format and examined with an offline analyzer for further investigation.

6. Back on the *Detailed Log View* window, click **Close**.
7. Leave the firewall web interface open to continue with the next task.

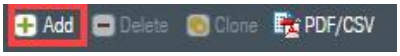
5.4 Create Security Policy Rule with an Anti-Spyware Profile

Anti-Spyware profiles block spyware on compromised hosts from trying to phone home or beacon out to external command-and-control (C2) servers, thus allowing you to detect malicious traffic, leaving the network from infected clients.

1. In the web interface, select **Objects > Security Profiles > Anti-Spyware**.

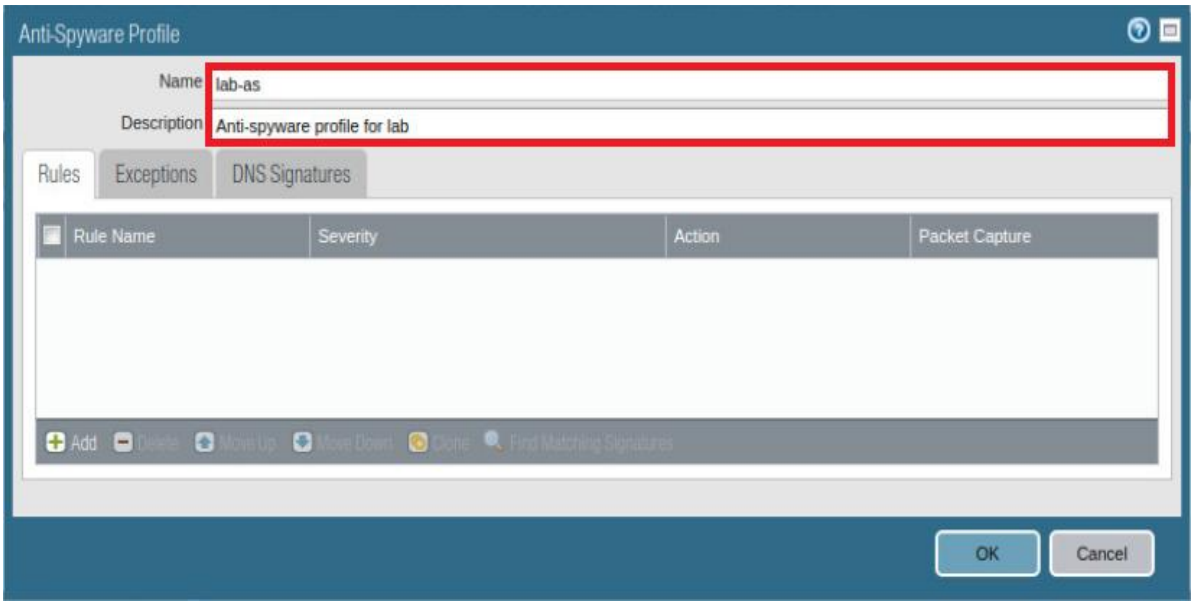


2. Click **Add** to create an Anti-Spyware Profile.



3. In the *Anti-Spyware Profile* window, configure the following.

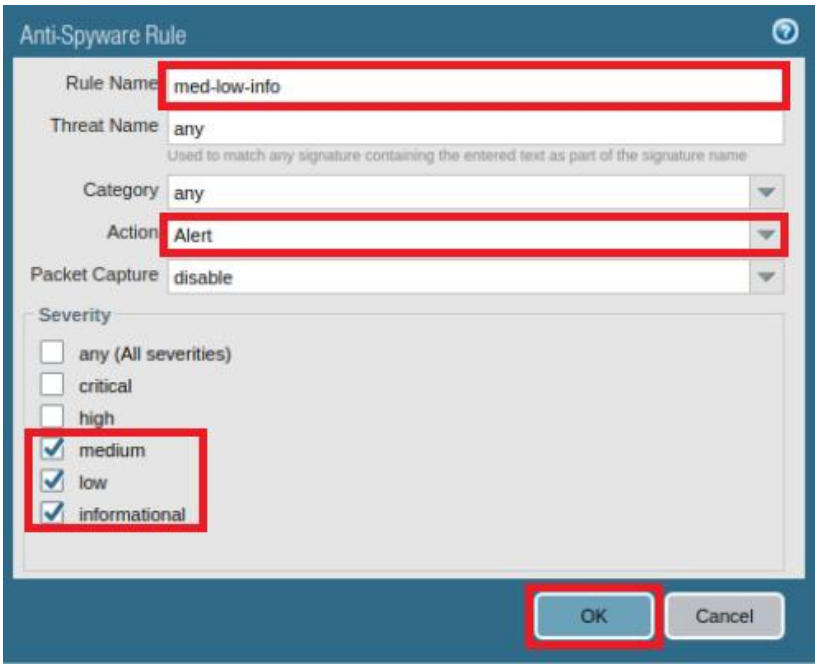
Parameter	Value
Name	`lab-as`
Description	`Anti-spyware profile for lab`



4. In the *Anti-Spyware Rule* window, click the **Add** button while on the *Rules* tab.

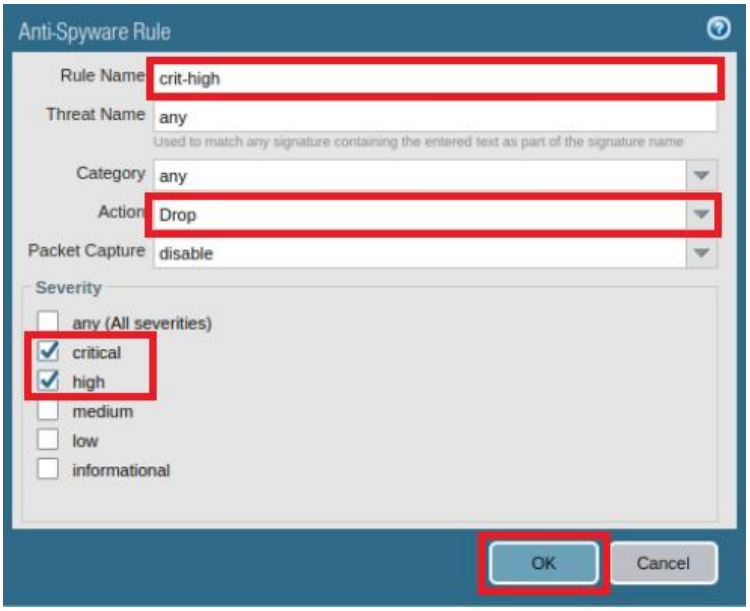
5. In the *Anti-Spyware Rule* window, configure the following and then click **OK**.

