SonicOS 7

DPI-SSH

Administration Guide

SONICWALL®

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Configuring DPI-SSH

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About DPI-SSH

IMPORTANT: Gateway Anti-Virus service does not work for DPI-SSH because TCP streams for Anti-Spyware are not supported. If the option is checked, the system takes no action.

Deep Packet Inspection (DPI) technology allows a packet filtering-firewall to classify passing traffic based on signatures of the Layer 3 and Layer 4 contents of the packet. DPI also provides information that describes the contents of the packet's payload (the Layer 7 application data). DPI is an existing SonicOS feature that examines the data and the header of a packet as it passes through the SonicWall firewall, searching for protocol non-compliance, viruses, spam, intrusions, or defined criteria to decide whether the packet might pass or if it needs to be routed to a different destination for action or other tracking.

SSH (Secure Shell) is a cryptographic network protocol for secure data communication, remote command-line login, remote command execution, and other secure network services between two networked computers. SSH connects, by way of a secure channel over an insecure network—a server and a client running SSH server and SSH client programs, respectively. The protocol distinguishes between two different versions, referred to as SSH-1 and SSH-2. SonicWall only supports SSH-2; SSH-1 sessions are not intercepted and inspected.

IMPORTANT: SSH clients with different version numbers cannot be used at the same time.

To effectively inspect an encrypted message, such as SSH, the payload must be decrypted first. DPI-SSH works as a man-in-the-middle (MITM) or a packet proxy. Any preset end-to-end communication is broken, and preshared keys cannot be used.

DPI-SSH divides the one SSH tunnel into two tunnels as it decrypts the packets coming from both tunnels and performs the inspection. If the packet passes the DPI check, DPI-SSH sends the re-encrypted packet to the tunnels. If the packet fails the check, it is routed to another destination, based on the policies, or submitted for collecting statistical information, and DPI-SSH resets the connection.

Topics:

Supported Clients/Servers and Connections

SSH is not a shell, but a secure channel that provides different services over this channel (tunnel), including shell, file transfer, or X11 forwarding.

DPI-SSH supports both route mode and Wire Mode. For Wire Mode, DPI-SSH is only supported in the secure (active DPI of inline traffic) mode. For route mode, there is no limitation.

SSH supports different client and server implementations, as listed in Supported Clients/Servers.

SUPPORTED CLIENTS/SERVERS

DPI-SSH Client Supported	DPI-SSH Servers Supported
SSH client for Cygwin	SSH server on Fedorz
Putty	SSH server on Ubuntu
secureCRT	
SSH on Ubuntu	
SSH n centos	
SFTP client on Cygwin	
SCP on Cygwin	
Winscp	

DPI-SSH supports up to 250 connections.

Supported Key Exchange Algorithms

DPI-SSH supports these key exchange algorithms:

- Diffie-Hellman-group1-sha1
- Diffie-Hellman-group14-sha1
- ecdh-sha2-nistp256

DPI-SSH supports DSA keys on the client side and RSA keys on the server side.

Caveats

If there is already an SSH server key stored in the local machine, it must be deleted. For example, if you already SSH to a server, and the server DSS key is saved, the SSH session fails if the DSS key is not deleted from the local file.

The `ssh-keygen` utility cannot be used to bypass the password.

Putty uses GSSAPI. This option is for SSH2 only, which provides stronger encrypted authentication. It stores a local token or secret in the local client and server for the first time communication. It exchanges messages and operations before DPI-SSH starts, however, so DPI-SSH has no knowledge about what was exchanged before, including he GSSAPI token. DPI-SSH fails with the GSSAPI option enabled.

On the client side, either the SSH 2.x or 1.x client can be used if DPI-SSH is enabled. Clients with different version numbers, however, cannot be used at the same time.

Gateway Anti-Virus and Application Firewall inspections are not supported even if these options are selected on the **POLICY | DPI-SSH > Settings** page.

