



# NETWORK SECURITY FUNDAMENTALS V2

## Lab 6: Decrypting SSH Traffic

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## Introduction

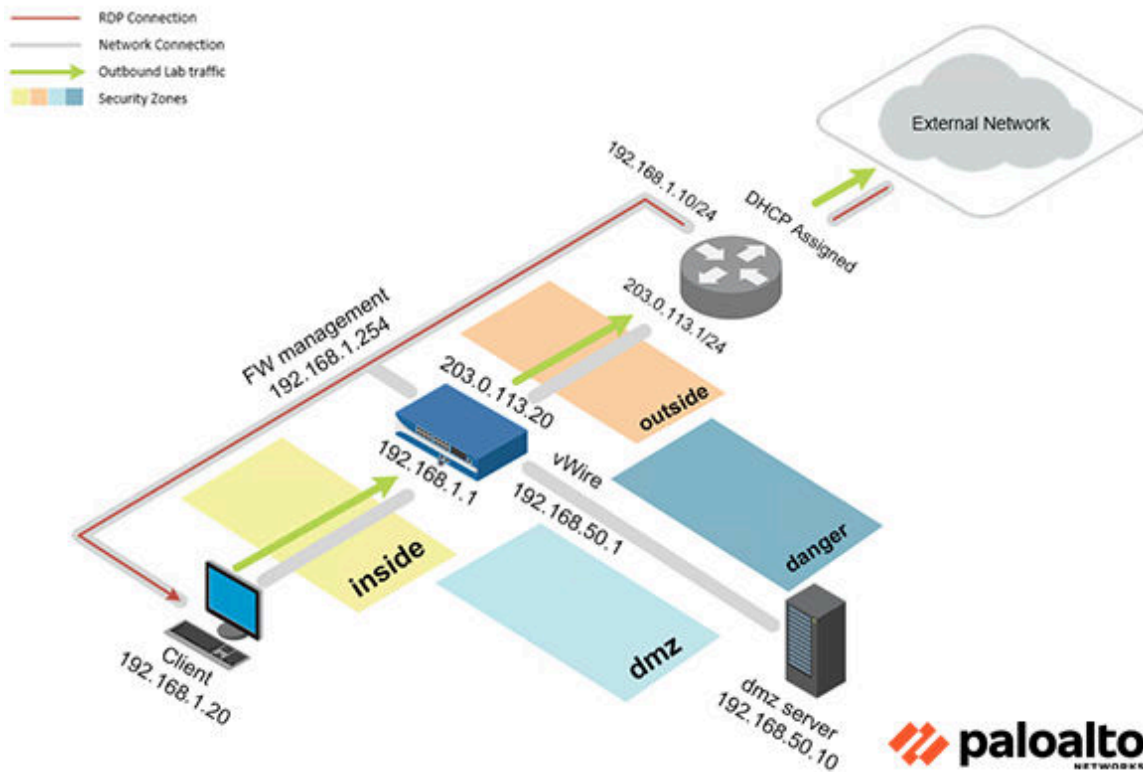
In this lab, you will decrypt SSH traffic by creating a decryption policy. Then, you will use PuTTY to SSH to the DMZ server (traffic-generator) and monitor the traffic logs on the Firewall to show the SSH session has been decrypted.

## Objective

In this lab, you will perform the following tasks:

- Create a Decryption Policy and Commit
- Create an SSH session with PuTTY and Verify Decryption Is Working
- Disable Decryption Policy

## 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.

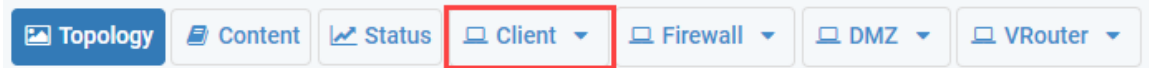
Virtual Machine	IP Address	Account (if needed)	Password (if needed)
Client	192.168.1.20	lab-user	Pal0Alt0!
DMZ	192.168.50.10	root	Pal0Alt0!
Firewall	192.168.1.254	admin	Pal0Alt0!

## 1 Decrypting SSH Traffic

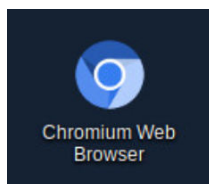
### 1.0 Load Lab Configuration

In this section, you will load the Firewall configuration file.

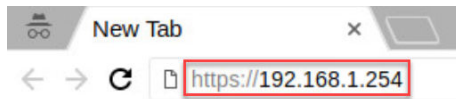
1. Click on the **Client** tab to access the Client PC.



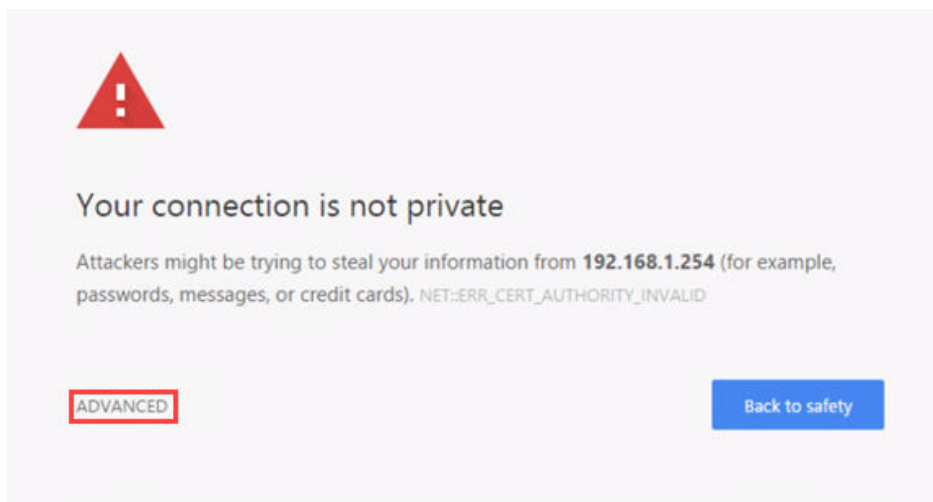
2. Log in to the Client PC as username `lab-user`, password `Pa10Alt0!`.
3. Double-click the **Chromium Web Browser** icon located on the desktop.



