



# VPN Monitoring and Troubleshooting in CDO

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## Monitor Remote Access VPN Sessions

The CDO Remote Access Monitoring dashboard can be used to view consolidated information about RA VPN users, including the current status of users, device types, client applications, user geolocation information, and duration of connections. You can also disconnect RA VPN sessions as needed.

Perform the following to see the VPN sessions:

1. In the cloud-delivered Firewall Management Center page, click **Return Home**.
2. In the CDO navigation pane, click **VPN > Remote Access VPN Monitoring**.

See [Monitor Remote Access Virtual Private Network Sessions](#) for more information.

## SD-WAN Summary Dashboard

The SD-WAN Summary dashboard (**Analysis > SD-WAN Summary**) provides a snapshot of your WAN devices and their interfaces. This dashboard helps you to:

- Identify issues with the underlay and overlay (VPN) topologies.
- Troubleshoot VPN issues using the existing **Health Monitoring**, **Device Management**, and **Site-to-Site Monitoring** pages.
- Monitor application performance metrics of WAN interfaces. The threat defense steers application traffic based on these metrics.

A WAN device must meet one of the following criteria:

- The device must be a VPN peer.
- The device must have WAN interface.

A WAN interface must meet one of the following criteria:

- The interface has IP address-based path monitoring enabled on it.
- The interface has a Policy Based Routing (PBR) policy with at least one application configured to monitor it.

For more information about PBR policy and path monitoring, see [Policy Based Routing](#).

Click **Uplink Decisions** to view the **VPN Troubleshooting** page. You can view syslogs with ID: 880001. These syslogs show the threat defense interfaces through which it steers traffic based on the configured PBR policy.

## Prerequisites for Using SD-WAN Summary Dashboard

- You must be an Admin, Security Analyst, or Maintenance user to view this dashboard. See [Secure Firewall Management Center and Cloud-delivered Firewall Management Center User Role Mapping](#) for more information.
- Threat defense devices must be Version 7.2 or later.
- Enable IP-based path monitoring and HTTP-based application monitoring on the WAN interfaces.
  1. Choose **Devices > Device Management**.
  2. Click the edit icon adjacent to the device that you want to edit.
  3. Click the edit icon adjacent to the interface that you want to edit.
  4. Click the **Path Monitoring** tab.
  5. Check the **Enable IP based Monitoring** check box.
  6. Check the **Enable HTTP based Application Monitoring** check box.
  7. Click **OK**.
- Configure a PBR policy with at least one application configured to monitor it:
  1. Choose **Devices > Device Management**.
  2. Click the edit icon adjacent to the device that you want to edit.
  3. Click **Routing**.
  4. In the left pane, click **Policy Based Routing**.
  5. Click **Add**.
  6. From the **Ingress Interface** drop-down list, choose an interface.
  7. Click **Add** to configure a forwarding action.
  8. Configure the parameters.
  9. Click **Save**.

# Monitor WAN Devices and Interfaces Using the SD-WAN Summary Dashboard

The SD-WAN Summary dashboard has the following widgets :

- [WAN Connectivity](#), on page 3
- [VPN Topology](#), on page 3
- [Interface Throughput](#), on page 3
- [Device Inventory](#), on page 4
- [WAN Device Health](#), on page 4

## WAN Connectivity

This widget provides a summary of the WAN interfaces statuses. It shows the number of WAN interfaces that are in the **Online**, **Offline** or **No Data** states. Note that you cannot monitor subinterfaces using this widget.

Click **View All Interfaces** to view more details about the interfaces in the health monitor page.

If a WAN interface is in the **Offline** or **No Data** state, you can troubleshoot it from the health monitor page:


1. In the **Monitoring** pane, expand **Devices**.
2. Click the corresponding WAN device to view the device-specific health details.
3. Click the **Interface** tab to view the interface status and aggregate traffic statistics for a specific time.

Alternatively, you can click **View System & Troubleshoot Details**. The health monitor page is displayed with all the necessary details.

