

SonicWALL

SonicOS 2.x Enhanced

Quick Start Guide

Rev 1.1
February 2004

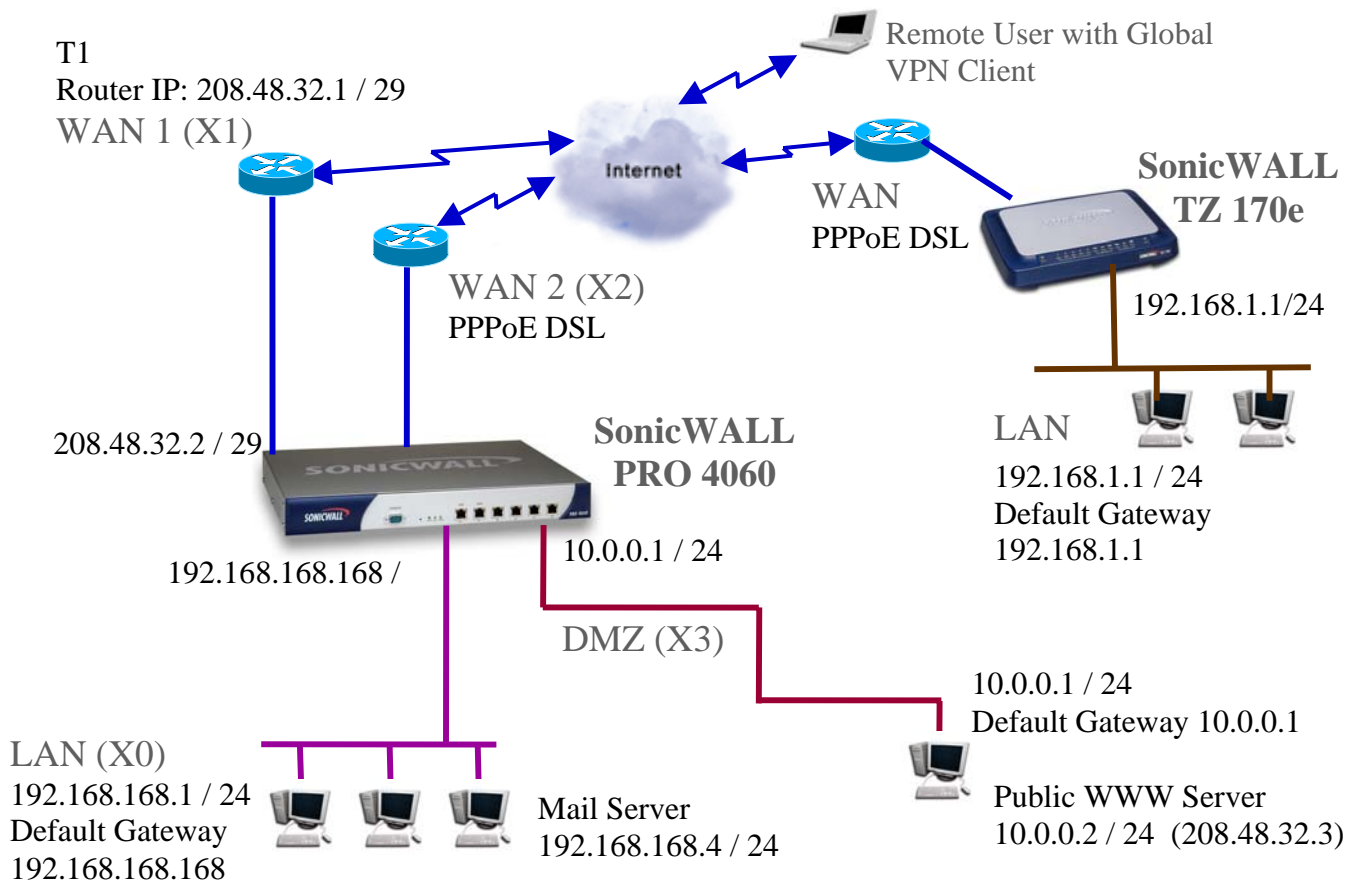
The SonicWall logo features the word "SONICWALL" in a bold, dark blue, sans-serif font. A red swoosh underline is positioned beneath the letters "SONIC", extending from the "S" to the "L".

SONICWALL

Introduction

This guide walks you through the steps required to configure a typical customer network using the new SonicOS 2.x Enhanced firmware. If you are familiar with Sonicwall's existing products and firmware, this guide will help you make the transition from those products to the next generation of Sonicwall firmware.