Parameter	Value
Rule Name	`med-low-info`
Action	**Alert**
Severity	**medium** **low** **informational**

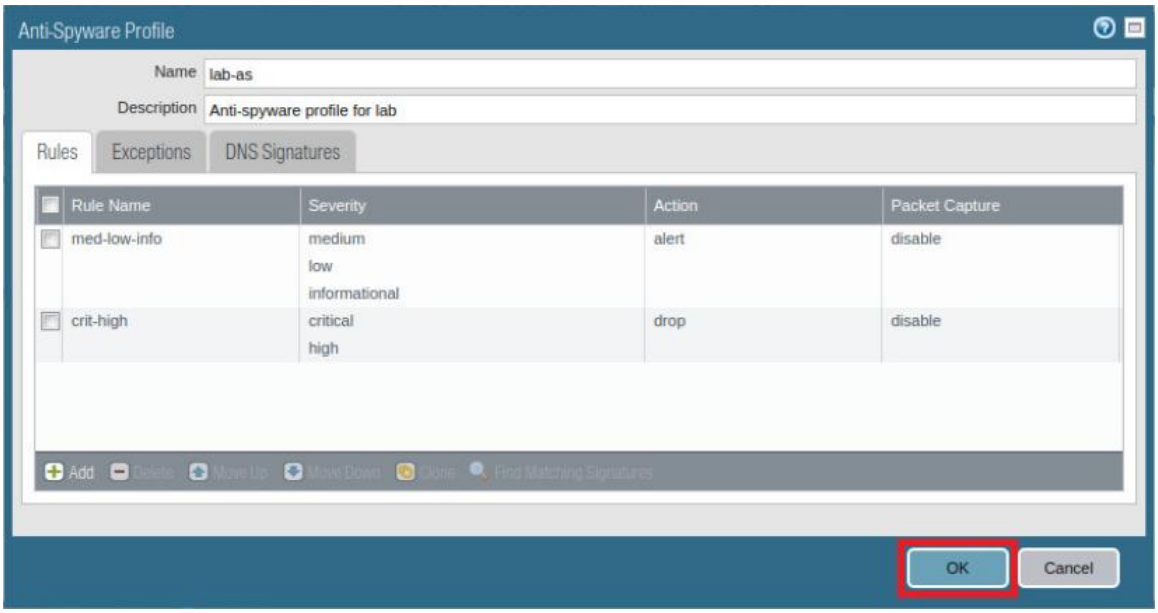


6. Back on the *Anti-Spyware Profile* window, click **Add** once more to create a new *Anti-Spyware Rule***,** then fill in the following data and click **OK**.

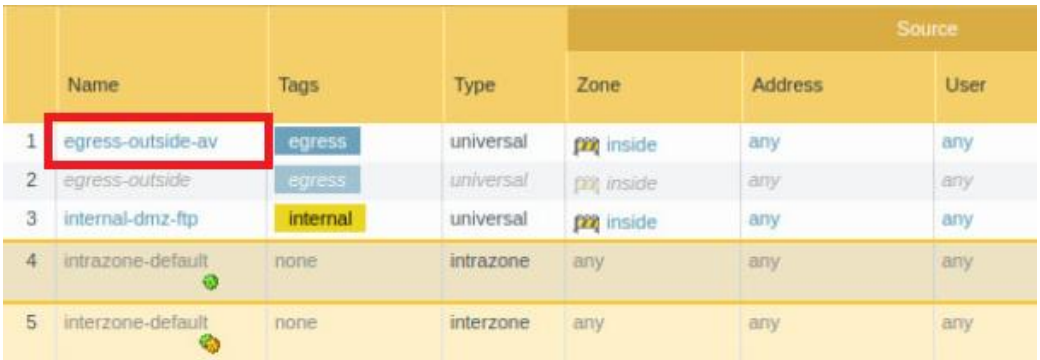
Parameter	**Value**
Rule Name	`crit-high`
Action	**Drop**
Severity	**critical** **high**



7. Back on the *Anti-Spyware Profile* window, click **OK**.

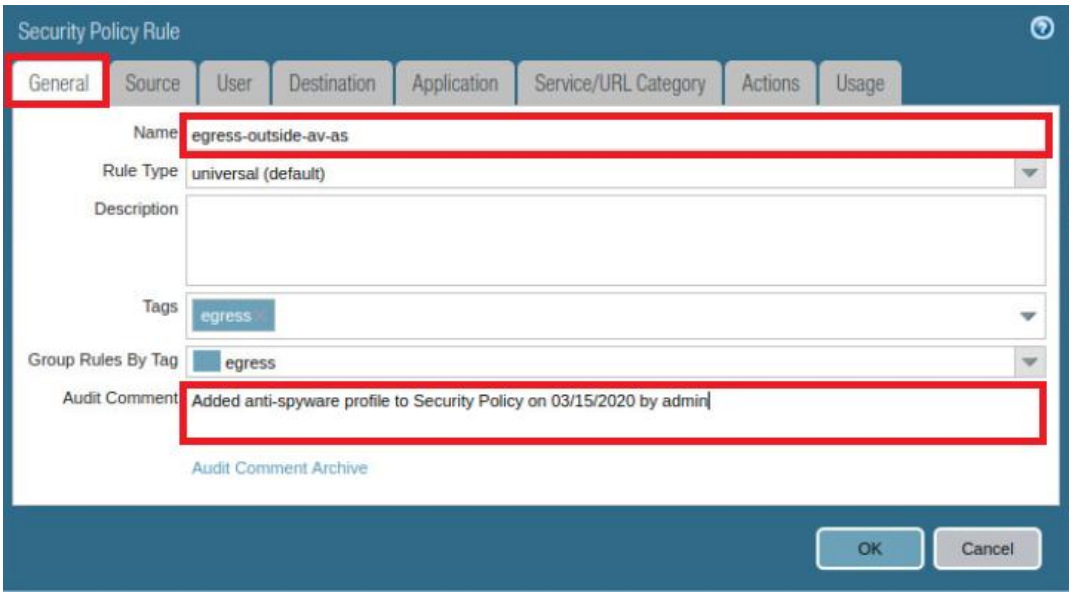


8. In the web interface, select **Policies > Security**.
9. Click on the **egress-outside-av** Security Policy Rule to config the policy.



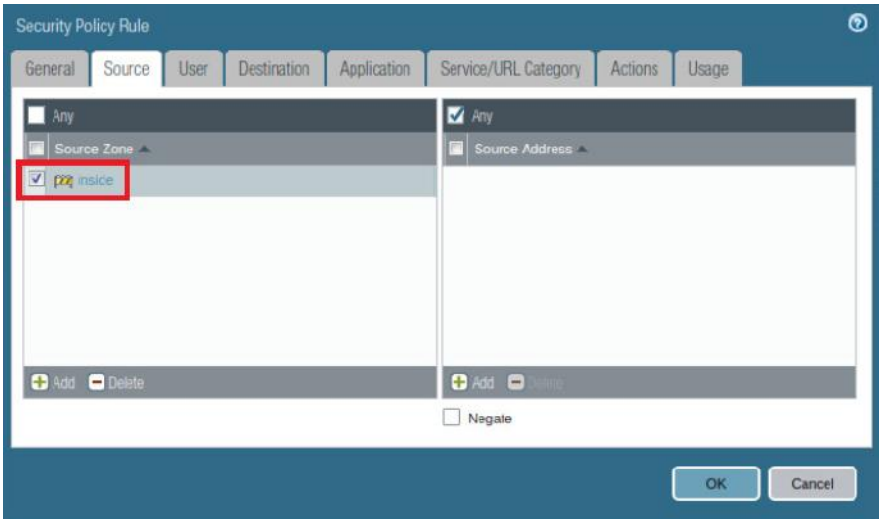
10. In the *Security Policy Rule* window, under the *General* tab, configure the following.

