Decryption Policies

The following topics provide an overview of decryption policy creation, configuration, management, and logging.

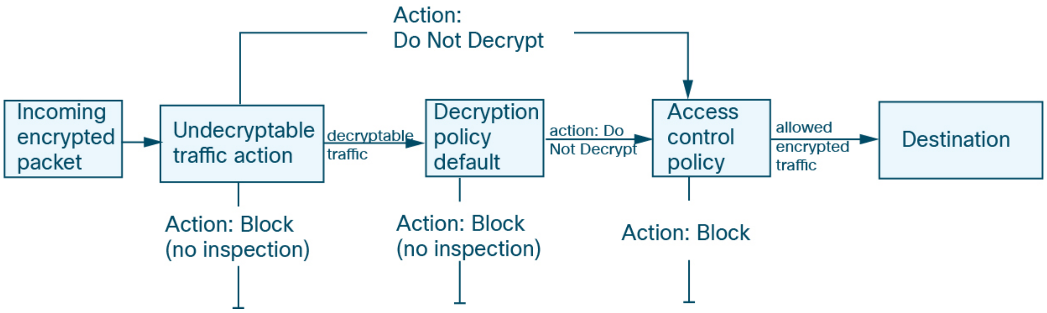
About Decryption Policies

An SSL policy determines how the system handles encrypted traffic on your network. You can configure one or more SSL policies, associate an SSL policy with an access control policy, then deploy the access control policy to a managed device. When the device detects a TCP handshake, the access control policy first handles and inspects the traffic. If it subsequently identifies a TLS/SSL-encrypted session over the TCP connection, the SSL policy takes over, handling and decrypting the encrypted traffic.

You can create multiple rules at the same time, including rules for decrypting incoming traffic (**Decrypt - Known Key** rule action) and outgoing traffic (**Decrypt - Resign** rule action). To create a rule with a **Do Not Decrypt** or other rule action (such as **Block** or **Monitor**), create an empty decryption policy and add the rule afterward.

Do Not Decrypt policy example

Following is an example decryption policy with a **Do Not Decrypt** rule action:



Action:
Do Not Decrypt
Incoming encrypted packet
Undecryptable traffic action
decryptable traffic
Decryption policy default
action: Do Not Decrypt
Access control policy
allowed encrypted traffic
Destination
Action: Block (no inspection)
Action: Block (no inspection)
Action: Block

The simplest SSL policy, as shown in the following diagram, directs the device where it is deployed to handle encrypted traffic with a single default action. You can set the default action to block decryptable traffic without further inspection, or to inspect undecrypted decryptable traffic with access control. The system can then either allow or block the encrypted traffic. If the device detects undecryptable traffic, it either blocks the traffic without further inspection or does not decrypt it, inspecting it with access control.

Requirements and Prerequisites for SSL Policies

Supported domains

Any

User roles

- Admin
- Access Admin
- Network Admin

Create a Decryption Policy

This topic discusses how to create a decryption policy and optionally one or more rules to protect internal or external servers. You can also create a decryption policy without rules and add the rules later. Creating an empty policy is a good choice to create rules with a **Do Not Decrypt**, **Block**, **Block With Reset**, or **Monitor** rule actions.

Before you begin

Review your needs for decryption:

- Decryption is a way to expose network traffic to deep inspection; however, there are times you should *not* decrypt traffic: When to decrypt traffic, when not to decrypt.
- To protect *internal* servers by decrypting and optionally inspecting traffic, you must have the internal certificate for your internal server: PKI.
- To protect *external* servers by decrypting and optionally inspecting traffic, you must upload an internal CA object that will be used to decrypt ad resign the traffic: PKI.