## VPN Topology

This widget provides a summary of the site-to-site VPN tunnel statuses. It shows the number of **Active**, **Inactive**, and **No Active Data** VPN tunnels.

Click **View All Connections** to view the VPN tunnel details in the **Site-to-site VPN Monitoring** dashboard.

If the tunnels are in the **Inactive** or **No Active Data** state, you can troubleshoot using the **Site-to-site VPN Monitoring** dashboard. In the **Tunnel Status** widget, hover your cursor over a topology, click the View  icon and do one of the following:

- Click the **CLI Details** tab to view the details of the VPN tunnels.
- Click the **Packet Tracer** tab to use the packet tracer tool for the topology.

## Interface Throughput

This widget monitors the throughput utilization of the WAN interfaces.

The interface throughput is classified into four bands. These details aid in cost planning and resourcing. You can choose a time range for the widget data from the **Show Last** drop-down list. The range is from 15 minutes to two weeks.

Click **View Health Monitoring** to view more details about the interface in the health monitor page.

### Device Inventory

This widget lists all the managed WAN devices and groups them according to the model.

Click **View Device Management** to view more details about the device in the **Device Management** page.

### WAN Device Health

This widget displays the device count according to the health of the WAN devices. You can view the number of devices with errors, warnings, or those that are in **Disabled** state.

Click **View Health Monitoring** to view the alarms, and quickly identify, isolate, and resolve issues.

If the health of a device is affected, you can troubleshoot it from the health monitor page.

1. In the **Monitoring** pane, expand **Devices**.
2. Click the corresponding WAN device to view the device-specific health details.
3. Click **View System & Troubleshoot Details**. The health monitor page is displayed with all the necessary details.

A device can be in **Disabled** state for multiple reasons, including the following:

- Management interface is disabled.
- Device is powered off.
- Device is being upgraded.

## Monitor Application Performance Metrics of WAN Interfaces Using the SD-WAN Summary Dashboard

Under the **Application Monitoring** tab, you can select a WAN device and view the application performance metrics for the corresponding WAN interfaces. These metrics include Jitter, Round Trip Time (RTT), Mean Opinion Score (MOS), and Packet Loss.

By default, the metrics data is refreshed every 5 minutes. You can change the refresh time; the range is from 5 to 30 minutes. You can view the metrics in tabular and graphical formats. For each WAN interface, the latest metric value appears in the table. For graphical data, you can choose a time interval of up to 24 hours to view the metrics data for the corresponding WAN interfaces.

## System Messages

The Message Center is the place to start your troubleshooting. This feature allows you to view messages that are continually generated about system activities and status. To open the Message Center, click **System Status**, located to the immediate right of the **Deploy** button in the main menu.

# VPN System Logs

You can enable logging of VPN troubleshoot syslogs for threat defense devices. Logging information can help you identify and isolate network or device configuration problems. When you enable VPN logging, the threat defense devices send VPN syslogs to the management center.

All VPN syslogs appear with a default severity level **errors** or a higher severity (unless changed). You can manage the VPN logging through threat defense platform settings. You can adjust the message severity level by editing the **VPN Logging Settings** in the threat defense platform settings policy for targeted devices. See [Configure Syslog Logging for Threat Defense Devices](#) for details on enabling VPN logging, configuring syslog servers, and viewing the system logs.

We recommend that you set the logging level of the VPN logs as level 3 (Errors). Setting the VPN logging level to level 4 and above (Warnings, Notifications, Informational or Debugging) could overload the management center.



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**Note** When you configure a device with site-to-site or remote access VPN, it automatically enables sending VPN syslogs to the management center by default.

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## Viewing VPN System Logs

The system captures event information to help you to gather additional information about the source of your VPN problems. Any VPN syslogs that are displayed have a default severity level 'ERROR' or higher (unless changed). By default the rows are sorted by the **Time** column.

You must be an Admin user in a leaf domain to perform this task.