Parameter	Value
Name	Rename policy to `egress-outside-av-as`
Audit Comment	Type `Added anti-spyware profile to Security Policy on <date> by admin`



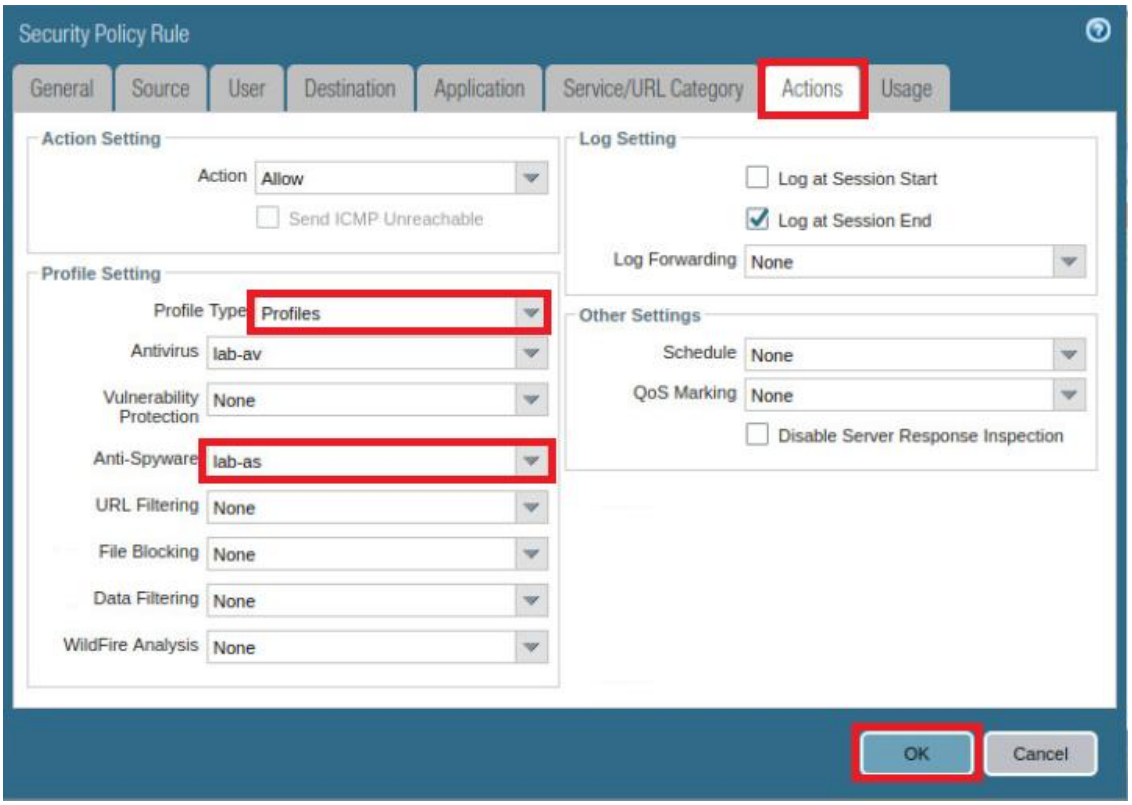
11. Click the **Source** tab and verify the following.

Parameter	Value
Source Zone	Verify that **inside** checkbox is selected



12. In the *Security Policy Rule* window, click the **Actions** tab, configure the following and then click **OK**.

Parameter	Value
Profile Type	Verify that **Profiles** is selected
Anti-Spyware	Select **lab-as**

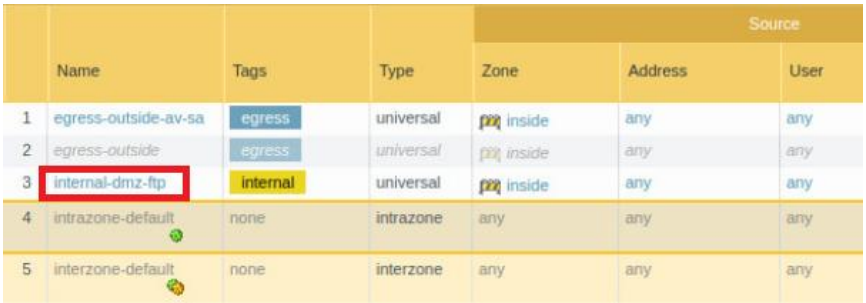


13. Leave the firewall web interface open to continue with the next task.

5.5 Create a DMZ-Access Security Policy

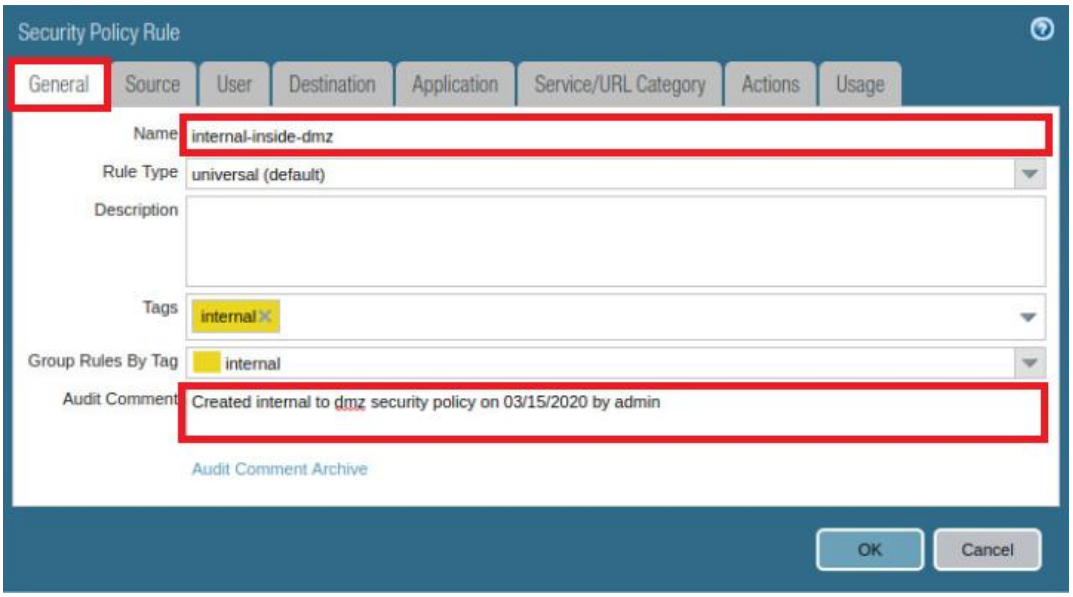
In the next task, you will configure the firewall to download an *External Dynamic List* (EDL) of URLs from the DMZ server. You will then apply the EDL to the Anti-Spyware DNS Sinkhole configuration. Before the EDL and DNS Sinkhole configurations can work, you must create a security policy that allows the management interface to connect to the DMZ server. The management interface establishes connections from the *inside* zone. The DMZ server responds to connection requests from the *dmz* zone.

1. In the web interface, click on the **internal-dmz-ftp** Security Policy Rule to configure the policy.



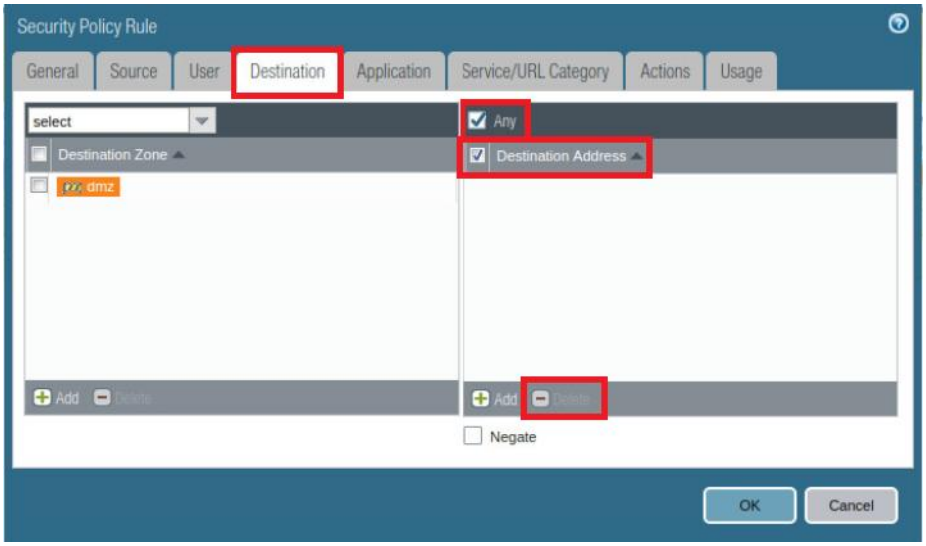
2. In the *Security Policy Rule* window, under the *General* tab, configure the following:

Parameter	Value
Name	Rename the policy to `internal-inside-dmz`
Audit Comment	Type `Created internal to dmz security policy on <date> by admin`



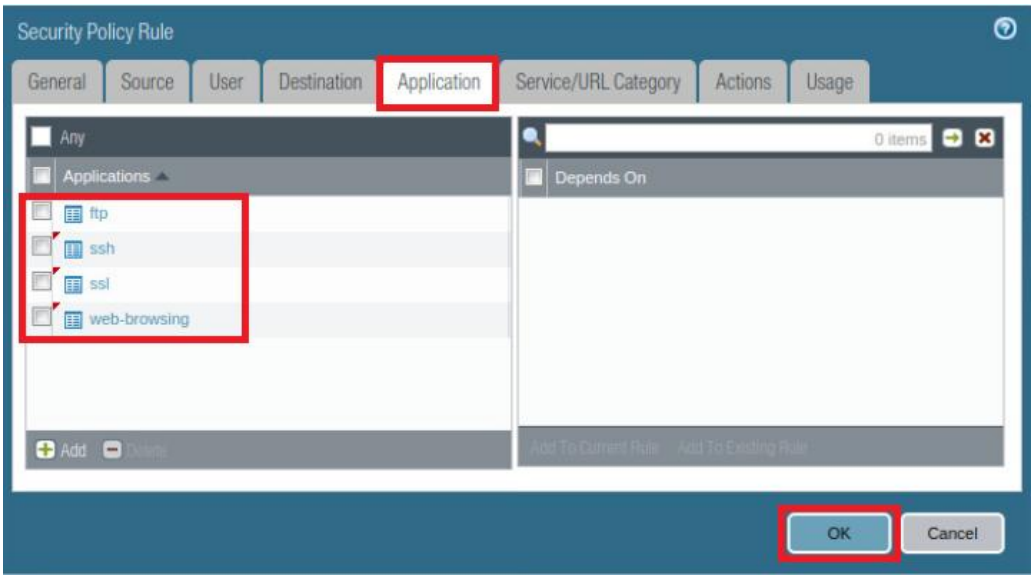
3. In the *Security Policy Rule* window, click the **Destination** tab and configure the following.

Parameter	Value
Destination Address	Select the **Destination Address** checkbox and click **Delete**
Destination Address	Verify that the **Any** checkbox is selected

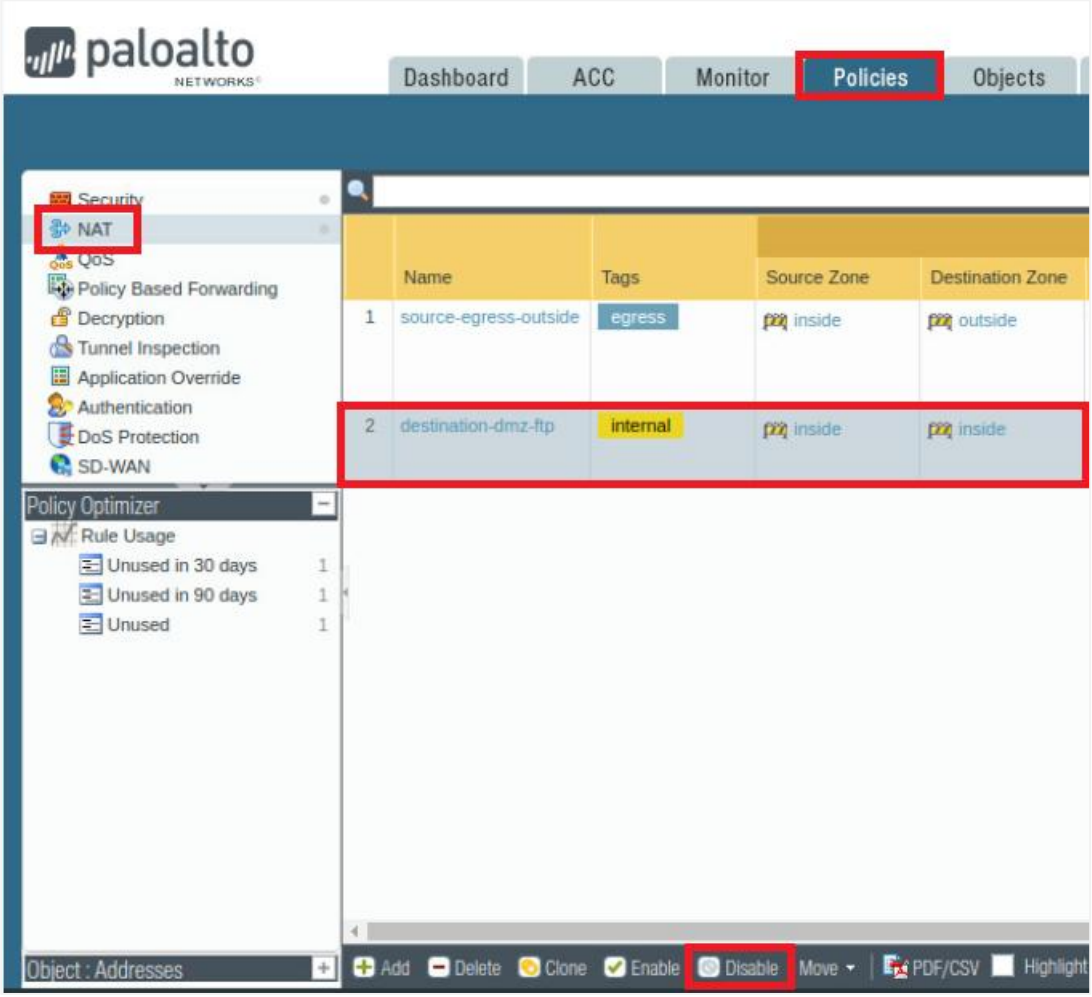


4. In the *Security Policy Rule* window, click the **Application** tab to configure the following and then click **OK**.

Parameter	Value
Applications	Click **Add** and select the following from the dropdown list: **ftp** **web-browsing** **ssl** **ssh**



5. In the web interface, navigate to **Policies > NAT**, select the **destination-dmz-ftp** NAT policy rule without opening it, and click **Disable**.