4. In the *Chromium address* field, type `https://192.168.1.254` and press **Enter**.

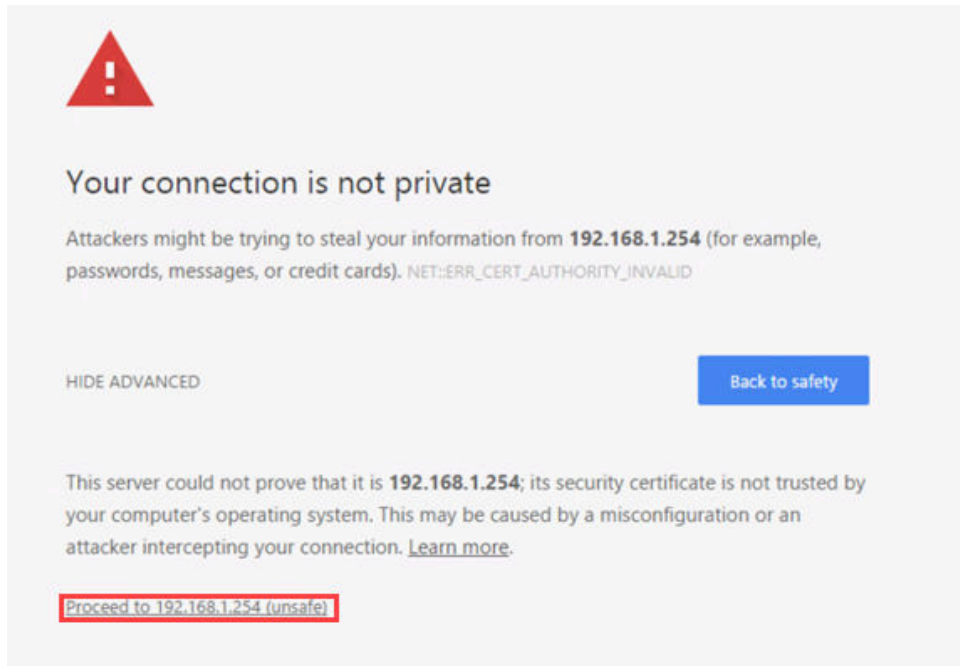


5. You will see a “Your connection is not private” message. Click on the **ADVANCED** link.



If you experience the “Unable to connect” or “502 Bad Gateway” message while attempting to connect to the specified IP above, please wait an additional 1-3 minutes for the Firewall to fully initialize. Refresh the page to continue.

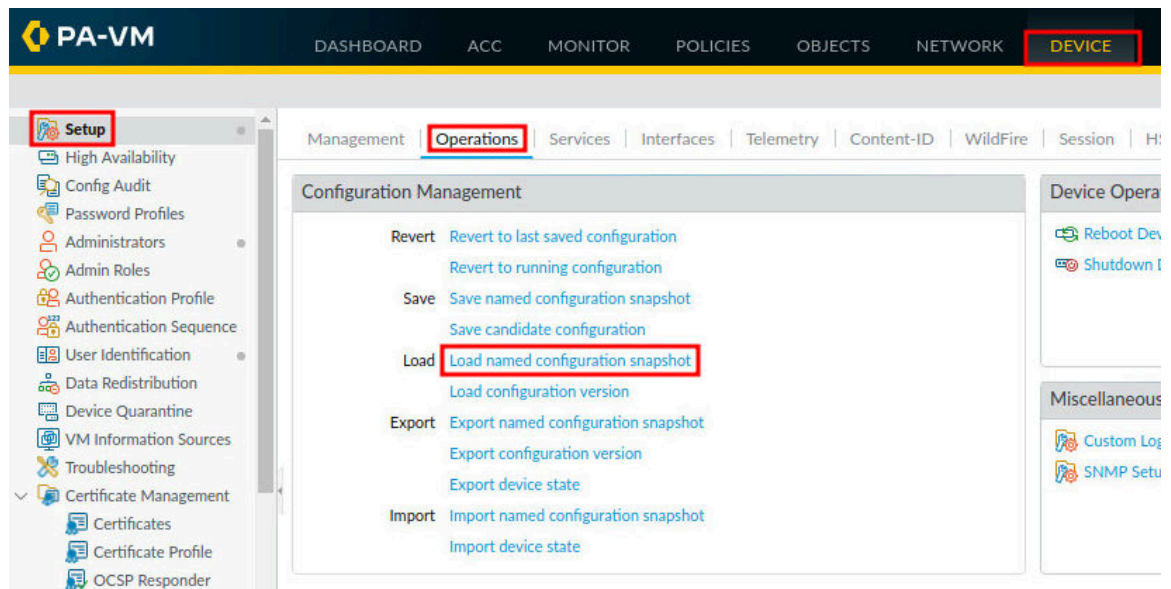
6. Click on **Proceed to 192.168.1.254 (unsafe)**.



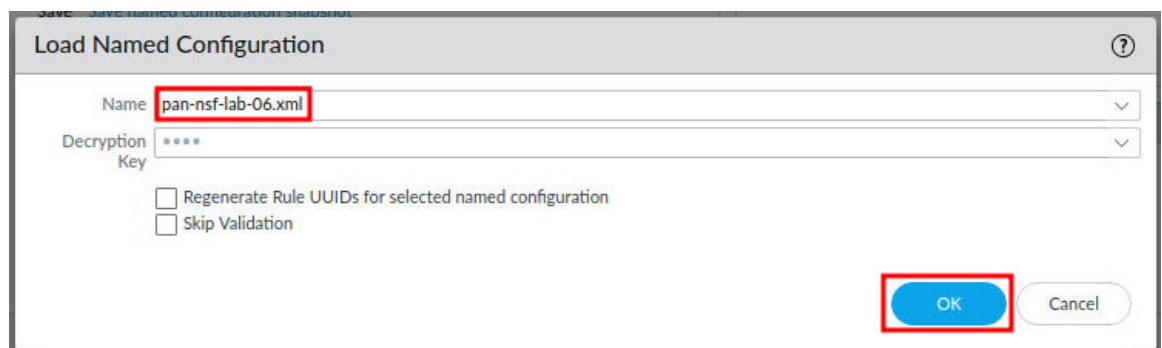
7. Log in to the Firewall web interface as username admin, password Pal0Alt0!.



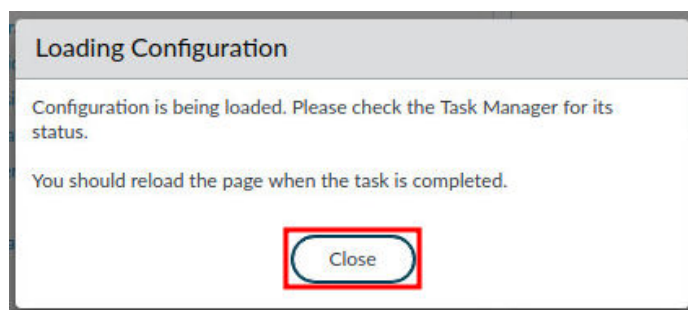
8. In the web interface, navigate to **Device > Setup > Operations** and click on **Load named configuration snapshot** underneath the *Configuration Management* section.



9. In the *Load Named Configuration* window, select **pan-nsf-lab-06.xml** from the *Name* dropdown box and click **OK**.

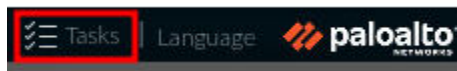


10. In the Loading Configuration window, a message will show *Configuration is being loaded. Please check the Task Manager for its status. You should reload the page when the task is completed.* Click **Close** to continue.