### Before you begin

Enable VPN logging by checking the **Enable Logging to Secure Firewall Management Center** checkboxselecting the **VPN Logs** radio button under the **Logging to Secure Firewall Management Center** setting in the threat defense platform settings (**Devices > Platform Settings > Syslog > Logging Setup**).

See [Syslog](#) for details on enabling VPN logging, configuring syslog servers, and viewing the system logs.

### Procedure

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**Step 1** Choose **Devices > VPN > Troubleshooting**.

**Step 2** You have the following options:

- Search—To filter current message information, click **Edit Search**.
  - View—To view VPN details associated with the selected message in the view, click **View**.
  - View All—To view VPN details for all messages in the view, click **View All**.
  - Delete—To delete selected messages from the database, click **Delete** or click **Delete All** to delete all the messages.
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# Debug Commands

This section explains how you use debug commands to help you diagnose and resolve VPN-related problems. The commands described here are not exhaustive, this section include commands according to their usefulness in assisting you to diagnose VPN-related problems.

## Usage Guidelines

Because debugging output is assigned high priority in the CPU process, it can render the system unusable. For this reason, use **debug** commands only to troubleshoot specific problems or during troubleshooting sessions with the Cisco Technical Assistance Center (TAC). Moreover, it is best to use **debug** commands during periods of lower network traffic and fewer users. Debugging during these periods decreases the likelihood that increased **debug** command processing overhead will affect system use.

You can view debug output in a CLI session only. Output is directly available when connected to the Console port, or when in the diagnostic CLI (enter **system support diagnostic-cli**). You can also view output from the regular Firepower Threat Defense CLI using the **show console-output** command.

To show debugging messages for a given feature, use the **debug** command. To disable the display of debug messages, use the **no** form of this command. Use **no debug all** to turn off all debugging commands.

```
debug feature [subfeature] [level]
no debug feature [subfeature]
```

## Syntax Description

<i>feature</i>	Specifies the feature for which you want to enable debugging. To see the available features, use the <b>debug ?</b> command for CLI help.
<i>subfeature</i>	(Optional) Depending on the feature, you can enable debug messages for one or more subfeatures. Use ? to see the available subfeatures.
<i>level</i>	(Optional) Specifies the debugging level. Use ? to see the available levels.

## Command Default

The default debugging level is 1.

## Example

With multiple sessions running on remote access VPN, troubleshooting can be difficult, given the size of the logs. You can use the **debug webvpn condition** command to set up filters to target your debug process more precisely.

```
debug webvpn condition {group name | p-ipaddress ip_address [{subnet subnet_mask | prefix length}] | reset | user name}
```

Where:

- **group name** filters on a group policy (not a tunnel group or connection profile).
- **p-ipaddress ip\_address** [{**subnet subnet\_mask** | **prefix length**}] filters on the public IP address of the client. The subnet mask (for IPv4) or prefix (for IPv6) is optional.
- **reset** resets all filters. You can use the **no debug webvpn condition** command to turn off a specific filter.
- **user name** filters by username.

If you configure more than one condition, the conditions are conjoined (ANDed), so that debugs appear only if all conditions are met.

After setting up the condition filter, use the base **debug webvpn** command to turn on the debug. Setting the conditions alone does not enable the debug. Use the **show debug** and **show webvpn debug-condition** commands to view the current state of debugging.

The following shows an example of enabling a conditional debug on the user jdoe.

```
firepower# debug webvpn condition user jdoe

firepower# show webvpn debug-condition
INFO: Webvpn conditional debug is turned ON
INFO: User name filters:
INFO: jdoe

firepower# debug webvpn
INFO: debug webvpn enabled at level 1.

firepower# show debug
debug webvpn enabled at level 1
INFO: Webvpn conditional debug is turned ON
INFO: User name filters:
INFO: jdoe
```

#### Related Commands

Command	Description
<b>show debug</b>	Shows the currently active debug settings.
<b>undebug</b>	Disables debugging for a feature. This command is a synonym for <b>no debug</b> .