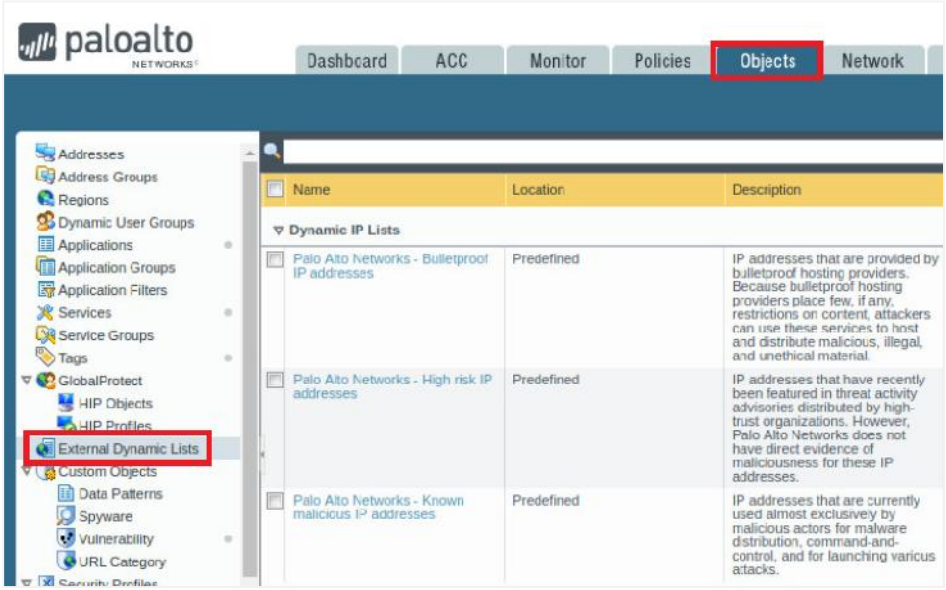
6. Verify that the rule is now disabled, with the entry being grayed out.

7. **Commit** all changes.
8. Leave the firewall web interface open to continue with the next task.

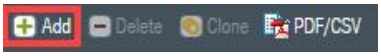
5.6 Configure DNS-Sinkhole External Dynamic List

An *External Dynamic List* is an object that references an external list of IP addresses, URLs, or domain names that can be used in policy rules. You must create this list as a text file and save it to a web server that the firewall can access. By default, the firewall uses its management port to retrieve the list items.

1. In the web interface, select **Objects > External Dynamic Lists**.

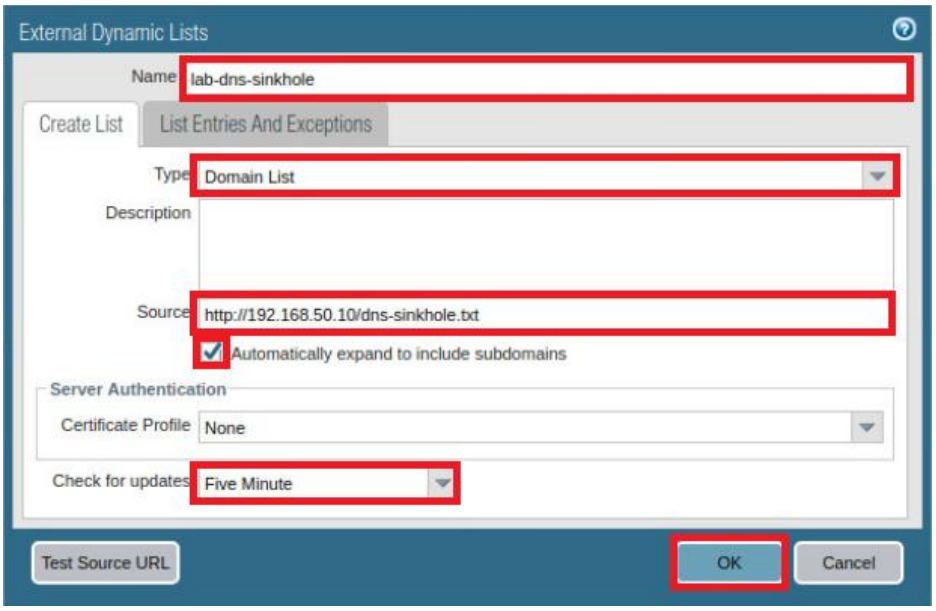


2. Click **Add** to configure a new External Dynamic List.

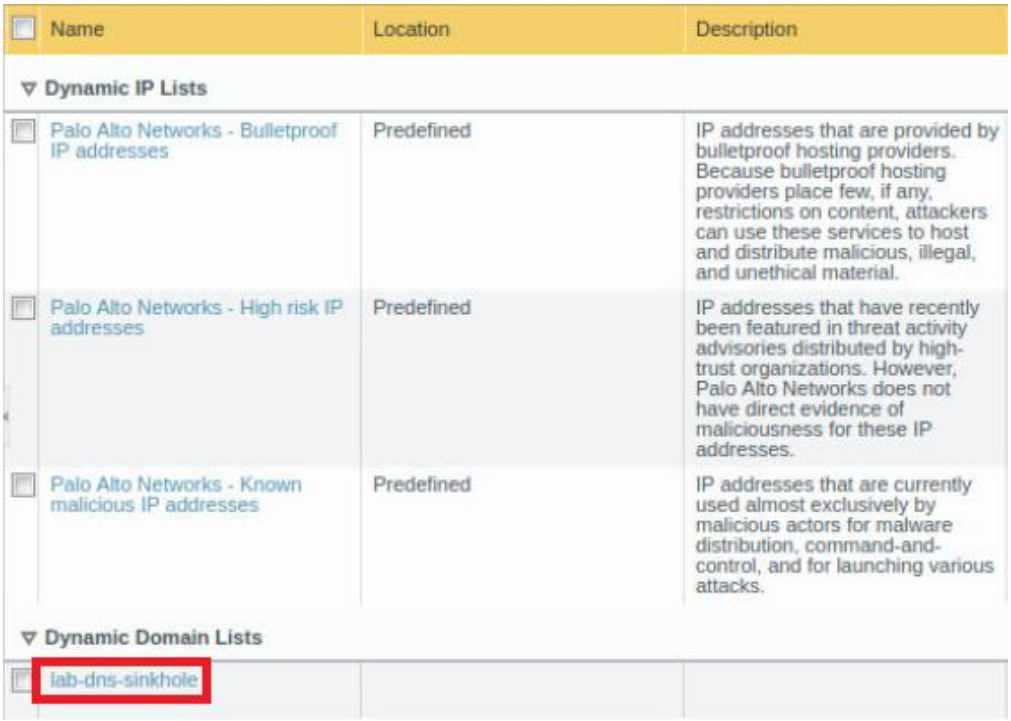


3. In the *External Dynamic Lists* window, configure the following and then click **OK**.

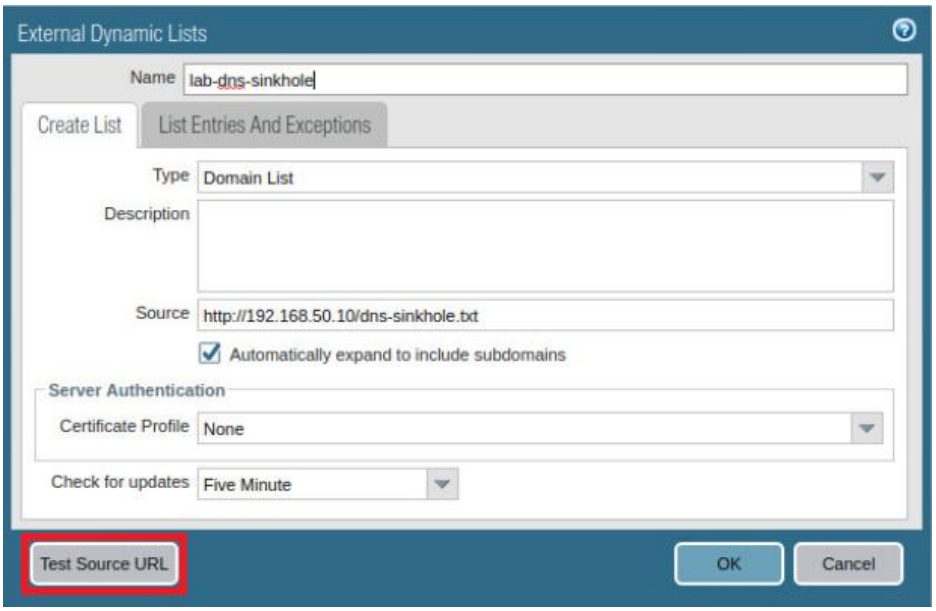
Parameter	Value
Name	`lab-dns-sinkhole`
Type	**Domain List**
Source	Type `http://192.168.50.10/dns-sinkhole.txt` (This is hosted on the DMZ server.)
Automatically expand to include subdomains	Select the **checkbox**
Check for updates	**Five Minute**



4. **Commit** all changes.
5. Click on **lab-dns-sinkhole** to open the configuration you just created.