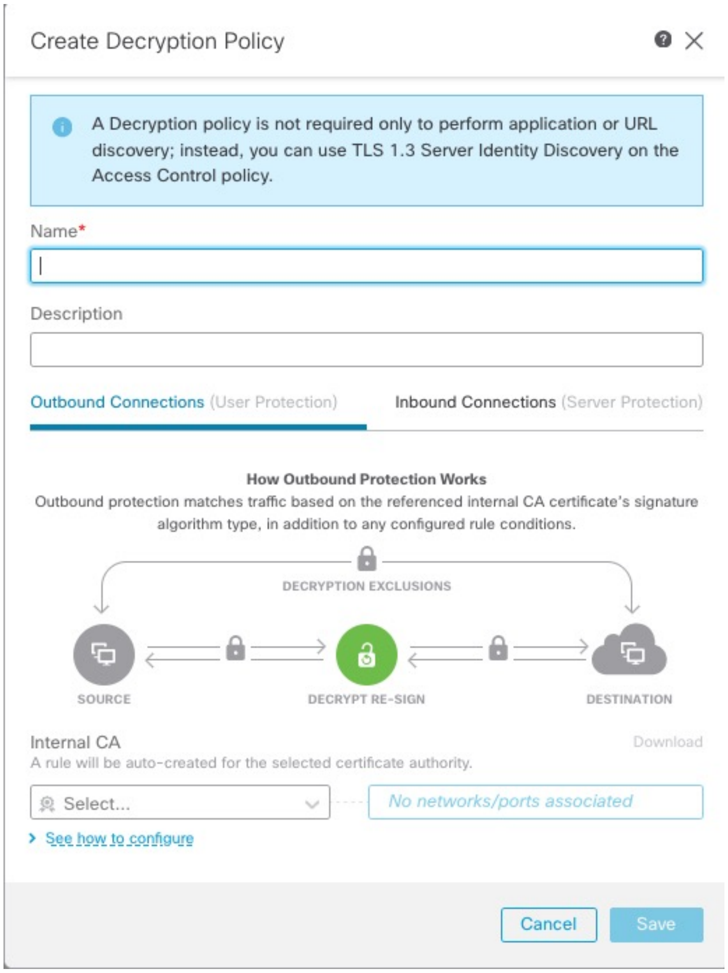
Procedure

Step 1 Log in to the Firewall Management Center if you haven't already done so.

Step 2 Click **Policies** > **Access Control heading** > **SSL**.

Step 3 Click **New Policy**.

Step 4 Enter a name for the policy in the **Name** field and an optional description in the **Description** field.



Create Decryption Policy

A Decryption policy is not required only to perform application or URL discovery; instead, you can use TLS 1.3 Server Identity Discovery on the Access Control policy.

Name*

Description

How Outbound Protection Works

Outbound protection matches traffic based on the referenced internal CA certificate's signature algorithm type, in addition to any configured rule conditions.

Internal CA

A rule will be auto-created for the selected certificate authority.

Outbound Connections (User Protection)
Inbound Connections (Server Protection)
DECRYPTION EXCLUSIONS
SOURCE
DECRYPT RE-SIGN
DESTINATION
Download
Select...
No networks/ports associated
See how to configure
Cancel
Save

The **Outbound Connections** tab page enables you to create **Decrypt - Resign** rules. These rules require an internal certificate that you can either create beforehand (using **Objects** > **Object Management** > **PKI** > **Internal CAs**) or you can create them as part of the outbound connection rule.

the **Inbound Connections** tab page enables you to create **Decrypt - Known Key** rules. These rules require an internal certificate that you can either create beforehand (using **Objects** > **Object Management** > **PKI** > **Internal Certs**) or you can create them as part of the inbound connection rule.

Step 5 Associate the decryption rule with an access control rule as discussed in Associating other policies with access control.

SSL Policy default actions

The default action for an SSL policy determines how the system handles decryptable encrypted traffic that does not match any non-monitor rule in the policy. When you deploy an SSL policy that does not contain any TLS/SSL rules, the default action determines how all decryptable traffic on your network is handled. Note that the system does not perform any kind of inspection on encrypted traffic blocked by the default action.

Table 1: SSL Policy Default Actions

Default Action	Effect on Encrypted Traffic
Block	Block the TLS/SSL session without further inspection.
Block with reset	Block the TLS/SSL session without further inspection and reset the TCP connection. Choose this option if traffic uses a connectionless protocol like UDP. In that case, the connectionless protocol tries to reestablish the connection until it is reset. This action also displays a connection reset error in the browser so the user is informed that the connection is blocked.
Do not decrypt	Inspect the encrypted traffic with access control.

Default handling options for undecryptable traffic

Table 2: Undecryptable Traffic Types

Type	Description	Default Action	Available Action
Compressed Session	The TLS/SSL session applies a data compression method.	Inherit default action	Do not decrypt Block Block with reset Inherit default action
SSLv2 Session	The session is encrypted with SSL version 2. Note that traffic is decryptable if the ClientHello message is SSL 2.0, and the remainder of the transmitted traffic is SSL 3.0.	Inherit default action	Do not decrypt Block Block with reset Inherit default action
Unknown Cipher Suite	The system does not recognize the cipher suite.	Inherit default action	Do not decrypt Block Block with reset Inherit default action
Unsupported Cipher Suite	The system does not support decryption based on the detected cipher suite.	Inherit default action	Do not decrypt Block Block with reset Inherit default action

Type	Description	Default Action	Available Action
Session not cached	The TLS/SSL session has session reuse enabled, the client and server reestablished the session with the session identifier, and the system did not cache that session identifier.	Inherit default action	Do not decrypt Block Block with reset Inherit default action
Handshake Errors	An error occurred during TLS/SSL handshake negotiation.	Inherit default action	Do not decrypt Block Block with reset Inherit default action
Decryption Errors	An error occurred during traffic decryption.	Block	Block Block with Reset

When you first create an SSL policy, logging connections that are handled by the default action is disabled by default. Because the logging settings for the default action also apply to undecryptable traffic handling, logging connections handled by the undecryptable traffic actions is disabled by default.