The example network used throughout this guide is illustrated below:



Basic WAN & LAN Configuration

Refer to the Sonicwall Quick Start Guide included on the product CD.

Security Zones and Objects

There are several new concepts introduced with SonicOS 2.x Enhanced firmware. In this section, we'll discuss the Security Zones and Objects. When configuring the new products, you will need to define your Security Zones early in the setup process so that your rules, NAT entries, and objects will be easier to work with.

Security Zones - Overview

Sonicwall's fourth generation appliances extend the previous architecture beyond the LAN, WAN, and DMZ. The new products, when loaded with the Enhanced firmware, have six user-definable interfaces. The first two interfaces (X0 and X1) are fixed interfaces, permanently bound to the LAN and WAN zones, respectively. The remaining four interfaces, X2-X5, can be configured and bound to any Zone.

The multiple interfaces allow the user to segment their network into a more manageable, secure infrastructure. It also allows the user to have multiple physical segments grouped together. This concept of multiple segments, or interfaces, logically grouped together is called Security Zones. The Security Zone permits the user to name the Zone in a user-friendly way and to write security rules that apply to all the segments in a Zone, without needing to address each physical interface individually. In our example, we have two interfaces (X1 and X2), used for WAN load-balancing and failover. If we group the two interfaces in the WAN Zone, we will only need to write one set of firewall rules that will apply regardless of which interface is active. This greatly simplifies the firewall rule base. The pre-defined Security Zones are not modifiable and are defined as follows:

- WAN – This Zone can consist of either one or two interfaces. If using the WAN-WAN capability, you need to add the second Internet interface to the WAN Zone.
- LAN – This Zone can consist of one to five interfaces, depending on your network design. Even though each interface will have a different network subnet attached to it, when grouped together they can be managed as a single entity.
- DMZ – This is the Demilitarized Zone you are probably familiar with from the existing Sonicwall product line. This Zone is normally used for publicly accessible servers. This Zone can consist of one to four interfaces, depending on you network design.
- VPN - This predefined Zone is used for simplifying secure, remote connectivity. It is the only Zone that does not have an assigned physical interface.

NOTE – Even though you may group interfaces together into one Security Zone, this does not preclude you from addressing a single interface within the Zone.

Creating a Custom Zone

There are four fixed Zone types: Trusted, Untrusted, Public and Encrypted. Only the number of interfaces limits the number of Zone instances for **Trusted** and **Public** Zone types. The **Untrusted** Zone type (i.e. the WAN) is reserved for the WAN interface(s). The **Encrypted** Zone type is a special system Zone comprising all VPN traffic and doesn't have any associated interface.


To create a custom zone, proceed as follows:

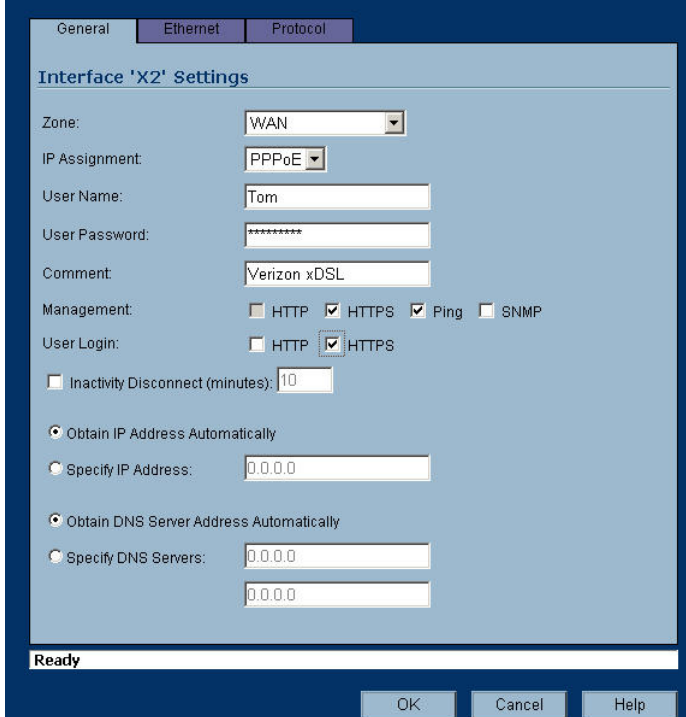
1. Select the Zones option under the Network button of the GUI.
2. Click the Add button and the Add Zone pop-up is displayed.
3. Name your Zone as desired.
4. Select whether the Zone is Trusted or Public.
5. If Content Filtering is desired, select the checkbox.
6. If AV enforcement is desired, select the checkbox.
7. If multiple interfaces are assigned to this zone, selecting the Allow Interface Trust option automatically adds the required access rules to allow hosts on those interfaces to communicate with one another.
8. Click OK to save your settings. The new custom Zone is displayed in the Zones window.

