

Multiple WAN

Document Scope

This feature module describes the functional changes needed for Multiple WAN. This document also includes a description of the new user-configurable data and corresponding GUI for how to use them with mwan.

This document contains the following sections:

- [“Feature Overview” section on page 1](#)
- [“Using Multiple WAN” section on page 2](#)

Feature Overview

This section provides an introduction to the Multiple WAN feature. This section contains the following subsections:

- [“Benefits” section on page 1](#)
- [“Platforms” section on page 1](#)
- [“Using Multiple WAN” section on page 2](#)

Benefits

The Multiple WAN (mwan) Feature allows the administrator to configure more than four WANs in the Network Interfaces section for routing. It also supports up to four WANs for WAN Failover and Load Balancing (LB). All four WANs can be probed using the SNWL Global Responder host.

Platforms

Multiple WAN is a feature for SonicOS 5.5 Enhanced.

Using Multiple WAN

This section contains the following subsections:

- [“WAN Failover and LB” section on page 2](#)
- [“Network Interfaces” section on page 7](#)
- [“Routing the Default & Secondary Default Gateways” section on page 8](#)
- [“DNS” section on page 9](#)

WAN Failover and LB

This section contains the following subsections:

- [“Traffic Flow Distribution Methods” section on page 4](#)
- [“WLB Logical/Probe Monitoring” section on page 5](#)

For the purpose of WAN Failover & WLB, the mwan supports up to four WAN members:

- Primary WAN Ethernet Interface
- Alternate WAN #1
- Alternate WAN #2
- Alternate WAN #3

The **Primary WAN Ethernet Interface** has the same meaning as the previous firmware’s concept of “Primary WAN.” It is the highest ranked WAN interface in the WLB group. The **Alternate WAN #1** corresponds to “Secondary WAN,” it has a lower rank than the Primary WAN but has a higher rank than the next two alternates. The others, **Alternate WAN #2** and **Alternate WAN #3**, are new, with Alternate WAN #3 being the lowest ranked among the four WAN members of the WLB group.

The screenshot displays the SonicWall Network Security Appliance web interface. The top navigation bar includes the SonicWall logo and the text "Network Security Appliance". On the left, a sidebar menu lists various system and network settings, with "Ethernet LB" selected under the "Network" category. The main content area is titled "Ethernet LB" and features a confirmation dialog with "Accept" and "Cancel" buttons. Below this, the "Ethernet Load Balancing" section is visible, containing several configuration options:

- Primary WAN Ethernet Interface: X1
- Alternate WAN #1: None
- Alternate WAN #2: None
- Alternate WAN #3: None
- Enable Load Balancing
- Basic Active/Passive Failover
 - Preempt and fallback to Primary WAN when possible
 - Per Destination Round-Robin
 - Spillover-Based
 - Send traffic to Alternate WANs when Primary WAN bandwidth exceeds 0 Kbps
 - Percentage-Based
 - Use Source and Destination IP Addresses Binding
 - Primary WAN Percentage: 0
 - Alternate WAN #1 Percentage: 0
 - Alternate WAN #2 Percentage: 0
 - Alternate WAN #3 Percentage: 0

By default, the Primary WAN is set to “X1,” or some interface internally designated by the firmware, while the Alternate WANs would be set to “None.”

Traffic Flow Distribution Methods

Because the WLB group can now have up to four members, the traffic distribution methods have been slightly modified from the previous version.