Note that if your browser uses certificate pinning to verify a server certificate, you cannot decrypt this traffic by re-signing the server certificate. For more information, see TLS/SSL Rules guidelines and limitations.

Related Topics

Set default handling for undecryptable traffic, on page 5

Set default handling for undecryptable traffic

You can set undecryptable traffic actions at the SSL policy level to handle certain types of encrypted traffic the system cannot decrypt or inspect. When you deploy an SSL policy that contains no TLS/SSL rules, the undecryptable traffic actions determine how all undecryptable encrypted traffic on your network is handled.

Depending on the type of undecryptable traffic, you can choose to:

- Block the connection.
- Block the connection, then reset it. This option is preferrable for connectionless protocols like UDP, which keep trying to connect until the connection is blocked.
- Inspect the encrypted traffic with access control.
- Inherit the default action from the SSL policy.

Procedure

Step 1 Log in to Secure Firewall Management Center if you haven't already done so.

Step 2 Click **Policies** > **Access Control heading** > **SSL**.

Step 3 Click **Edit** (✏) next to the name of the SSL policy.

Step 4 In the SSL policy editor, click **Undecryptable Actions**.

Step 5 For each field, choose either the SSL policy's default action or another action you want to take on the type of undecryptable traffic. See Default handling options for undecryptable traffic, on page 4 and SSL Policy default actions, on page 3 for more information.

Step 6 Click **Save** to save the policy.

What to do next

- Configure default logging for connections handled by the undecryptable traffic actions; see *Logging Connections with a Policy Default Action* in the *Cisco Secure Firewall Management Center Administration Guide*.
- Deploy configuration changes; see Deploy Configuration Changes.

SSL Policy advanced options

An SSL policy 's **Advanced Settings** page has global settings that are applied to all managed devices that are configured for Snort 3 to which the policy is applied.

An SSL policy advanced settings are all ignored on any managed device that runs:

- A version earlier than 7.1
- Snort 2

Block flows requesting ESNI

Encrypted Server Name Indication (ESNI (link to draft proposal)) is a way for a client to tell a TLS 1.3 server what the client is requesting. Because the SNI is encrypted, you can optionally block these connections because the system cannot determine what the server is.

Disable HTTP/3 advertisement

This option strips HTTP/3 (RFC 9114) from the ClientHello in TCP connections. HTTP/3 is part of the QUIC transport protocol, not the TCP transport protocol. Blocking clients from advertising HTTP/3 provides protection against attacks and evasion attempts potentially burried within QUIC connections.

Propagate untrusted server certificates to clients

This applies only to traffic matching a **Decrypt - Resign** rule action.

Enable this option to substitute the certificate authority (CA) on the managed device for the server's certificate in cases where the server certificate is untrusted. An *untrusted* server certificate is one that is not listed as a trusted CA in the Secure Firewall Management Center. (**Objects** > **Object Management** > **PKI** > **Trusted CAs**).

Enable TLS 1.3 decryption

Whether to apply decryption rules to TLS 1.3 connections. If you do not enable this option, the decryption rules apply to TLS 1.2 or lower traffic only. See TLS 1.3 decryption best practices, on page 7.

TLS 1.3 decryption best practices

Recommendation: When to enable advanced options

Both the SSL policy and the access control policy have advanced options that affect how traffic is handled, whether the traffic is being decrypted or not.

The advanced options are:

- Decryption policy:
  - TLS 1.3 decryption
  - TLS adaptive server identity probe
- Access control policy: TLS 1.3 Server Identity Discovery

  The access control policy setting takes precedence over the decryption policy setting.

Use the following table to decide which option to enable:

TLS adaptive server identity probe setting (decryption policy)	TLS 1.3 Server Identity Discovery setting (access control policy)	Result	Recommended when
Enabled	Disabled	Adaptive probe sent if decryption policy contains *any* rule conditions specified in SSL Policy advanced options, on page 6 *and* if the server certificate is not cached.	• You're not using application or URL conditions in access control rules • You're decrypting traffic
Enabled	Enabled	Probe is always sent if the server certificate is not cached.	Use only if your access control rules have URL or application conditions
Disabled	Enabled	Probe is always sent if the server certificate is not cached.	Not recommended.
Disabled	Disabled	Probe is never sent.	Very limited usefulness; use only if not decrypting traffic and not using application or URL conditions in the access control rule

Note A cached TLS server's certificate is available to all Snort instances on a particular Firewall Threat Defense. The cache can be cleared with a CLI command and is automatically cleared when the device is rebooted.

Reference

For more information, see the discussion of TLS server identity discovery on secure.cisco.com.