Network > Zones							
Zone Settings							
<input type="checkbox"/>	Name	Security Type	Member Interfaces	Interface Trust	Content Filtering	Anti-Virus	Configure
<input type="checkbox"/>	LAN	Trusted	X0	✓			
<input type="checkbox"/>	WAN	Untrusted	X1, X2				
<input type="checkbox"/>	DMZ	Public	X3	✓			
<input type="checkbox"/>	VPN	Encrypted	N/A				
<input type="checkbox"/>	My Custom Zone	Trusted	N/A	✓			

Security Zones - Configuration

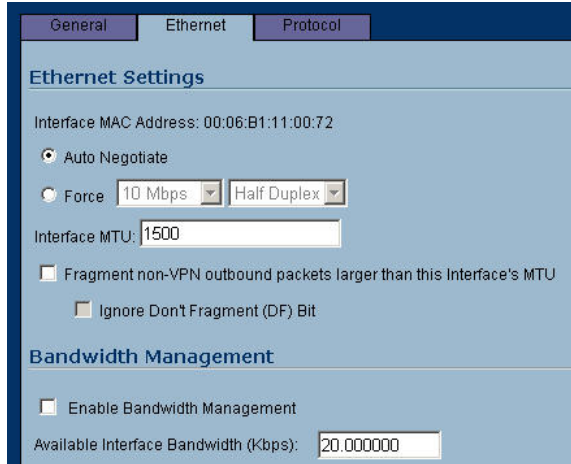
The following will guide you through the process of configuring and assigning interfaces to Security Zones:

1. We start out with the LAN and WAN interfaces as previously defined.
2. Click the configure icon () associated with the X2 interface.
3. Select the ZONE as WAN and the IP assignment as PPPoE.
4. Add the User Name and Password assigned to the PPPoE DSL account.
5. Enter a Comment if desired.
6. Decide if you want to allow Management and User Logins on this interface.
7. If the ISP provided you with a Static IP address, select 'Specify IP Address' and enter the assigned Static IP.
8. If you want to set your own DNS servers, as opposed to the DNS servers automatically provided by the PPPoE connection, click 'Specify DNS Servers' and enter the values.
9. Select the Ethernet tab.

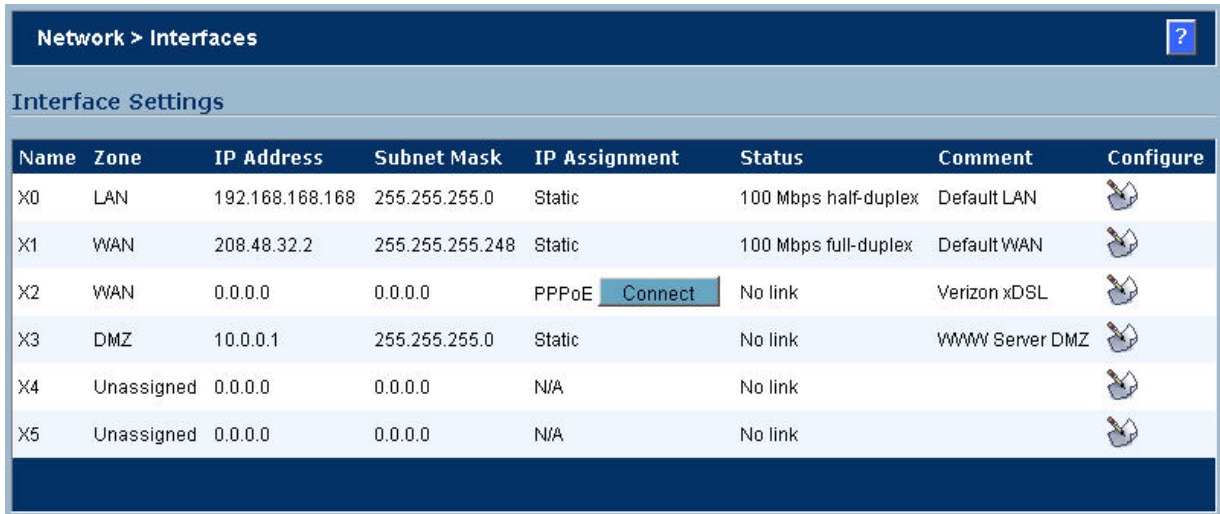


NOTE – Even though the Sonicwall auto-negotiates the Ethernet settings, you should make it a habit to force the settings to match the connected network equipment.