Network /

Ethernet LB

Ethernet Load Balancing

Primary WAN Ethernet Interface:

Alternate WAN #1:

Alternate WAN #2:

Alternate WAN #3:

Enable Load Balancing

Basic Active/Passive Failover

Preempt and fallback to Primary possible

Per Destination Round-Robin

Spillover-Based

Send traffic to Alternate WANs when Primary WAN bandwidth exceeds Kbps

Percentage-Based

Use Source and Destination IP Addresses Binding

Primary WAN Percentage:

Alternate WAN #1 Percentage:

Alternate WAN #2 Percentage:

Alternate WAN #3 Percentage:

The configurable fields for traffic flow distribution include the following:

- **Basic Active/Passive Failover**—The four WAN interfaces use ‘rank’ to determine the order of preemption when the **Preempt** checkbox has been enabled. Only a higher-ranked interface can preempt an Active WAN interface.
- **Round Robin**—This option now allows the user to re-order the WAN interfaces for Round Robin selection. The order is as follows: Primary WAN, Alternate WAN #1, Alternate WAN #3, and Alternate WAN #4; the Round Robin will then repeat back to the Primary WAN and continue the order.
- **Spillover**—The bandwidth threshold applies to the Primary WAN. Once the threshold is exceeded, new traffic flows are allocated to the Alternates in a Round Robin manner. Once the Primary WAN bandwidth goes below the configured threshold, Round Robin stops, and outbound new flows will again be sent out only through the Primary WAN. Note that existing flows will remain associated with the Alternates (since they are already cached) until they timeout normally.
- **Ratio**—There are now four fields so that percentages can be set for each WAN in the WLB group. To avoid problems associated with configuration errors, please ensure that the percentage correctly corresponds to the WAN interface it indicates.

WLB Logical/Probe Monitoring

When Logical probing is enabled, test packets can be set to remote probe targets to verify WAN path availability. A new option has been provided to allow probing through the additional WAN interfaces: Alternate WAN #3 and Alternate WAN #4.

Network /

Ethernet LB

Ethernet Load Balancing

Primary WAN Ethernet Interface:

Alternate WAN #1:

Alternate WAN #2:

Alternate WAN #3:

Enable Load Balancing

Basic Active/Passive Failover

Preempt and fallback to Primary WAN when possible

Per Destination Round-Robin

Spillover-Based

Send traffic to Alternate WANs when Primary WAN bandwidth exceeds Kbps

Percentage-Based **Current total (91) is less than 100.**

Use Source and Destination IP Addresses Binding

Primary WAN Percentage:

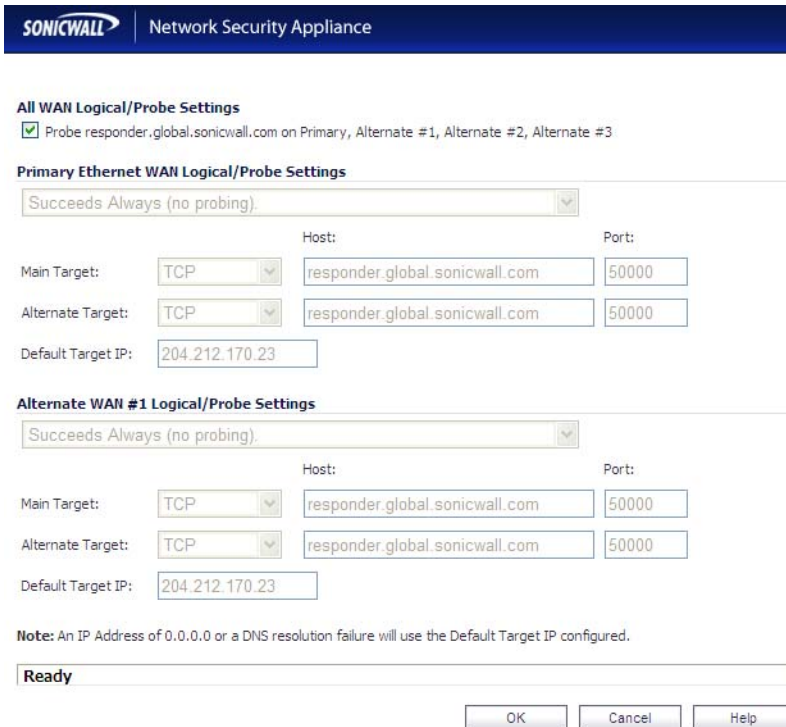
Alternate WAN #1 Percentage:

Alternate WAN #2 Percentage:

Alternate WAN #3 Percentage:

The new option is called **Probe responder.global.sonicwall.com on Primary, Alternate#1, Alternate #2, Alternate #3**. When enabled, this sends TCP probe packets to the global SNWL host that responds to SNWL TCP packets, responder.global.sonicwall.com, using a target probe destination address of 204.212.170.23:50000. If disabled, only a physical link check is performed on Alternate WAN #2 and Alternate WAN #3.

The new option is a checkbox that is disabled by default. Once selected, the rest of the probe configuration will automatically enable built-in settings. The same probe will be applied to all four WAN Ethernet interfaces. Note that Dialup WAN probe setting also defaults to the built-in settings.



SONICWALL Network Security Appliance

All WAN Logical/Probe Settings
 Probe responder.global.sonicwall.com on Primary, Alternate #1, Alternate #2, Alternate #3

Primary Ethernet WAN Logical/Probe Settings
 Succeeds Always (no probing)

	Host:	Port:
Main Target:	responder.global.sonicwall.com	50000
Alternate Target:	responder.global.sonicwall.com	50000
Default Target IP:	204.212.170.23	

Alternate WAN #1 Logical/Probe Settings
 Succeeds Always (no probing)

	Host:	Port:
Main Target:	responder.global.sonicwall.com	50000
Alternate Target:	responder.global.sonicwall.com	50000
Default Target IP:	204.212.170.23	

Note: An IP Address of 0.0.0.0 or a DNS resolution failure will use the Default Target IP configured.

Ready

OK Cancel Help

**Note**

If probing the Alternate WAN #2 and Alternate WAN #3 is not desired, the checkbox should not be selected.

Network Interfaces

The Network Interfaces page allows more than two WAN interfaces to be configured for routing. It is possible to configure WAN interfaces in the Network Interfaces page, but not include them in the WAN Failover & LB. Only the Primary WAN Ethernet Interface is required to be part of the WLB group whenever WLB has been enabled. Any WAN interface that does not belong to the WLB group is not included in the WLB function, but performs normal WAN routing functions.

Network /

Interfaces

Accept

Interface Settings

Name	Zone	IP Address	Subnet Mask	IP Assignment	Status	Comment	Configure
X0	LAN	192.168.168.240	255.255.255.0	Static	100 Mbps half-duplex	Default LAN	
X1	WAN	10.0.88.240	255.255.0.0	Static	100 Mbps half-duplex	Default WAN	
X2	WAN	192.168.0.217	255.255.255.0	DHCP	<input type="button" value="Release"/>	100 Mbps half-duplex	
X3	Unassigned	0.0.0.0	0.0.0.0	N/A	No link		
X4	LAN	192.168.172.240	255.255.255.0	Static	No link		
X4:V123	WAN	192.168.171.240	255.255.255.0	Static	VLAN Sub-Interface		<input checked="" type="checkbox"/>
X5	WAN	67.115.118.197	255.255.255.238	PPPoE	<input type="button" value="Disconnect"/>	100 Mbps full-duplex	
X6	WAN	67.115.118.194	255.255.255.238	PPPoE	<input type="button" value="Disconnect"/>	100 Mbps full-duplex	
X7	Unassigned	0.0.0.0	0.0.0.0	N/A	No link		
X8	LAN	192.168.170.240	255.255.255.0	Static	100 Mbps half-duplex		
M0	WAN	0.0.0.0	255.255.255.0	Dial-Up	Disconnected	Module	



Note

A virtual WAN interface may belong to the WLB group. However, prior to using within the WLB group, please ensure that the virtual WAN network is fully routable like that of a physical WAN.