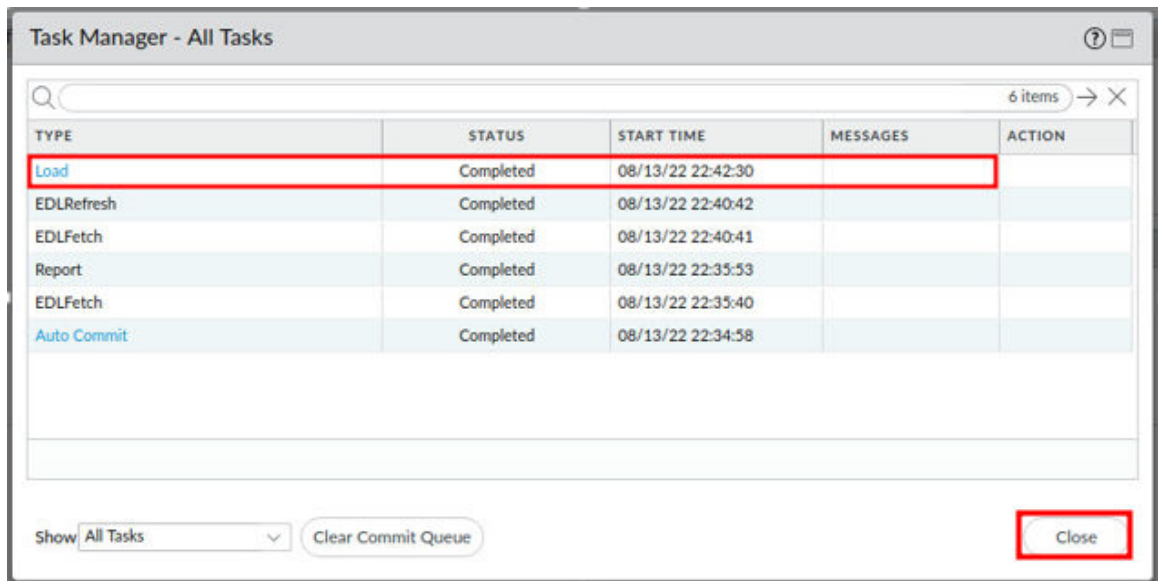




11. Click the **Tasks** icon located at the bottom-right of the web interface.



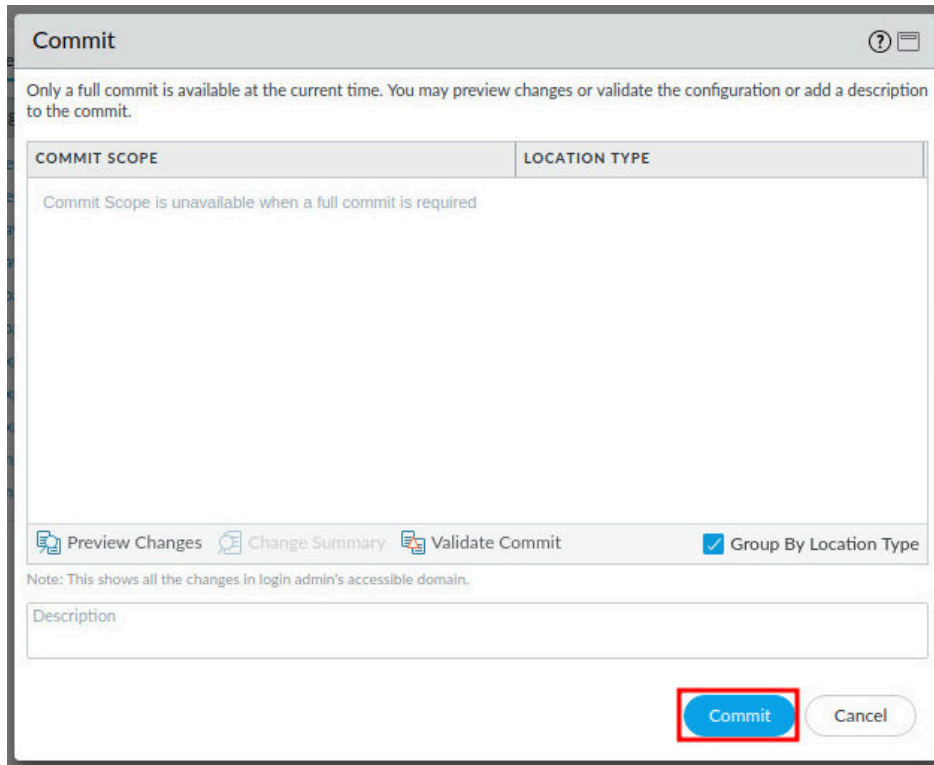
12. In the *Task Manager – All Tasks* window, verify the *Load* type has successfully completed. Click **Close**.



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

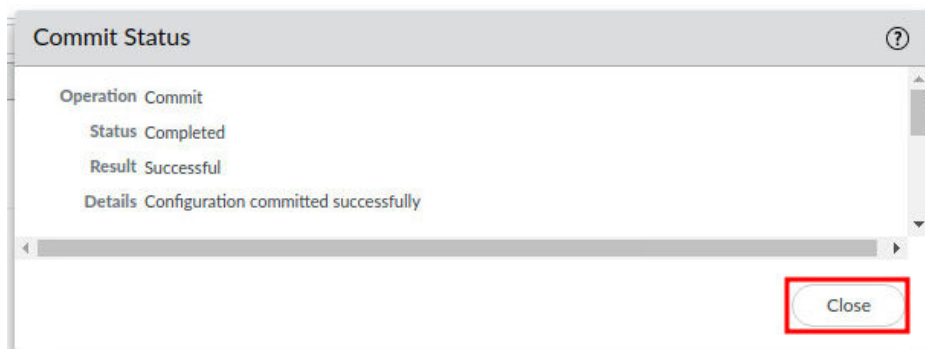


14. In the *Commit* window, click **Commit** to proceed with committing the changes.



The screenshot shows the 'Commit' window in a network management interface. At the top, a message states: 'Only a full commit is available at the current time. You may preview changes or validate the configuration or add a description to the commit.' Below this is a table with two columns: 'COMMIT SCOPE' and 'LOCATION TYPE'. The 'COMMIT SCOPE' column contains the text 'Commit Scope is unavailable when a full commit is required'. Below the table are three tabs: 'Preview Changes', 'Change Summary', and 'Validate Commit'. To the right of these tabs is a checkbox labeled 'Group By Location Type' which is checked. Below the tabs is a text area labeled 'Description'. At the bottom right, there are two buttons: 'Commit' (highlighted with a red rectangle) and 'Cancel'.

15. When the commit operation successfully completes, click **Close** to continue.



The screenshot shows the 'Commit Status' window. It displays the following information: 'Operation Commit', 'Status Completed', 'Result Successful', and 'Details Configuration committed successfully'. At the bottom right, there is a 'Close' button highlighted with a red rectangle.

