SonicWall® Global Management System MANAGE SD-WAN

Administration

SONICWALL®

Contents

SD-WAN Groups

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Introduction

SD-WAN (Software-Defined Wide Area Network) provides software-based control over wide area network (WAN) connections. SD-WAN offers the following features:

- Application-aware routing
- Dynamic path selection based on:
  - Latency, jitter, and/or packet loss
  - User-defined thresholds for quality assessment
- SD-WAN Interface Groups
  - WAN and VPN
  - Scalable from one to N interfaces
- Path Performance Probes for metrics
- Connection-based traffic distribution
- Automatic connection failover over VPN
- Provisioning and management (both GMS and Capture Security Center)

SD-WAN is best used for specific traffic types and/or applications requiring dynamically chosen optimal destination interfaces depending on how the network paths are behaving. To operate correctly, each application has a certain requirement from the network path. For example, the network quality for VoIP to operate correctly requires the optimal latency to be 100 ms or less while a latency of 150 ms or higher results in choppy calls. SD-WAN helps in such scenarios by first dynamically measuring the various network performance metrics, such as latency, jitter and packet loss, on multiple network paths. SD-WAN then compares these metrics with the performance threshold for a particular traffic flow and determines the optimal network that meets the flow's network quality accordingly.

Creating SD-WAN Groups

SD-WAN Groups are logical groups of interfaces that can be used for load-balancing as well as dynamic path selection based on the performance criterion through each interface path. You can create your own custom groups.

The SD-WAN Groups page displays the custom pool of interfaces used for optimized and resilient traffic flow. SonicWall SD-WAN supports forward and reverse inheritance, but this cannot be used on numbered tunnel interfaces.

You can create multiple SD-WAN Groups to meet your requirements.

To add an SD-WAN group:

1   Navigate to **SD-WAN** > **SD-WAN Groups**.

2   On the SD-WAN Groups page, click **Add New Group**.

3   On the **Add SD-WAN Group** page, enter a descriptive name in the **Name** field. You can use this name to later search for the SD-WAN group.

4   Select one or more interfaces from the **Group Members: Select here:** column, and click the right arrow icon to move them to **Selected: Interface Ordering** column. Member interfaces can be only WAN or Numbered Tunnel Interfaces.

> (i) | **NOTE:** You can select up to 10 interfaces for a group.

5   To change the priority of the selected group members:

- Select the interface.

- Click the Up Arrow to rise priority of an interface.

6   Click **OK**.

Editing SD-WAN Groups

The **SD-WAN Groups** window shows you the list of SD-WAN groups. From here you can search for an SD-WAN group using its name, or the interfaces used in the SD-WAN Group.

Editing an SD-WAN Group:

1   Navigate to **SD-WAN** > **SD-WAN Groups**.

2   On the **SD-WAN Groups** page, in the search bar, enter the name of the SD-WAN Group or any of the interfaces used in the group.

3   Click **Search**.

4   From the search result, click the **Edit** icon under the **Configure** column.

5   On the **Edit SD-WAN Group** dialog, you can change the name and interfaces of the SD-WAN group.

6   Click **OK**.

7   On the **Modify Task Description and Schedule** page, enter a description of the edit and select any one of the scheduling options.

8   Click **Accept**.

Performance Probes

Topics:

- Adding Performance Probes
- Modifying or Deleting Performance Probes

Adding Performance Probes

Network path performance metrics are determined using SD-WAN performance probes, which are similar to network monitor Probes. GMS supports the ICMP and TCP probe types. An SD-WAN probe can be used by multiple Path Selection profiles.

The **SD-WAN** > **Performance Probes** page shows the dynamic performance data (latency/jitter/packet loss) and probe status for each path (interface) in the SD-WAN group. The display can show data for the last minute (default), last day, last week, or last month.

(i) | **NOTE:** An interface cannot be a member of more than one SD-WAN group.

To add a performance probe:

1 Navigate to **SD-WAN** > **Performance Probes**.

2 On the **Performance Probes** page, click **Add Performance Probe**. The **Add SD-WAN Performance Probe** dialog displays.

```
SD-WAN Performance Probe Settings

Name:                                    [                        ]

SD-WAN Group:                            [--Select a group --    ▼]

Probe Target:                            [--Select an address object - ▼]

Probe type:                              [Ping (ICMP) - Explicit Route ▼]

Port:                                    [        ]

Probe hosts every:                       [5    ]  seconds

Reply time out:                          [5    ]  seconds

Probe state is set to DOWN after:        [3    ]  missed intervals

Probe state is set to UP after:          [3    ]  successful intervals

     [ ]  RST Response Counts As Miss

Comment:                                 [                        ]

            ( OK )    ( Cancel )
```

3   Enter a meaningful name in the **Name** field. You can use this name later to search for the Performance Probe.

4   Select an SD-WAN group (defined earlier) from the **SD-WAN Group** drop-down menu.

5   Select an address object from **Probe Target** drop-down menu.

6   From Probe Type, select:

- **Ping (ICMP) - Explicit Route** (default); go to Step 8.
- **TCP - Explicit Route**; the Port field becomes available.