Routing the Default & Secondary Default Gateways

Because the gateway address objects previously associated with the Primary WAN and Secondary WAN are now deprecated, user-configured Static Routes need to be re-created in order to use the correct gateway address objects associated with the WAN interfaces. This will have to be configured manually as part of the firmware upgrade procedure.

The screenshot shows the SonicWall Network Security Appliance web interface. The left sidebar contains a navigation menu with categories like System, Network, SonicPoint, Firewall, VoIP, Application Firewall, VPN, Users, High Availability, Security Services, and Log. The 'Network' category is expanded, showing sub-items like Interfaces, WAN Failover & LB, Zones, DNS, Address Objects, Routing (highlighted), NAT Policies, ARP, DHCP Server, IP Helper, Web Proxy, and Dynamic DNS. The main content area displays the 'Route Policies' configuration page. At the top right, it shows 'Items 1 to 27 (of 27)'. Below this, there are radio buttons for 'View Style: All Policies', 'Custom Policies', and 'Default Policies'. The main table lists 18 static routes with columns for #, Source, Destination, Service, Gateway, Interface, Metric, Priority, Comment, and Configure. Three routes are circled in red: Route 1 (Gateway: Secondary Default Gateway), Route 3 (Gateway: Default Gateway), and Route 15 (Gateway: Secondary Default Gateway).

#	Source	Destination	Service	Gateway	Interface	Metric	Priority	Comment	Configure
1	Any	yahoo.com	HTTP	Secondary Default Gateway	X2	1	1		
2	Any	yahoo.com	HTTP	X2 Default Gateway	X2	1	2		
3	Any	google.com	HTTP	Default Gateway	X1	1	3		
4	Any	google.com	HTTP	X1 Default Gateway	X1	1	4		
5	Any	X3 Subnet	Any	0.0.0.0	X3	20	5		
6	Any	X4 Subnet	Any	0.0.0.0	X4	20	6		
7	Any	10.50.128.52	Any	X1 Default Gateway	X1	1	7		
8	Any	10.50.128.52	Any	X2 Default Gateway	X2	1	8		
9	Any	255.255.255.255/32	Any	0.0.0.0	X0	20	9		
10	Any	X1 Default Gateway	Any	0.0.0.0	X1	20	10		
11	Any	X2 Default Gateway	Any	0.0.0.0	X2	20	11		
12	Any	X2:V123 Default Gateway	Any	0.0.0.0	X2:V123	20	12		
13	Any	X3 Default Gateway	Any	0.0.0.0	X3	20	13		
14	Any	X4 Default Gateway	Any	0.0.0.0	X4	20	14		
15	Any	dell.com	Any	Secondary Default Gateway	X2	1	15		
16	Any	dell.com	Any	X2 Default Gateway	X2	1	16		
17	Any	X0 Subnet	Any	0.0.0.0	X0	20	17		
18	Any	X2 Subnet	Any	0.0.0.0	X2	20	18		

The old address object Default Gateway corresponds to the default gateway associated with the Primary WAN in the WLB group. The Secondary Default Gateway corresponds to the default gateway associated with Alternate WAN #1.



Note

After re-adding the routes, delete the old ones referring to the Default and Secondary Default Gateways.

DNS

When DNS name resolution issues are encountered with this firmware, you may need to select the **Specify DNS Servers Manually** option and set the servers to Public DNS Servers (ICANN or non-ICANN).

Network /
DNS

DNS Settings

Specify DNS Servers Manually

DNS Server 1:

DNS Server 2:

DNS Server 3:

Inherit DNS Settings Dynamically from WAN Zone

DNS Server 1:

DNS Server 2:

DNS Server 3:



Note

Depending on your location, some DNS Servers may respond faster than others. Verify that these servers work correctly from your installation prior to using with your SonicWALL appliance.

Solution Document Version History

Version Number	Date	Notes
1	6/30/2009	This document was created by Angela Mendoza.
2	7/01/2009	Reviewed with Rosalea Real.