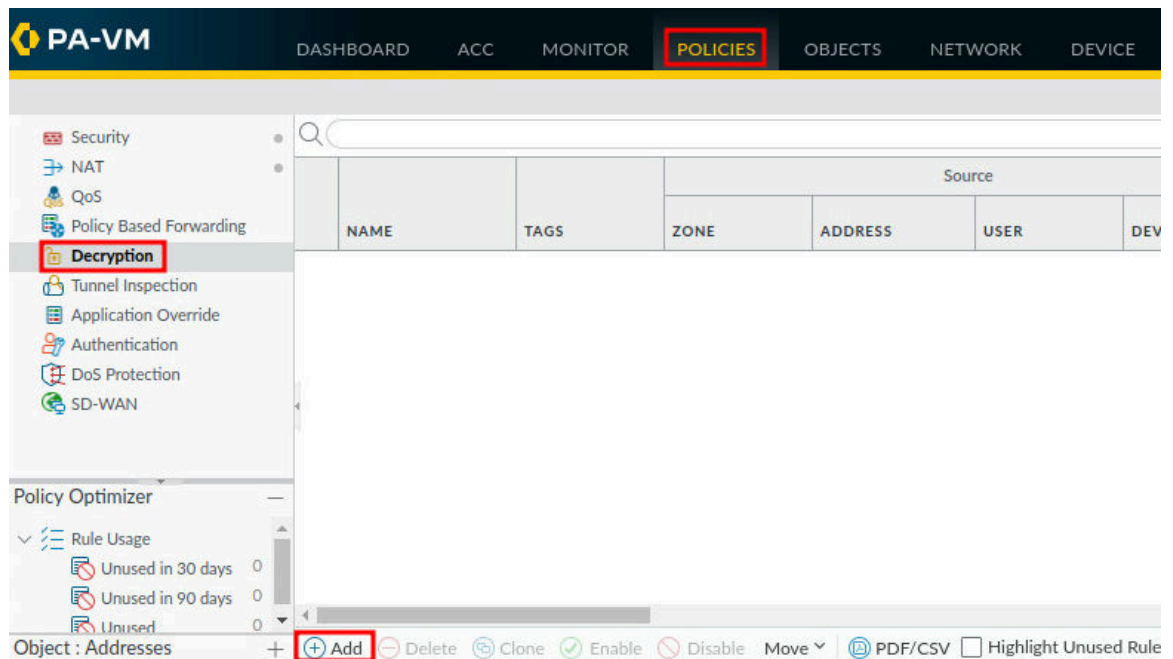


The commit process takes changes made to the Firewall and copies them to the running configuration, which will activate all configuration changes since the last commit.

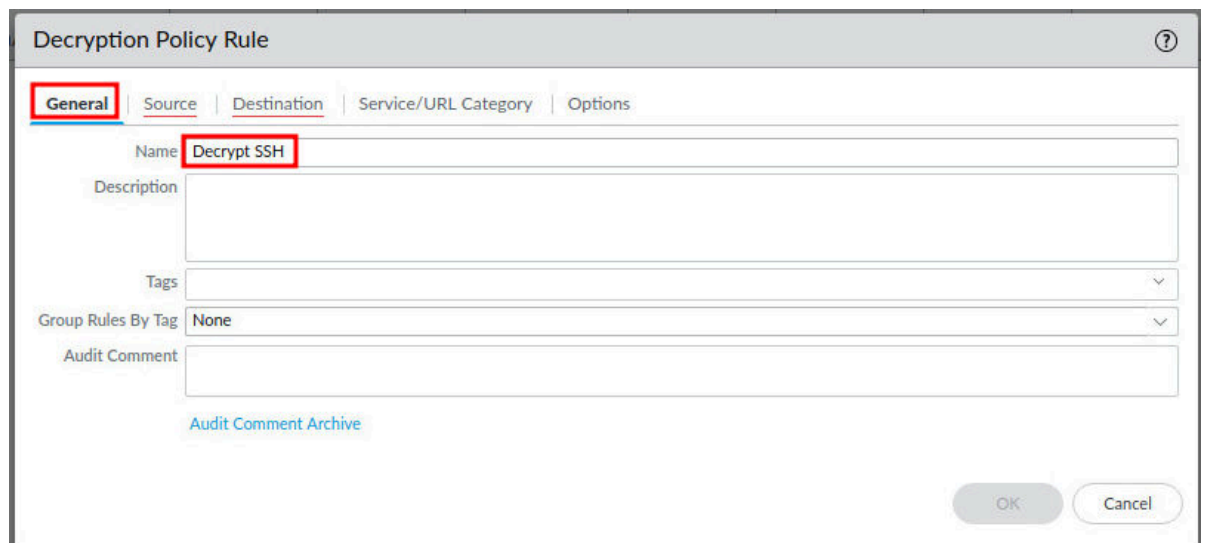
## 1.1 Create a Decryption Policy and Commit

In this section, you will create a decryption policy. Decryption Policies allow administrators to stop threats that would otherwise remain hidden in encrypted traffic and help prevent sensitive content from leaving an organization. Then, you will commit your changes to the Firewall.

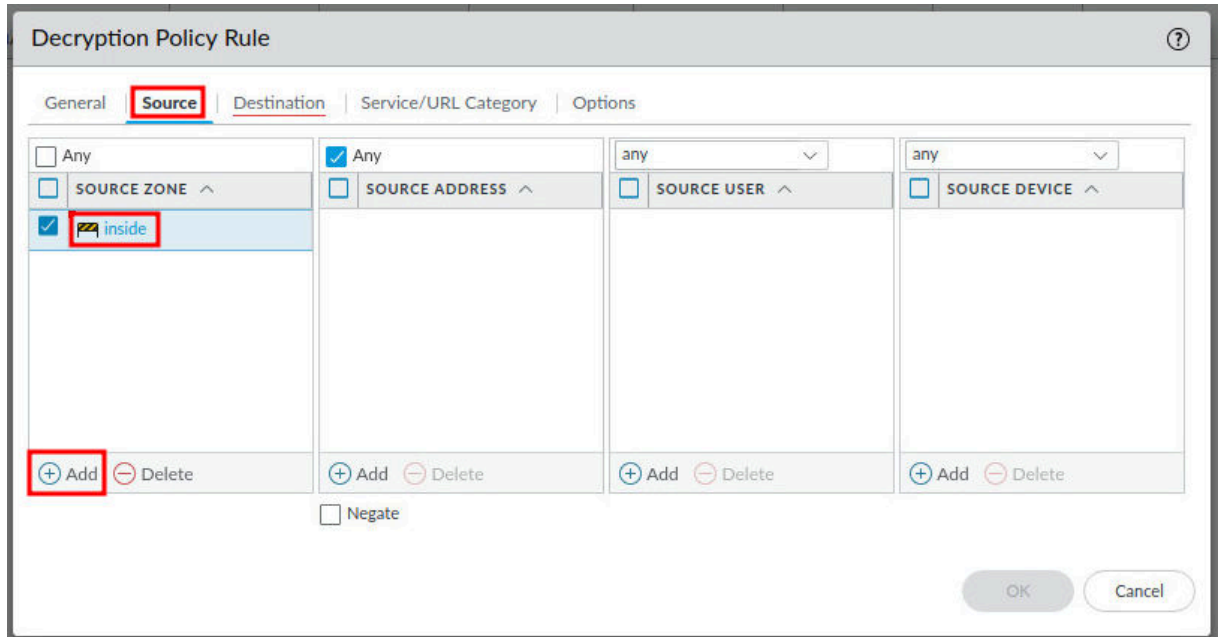
1. Navigate to **Policies > Decryption > Add**.