6. In the *External Dynamic List* window, click the **Test Source URL** button.



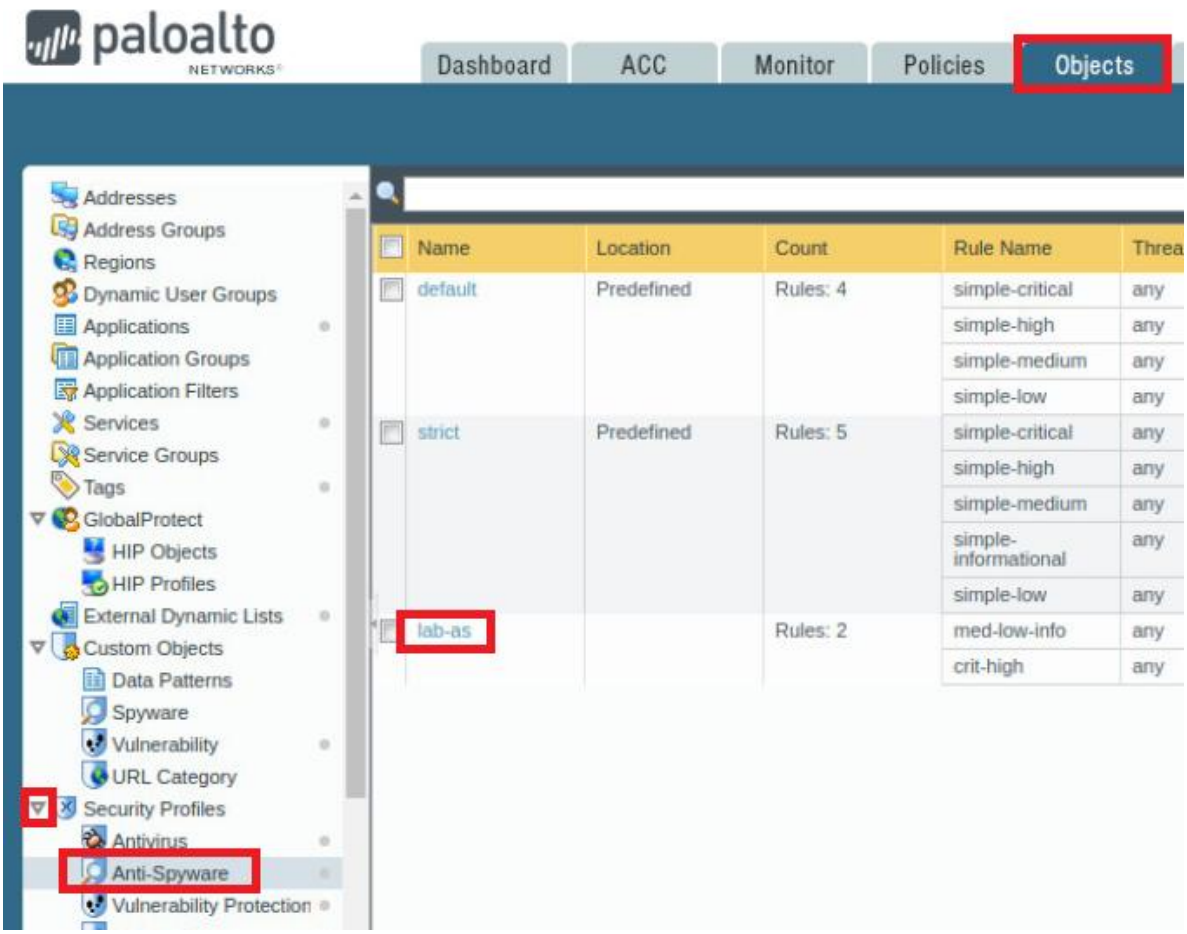
7. Confirm that the firewall reports that the source URL is accessible and click **Close**. If the firewall reports a URL access error, check the source address, correct any errors, and rerun the test.

8. Back on the *External Dynamic Lists* window, click **Cancel** to close it.
9. Leave the firewall web interface open to continue with the next task

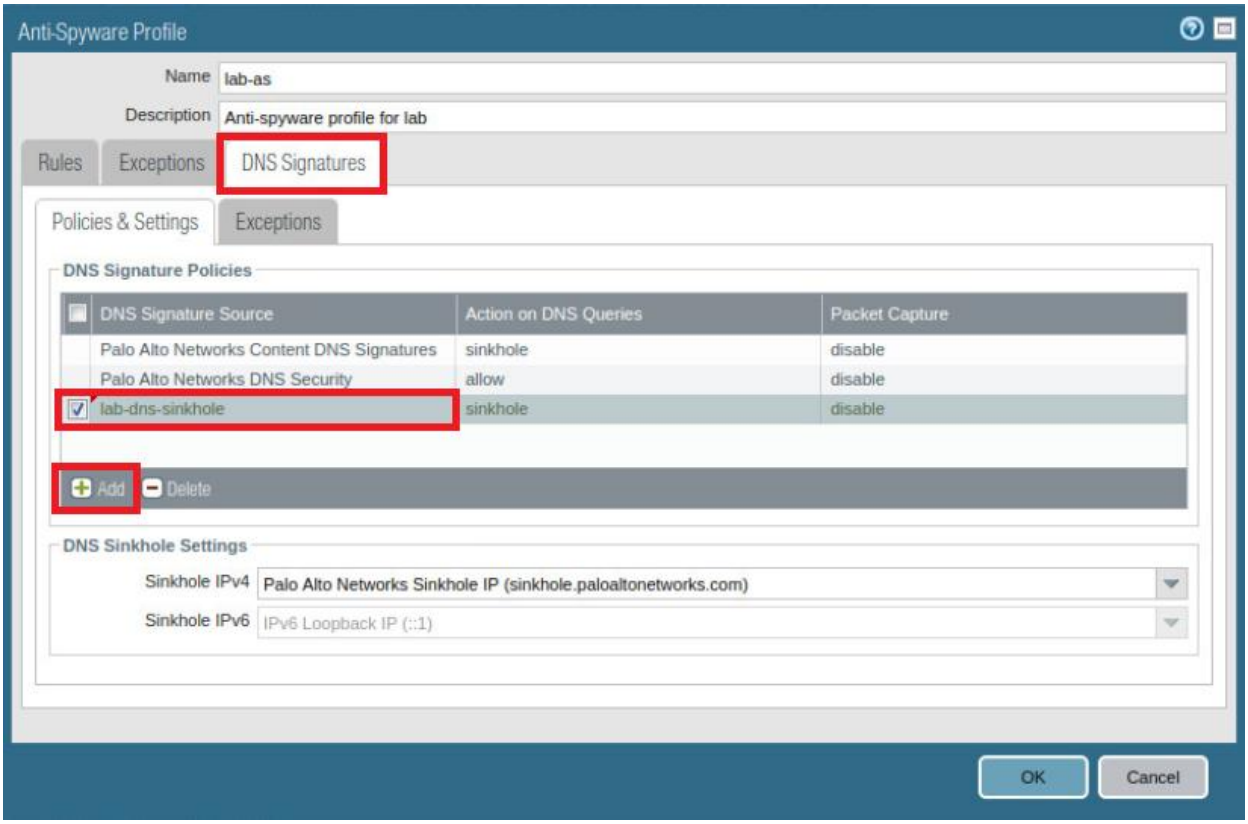
5.7 Create an Anti-Spyware Profile with DNS Sinkhole

The DNS sinkhole action provides administrators with a method of identifying infected hosts on the network using DNS traffic, even when the firewall cannot see the originator of the DNS query because the DNS server is not on the internal network.

