PALO ALTO NETWORKS - EDU-210

Lab 7: Decryption

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Contents

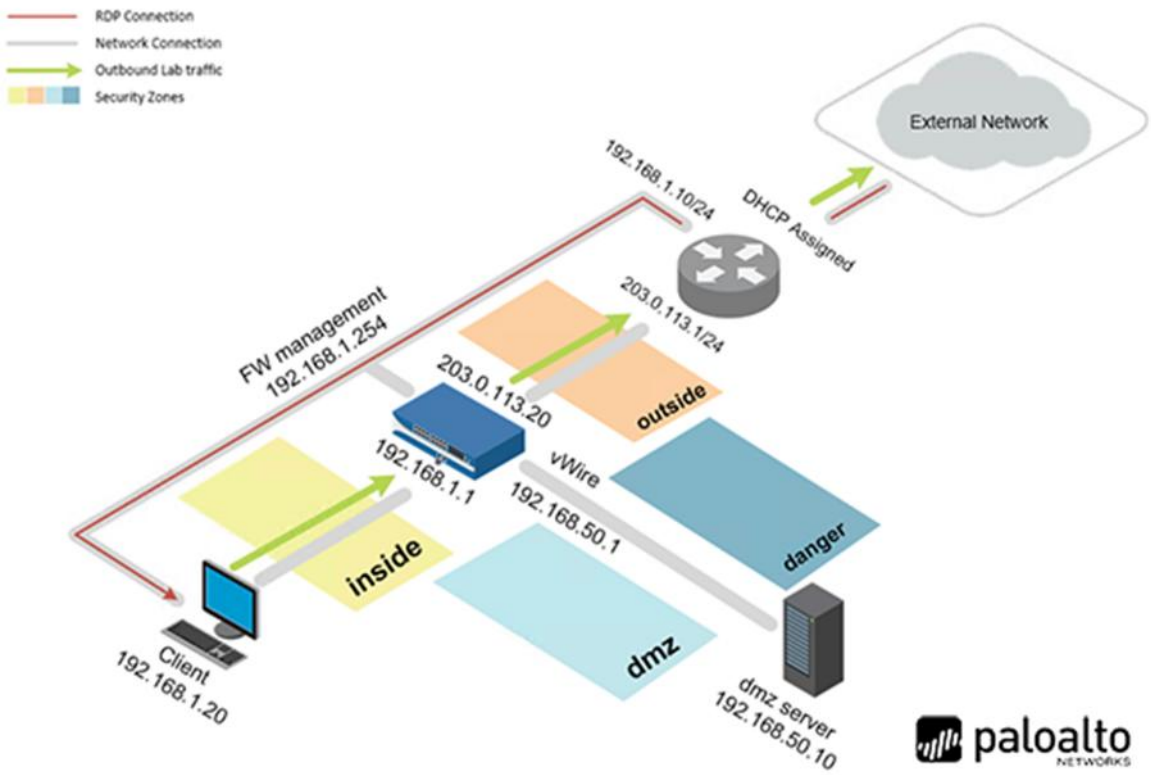
Introduction

As you browsed through the logs, you noticed that there was a lot of SSL traffic. When you were testing the system and attempted to download an Eicar file from one of the SSL links, you found that it was allowed. The CSO has determined that we need to inspect all traffic within the acceptable risk categories. Therefore, you need to set up the system to decrypt all traffic that is not to be excluded because of compliance requirements.

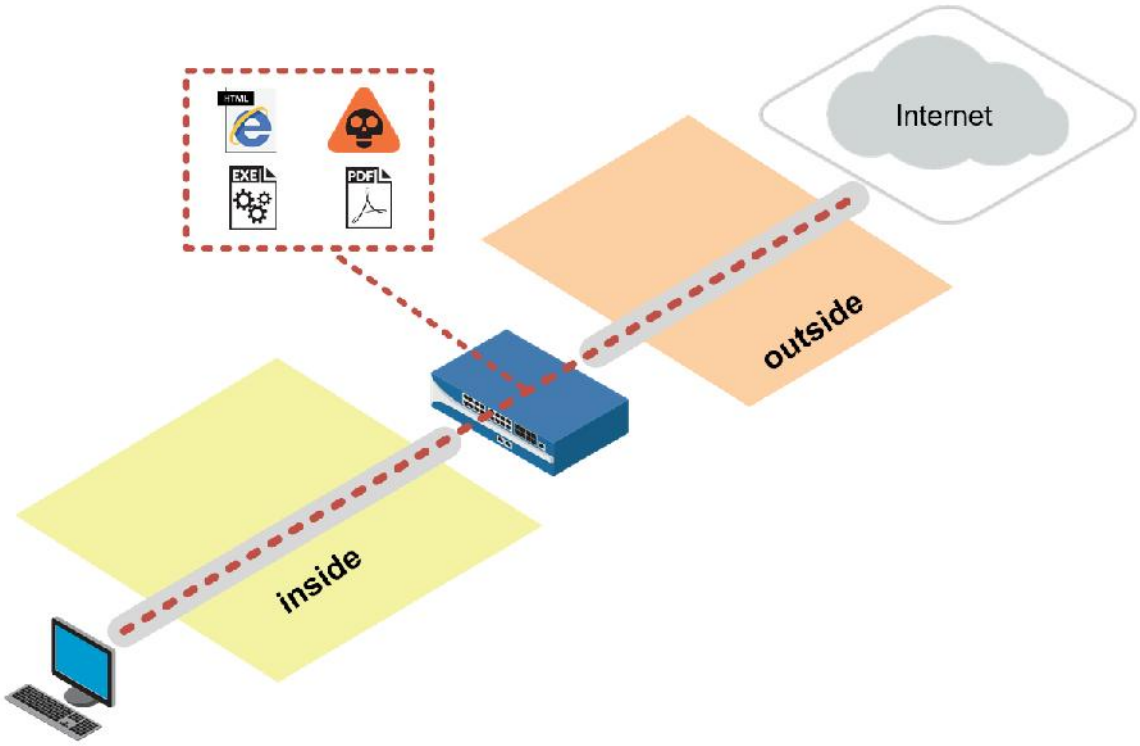
Objectives

- Observe firewall behavior without decryption
- Create Forward Trust and Untrust certificates
- Create a custom decryption category
- Create a Decryption policy
- Observe firewall behavior after decryption is enabled
- Review logs

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$`
Firewall	192.168.1.254	`admin`	`Train1ng$`

7 Decryption

7.0 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.

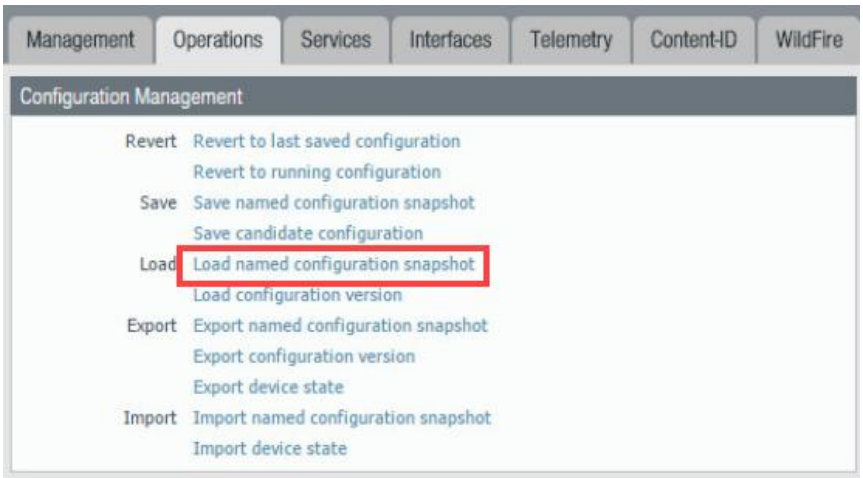
2. Log in as `lab-user` using the password `Train1ng$`.

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$`

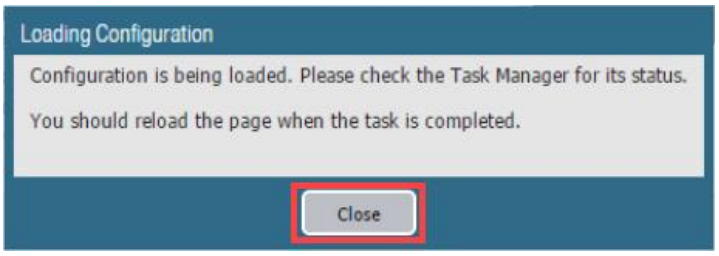
6. In the web interface, select **Device > Setup > Operations**.

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



8. Click the dropdown list next to the *Name* text box and select **edu-210-lab-07.xml**. Click **OK**.

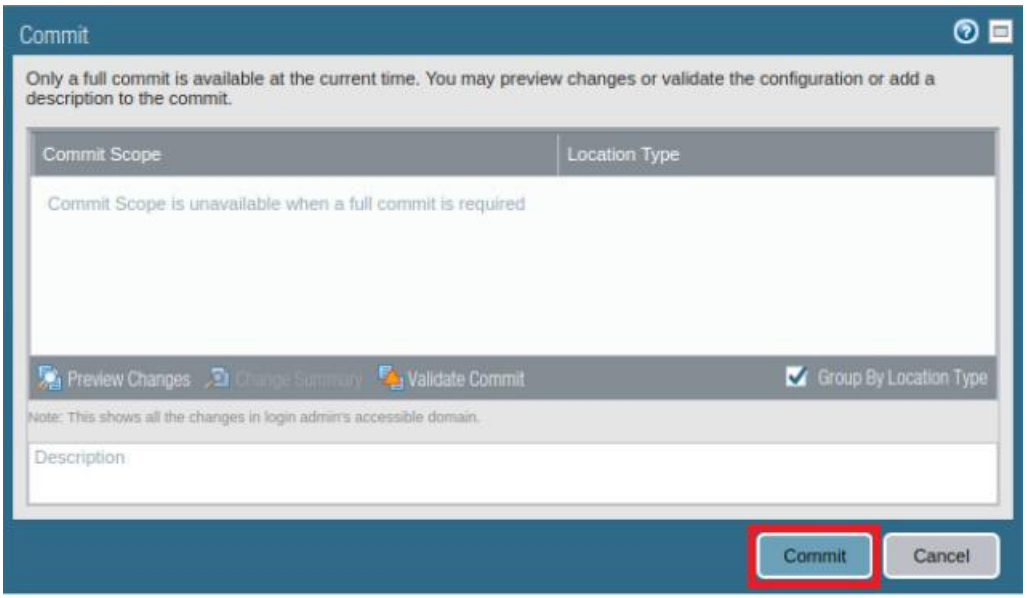
9. Click **Close**.