2. In the **General** tab of the *Decryption Policy Rule* window, type Decrypt SSH in the *Name* field.

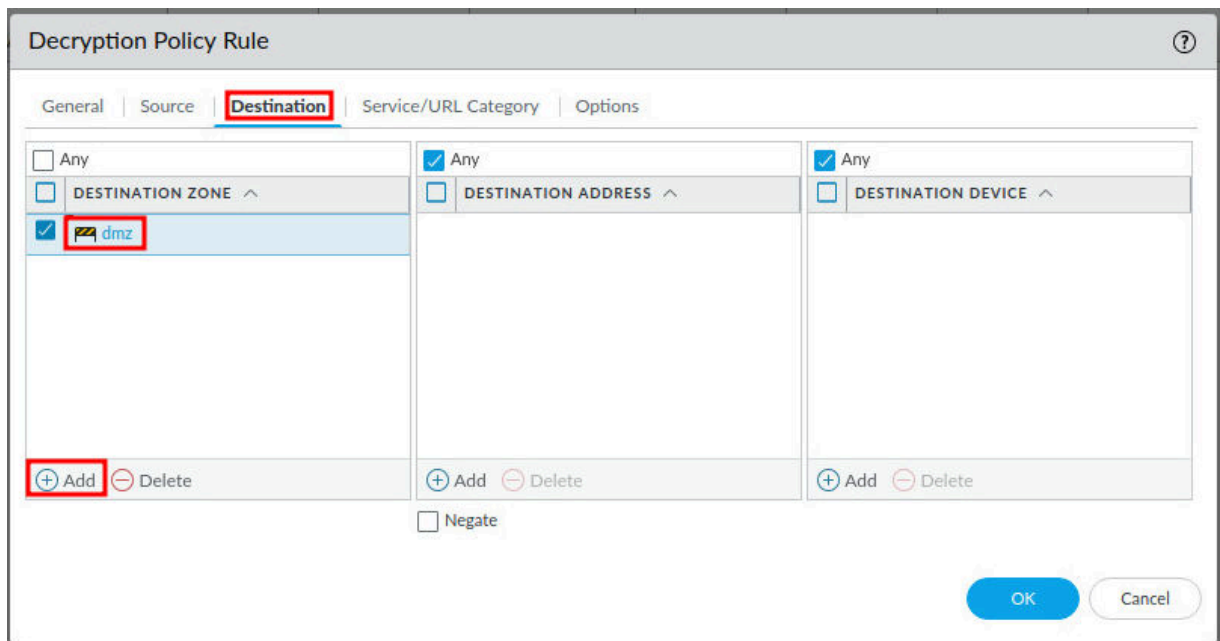


3. In the *Decryption Policy Rule* window, click on the **Source** tab. Then, click **Add** in the *Source Zone* section. Next, select **inside**.



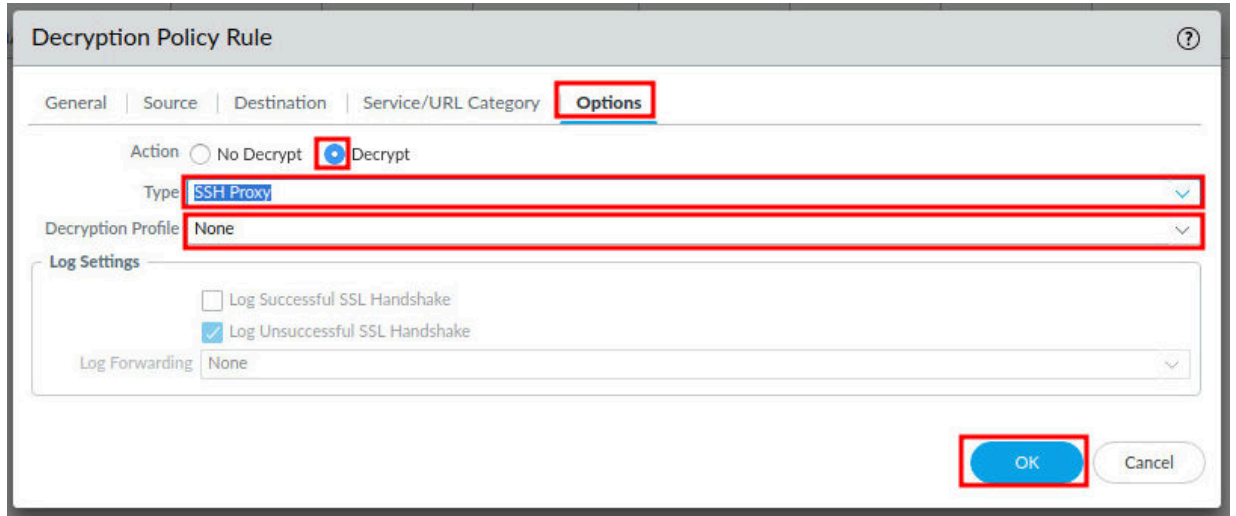
The screenshot shows the 'Decryption Policy Rule' window with the 'Source' tab selected. The 'SOURCE ZONE' section has a red box around the 'Add' button and another red box around the 'inside' zone. The 'SOURCE ADDRESS', 'SOURCE USER', and 'SOURCE DEVICE' sections are empty. The 'Negate' checkbox is unchecked. The 'OK' and 'Cancel' buttons are at the bottom right.

4. In the *Decryption Policy Rule* window, click on the **Destination** tab. Then, click **Add** in the *Destination Zone* section. Next, select **dmz**.



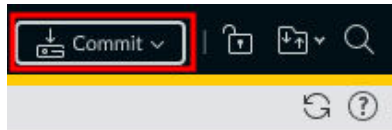
The screenshot shows the 'Decryption Policy Rule' window with the 'Destination' tab selected. The 'DESTINATION ZONE' section has a red box around the 'Add' button and another red box around the 'dmz' zone. The 'DESTINATION ADDRESS' and 'DESTINATION DEVICE' sections are empty. The 'Negate' checkbox is unchecked. The 'OK' and 'Cancel' buttons are at the bottom right.

5. In the *Decryption Policy Rule* window, click on the **Options** tab. Then, select **Decrypt** for the *Action*. Next, select **SSH Proxy** in the *Type* dropdown. Then, leave the *Decryption Profile* set to **None**. Finally, click the **OK** button.

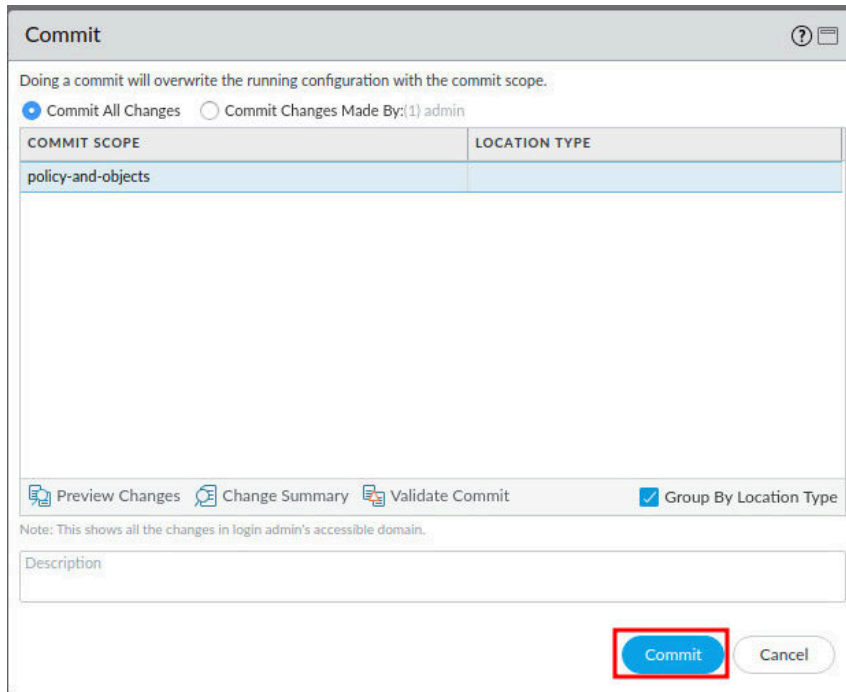


The image shows the 'Decryption Policy Rule' window with the 'Options' tab selected. The 'Action' is set to 'Decrypt', the 'Type' is 'SSH Proxy', and the 'Decryption Profile' is 'None'. The 'Log Settings' section shows 'Log Successful SSL Handshake' unchecked and 'Log Unsuccessful SSL Handshake' checked. The 'Log Forwarding' is set to 'None'. The 'OK' button is highlighted with a red box.