7   Enter the port number of the explicit route in the **Port** field.

8   Enter the interval between probes in the **Probe hosts every**: seconds field. The minimum is 1 second, the maximum is 3600 seconds, and the default is **5** seconds.

> ⓘ | **NOTE:** The probe interval must be greater than the reply time out.

9   Enter the maximum delay for a response in the **Reply time out** … seconds field. The minimum is 1 second, the maximum is 60 seconds, and the default is **3** seconds.

10   Enter the maximum number of missed intervals before the probe is set to the DOWN state in the **Probe state is set to DOWN after** … missed intervals field. The minimum number is 1, the maximum is 100, and the default is 3.

11   Enter the maximum number of successful intervals before the probe is set to the UP state in the **Probe state is set to UP after** … successful intervals field. The minimum number is 1, the maximum is 100, and the default is 3.

12   If you selected **TCP - Explicit Route** for Probe Type, the **RST Response Counts As Miss** option becomes available. Select the option to count RST responses as missed intervals. This option is not selected by default.

13   Optionally, enter a comment in the **Comment** field.

14   Click **OK**.

15   On the **Modify Task Description and Schedule** window, add a description for the performance probe and select one of the options under schedule based on when you want to create the performance probe and then click **Accept**.

Modifying or Deleting Performance Probes

The Performance Probes window displays the list of performance probes in a table and you can search for any of the performance probe based on its name, probe target, probe type, or port number.

To edit a Performance Probe:

1   Navigate to **SD-WAN** > **Performance Probes**.

2   In the search bar, type the probe name and click **Search**.

3   Under the **Configure** column, click the **Edit** icon next to the probe you want to modify. If you want to delete a Performance Probe, click the **Delete** icon.

4   When you click **Configure**, the **Edit SD-WAN Performance Probe** window opens.

5   Update details about the performance probes and click **OK**.

6   In the **Modify Task Description and Schedule** window, select one of the options under **Schedule** and click **Accept**.

Performance Class Objects

Topics:

-
-

Adding Performance Class Objects

A Performance Class specifies the performance criterion for selecting the optimal path. It could be the:

- Best latency/jitter/packet loss among the existing paths.
- Performance class object that defines the metric thresholds for latency, jitter and packet loss.

You use SD-WAN Performance Class Objects to configure the desired performance characteristics for the application/traffic categories. These objects are used in the Path Selection Profile to automate the selection of paths based on these metrics.

There are four default Performance Class Objects:

- Best of All (combines the other three objects)

  (i) | **NOTE:** Best of All is only supported in group level. At the unit level, some firmware versions might not support this.
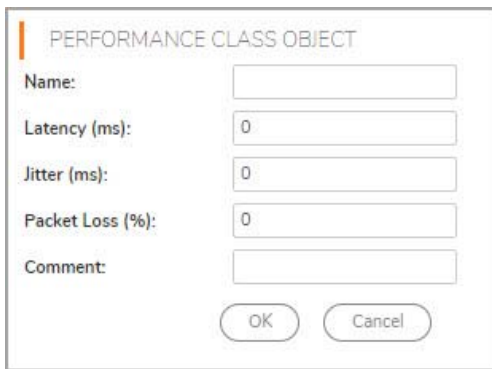
- Lowest Jitter
- Lowest Latency
- Lowest Packet Loss

You configure custom performance thresholds that best meet the needs of your application/traffic categories with Performance Class Objects.

To add a Performance Class Object:

1 Navigate to **SD-WAN** > **Performance Class Objects**.

2   Click **Add New Class Object**. The **Add Performance Class Object** dialog displays.

PERFORMANCE CLASS OBJECT

Name:

Latency (ms):   0

Jitter (ms):   0

Packet Loss (%):   0

Comment:

        OK   Cancel

3   Enter a meaningful name in the **Name** field.

4   In the **Latency (ms)** field, enter the allowed latency for the performance class object. This should be between 0 and 1000 ms.

5   In the **Jitter (ms)** field, enter the allowed latency for the performance class object. The should be between 0 and 100 ms.

6   Enter the acceptable percentage of packet loss in the **Packet Loss (%)** field. Enter a number between 0 and 100.

7   Click **OK**.

8   On the **Modify Task Description and Schedule** window, add a description and select one of the options under schedule based on when you want to create the performance class object and then click **Accept**.

ⓘ **NOTE:** The default Performance Class Objects cannot be edited or deleted.

Editing Performance Class Objects

The Performance Class Objects window shows the list of all Performance Class Objects including the default class objects. The default class objects cannot be deleted. You can delete only the objects created by the user.