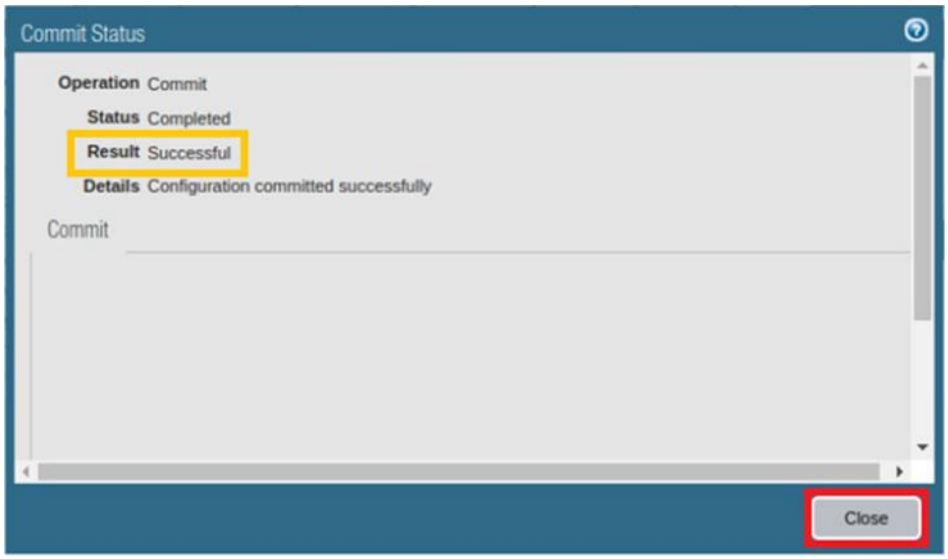
The following instructions are the steps to execute a **"Commit All"** as you will perform many times throughout these labs.

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

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



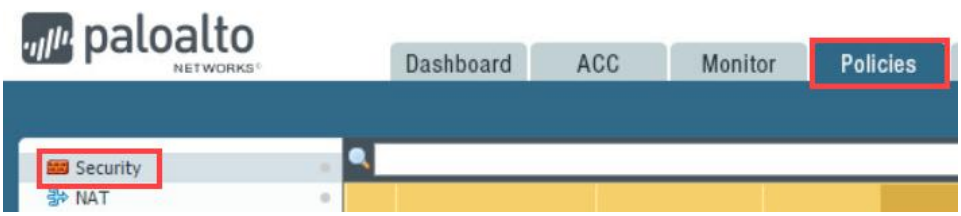
12. Once completed successfully, click **Close** to continue.



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

7.1 Test Firewall Behavior Without Decryption

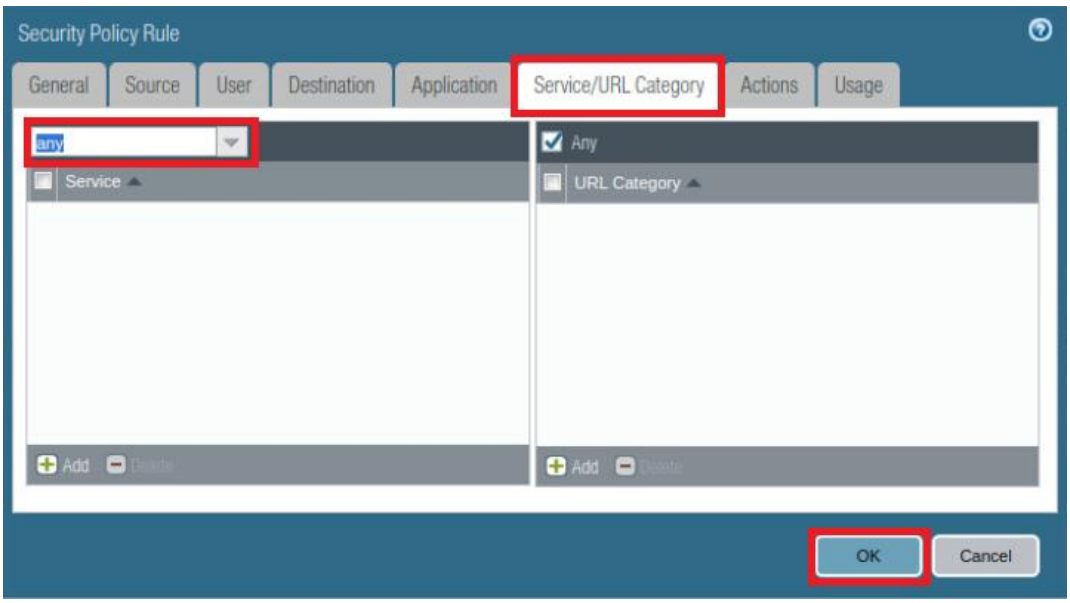
1. In the web interface, navigate to **Policies > Security**.



2. Click on **egress-outside-content-id** to open the Security Policy Rule.

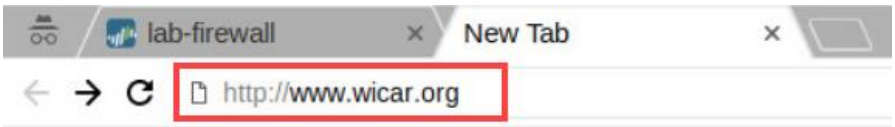
3. In the *Security Policy Rule* window, click the **Service/URL Category** tab and configure the following. Once finished, click **OK**.

Parameter	Value
Service	Select **any** from the dropdown list



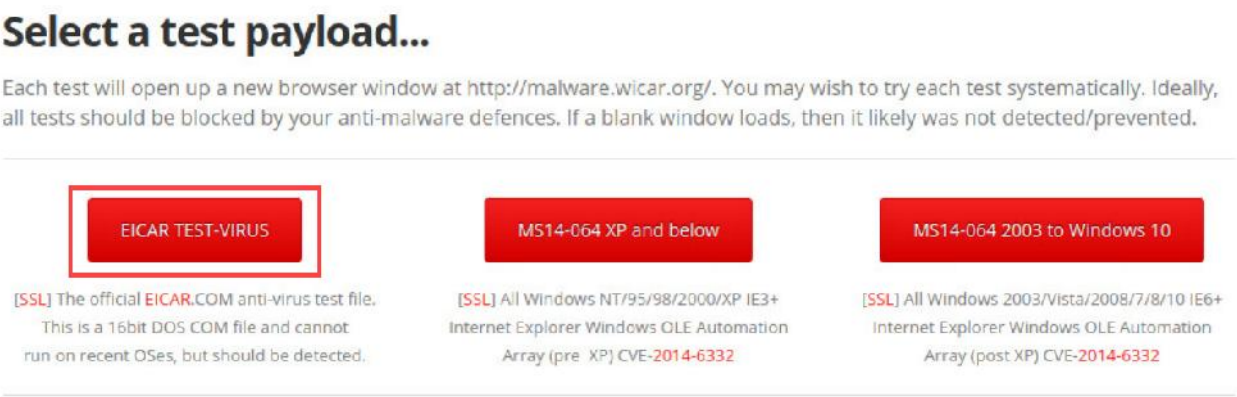
4. **Commit** all changes.

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



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

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



8. Notice a message appears stating that the download was blocked. Close this browser tab.

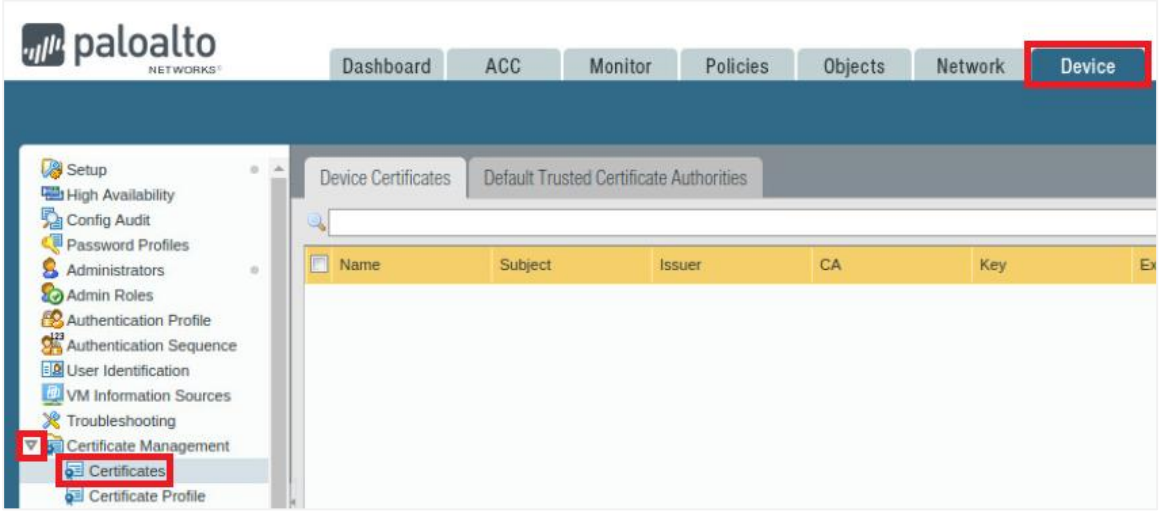
9. Back on the *wicar.org* webpage download the same test file, but this time choose to download it using HTTPS by clicking on the **SSL** hyperlink found underneath the **EICAR TEST-VIRUS** button.

10. Notice that the download is not blocked because the connection is encrypted, and the virus is hidden. When prompted for the download, click **Cancel** to terminate the download session.
11. Close the browser tab.

7.2 Create Two Self-Signed Certificates

In this task, you will generate certificates so that the firewall can decrypt the traffic.

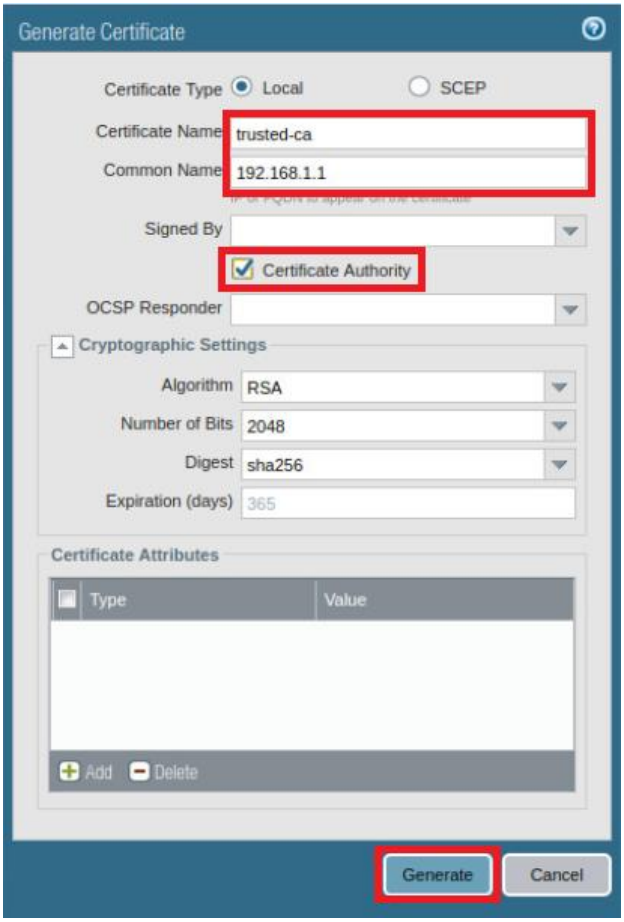
1. In the web interface, navigate to **Device > Certificate Management > Certificates**:



2. Click **Generate** at the bottom of the page to create a new CA certificate.

3. Configure the following and then click **Generate** to create the certificate.

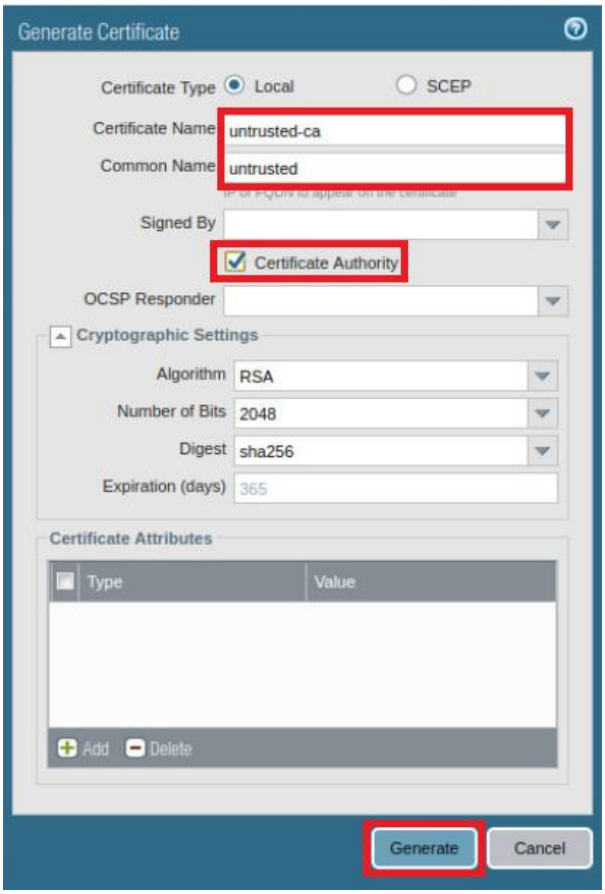
Parameter	Value
Certificate Name	Type `trusted-ca`
Common Name	Type `192.168.1.1`
Certificate Authority	Select the **Certificate Authority** checkbox



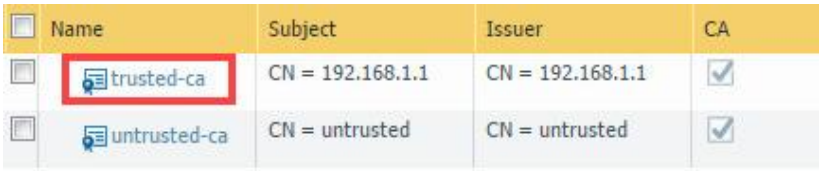
4. Click **OK** to close the *Generate Certificate* success window.
5. Click **Generate** at the bottom of the page to create another CA certificate.

6. Configure the following and then click **Generate** to create the certificate.

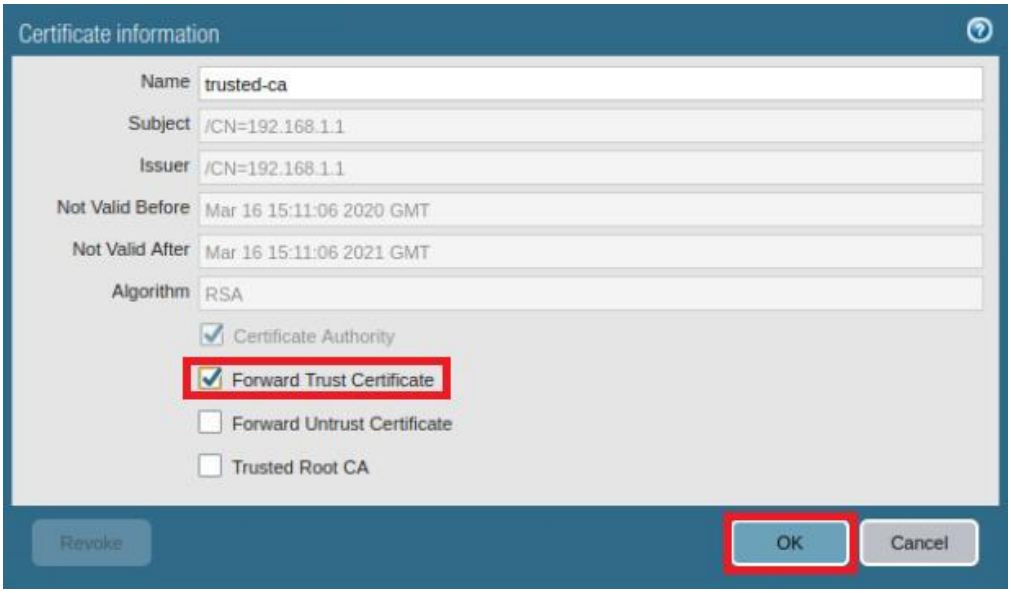
Parameter	Value
Certificate Name	Type `untrusted-ca`
Common Name	Type `untrusted`
Certificate Authority	Select the **Certificate Authority** checkbox



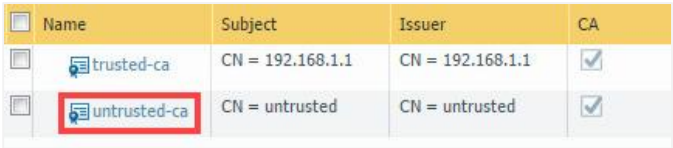
7. Click **OK** to dismiss the *Generate Certificate* success window.
8. Click on **trusted-ca** in the list of certificates to edit the certificate information.



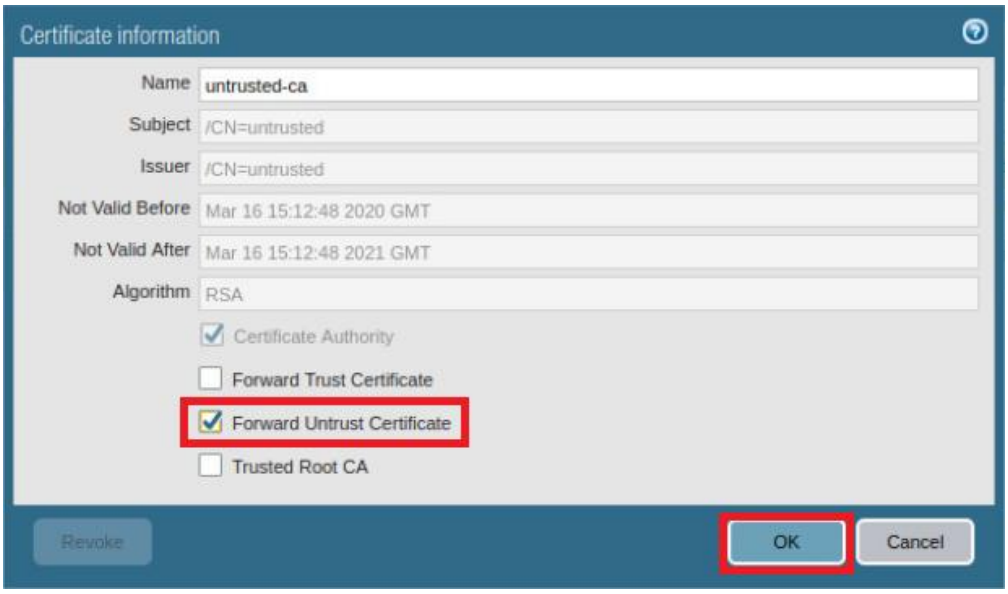
9. In the *Certification Information* window, select the **Forward Trust Certificate** checkbox and click **OK**:



10. Click on **untrusted-ca** in the list of certificates to edit the certificate information.



11. Select the **Forward Untrust Certificate** checkbox and click **OK**.

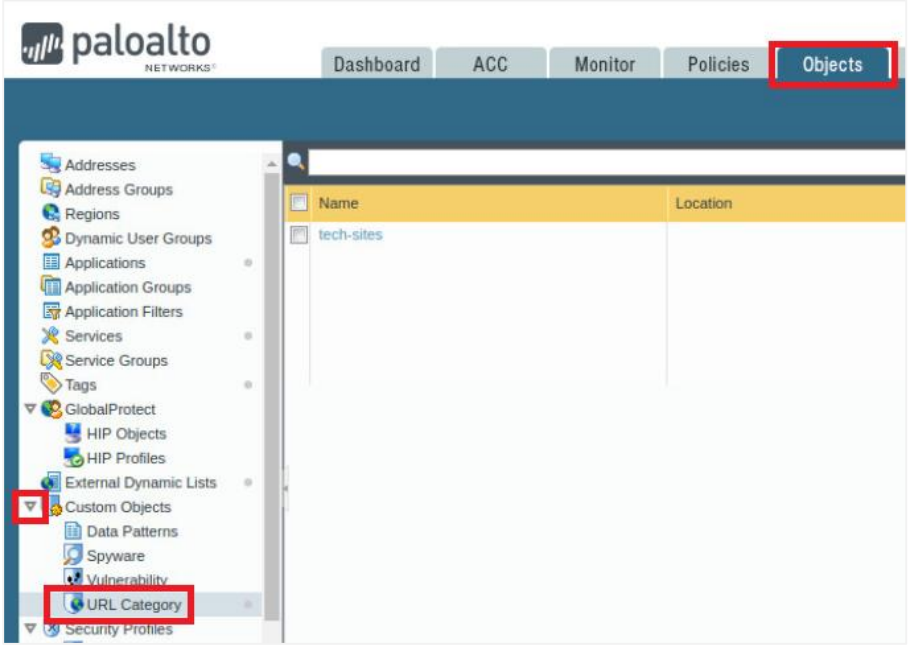


12. Leave the firewall web interface open to continue with the next task.

7.3 Create a Custom Decryption URL Category

In this task, you will create a custom *URL Category* to ensure that only intended traffic is being decrypted.

1. In the web interface, navigate to **Objects > Custom Objects > URL Category**.

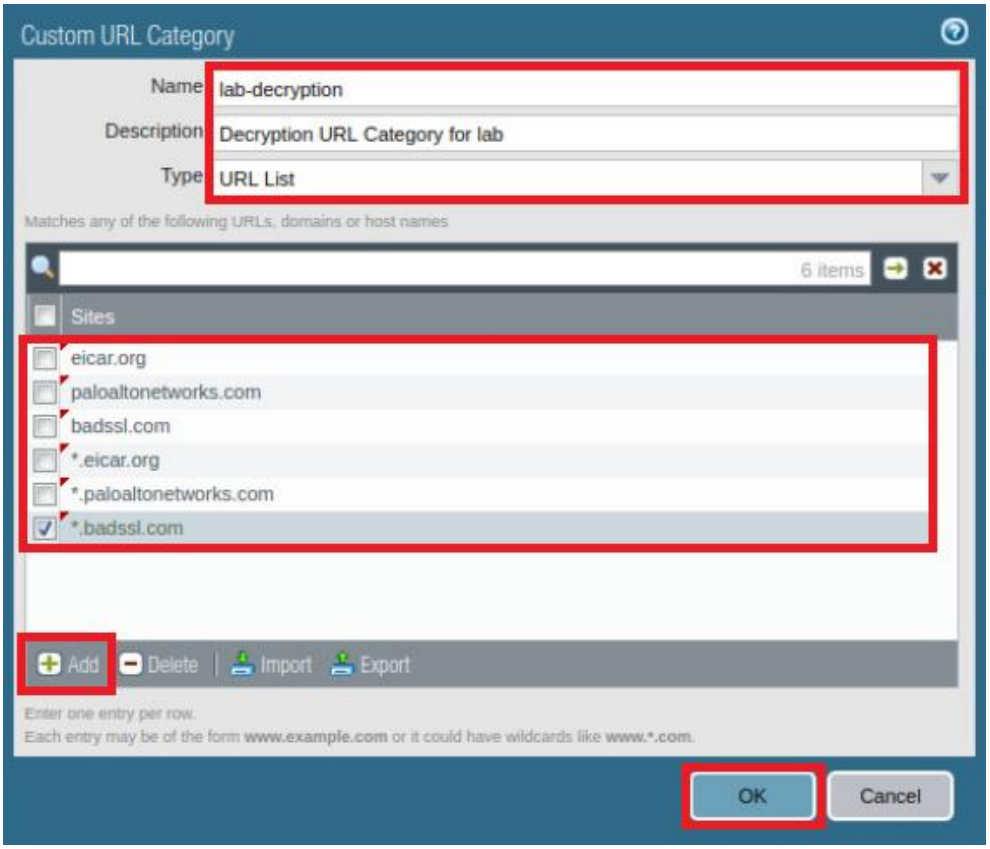


2. Click **Add** to open the *Custom URL Category* configuration window.

3. In the *Custom URL Category* window, configure the following, then click **OK**.

Parameter	Value
Name	Type `lab-decryption`
Description	Type `Decryption URL Category for lab`
Type	Verify that **URL List** is selected