10. Select the 'Force' checkbox and enter the appropriate values for the DSL modem connected to the X2 interface.
11. If required, make the appropriate changes to the MTU and fragment settings based on your configuration. For normal installations, changes should not be required.
12. If using Bandwidth Management, enter the available bandwidth for this DSL connection.
13. Click OK to save your settings. The new WAN interface is displayed in the settings:
14. We will also need a DMZ configured for our installation. Click the configure icon associated with the X3 interface.



15. Select the Zone as DMZ.
16. Enter the IP address assigned to the X3 interface. Enter the network mask assigned to the interface.
17. Enter your comments as applicable.
18. Decide if you want to allow Management and User Logins on this interface.
19. Select the Ethernet tab. As above, make the appropriate entries based on the equipment to be installed on the DMZ Zone.
20. Click OK to save your settings. The new DMZ interface is displayed in the settings.



Name	Zone	IP Address	Subnet Mask	IP Assignment	Status	Comment	Configure
X0	LAN	192.168.168.168	255.255.255.0	Static	100 Mbps half-duplex	Default LAN	
X1	WAN	208.48.32.2	255.255.255.248	Static	100 Mbps full-duplex	Default WAN	
X2	WAN	0.0.0.0	0.0.0.0	PPPoE Connect	No link	Verizon xDSL	
X3	DMZ	10.0.0.1	255.255.255.0	Static	No link	WWW Server DMZ	
X4	Unassigned	0.0.0.0	0.0.0.0	N/A	No link		
X5	Unassigned	0.0.0.0	0.0.0.0	N/A	No link		

Objects/Groups - Overview

Sonic OS Enhanced introduces the concept of Objects to your security policy. Objects are either pre-defined or user-defined elements that can be used by themselves or in groups. Objects relate to network elements (hosts, subnets or ranges), users, and services. Throughout the new Enhanced firmware, we will need to define objects and groups in order to create the desired security policy.

Example 1 - We want to write firewall rules to allow mail in to and out from our mail server. Instead of just using the mail server's IP address, we'll create an Address Object called 'Mail Server' and write our firewall rules using this object. If we ever change the address of our mail server, just a simple change of the object will ensure that the address is changed wherever it may be in use.

Example 2 – We would like to block users from accessing Instant Messengers during work hours. We know that the IM services need to connect to certain servers and we know what the IP address ranges are for those servers. The problem is, there are a lot of ranges! The solution: create address objects for each of the IP ranges. Add those address objects to a group called 'Instant Messengers', and write a rule that denies all access to the Instant Messenger group. You'll see later on that this will result in a single firewall rule, instead of the six or more that would have been required without groups.

The same concept of creating an IP address object or group also works for Users and Services.

Objects and Groups - Configuration

The following will guide you through the process of creating objects and groups. We will use the Instant Messenger example from above.

Define the Objects:

1. Select the Address Objects option under the Network button of the GUI.
2. Click the Add button under Address Objects.
3. Enter an applicable name for the object.
4. Select the object type (Host, Range, or Network).

NOTE – Settings will be slightly different for other objects. For the Mail Server in the example, select the Host type. For the VPN, select the Network type.

5. Enter the Starting and Ending IP addresses.
6. Select which Zone the range is located on.
7. Click OK to save your entries. Repeat the steps above for the other Instant Messenger services, defining all IP addresses and networks. When completed, you will have a list of Address Objects displayed.

Name:

Type:

Starting IP Address:

Ending IP Address:

Zone Assignment:

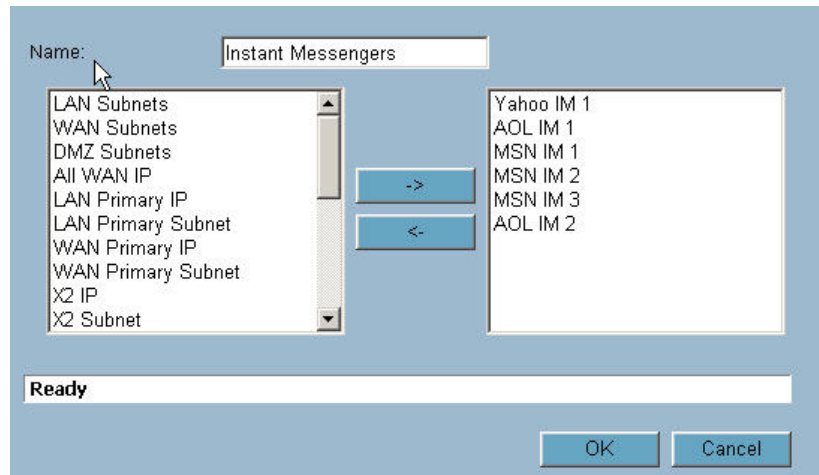
Ready

<input type="checkbox"/> Name	Address Detail	Type	Zone	Configure
<input type="checkbox"/> WWW Server	10.0.0.2/255.255.255.255	Host	DMZ	
<input type="checkbox"/> Mail Server	192.168.168.4/255.255.255.255	Host	LAN	
<input type="checkbox"/> Local LAN	192.168.168.1/255.255.255.0	Network	LAN	
<input type="checkbox"/> TZ170 Remote LAN	192.168.1.2/255.255.255.0	Network	VPN	
<input type="checkbox"/> Yahoo IM 1	216.136.227.1 - 216.136.227.254	Range	WAN	
<input type="checkbox"/> AOL IM 1	64.12.26.1 - 64.12.26.254	Range	WAN	
<input type="checkbox"/> MSN IM 1	207.46.110.1 - 207.46.110.1	Range	WAN	
<input type="checkbox"/> MSN IM 2	65.54.195.253/255.255.255.255	Host	WAN	
<input type="checkbox"/> MSN IM 3	207.68.171.238/255.255.255.255	Host	WAN	
<input type="checkbox"/> AOL IM 2	205.188.10.1 - 205.188.10.254	Range	WAN	

8. Repeat the steps above to define other address objects required for your installation. In the case of our example, you'll need to create objects for:
 - a. Web Server (10.0.0.2/32)
 - b. Mail Server (192.168.168.4/32)
 - c. Local Pro 4060 LAN for the VPN (192.168.168.0/24)
 - d. Remote TZ170 LAN for the VPN (192.168.1.0/24)

Define the Group:

1. Click the Add Group button under Address Groups.
2. Enter a name for the Address Group.
3. Select the IM address objects previously defined and click the -> button to move them into your group.
4. When they are all selected, click OK to save your selections.



That's it! Later, we'll make use of this group in a rule to block IM access.

Address Groups

View Style: Custom Address Objects System Address Objects All Address Objects

Name	Address Detail	Type	Zone	Configure
<input type="checkbox"/> Instant Messengers		Group		
▶ Yahoo IM 1	216.136.227.1 - 216.136.227.254	Range	WAN	
▶ AOL IM 1	64.12.26.1 - 64.12.26.254	Range	WAN	
▶ MSN IM 1	207.46.110.1 - 207.46.110.1	Range	WAN	
▶ MSN IM 2	65.54.195.253/255.255.255.255	Host	WAN	
▶ MSN IM 3	207.68.171.238/255.255.255.255	Host	WAN	
▶ AOL IM 2	205.188.10.1 - 205.188.10.254	Range	WAN	

Firewall Access Rules

With Sonic OS Enhanced, you will find much more functionality and flexibility when configuring Firewall Access Rules. However, rule configuration requires advance planning and depends on the proper configuration of Interfaces, Zones, NAT Policies, Network Address Objects, Service Objects, and Schedules. Now that we've covered Interfaces, Zones, and Address Objects, let's compare rule creation on SonicOS Enhanced to Sonicwall 6.x firmware.

“Public LAN Server”

The most common access rule created in 6.x firmware is the “Public LAN Server”. Specifying a “Public LAN Server” in 6.x firmware automatically took care of everything for the administrator behind the scenes – NAT, service (protocol/port) definition, firewall rule, etc.:

Referring to the screen shot, if public access to an SMTP server was required, you could simply supply the private IP address of that server next to “Send Email” in the “Public LAN Server” field.