## debug aaa

See the following commands for debugging configurations or authentication, authorization, and accounting (AAA) settings.

**debug aaa** [*accounting* | *authentication* | *authorization* | *common* | *internal* | *shim* | *url-redirect*]

#### Syntax Description

<i>aaa</i>	Enables debugging for AAA. Use ? to see the available subfeatures.
<i>accounting</i>	(Optional) Enables AAA accounting debugging.
<i>authentication</i>	(Optional) Enables AAA authentication debugging.
<i>authorization</i>	(Optional) Enables AAA authorization debugging.
<i>common</i>	(Optional) Specifies the AAA common debug level. Use ? to see the available levels.
<i>internal</i>	(Optional) Enables AAA internal debugging.
<i>shim</i>	(Optional) Specifies the AAA shim debug level. Use ? to see the available levels.

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*url-redirect* (Optional) Enables AAA url-redirect debugging.

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**Command Default**

The default debugging level is 1.

**Related Commands**

Command	Description
<b>show debug aaa</b>	Shows the currently active debug settings for AAA.
<b>undebug aaa</b>	Disables debugging for AAA. This command is a synonym for <b>no debug aaa</b> .

## debug crypto

See the following commands for debugging configurations or settings associated with crypto.

**debug crypto** [*ca* | *condition* | *engine* | *ike-common* | *ikev1* | *ikev2* | *ipsec* | *ss-apic*]

**Syntax Description**

<i>crypto</i>	Enables debugging for <i>crypto</i> . Use ? to see the available subfeatures.
<i>ca</i>	(Optional) Specifies the PKI debug levels. Use ? to see the available subfeatures.
<i>condition</i>	(Optional) Specifies the IPsec/ISAKMP debug filters. Use ? to see the available filters.
<i>engine</i>	(Optional) Specifies the crypto engine debug levels. Use ? to see the available levels.
<i>ike-common</i>	(Optional) Specifies the IKE common debug levels. Use ? to see the available levels.
<i>ikev1</i>	(Optional) Specifies the IKE version 1 debug levels. Use ? to see the available levels.
<i>ikev2</i>	(Optional) Specifies the IKE version 2 debug levels. Use ? to see the available levels.
<i>ipsec</i>	(Optional) Specifies the IPsec debug levels. Use ? to see the available levels.
<i>condition</i>	(Optional) Specifies the Crypto Secure Socket API debug levels. Use ? to see the available levels.
<i>vpnclient</i>	(Optional) Specifies the EasyVPN client debug levels. Use ? to see the available levels.

**Command Default**

The default debugging level is 1.

**Related Commands**

Command	Description
<b>show debug crypto</b>	Shows the currently active debug settings for crypto.
<b>undebug crypto</b>	Disables debugging for crypto. This command is a synonym for <b>no debug crypto</b> .



## debug crypto ca

See the following commands for debugging configurations or settings associated with crypto ca.

**debug** *crypto ca* [*cluster* | *messages* | *periodic-authentication* | *scep-proxy* | *transactions* | *trustpool*] [*1-255*]

Syntax Description		
	<i>crypto ca</i>	Enables debugging for <i>crypto ca</i> . Use ? to see the available subfeatures.
	<i>cluster</i>	(Optional) Specifies the PKI cluster debug level. Use ? to see the available levels.
	<i>cmp</i>	(Optional) Specifies the CMP transactions debug level. Use ? to see the available levels.
	<i>messages</i>	(Optional) Specifies the PKI Input/Output message debug level. Use ? to see the available levels.
	<i>periodic-authentication</i>	(Optional) Specifies the PKI periodic-authentication debug level. Use ? to see the available levels.
	<i>scep-proxy</i>	(Optional) Specifies the SCEP proxy debug level. Use ? to see the available levels.
	<i>server</i>	(Optional) Specifies the local CA server debug level. Use ? to see the available levels.
	<i>transactions</i>	(Optional) Specifies the PKI transaction debug level. Use ? to see the available levels.
	<i>trustpool</i>	(Optional) Specifies the trustpool debug level. Use ? to see the available levels.
	<i>1-255</i>	(Optional) Specifies the debugging level.