Sites	Click **Add** and type the following websites:
	`eicar.org`
	`paloaltonetworks.com`
	`badssl.com`
	`*.eicar.org`
	`*.paloaltonetworks.com`
	`*.badssl.com`

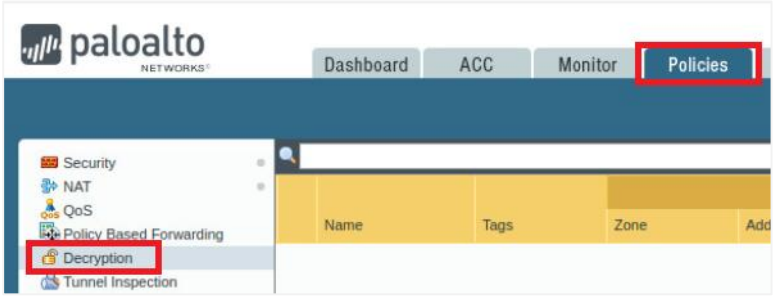


4. Leave the firewall web interface open to continue with the next task.

7.4 Create a Decryption Policy

In this task, you will create a *Decryption Policy* to decrypt traffic that matches the *Custom URL Category* you created in the previous task.

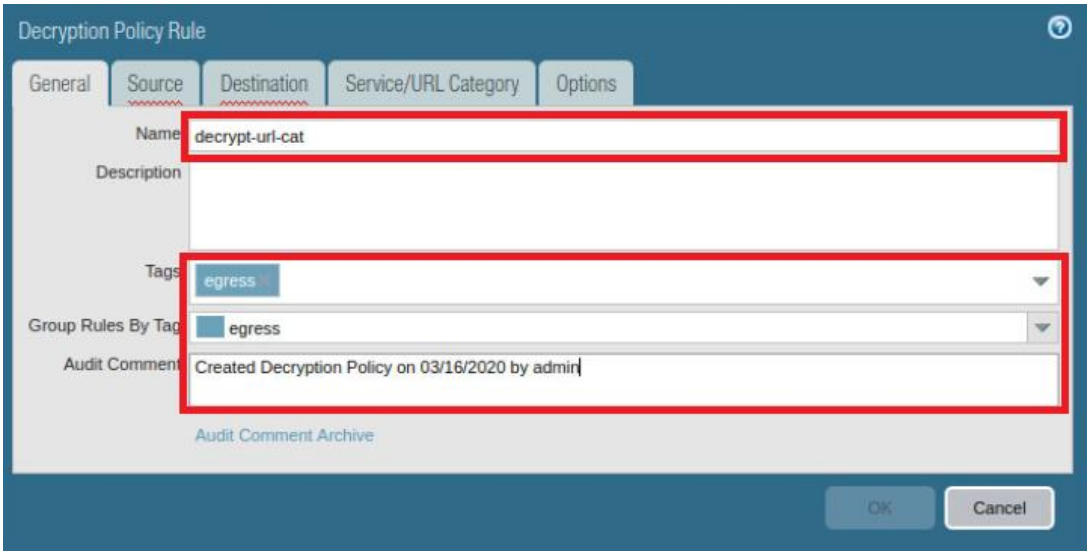
1. In the web interface, select **Policies > Decryption**.



2. Click **Add** to create a Decryption Policy Rule.

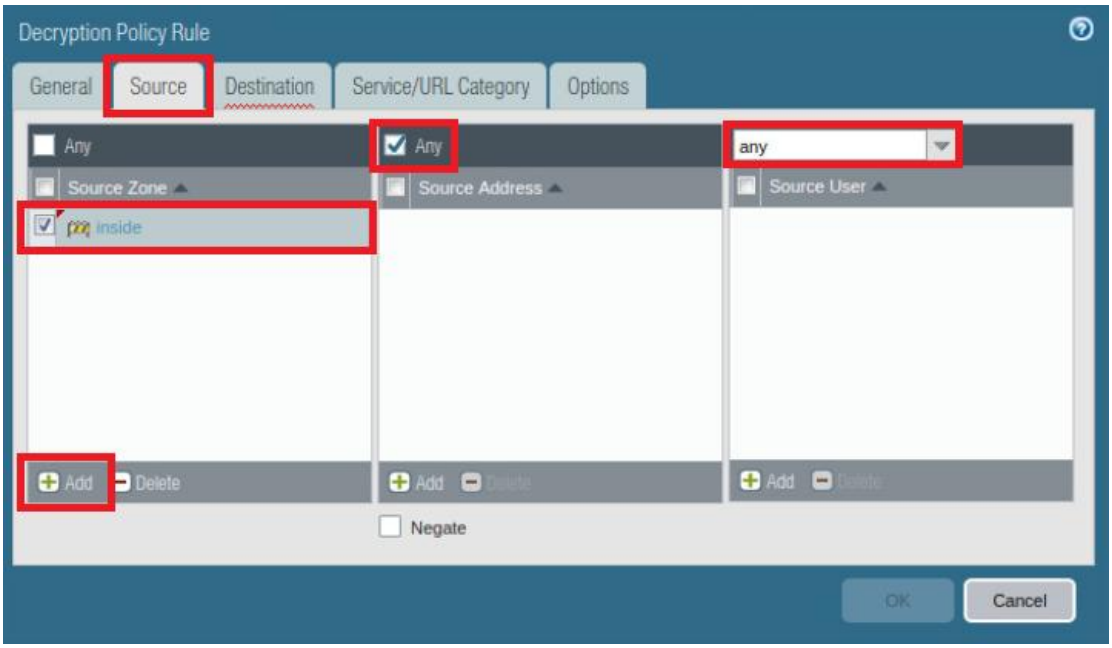
3. In the *Decryption Policy Rule* window, while on the **General** tab, configure the following:

Parameter	Value
Name	Type `decrypt-url-cat`
Tags	Select **egress** from the dropdown list
Group Rules By Tag	Select **egress** from the dropdown list
Audit Comment	Type `Created Decryption Policy on <date> by admin`



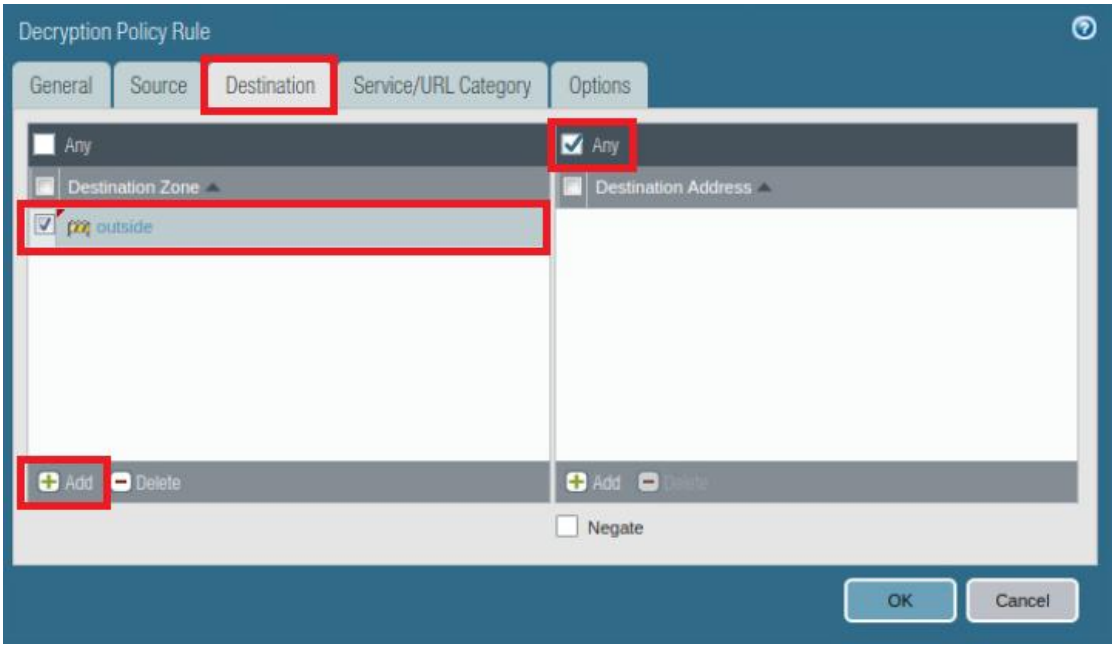
4. In the *Decryption Policy Rule* window, click the **Source** tab and configure the following:

Parameter	Value
Source Zone	Click **Add** and select **inside** from the dropdown list
Source Address	Verify that the **Any** checkbox is selected
Source User	Verify that **any** is selected



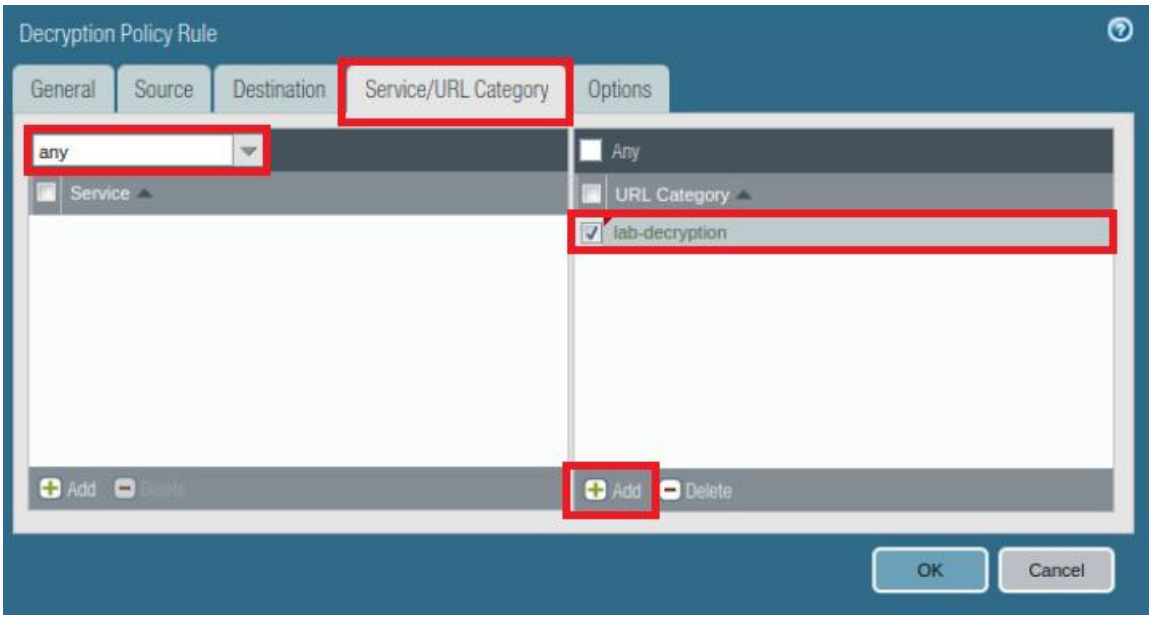
5. In the *Decryption Policy Rule* window, click the **Destination** tab and configure the following:

Parameter	Value
Destination Zone	Click **Add** and select **outside** from the dropdown list
Destination Address	Verify that the **Any** checkbox is selected



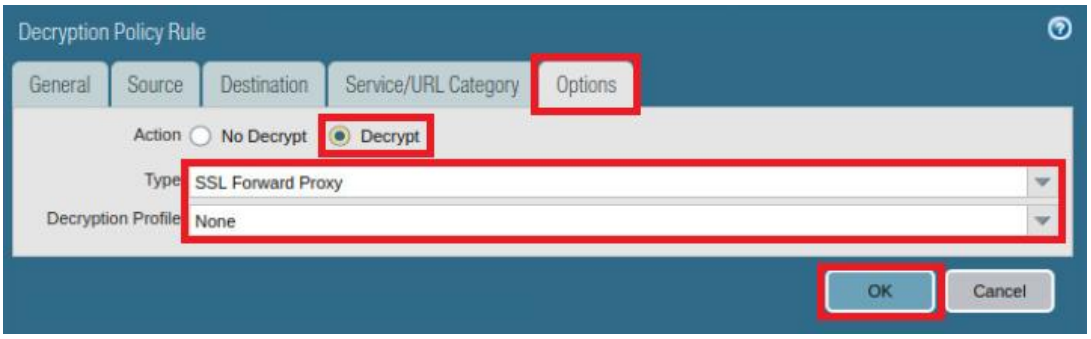
6. In the *Decryption Policy Rule* window, click the **Service/URL Category** tab and configure the following:

Parameter	Value
Service	Verify that **any** is selected
URL Category	Click **Add** and select **lab-decryption** from the dropdown list



7. In the *Decryption Policy Rule* window, click the **Options** tab, configure the following and then click **OK**.

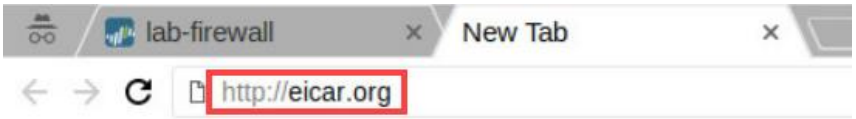
Parameter	Value
Action	Select the **Decrypt** radio button
Type	Verify that **SSL Forward Proxy** is selected
Decryption Policy	Verify that **None** is selected



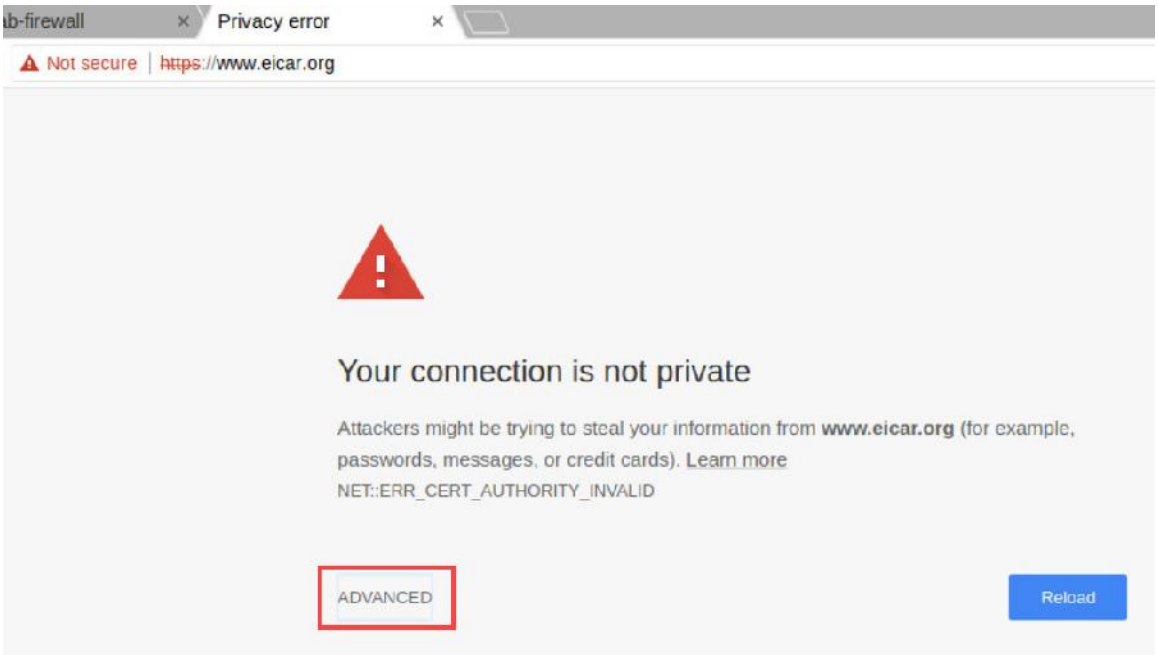
8. **Commit** all changes.

7.5 Test AV Security Profile with the Decryption Policy

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

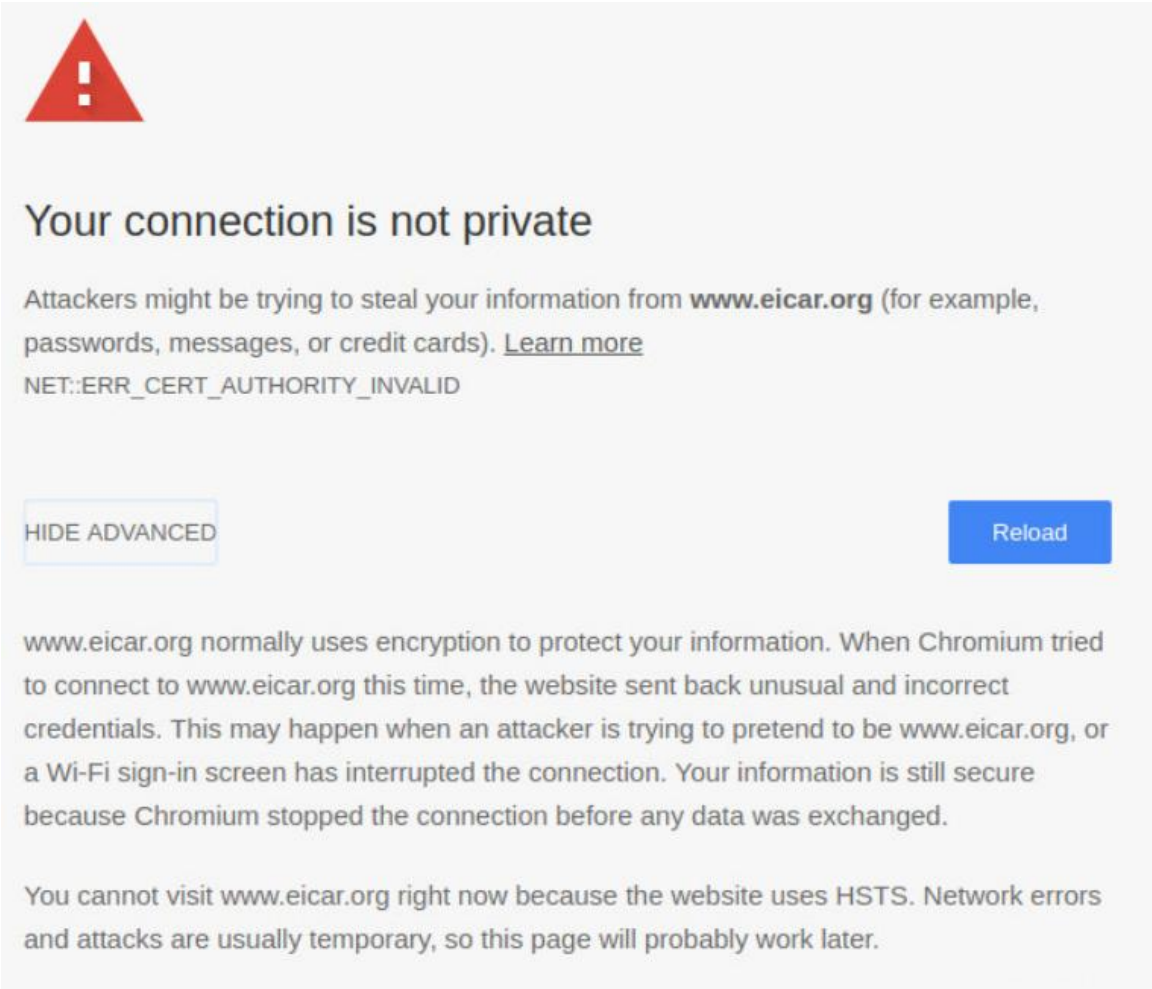


2. Notice a certificate issue is displayed. Continue moving forward by clicking on the **ADVANCED** hyperlink.

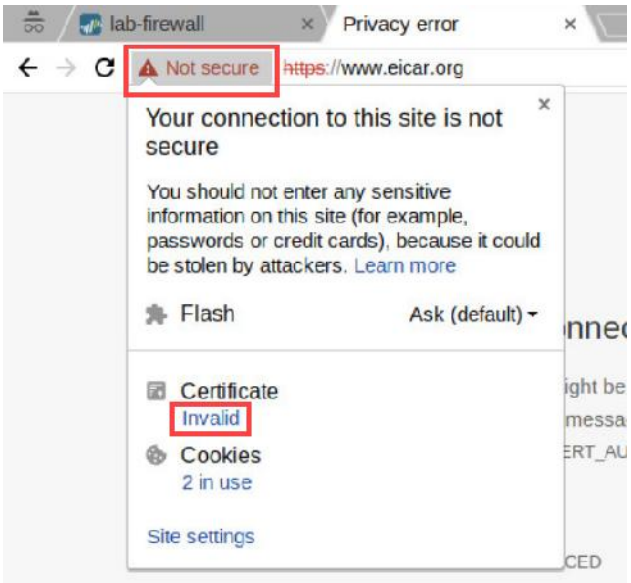


The endpoint (Client desktop) does not trust the certificate generated by the firewall (192.168.1.1).

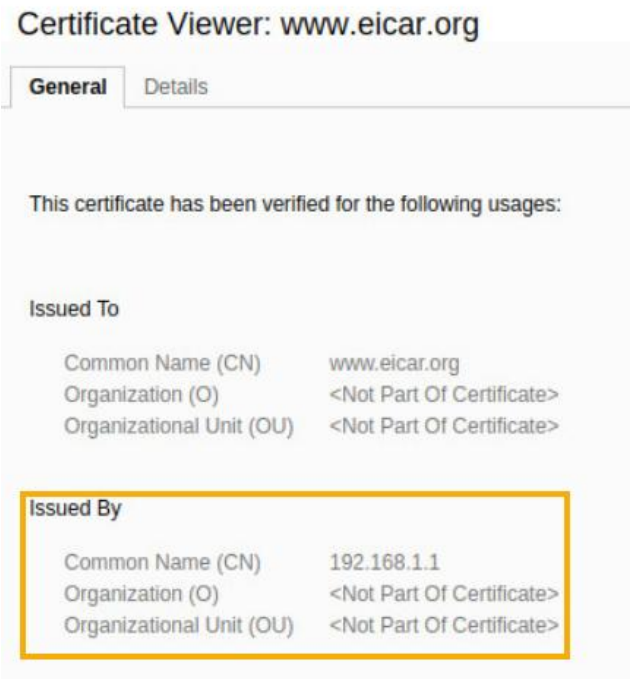
3. Review the message presented by the Chrome browser, stating that you are restricted from being able to proceed further to the website.