To edit a performance class object:

1   Navigate to **SD-WAN** > **Performance Class Objects**.

2   In the **Search** bar, enter the name of a performance class object and click **Search**.

3   Under **Configure** column, click the **Edit** icon next to the class object that you want to edit.

4   In the **Edit Performance Class Object** window, update the details and click **OK**.

5   In the **Modify Task Description and Schedule** window, select one of the options and click **Accept**.

Path Selection Profiles

Topics:

- Adding a Path Selection Profile
- Editing a Path Selection Profile

Adding a Path Selection Profile

Path Selection Profiles (PSPs) are the settings that help determine the network path that fulfills a specific network performance criteria, from a pool of available network paths. The dynamic path selection mechanism is implemented using the PSP settings when associated with Policy-based Routes (PBR). When more than one network path meets the criterion (as per the performance class in the PSP), then traffic is load balanced across the network paths. When associated with a policy-based routing policy, a path selection profile helps select the optimal path across the SD-WAN interfaces for the application/service. SD-WAN (Software-Defined Wide Area Network) provides software-based control over wide area network (WAN) connections.

To add a Path Selection Profile

1 Navigate to **SD-WAN** > **Path Selection Profiles**.

2 Click **Add Path Selection Profile**. The Add Path Selection Profile dialog displays.

3 Add a meaningful name in the **Name** field.

4 From **SD-WAN Group**, select the group (created previously) to which the profile applies.

5 From **Performance Probe**, select the probe (created previously) to use in the profile.

6 From **Performance Class**, select the Performance Class Object (created previously) for the dynamic selection of the optimal network path:

7 From **Backup Interface**, select the interface to use when any interface does not meet the performance criterion (as per the Performance class; that is, when all the SD-WAN Group members fail to meet the performance criteria or all the interfaces are down).

8   To specify whether the default state of the performance probe should be treated as Up, select
     Performance Probe default state is UP. If this option is not selected, the performance probe is treated as
     DOWN. This option is selected by default.

9   Select **Reset connections if path does not meet the performance criteria** when

10   Click **OK**.

11   In the **Modify Task Description and Schedule** window, select one of the scheduling options and click
     Accept.

Editing a Path Selection Profile

The Path Selection Profiles window shows the list of all the Path Selection Profiles created. You can find all the
Path Selection Profiles in a table. You can select the path selection profile from the table or you can use the
search function to search for a specific profile using its name or other parameters.

To edit a Path Selection Profile:

1   Navigate to **SD-WAN** > **Path Selection Profiles**.

2   In the **Search** bar, enter the name of the performance class object and click **Search**.

3   Under **Configure** column, click the **Edit** icon next to the class object that you want to edit.

4   In the **Edit Path Selection Profile** window, update the details and click **OK**.

5   In the **Modify Task Description and Schedule** window, select one of the scheduling options and click
     Accept.

SD-WAN Routing

Topics:

- Adding an SD-WAN Route Policy
- Editing an SD-WAN Route Policy

Adding an SD-WAN Route Policy

Dynamic Path selection for specific traffic flows uses Policy-based Routes. An SD-WAN Policy-based Route is used to configure the route policy for the specific source/destination service/app combination, with a corresponding Path Selection Profile that determines the outgoing path dynamically based on the Path Selection Profile. If there is more than one path qualified by the Path Selection Profile, the traffic is automatically load balanced among the qualified paths. If none of the paths are qualified by the path selection profile and the backup interface in the profile is not configured or is down, the route is disabled.

SD-WAN routing can be configured from the **Network > Route Policies** page or **SD-WAN > SD-WAN Routing** page. The **SD-WAN > Routing** page only shows the SD-WAN Routes and only allows configuration of SD-WAN-type routes.

To add an SD-WAN route policy:

1   Navigate to **SD-WAN** > **SD-WAN Routing**.

2   Click **Add Route Policy**. The **Add Route Policy** dialog displays.

3   On the **General** view, enter a **Name** and select the **Source**, **Destination**, and **Service**.

4   Under **Path Profile**, select a (previously created) path selection profile.

> ⓘ   **IMPORTANT:** When configuring an SD-WAN route from the **Network > Route Policies** page, choose **SD-WAN Route** on the **Add Route Policy** dialog; the options change to match those of the **Add SD-WAN Route Policy** dialog.

5   Click **Advanced**.

6   Enter the Type of Service (TOS) and TOS Mask values in hexadecimal format.

7   Click **OK**.

8   In the **Modify Task Description and Schedule** window, enter a description and select one of the scheduling options. Click **Accept**.

Editing an SD-WAN Route Policy

To edit an SD-WAN route policy:

1 Navigate to **SD-WAN** > **SD-WAN Routing**.

2 Under **Configure** column, click the **Edit** icon next to the route policy that you want to edit.

3 In the **Edit Route Policy** page, update the details and click **OK**.

4 In the **Modify Task Description and Schedule** page, enter a description for the edit and select one of the scheduling options. Click **Accept**.

SonicWall Support

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

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 video tutorials
- Access MySonicWall
- 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

Legend

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

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

ⓘ **IMPORTANT, NOTE, TIP, MOBILE, or VIDEO:** An information icon indicates supporting information.