Activating Your DPI-SSH License

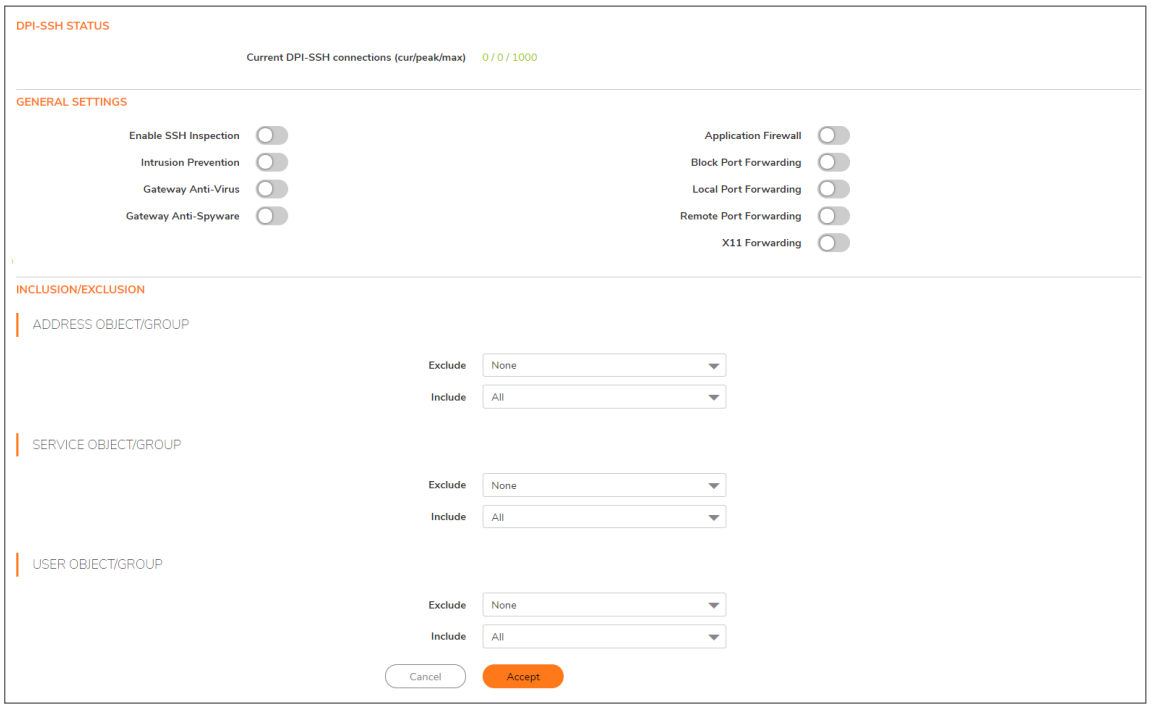
DPI-SSH is fully licensed by default, but you need to activate your license. When you first select **POLICY | DPI-SSH > Settings**, you receive the message: Upgrade Required.

If the upgrade is not required, skip to *Configuring DPI-SSH*. For information about activating your license, see the *Quick Start Guide* for your appliance.

Managing DPI-SSH

Gateway Anti-Virus service does not work for DPI-SSH because TCP streams for Anti-Spyware are not supported. If the checkbox is checked, the system takes no action.

Configure DPI-SSH on the **POLICY | DPI-SSH > Settings** page.



Topics:

Viewing Connection Status

To view the status of DPI-SSH connections:

1. Navigate to **POLICY | DPI-SSH > Settings**.
2. Scroll to **DPI-SSH Status**.

The status displays the number of:

- Current DPI-SSH connections
- Peak DPI-SSH connections
- Maximum number of DPI-SSH connections

Configuring Client DPI-SSH Inspection

You configure Client DPI-SSH inspection in the General Settings section of Decryption Services > DPI-SSH.

To enable Client DPI-SSH inspection:

1. In the **General Settings** section, select the **Enable SSH Inspection** option. This option is not selected by default.

2. Select one or more types of service inspections; none are selected by default:
   - **Intrusion Prevention**
   - **Gateway Anti-Virus**
   - **Gateway Anti-Spyware**

     IMPORTANT: Gateway Anti-Virus service does not work for DPI-SSH because TCP streams for Anti-Spyware are not supported. If the option is checked, the system takes no action.
   - **Application Firewall**

- **Block Port Forwarding**: for more information about these options, see *DPI-SSH Blocking of Port Forwarding*:
  - **Local Port Forwarding**
  - **Remote Port Forwarding**
  - **X11 Forwarding**

3. Click **Accept**.

DPI-SSH Blocking of Port Forwarding

SSH makes it possible to tunnel other applications through SSH by using port forwarding. Port forwarding allows local or remote computers (for example, computers on the internet) to connect to a specific computer or service within a private LAN. Port forwarding translates the address and/or port number of a packet to a new destination address and forwards it to that destination according the routing rules. Because these packets have new destination and port numbers, they can bypass the firewall security policies.

To prevent circumvention of the application-based security policies on the SonicWall network security appliance, SonicOS supports blocking SSH port forwarding for both Local and Remote port forwarding.

- *Local port forwarding* allows a computer on the local network to connect to another server, which might be an external server.
- *Dynamic port forwarding* allows you to configure one local port for tunneling data to all remote destinations. This can be considered as a special case of Local port forwarding.
- *Remote port forwarding* allows a remote host to connect to an internal server.