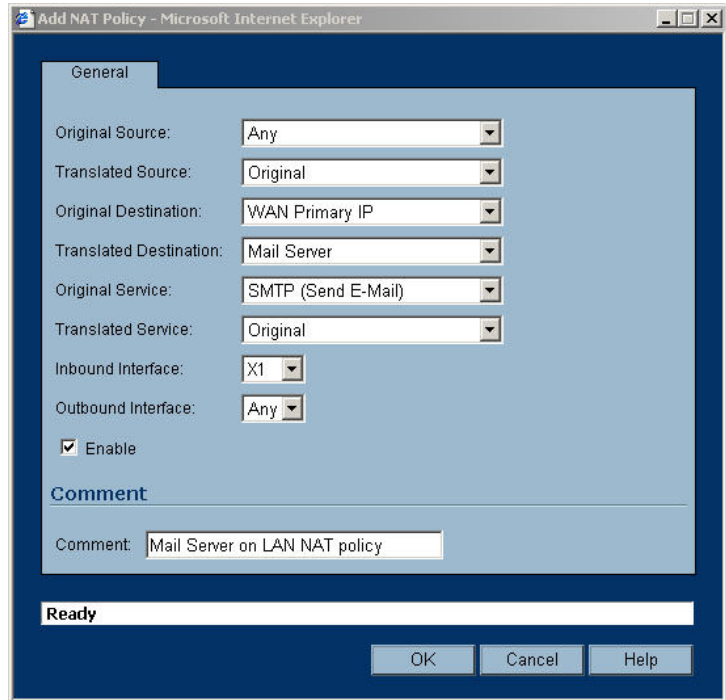
Service	LAN Out	Public LAN Server
Web (HTTP)	<input checked="" type="checkbox"/>	0.0.0.0
File Transfer (FTP)	<input checked="" type="checkbox"/>	0.0.0.0
Send Email (SMTP)	<input checked="" type="checkbox"/>	0.0.0.0
Retrieve Email (POP3)	<input checked="" type="checkbox"/>	0.0.0.0
Name Service (DNS)	<input checked="" type="checkbox"/>	0.0.0.0
News (NNTP)	<input checked="" type="checkbox"/>	0.0.0.0
Ping	<input checked="" type="checkbox"/>	0.0.0.0
Key Exchange (IKE)	<input checked="" type="checkbox"/>	10.50.165.52
Terminal Services	<input checked="" type="checkbox"/>	0.0.0.0
Default	<input checked="" type="checkbox"/>	

Completing the same task with SonicOS Enhanced requires a few more steps. First, we must ensure that we have a Network Address Object defined that contains the actual IP address of the SMTP server. From our work in previous sections, we see that the “Mail Server” object does indeed exist. Next, we must establish a NAT policy for the mail server:

Mail Server NAT Policy:

To create an Inbound NAT policy for our Mail Server:

1. Select the NAT Policies option under the Network button of the GUI.
2. Click the ADD button.
3. For Original Source, select ANY. Allow E-Mail from anywhere on the Internet.
4. For Translated Source, select Original. We want to leave the original source IP address alone.
5. For Original Destination, select WAN Primary IP. Incoming mail is being sent to the routable WAN IP of the Sonicwall.
6. For Translated Destination, select the Mail Server address object. This causes the incoming mail to be routed to the private IP address (192.168.168.4) defined by the Mail Server address object.
7. For Original Service, select SMTP (Send E-Mail). We only want this translation to work for E-Mail.
8. For Translated Service, select Original. Our mail server is expecting SMTP on port 25, so we leave the service as the original, no service translations required.
9. For Inbound Interface, select X1 (the primary WAN).
10. For Outbound Interface, select ANY.
11. Click OK to add the NAT policy.



Mail Server Firewall Policy:

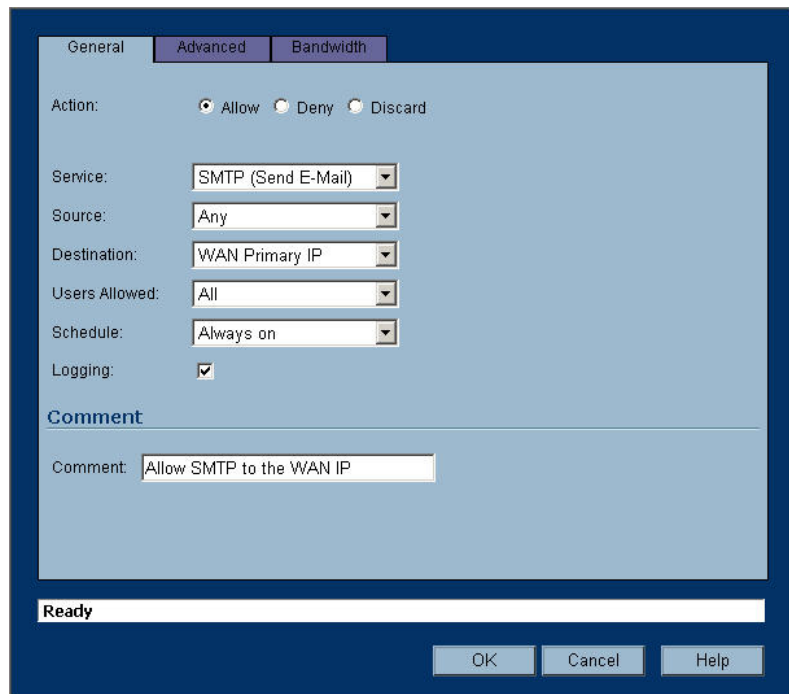
This NAT policy will take any TCP packets coming in on the primary WAN interface that are destined for port 25, and redirect them to the IP address of the Mail Server. This is a great start to allowing access to our mail server, but we're not done yet – next we must specify an Access Rule allowing the traffic to pass through the firewall.