1. In the web interface, navigate to **Objects > Security Profiles > Anti-Spyware** and then click the Anti-Spyware Profile named **lab-as**.

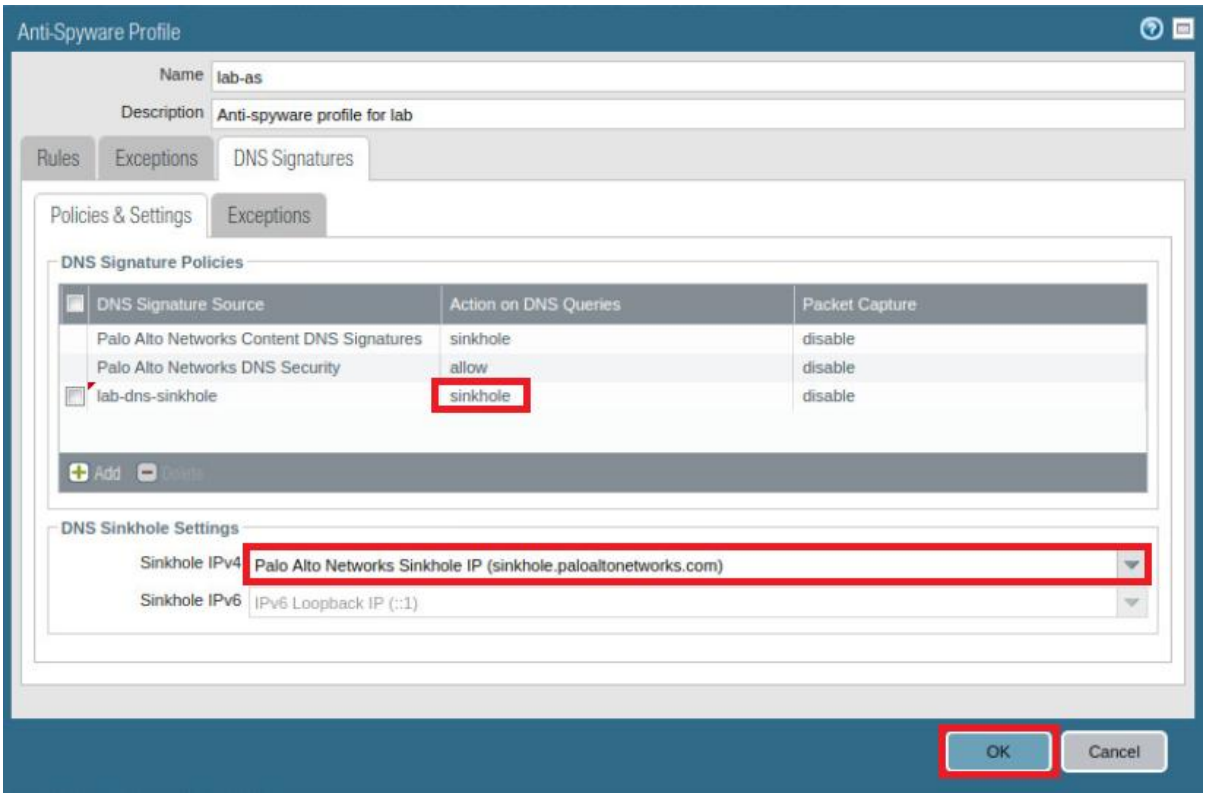


2. In the *Anti-Spyware Profile* window, click the **DNS Signatures** tab. Locate the DNS Signature Policies box, click **Add**, and select **lab-dns-sinkhole**.



3. Verify that the *Action on DNS Queries* column for *lab-dns-sinkhole* is set to **sinkhole**.

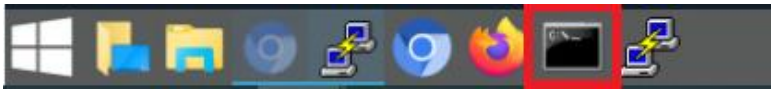
4. Verify that the *Sinkhole IPv4* is set to **Palo Alto Networks Sinkhole IP (sinkhole.paloaltonetworks.com)** in the *DNS Sinkhole Settings* box. Click **OK** to close the *Anti-Spyware Profile* configuration window.



5. **Commit** all changes.

5.8 Test the Security Policy Rule

1. Launch the *Terminal* window by clicking on the **Xfce Terminal** icon in the toolbar.



2. Type the **`nslookup`** command and press the **Enter** key.
3. Type the command **`server 8.8.8.8`** and press the **Enter** key.

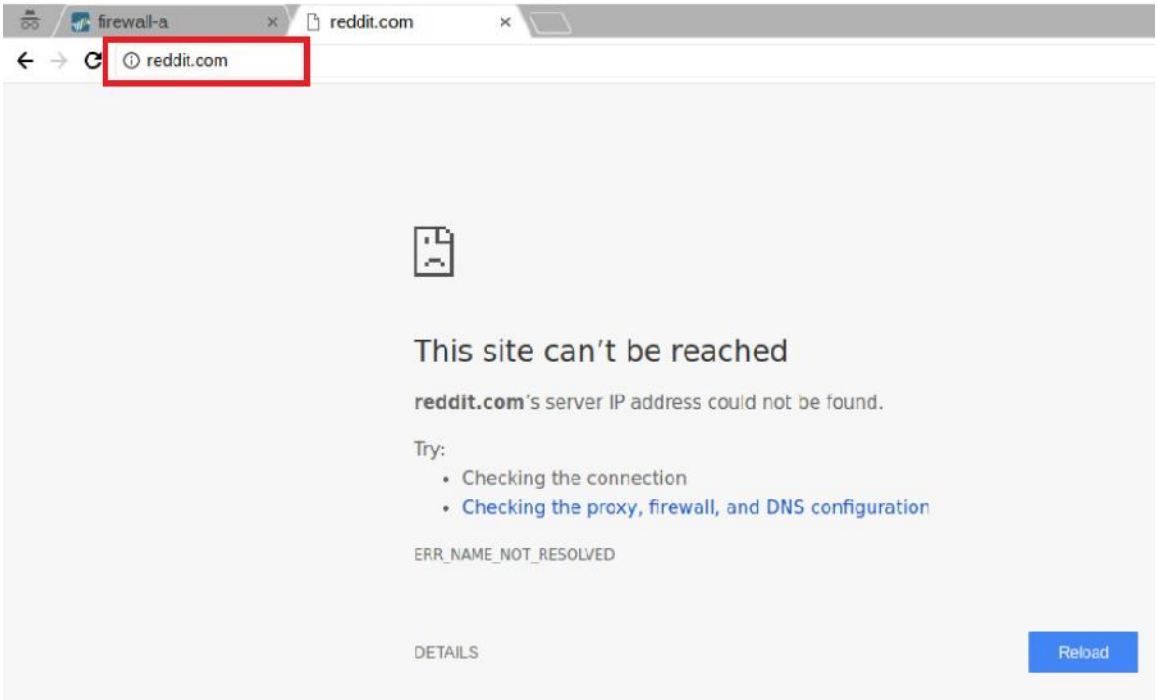
```
C:\home\lab-user> nslookup
> server 8.8.8.8
Default server: 8.8.8.8
Address: 8.8.8.8#53
>
```

4. At the *nslookup* command prompt, type **`reddit.com`** and press the **Enter** key.

```
> reddit.com
Server:         8.8.8.8
Address:        8.8.8.8#53

Non-authoritative answer:
reddit.com      canonical name = sinkhole.paloaltonetworks.com.
>
```

5. Notice that the reply for *reddit.com* shows *canonical name = sinkhole.paloaltonetworks.com*. The request has been sinkholed. Type **`exit`** and press **Enter** to exit *nslookup*.
6. Type **`exit`** and press **Enter** again to exit the Terminal window.
7. Open a new tab in **Chromium Web Browser** and browse to **`http://reddit.com`**. Wait for the connection to time out.