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



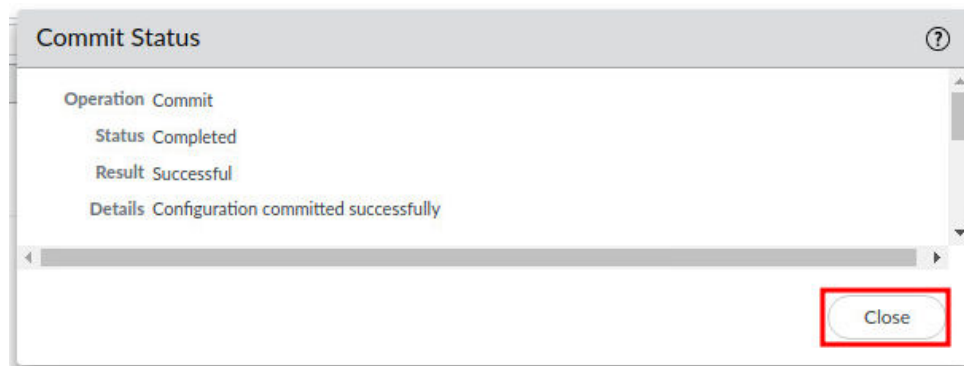
7. In the Commit window, click **Commit** to proceed with committing the changes.



The image shows the 'Commit' window. It displays a table with 'COMMIT SCOPE' and 'LOCATION TYPE' columns. The 'COMMIT SCOPE' is 'policy-and-objects'. The 'LOCATION TYPE' is empty. The 'Commit' button is highlighted with a red box.

COMMIT SCOPE	LOCATION TYPE
policy-and-objects	

- When the commit operation successfully completes, click **Close** to continue.



Decryption policies provide flexible rules and matching criteria that enable you to protect destination zones or specific servers that may be prone to DoS attacks.

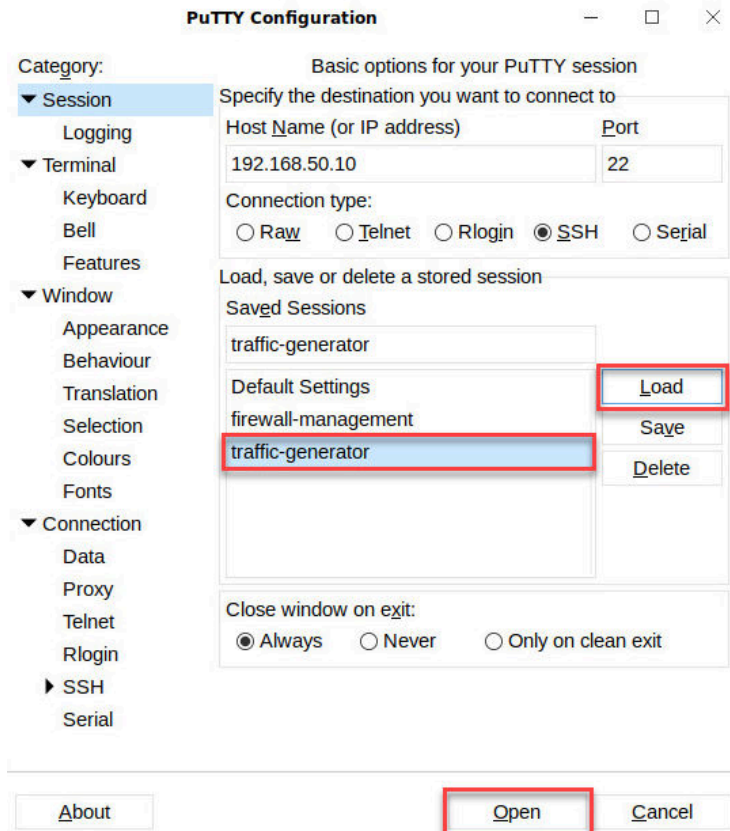
## 1.2 Create an SSH Session with PuTTY and Verify Decryption Is Working

In this section, you will create an SSH session with PuTTY to the DMZ server (traffic-generator), which travels through the internal interface of the Firewall. Then, you will monitor the traffic logs to verify decryption is working.

- Click the **PuTTY** icon on the taskbar at the bottom of the screen.



- In the *PuTTY Configuration* window, select **traffic-generator** from the *Saved Sessions* section. Then, click the **Load** button. Finally, click the **Open** button.



- You may be prompted with a *PuTTY Security Alert* window. If so, click **Accept** to continue.



- At the prompt, log in as **root**, type **Pa10A!t0!** as the password, and press **Enter**.





Notice the cursor will not move while you type the password.

- Once the SSH connection has been made to the DMZ Server, type **exit** and press **Enter** on the keyboard to close the SSH session from the client PC to the DMZ Server.

```

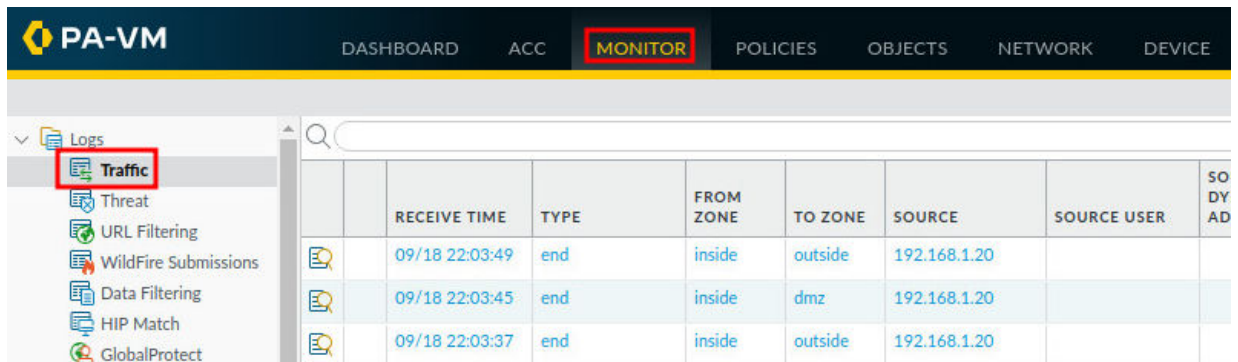
root@pod-dmz:~
login as: root
root@192.168.50.10's password:
Last login: Fri Mar 13 20:50:03 2020 from 192.168.1.20
[root@pod-dmz ~]# exit

```



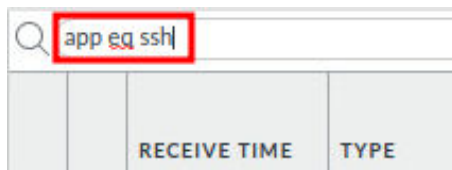
This will close the SSH session from the Client to the DMZ server. Complete steps 1-5, five times to show multiple SSH connections in the threat logs of the Palo Alto Networks Firewall.

- Navigate to **Monitor > Logs > Traffic**.