First, we must ensure that we place the access rule correctly in the Zone matrix. The Zone concept essentially creates a matrix of rulesets, with each ruleset applying to traffic **from** one zone **to** another. Since this rule will apply to traffic coming in from the WAN zone and destined for the LAN zone, we'll need to edit the appropriate rules as follows:



1. Click the intersection of the WAN (on the left) and LAN (on the top) to display any rules applicable for incoming packets from the WAN to the LAN.
2. Click ADD, to create a new entry in the WAN > LAN ruleset for our Mail Server.
3. Select the ALLOW radio button.
4. For Service, select SMTP (Send E-Mail). We only want to allow E-Mail in to our mail server.
5. For Source, select ANY. Allow incoming E-Mail from any location.

NOTE – Unlike the 6.x firmware, the firewall rule is written for the routable WAN IP address, not the private IP address of the Mail Server.



6. For Destination, select WAN Primary IP. All incoming mail is being sent to the IP address assigned to the WAN interface.
7. For Users Allowed, select all. You should not restrict E-Mail by using User Level Authentication.
8. For Schedule, select Always On. We want to always allow incoming E-Mail.
9. Add your own comments as desired.
10. Click OK to add the new firewall rule.

While there are many other possibilities for creating Access Rules in SonicOS Enhanced, this “Public LAN Server” example should give you an understanding of where to start. In this section, we saved a couple fields for future explanation, so let’s talk about them now:

User Level Authentication and Schedules

Back in the “Objects” section we created an Address Object Group called “Instant Messengers”. Let’s put this group to use in a rule, and combine it with User-Level Authentication (ULA). This combination will allow us provide IM services on a user-by-user basis. Then we’ll take it one step further, and use a schedule to apply the rule during certain days and times only.

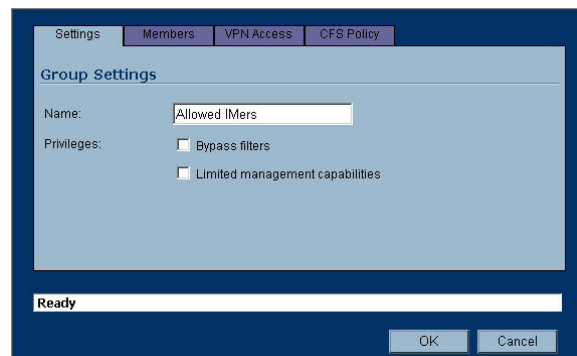
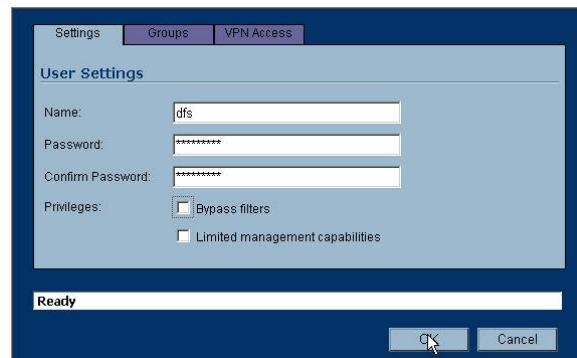
NOTE – Before creating the rule, you must first ensure that the user and/or group exist. User level authentication can be accomplished with either the built-in, internal User database of the Sonicwall, or via a Radius server.

Create User(s) & Group(s):

You can use the following steps to create additional Users and Groups for other purposes, such as VPN Client access.

To create a User and associated Group:

1. From the GUI, select the USERS option, and then LOCAL USERS.
2. Click the ADD USER button.
3. Enter the User’s Name and Password. Click OK.
4. Repeat the previous steps to create additional users, as required.
5. Select LOCAL GROUPS and then select ADD GROUP.
6. Enter a name for the Group (we called ours “Allowed IMers”).
7. Select the MEMBERS tab.
8. Select the User we previously created and click the “->” button to make them a Member of the group. Repeat for additional Users, as required.
9. Click OK.