Please Note

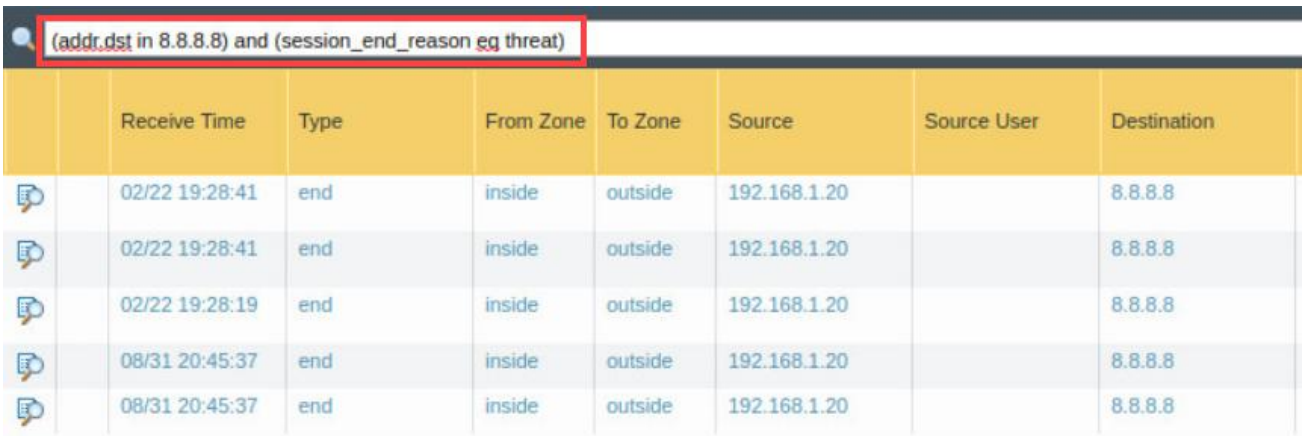
Make sure that you do not include "www." in the URL, because "www.reddit.com" is not in the EDL; "reddit.com" is currently the only entry in the list.

8. Close the reddit browser tab.

5.9 Review the Logs

1. Change focus to the firewall's web interface and navigate to **Monitor > Logs > Traffic**.

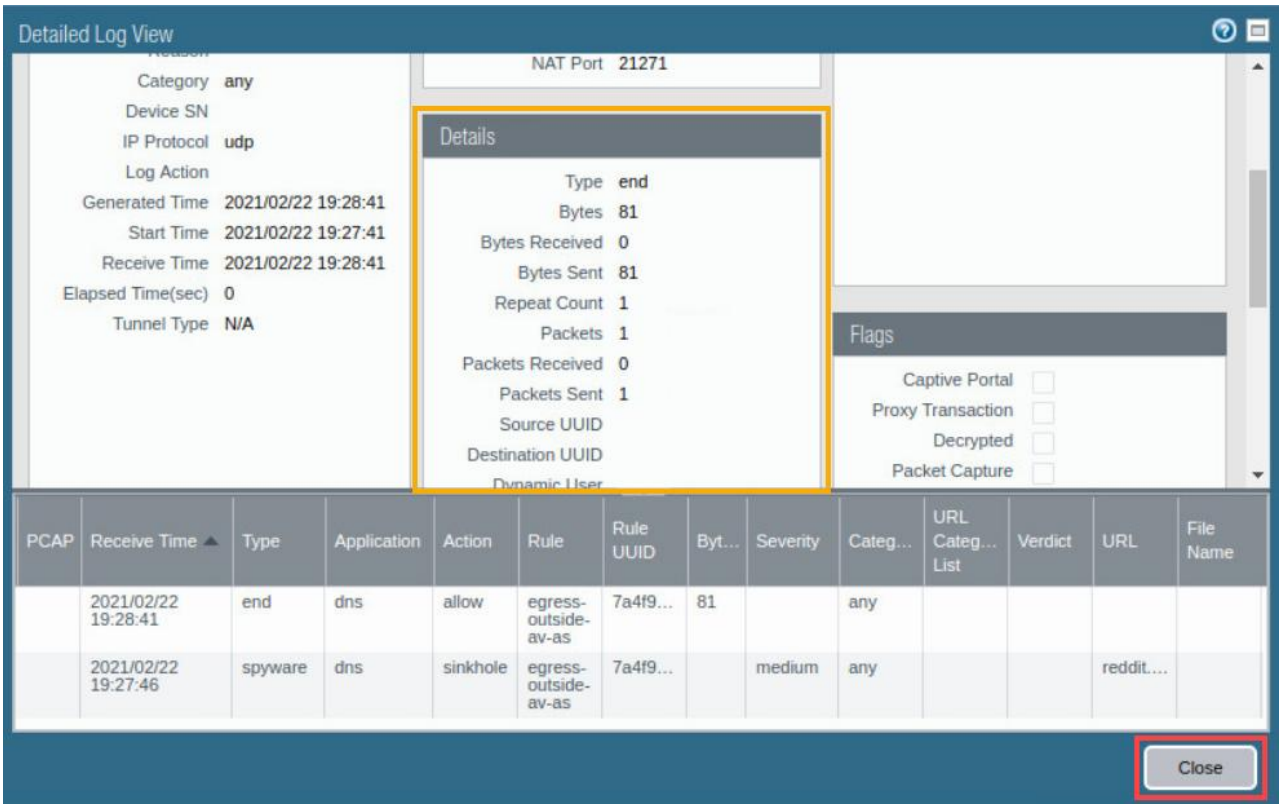
2. To find the DNS request in the Traffic log, use the following filter statement `(addr.dst in 8.8.8.8) and (session_end_reason eq threat)` and then press **Enter**.



	Receive Time	Type	From Zone	To Zone	Source	Source User	Destination
	02/22 19:28:41	end	inside	outside	192.168.1.20		8.8.8.8
	02/22 19:28:41	end	inside	outside	192.168.1.20		8.8.8.8
	02/22 19:28:19	end	inside	outside	192.168.1.20		8.8.8.8
	08/31 20:45:37	end	inside	outside	192.168.1.20		8.8.8.8
	08/31 20:45:37	end	inside	outside	192.168.1.20		8.8.8.8

3. Click the **magnifying glass** icon next to one of the entries to see the *Detailed Log View*.

4. In the *Detailed Log View* window, you should notice the additional information that matches what you previously viewed in the Threat log. Next, scroll down and review the information in the Details section in the middle column of the main display area. Notice that the traffic log records only one packet. This packet is the original DNS query send from the client. The DNS response packet with the sinkhole address is sent directly from the firewall itself. Click **Close** to close the *Detailed Log View* window.



5. The lab is now complete; you may end the reservation.