	RECEIVE TIME	TYPE	FROM ZONE	TO ZONE	SOURCE	SOURCE USER	SO DY AD
	09/18 22:03:49	end	inside	outside	192.168.1.20		
	09/18 22:03:45	end	inside	dmz	192.168.1.20		
	09/18 22:03:37	end	inside	outside	192.168.1.20		

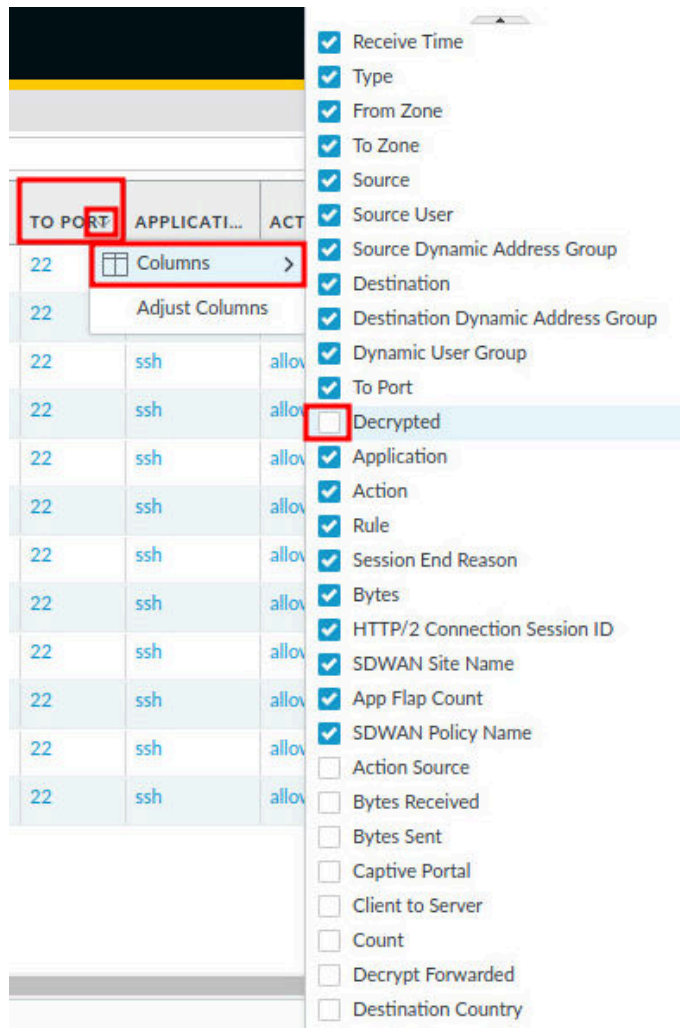
- In the search bar, type **app eq ssh** and press **Enter**. This will filter only SSH applications.



RECEIVE TIME	TYPE
--------------	------



8. Click on the **To Port** column. Then, click on the **arrow** beside the *To Port* column. Next, select **Columns** from the menu. Finally, click to check the **Decrypted** checkbox.

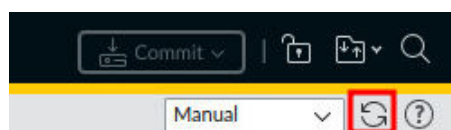


You may need to scroll the window to the right in order to view the column.



The **Decrypted** checkbox might be listed alphabetically among the unchecked boxes in the lower part of the menu

9. Click the **refresh** icon in the upper-right to refresh the traffic logs.



10. View the logs showing the SSH traffic and notice that the traffic was decrypted using the decryption policy created earlier.

app eq ssh

	RECEIVE TIME	TYPE	FROM ZONE	TO ZONE	SOURCE	SOURCE USER	SOURCE DYNAMIC ADDRESS GROUP	DESTINATI...	DESTINATION DYNAMIC ADDRESS GROUP	DYNAMIC USER GROUP	TO PORT	DECRYPTED
	09/18 22:03:45	end	inside	dmz	192.168.1.20			192.168.50.10			22	yes
	09/18 22:03:27	end	inside	dmz	192.168.1.20			192.168.50.10			22	yes
	09/18 22:03:16	start	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:03:12	end	inside	dmz	192.168.1.20			192.168.50.10			22	yes
	09/18 22:03:02	start	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:02:27	start	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:01:15	end	inside	dmz	192.168.1.20			192.168.50.10			22	yes
	09/18 22:00:37	end	inside	dmz	192.168.1.20			192.168.50.10			22	yes
	09/18 22:00:26	start	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 21:59:52	start	inside	dmz	192.168.1.20			192.168.50.10			22	no

### 1.3 Disable the Decryption Policy

In this section, you will disable the decryption policy that was created earlier and verify the Firewall is no longer decrypting the SSH traffic.

1. Navigate to **Policies > Decryption**.

PA-VM

DASHBOARD ACC MONITOR **POLICIES** OBJECTS NETWORK DEVICE

Security

NAT

QoS

Policy Based Forwarding

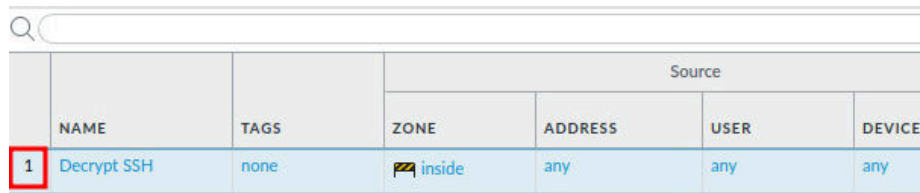
**Decryption**

Tunnel Inspection

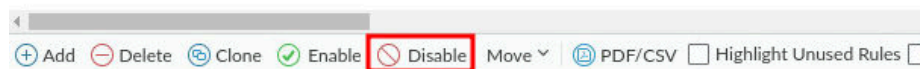
Application Override

	NAME	TAGS	Source			
			ZONE	ADDRESS	USER	DEVICE
1	Decrypt SSH	none	inside	any	any	any

- Click the **1**, to select the **Decrypt SSH** policy created. Then, click **Disable** at the bottom.



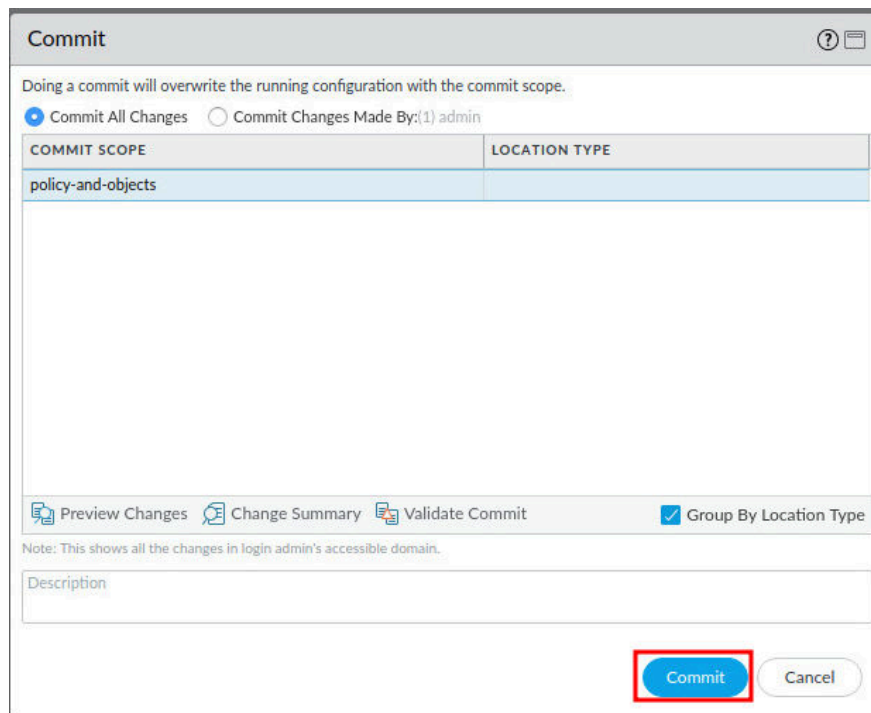
	NAME	TAGS	Source			
			ZONE	ADDRESS	USER	DEVICE
1	Decrypt SSH	none	inside	any	any	any



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



- In the *Commit* window, click **Commit** to proceed with committing the changes.