4. In the address bar, click on **Not secure** followed by clicking on **Invalid** underneath *Certificate*.



5. Notice who the issuer is by looking in the *Issued By* section.



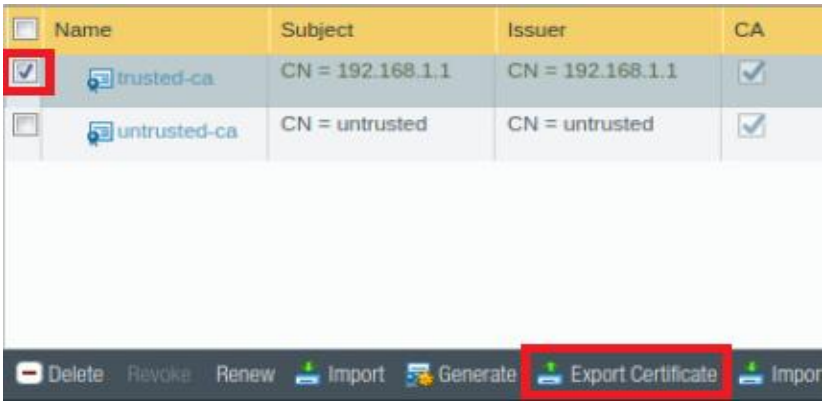
This certificate has been issued on behalf of *www.eicar.org* by the firewall (*192.168.1.1*) using the Trusted Certificate you created earlier. The client browser does not trust this certificate because it is "self-signed" by the firewall. In the next section, you will fix this issue so that the browser trusts certificates issued by the firewall.

6. Close the browser tab.

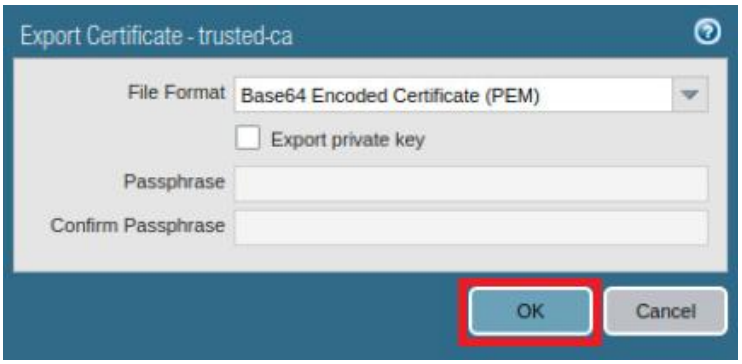
7.6 Export the Firewall Certificate

1. Change focus back to the firewall's web interface and navigate to **Device > Certificate Management > Certificates**.

2. Check the checkbox for **trusted-ca,** then click **Export Certificate** to open the Export Certificate configuration window.



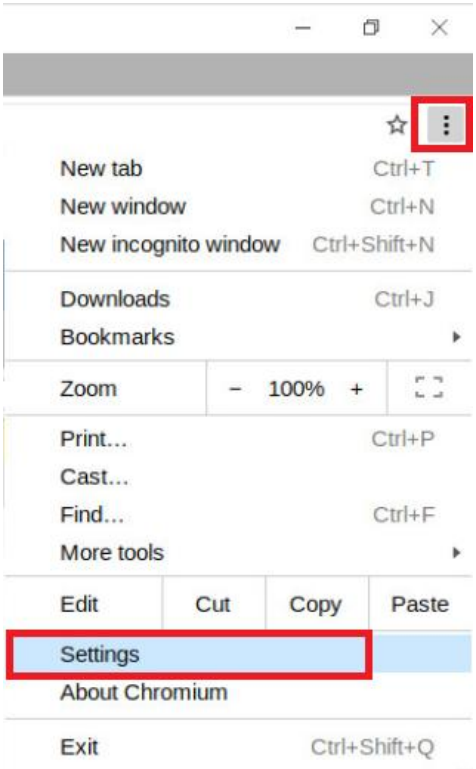
3. In the *Export Certificate - trusted-ca* window, click **OK** to export the *trusted-ca* certificate.



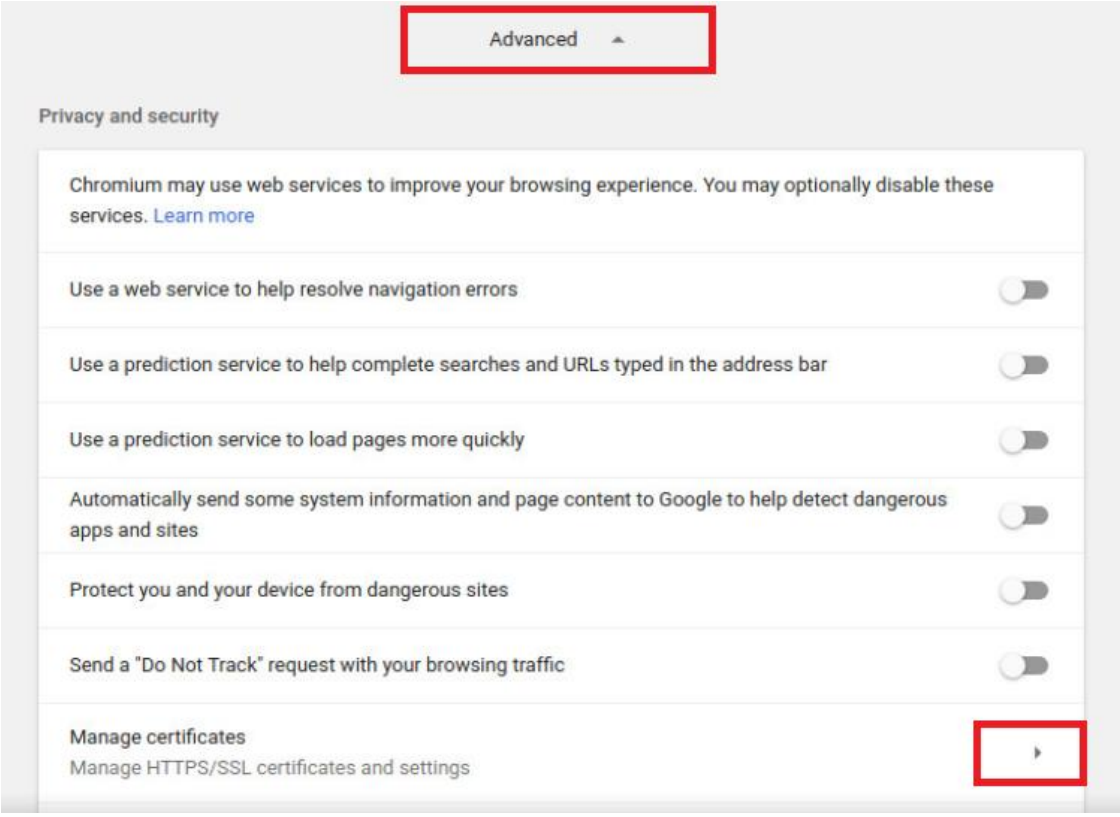
4. In the *Save File* window, choose the default **~/Downloads** and click **Save**.
5. Leave the firewall web interface open to continue with the next task.

7.7 Import the Firewall Certificate

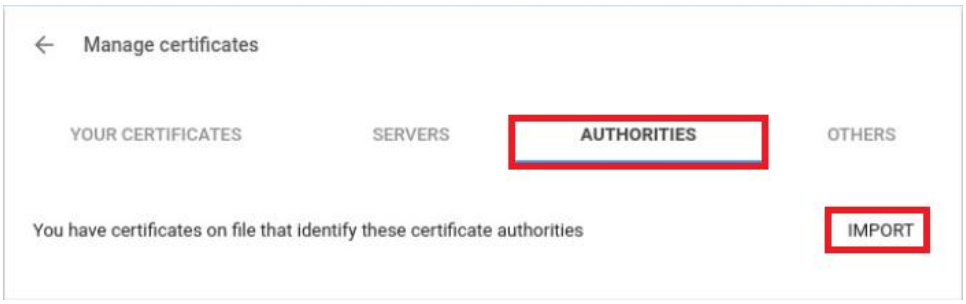
1. In the *Chromium Web Browser*, click **Customize and Control Chromium** and then click **Settings**.



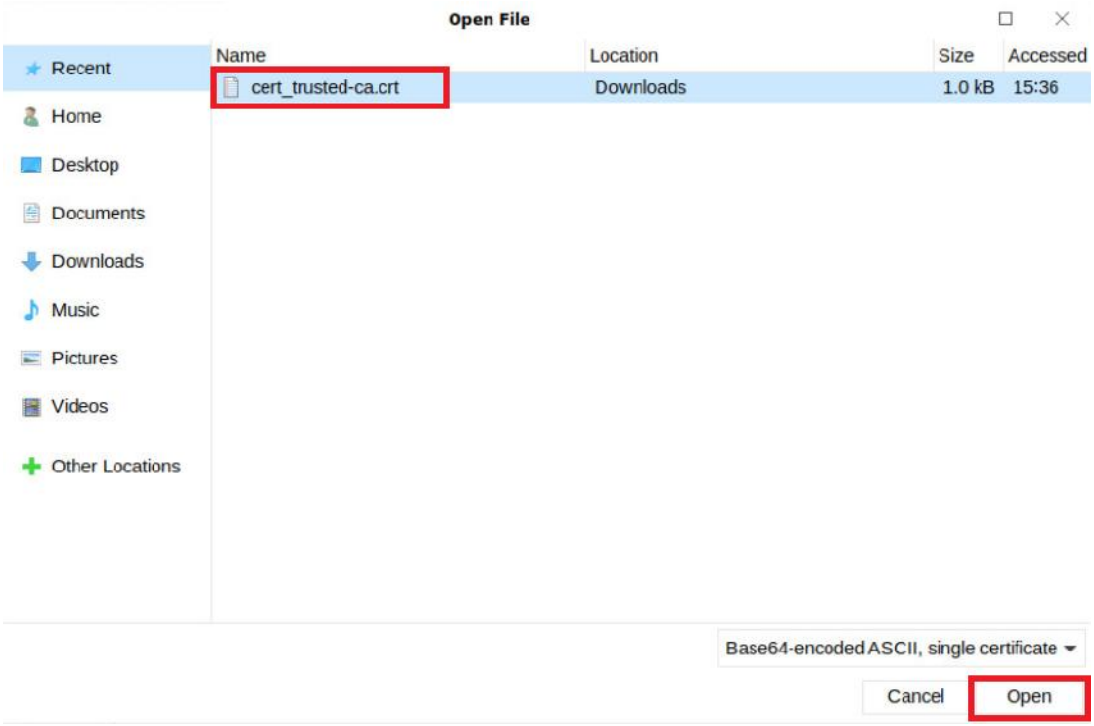
2. Scroll down, click **Advanced** to expand the view, and then click **Manage certificates**.