SSH port forwarding supports the following servers:

- SSH server on Fedora
- SSH server on Ubuntu

SSH port forwarding supports both:

- Route mode
- Wire mode – only supported in Secure Mode

SSH port forwarding supports a maximum of 1000 connections, matching the maximum supported by DPI-SSH.

DPI-SSH must be enabled for blocking of SSH port forwarding to work. If any local or remote port forwarding requests are made when the blocking feature is enabled, SonicOS blocks those requests and resets the connection.

To enable blocking of SSH port forwarding:

1. Navigate to the **POLICY | DPI-SSH > Settings** page.

2. In the **General Settings** section, select **Block Port Forwarding**.

3. Select either or both **Local Port Forwarding** and **Remote Port Forwarding** to block that type of port forwarding.
4. Click **Accept**.

DPI-SSH port forwarding supports the following clients:

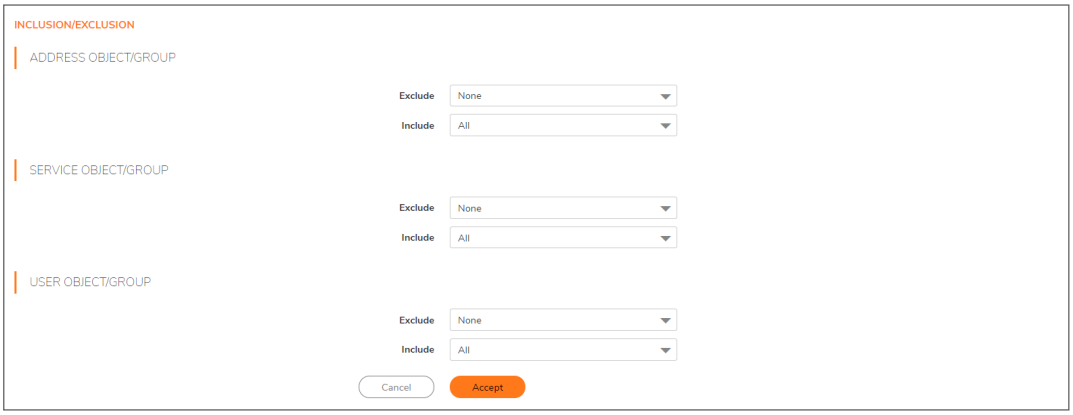
- SSH client for Cygwin
- Putty
- SecureCRT
- SSH on Ubuntu
- SSH on CentOS

Customizing Client DPI-SSH Inspection

By default, when DPI-SSH is enabled, it applies to all traffic on the firewall. You can customize to which traffic DPI-SSH inspection applies in the **Inclusion/Exclusion** section.

To customize DPI-SSH client inspection:

1. Go to the **Inclusion/Exclusion** section of the **POLICY | DPI-SSH > Settings** page.



2. From the **Address Object/Group Exclude** and **Include** drop-down menus, select an address object or group to exclude or include from DPI-SSH inspection. By default, **Exclude** is set to **None** and Include is set to **All**.
3. From the **Service Object/Group Exclude** and **Include** drop-down menus, select an address object or group to exclude or include from DPI-SSH inspection. By default, **Exclude** is set to **None** and Include is set to **All**.
4. From the **User Object/Group Exclude** and **Include** drop-down menus, select an address object or group to exclude or include from DPI-SSH inspection. By default, **Exclude** is set to **None** and Include is set to **All**.
5. Click **Accept**.

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SonicWall Support

Technical support is available to customers who have purchased SonicWall products with a valid maintenance contract.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. To access the Support Portal, go to https://www.sonicwall.com/support.

The Support Portal enables you to:

- View knowledge base articles and technical documentation
- View and participate in the Community forum discussions at https://community.sonicwall.com/technology-and-support.
- View video tutorials
- Access https://mysonicwall.com
- Learn about SonicWall professional services
- Review SonicWall Support services and warranty information
- Register for training and certification
- Request technical support or customer service

To contact SonicWall Support, visit https://www.sonicwall.com/support/contact-support.

About This Document

NOTE: A NOTE icon indicates supporting information.

IMPORTANT: An IMPORTANT icon indicates supporting information.

TIP: A TIP icon indicates helpful information.

CAUTION: A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.

WARNING: A WARNING icon indicates a potential for property damage, personal injury, or death.

SonicOS DPI-SSH Administration Guide
Updated - January 2021
Software Version - 7
232-005333-10 Rev B

End User Product Agreement

To view the SonicWall End User Product Agreement, go to: https://www.sonicwall.com/legal/end-user-product-agreements/.

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