**Command Default** The default debugging level is 1.

Related Commands	Command	Description
	<b>show debug crypto ca</b>	Shows the currently active debug settings for crypto ca.
	<b>undebug</b>	Disables debugging for crypto ca. This command is a synonym for <b>no debug crypto ca</b> .

## debug crypto ikev1

See the following commands for debugging configurations or settings associated with Internet Key Exchange version 1 (IKEv1).

**debug** *crypto ikev1* [*timers*] [*1-255*]

Syntax Description		
	<i>ikev1</i>	Enables debugging for <i>ikev1</i> . Use ? to see the available subfeatures.
	<i>timers</i>	(Optional) Enables debugging for IKEv1 timers.

*1-255* (Optional) Specifies the debugging level.

**Command Default**

The default debugging level is 1.

**Related Commands**

Command	Description
<b>show debug crypto ikev1</b>	Shows the currently active debug settings for IKEv1.
<b>undebug crypto ikev1</b>	Disables debugging for IKEv1. This command is a synonym for <b>no debug crypto ikev1</b> .

**debug crypto ikev2**

See the following commands for debugging configurations or settings associated with Internet Key Exchange version 2 (IKEv2).

**debug** *crypto ikev2* [*ha* | *platform* | *protocol* | *timers*]

**Syntax Description**

<i>ikev2</i>	Enables debugging <i>ikev2</i> . Use ? to see the available subfeatures.
<i>ha</i>	(Optional) Specifies the IKEv2 HA debug level. Use ? to see the available levels.
<i>platform</i>	(Optional) Specifies the IKEv2 platform debug level. Use ? to see the available levels.
<i>protocol</i>	(Optional) Specifies the IKEv2 protocol debug level. Use ? to see the available levels.
<i>timers</i>	(Optional) Enables debugging for IKEv2 timers.

**Command Default**

The default debugging level is 1.

**Related Commands**

Command	Description
<b>show debug crypto ikev2</b>	Shows the currently active debug settings for IKEv2.
<b>undebugcrypto ikev2</b>	Disables debugging for IKEv2. This command is a synonym for <b>no debug crypto ikev2</b> .

**debug crypto ipsec**

See the following commands for debugging configurations or settings associated with IPsec.

**debug** *crypto ipsec* [*1-255*]

**Syntax Description**

<i>ipsec</i>	Enables debugging for <i>ipsec</i> . Use ? to see the available subfeatures.
<i>1-255</i>	(Optional) Specifies the debugging level.

**Command Default** The default debugging level is 1.

Related Commands	Command	Description
	<b>show debug crypto ipsec</b>	Shows the currently active debug settings for IPsec.
	<b>undebugcrypto ipsec</b>	Disables debugging for IPsec. This command is a synonym for <b>no debug crypto ipsec</b> .

## debug ldap

See the following commands for debugging configurations or settings associated with LDAP (Lightweight Directory Access Protocol).

**debug ldap** [1-255]

Syntax Description		
	<i>ldap</i>	Enables debugging for LDAP. Use ? to see the available subfeatures.
	<i>1-255</i>	(Optional) Specifies the debugging level.

**Command Default** The default debugging level is 1.

Related Commands	Command	Description
	<b>show debug ldap</b>	Shows the currently active debug settings for LDAP.
	<b>undebugldap</b>	Disables debugging for LDAP. This command is a synonym for <b>no debug ldap</b> .

## debug ssl

See the following commands for debugging configurations or settings associated with SSL sessions.