3. In the *Manage certificates* window, click **AUTHORITIES**, and then click **IMPORT**.

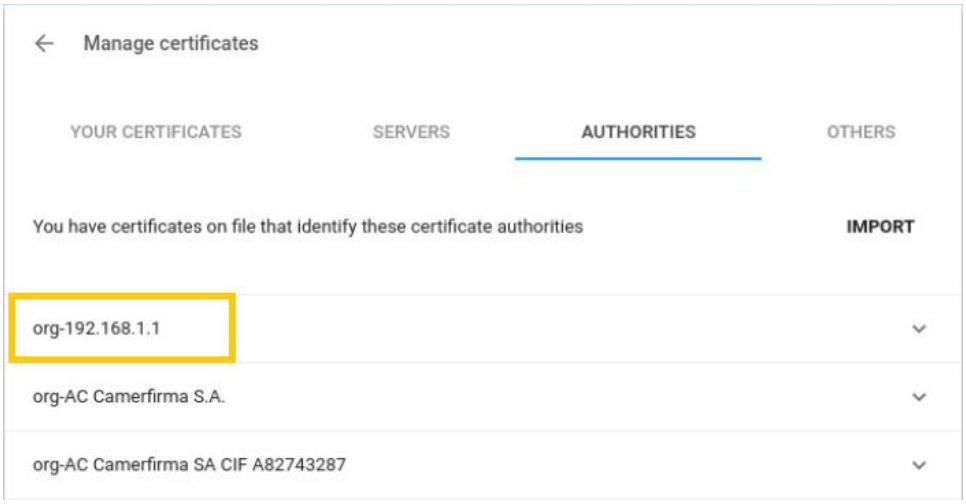


4. Select **cert_trusted-ca.crt**, then click **Open**.



5. In the *Certificate Authority* window, check all the boxes and then click **OK**.

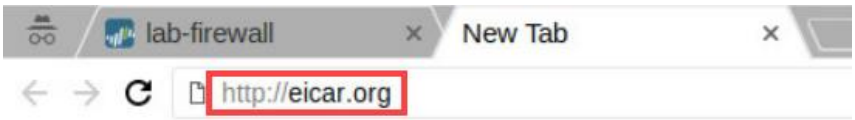
6. Notice that the *trusted-ca* certificate is now imported.



7. Close the **Settings – Chromium** browser window.

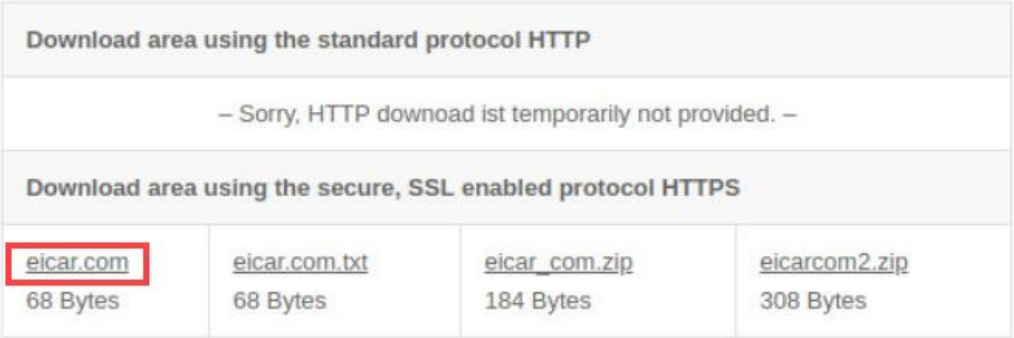
7.8 Test the Decryption Policy

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



2. Click the **Download Anti Malware Testfile** image in the upper-right corner of the webpage.

3. Scroll down and within the *Download* area at the bottom of the page, click the **eicar.com** file to download the file using the SSL-enabled HTTPS protocol.

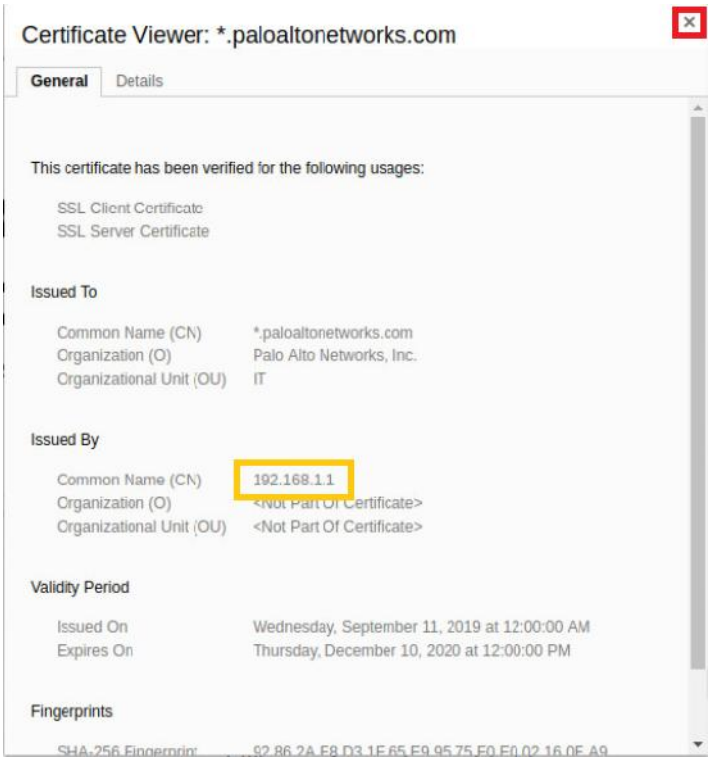


Notice that the *eicar* test file is detected and blocked.

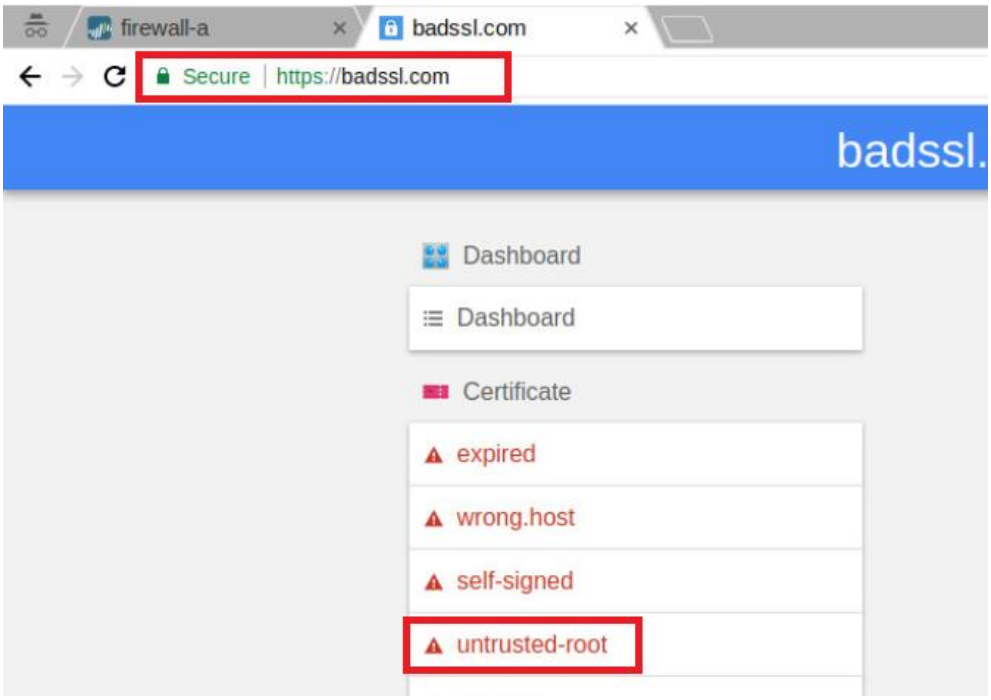
4. In the same browser tab, browse to `https://www.paloaltonetworks.com`. Notice that there is no certificate warning, and the page is displayed correctly.

5. Click the **Secure** icon next to the URL in the browser and click **Valid** under Certificate.

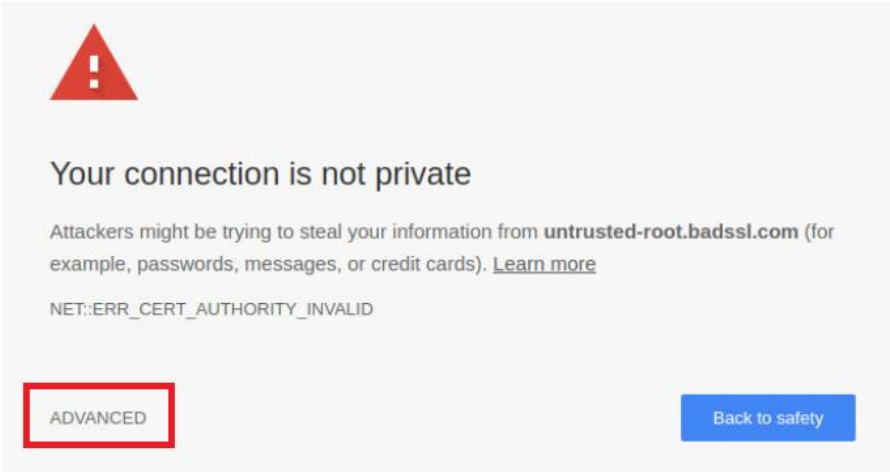
6. Notice that the certificate was issued by *192.168.1.1*, click the **X** to close the *Certificate View: *.paloaltonetworks.com* window.



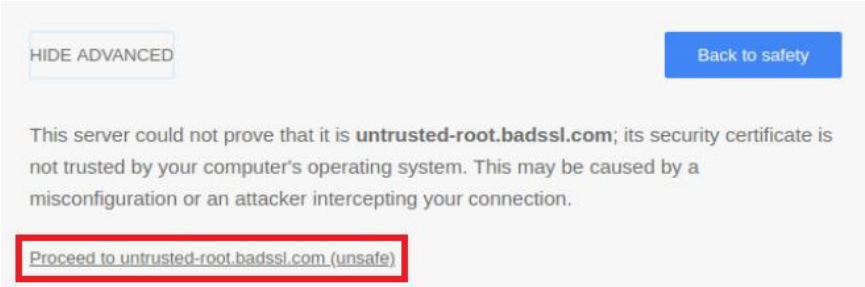
7. In the same browser tab, browse to `https://www.badssl.com` and then click on **untrusted-root**.



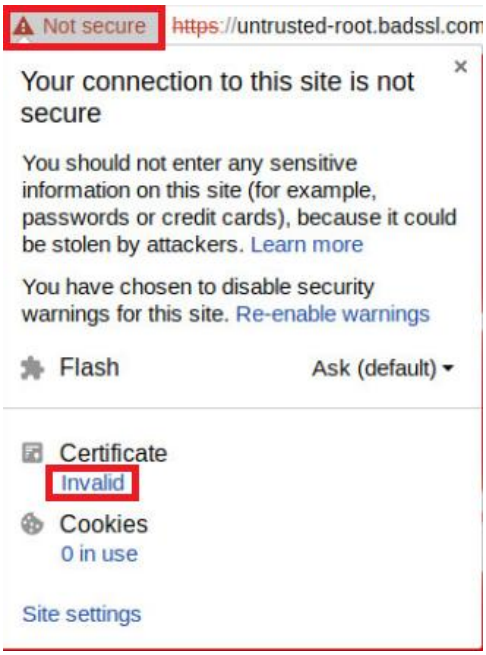
8. Notice that *Your connection is not private* is now displayed. Click on the **Advanced** link.