**Commit**

Doing a commit will overwrite the running configuration with the commit scope.

☒ Commit All Changes ☐ Commit Changes Made By: (1) admin

COMMIT SCOPE	LOCATION TYPE
policy-and-objects	

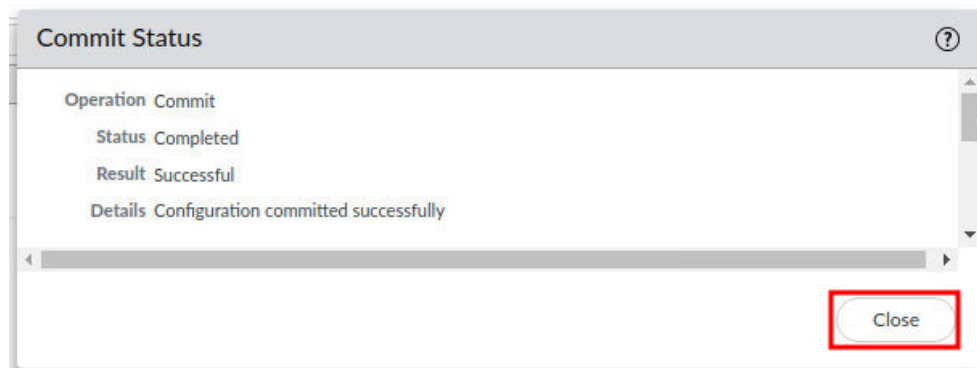
Preview Changes Change Summary Validate Commit ☒ Group By Location Type

Note: This shows all the changes in login admin's accessible domain.

Description

**Commit** Cancel

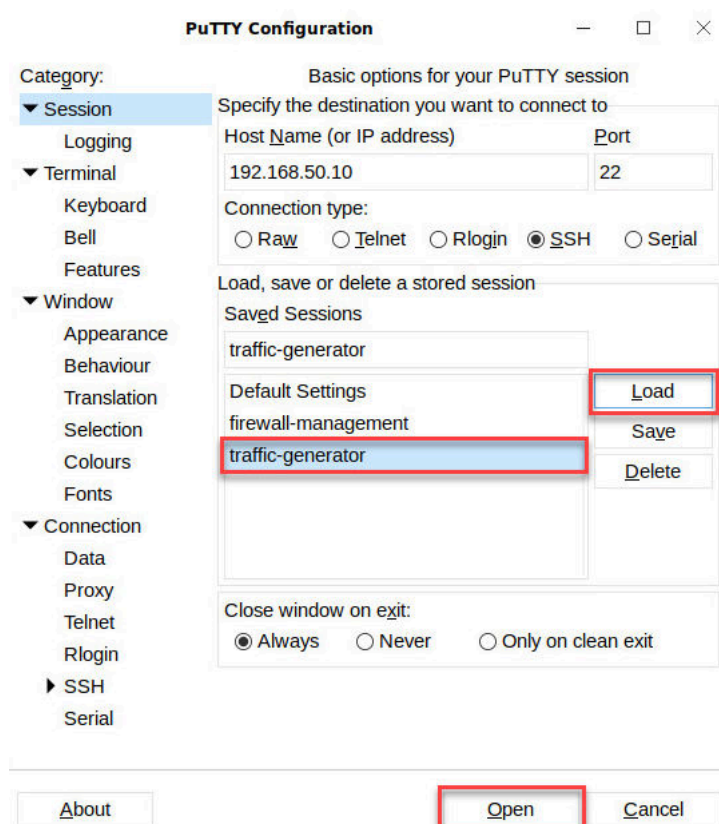
5. When the commit operation successfully completes, click **Close** to continue.



6. Click the **PuTTY** icon on the taskbar at the bottom of the screen.



7. In the *PuTTY Configuration* window, select **traffic-generator** from the *Saved Sessions* section. Then, click the **Load** button. Finally, click the **Open** button.



8. At the prompt, log in as root, type Pa10A1t0! as the password, and press **Enter**.

```

root@pod-dmz:~
login as: root
root@192.168.50.10's password:
Last login: Fri Mar 13 20:50:03 2020 from 192.168.1.20
[root@pod-dmz ~]#

```



Notice the cursor will not move while you type the password.

9. Once the SSH connection has been made to the DMZ Server, type **exit** and press **Enter** on the keyboard to close the SSH session from the client PC to the DMZ Server.

```

root@pod-dmz:~
login as: root
root@192.168.50.10's password:
Last login: Fri Mar 13 20:50:03 2020 from 192.168.1.20
[root@pod-dmz ~]# exit

```



This will close the SSH session from the Client to the DMZ server. Complete steps 6-9, five times to show multiple SSH connections in the threat logs of the Palo Alto Networks Firewall.

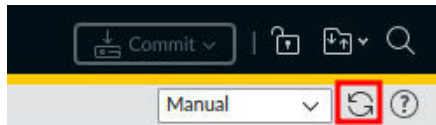
10. Click on the **Chromium** icon from the taskbar to maximize.



11. Navigate to **Monitor > Logs > Traffic**.

PA-VM		DASHBOARD	ACC	MONITOR	POLICIES	OBJECTS	NETWORK	DEVICE
Logs								
Traffic								
Threat								
URL Filtering								
WildFire Submissions								
Data Filtering								
HIP Match								
GlobalProtect								
		RECEIVE TIME	TYPE	FROM ZONE	TO ZONE	SOURCE	SOURCE USER	SO DY AD
		09/18 22:03:49	end	inside	outside	192.168.1.20		
		09/18 22:03:45	end	inside	dmz	192.168.1.20		
		09/18 22:03:37	end	inside	outside	192.168.1.20		

12. Click the **refresh** icon in the upper-right to refresh the traffic logs.



13. View the logs showing the SSH traffic and notice that the traffic was not decrypted due to disabling the Decryption Policy.

app eq ssh												
	RECEIVE TIME	TYPE	FROM ZONE	TO ZONE	SOURCE	SOURCE USER	SOURCE DYNAMIC ADDRESS GROUP	DESTINATI...	DESTINATION DYNAMIC ADDRESS GROUP	DYNAMIC USER GROUP	TO PORT	DECRYPTED
	09/18 22:38:56	end	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:38:43	end	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:38:34	start	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:38:30	end	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:38:21	start	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:38:18	end	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:38:07	start	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:38:06	end	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:37:56	start	inside	dmz	192.168.1.20			192.168.50.10			22	no
	09/18 22:37:43	start	inside	dmz	192.168.1.20			192.168.50.10			22	no

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