**debug ssl** [*cipher* | *device*] [1-255]

Syntax Description		
	<i>ssl</i>	Enables debugging for SSL. Use ? to see the available subfeatures.
	<i>cipher</i>	(Optional) Specifies the SSL cipher debug level. Use ? to see the available levels.
	<i>device</i>	(Optional) Specifies the SSL device debug level. Use ? to see the available levels.
	<i>1-255</i>	(Optional) Specifies the debugging level.

**Command Default** The default debugging level is 1.

Related Commands	Command	Description
	<b>show debug ssl</b>	Shows the currently active debug settings for SSL.
	<b>undebug ssl</b>	Disables debugging for SSL. This command is a synonym for <b>no debug ssl</b> .

## debug webvpn

See the following commands for debugging configurations or settings associated with WebVPN.

**debug webvpn** [*anyconnect* | *chunk* | *cifs* | *citrix* | *compression* | *condition* | *cstp-auth* | *customization* | *failover* | *html* | *javascript* | *kcd* | *listener* | *mus* | *nfs* | *request* | *response* | *saml* | *session* | *task* | *transformation* | *url* | *util* | *xml*]

### Syntax Description

<i>webvpn</i>	Enables debugging for WebVPN. Use ? to see the available subfeatures.
<i>anyconnect</i>	(Optional) Specifies the WebVPN Secure Client debug level. Use ? to see the available levels.
<i>chunk</i>	(Optional) Specifies the WebVPN chunk debug level. Use ? to see the available levels.
<i>cifs</i>	(Optional) Specifies the WebVPN CIFS debug level. Use ? to see the available levels.
<i>citrix</i>	(Optional) Specifies the WebVPN Citrix debug level. Use ? to see the available levels.
<i>compression</i>	(Optional) Specifies the WebVPN compression debug level. Use ? to see the available levels.
<i>condition</i>	(Optional) Specifies the WebVPN filter conditions debug level. Use ? to see the available levels.
<i>cstp-auth</i>	(Optional) Specifies the WebVPN CSTP authentication debug level. Use ? to see the available levels.
<i>customization</i>	(Optional) Specifies the WebVPN customization debug level. Use ? to see the available levels.
<i>failover</i>	(Optional) Specifies the WebVPN failover debug level. Use ? to see the available levels.
<i>html</i>	(Optional) Specifies the WebVPN HTML debug level. Use ? to see the available levels.
<i>javascript</i>	(Optional) Specifies the WebVPN Javascript debug level. Use ? to see the available levels.
<i>kcd</i>	(Optional) Specifies the WebVPN KCD debug level. Use ? to see the available levels.
<i>listener</i>	(Optional) Specifies the WebVPN listener debug level. Use ? to see the available levels.
<i>mus</i>	(Optional) Specifies the WebVPN MUS debug level. Use ? to see the available levels.
<i>nfs</i>	(Optional) Specifies the WebVPN NFS debug level. Use ? to see the available levels.

<i>request</i>	(Optional) Specifies the WebVPN request debug level. Use ? to see the available levels.
<i>response</i>	(Optional) Specifies the WebVPN response debug level. Use ? to see the available levels.
<i>saml</i>	(Optional) Specifies the WebVPN SAML debug level. Use ? to see the available levels.
<i>session</i>	(Optional) Specifies the WebVPN session debug level. Use ? to see the available levels.
<i>task</i>	(Optional) Specifies the WebVPN task debug level. Use ? to see the available levels.
<i>transformation</i>	(Optional) Specifies the WebVPN transformation debug level. Use ? to see the available levels.
<i>url</i>	(Optional) Specifies the WebVPN URL debug level. Use ? to see the available levels.
<i>util</i>	(Optional) Specifies the WebVPN utility debug level. Use ? to see the available levels.
<i>xml</i>	(Optional) Specifies the WebVPN XML debug level. Use ? to see the available levels.

**Command Default**

The default debugging level is 1.

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>show debug webvpn</b>	Shows the currently active debug settings for WebVPN.
<b>undebug webvpn</b>	Disables debugging for WebVPN. This command is a synonym for <b>no debug webvpn</b> .

debug webvpn