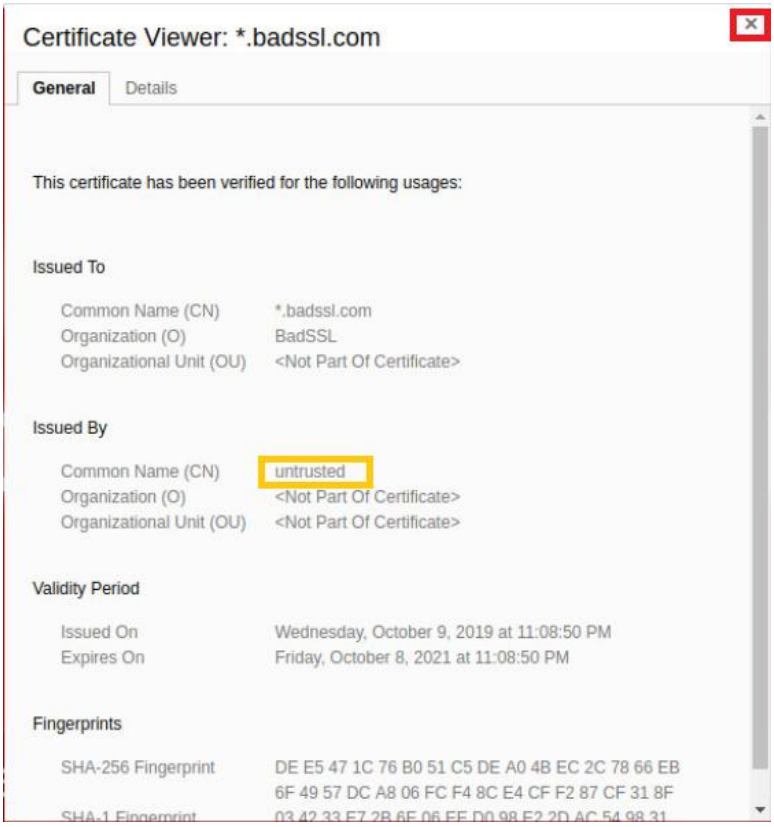
9. Click the **Proceed to untrusted-root.badssl.com (unsafe)** link.



10. Click the **Not Secure** link near the URL and click **Invalid** under Certificate.



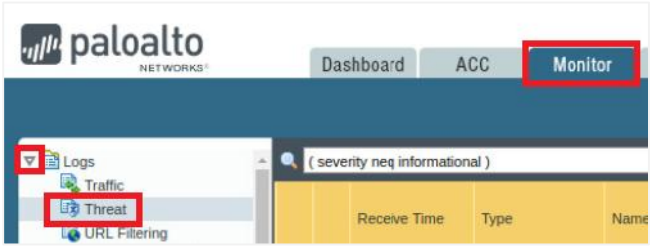
11. Notice that the certificate is still signed by the firewall. However, it was signed with the untrusted certificate. Click the **X** to close the *Certificate View: *.badssl.com* window.



12. Close the browser tab.

7.9 Review Logs

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

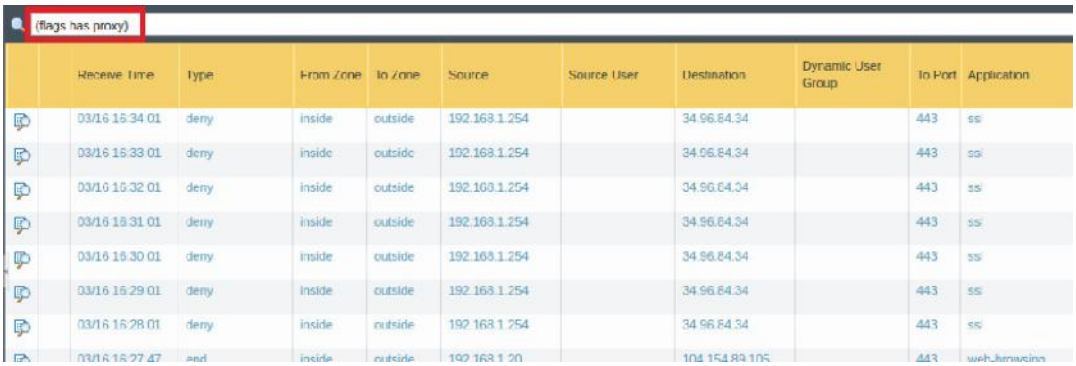


2. Clear any existing filters and notice that there is an entry for when the connection was reset in the browser.

Receive Time	Type	Name	From Zone	To Zone	Source address
03/16 16:08:09	spyware	Suspicious TLS Evasion Found	inside	outside	192.168.1.20
03/16 16:08:08	spyware	Suspicious HTTP Evasion Found	inside	outside	192.168.1.20
03/16 16:07:23	virus	Eicar Test File	inside	outside	192.168.1.20
03/16 16:06:53	virus	Eicar Test File	inside	outside	192.168.1.20
03/16 16:06:46	virus	Eicar Test File	inside	outside	192.168.1.20
03/16 16:06:46	virus	Eicar Test File	inside	outside	192.168.1.20
03/16 16:01:40	spyware	Suspicious HTTP Evasion Found	inside	outside	192.168.1.20

3. Select **Monitor > Logs > Traffic**.

4. Clear any existing filters and then type `(flags has proxy)` in the filter text box. Press **Enter**. This filter flags only traffic entries that were decrypted.



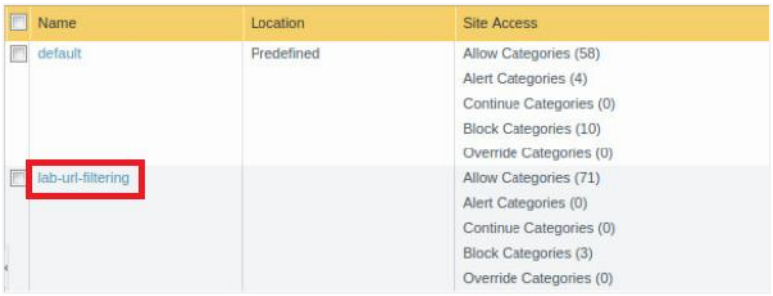
If the *Decrypted* column is not present, hover the mouse over *Receive Time* and click the **dropdown** arrow and check the checkbox for **Decrypted** to add the column view.

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

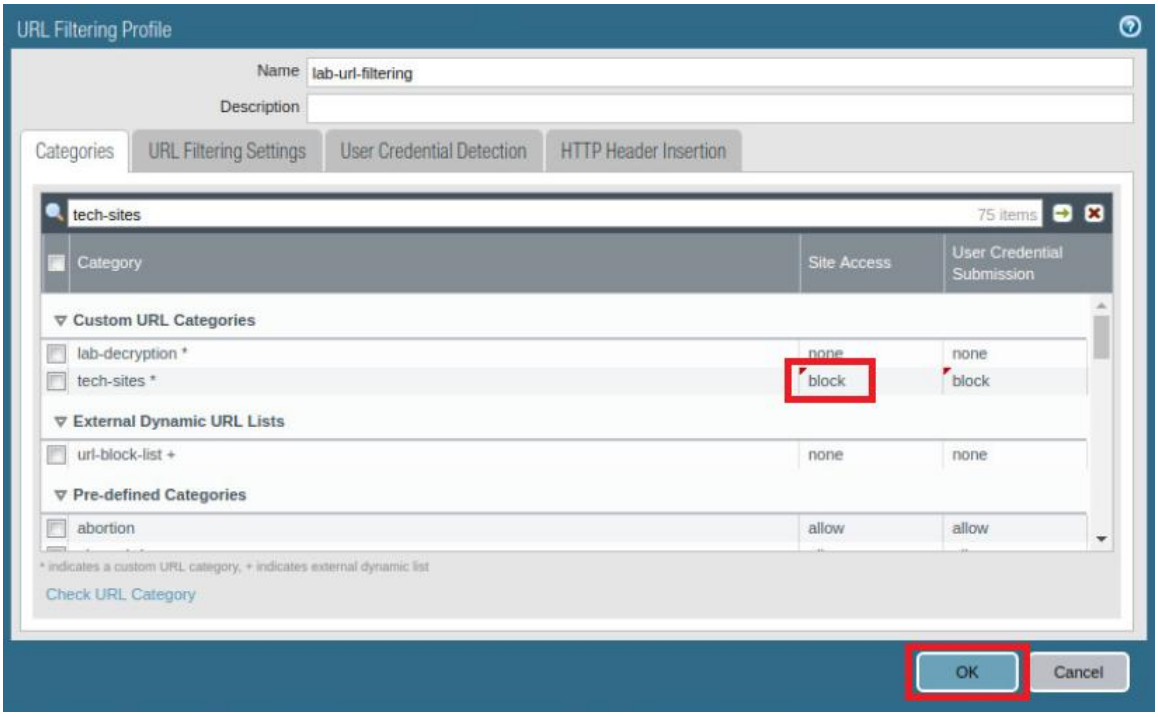
7.10 Test URL Filtering with Decryption

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

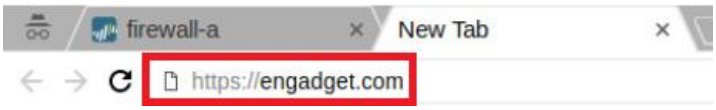
2. Click on **lab-url-filtering** to open the object.



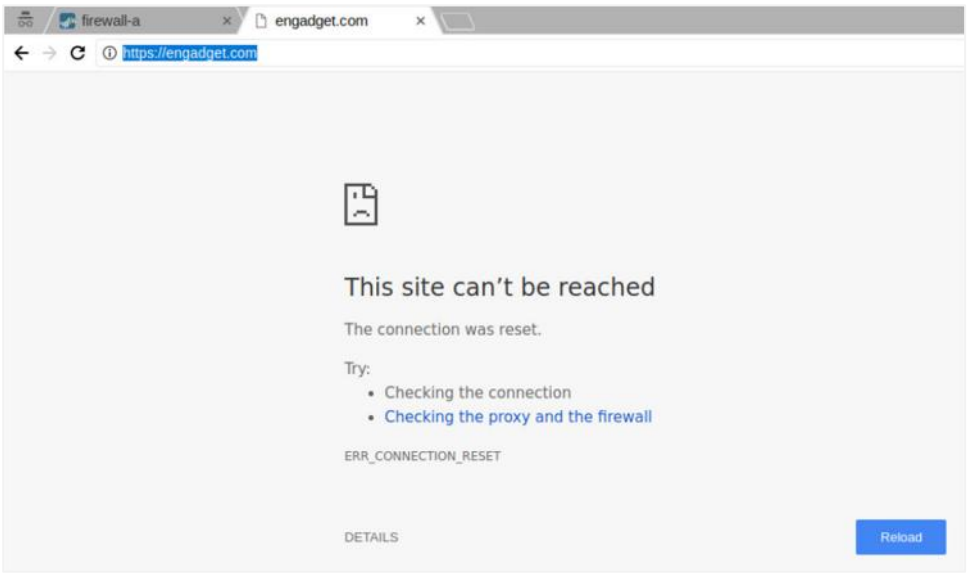
3. In the *URL Filtering Profile* window, while on the *Categories* tab, locate *tech-sites* from the list without utilizing the search feature and change **Site Access** to **block** and then click **OK**.



4. **Commit** all changes.
5. Open a new tab in **Chromium Web Browser** and browse to `https://engadget.com`.



6. Notice that *Engadget* is now blocked because the site can be identified and blocked per the *URL Filtering Profile*.



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