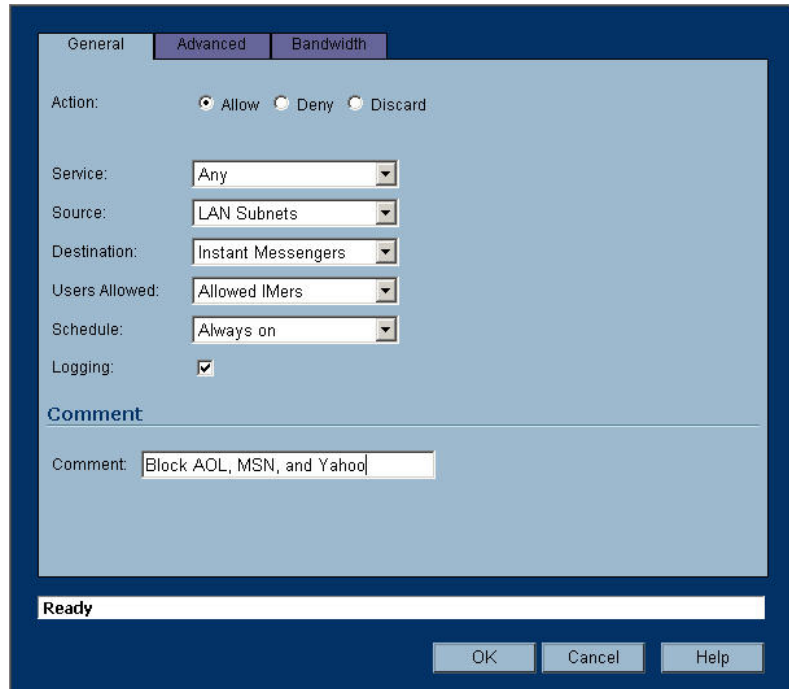


Create Firewall Rule:

To create the Firewall rule to limit Instant Messenger usage to only those in the group:

1. From the GUI, select the FIREWALL option.
2. Click the intersection of the LAN (on the left) and WAN (on the top) to display any rules applicable for outgoing packets from the LAN to the WAN.

3. Click ADD, to create a new entry in the LAN -> WAN ruleset for our IM users.
4. Select the ALLOW radio button.
5. For Service, select ANY. We want to block all access to the IM registration sites.
6. For Source, select LAN Subnets. This will apply the rule to all networks in the LAN Subnets group.
7. For Destination, select the custom address object group, Instant Messengers. You can add additional IM sites as required.
8. For Users Allowed, select the custom user group, Allowed IMers.
9. For Schedule, select Always On. Or, you can select a predefined schedule, such as After Hours. This limits the user's access to IM programs to only non-work hours. You can also create your own schedule, if desired.
10. Add your own comments as desired.
11. Click OK to add the new firewall rule.



Note that in the “Users Allowed” field we’ve placed the “Allowed IMers” user group. This means that the rule will only apply to users who have first logged in with the appropriate username and password. To use IM programs, a user would first launch a web browser and point it to the Sonicwall’s LAN IP address (<http://192.168.168.168>, or whatever that address may be). After supplying the username and password, the user will be authenticated and will then have rights to use this rule – in other words, they can launch those IM clients!

Building VPNs

With Sonic OS Enhanced, you will find all of the VPN capabilities of the previous firmware and more. Some of the new features are:

- * The ability to define both a Primary VPN Gateway and a Secondary VPN Gateway for use in the event the primary is unavailable.
- * For interoperability, the ability to define whether to use an IP Address, Domain Name, E-Mail Address, or the Sonicwall Identifier as a means of authenticating IKE negotiations.
- * The ability to specify both the local protected network and the remote network, allowing a level of granularity that wasn’t before available.

- * The ability to NAT traffic as it enters the VPN Tunnel, or as it exits (inbound or outbound), and the capability to have firewall rules specified on VPN traffic.

Defining the Security Associations (SA)

For the purpose of this example, we will keep the VPN configuration simple. Refer to the network diagram at the beginning of the document for the specifics. You should have already defined Address objects for the local network (behind the 4060) and the remote network (behind the TZ170).

On the Pro 4060, define the SA as follows:

1. From the GUI, select the VPN option, and then click ADD.
2. For IPsec Keying Mode, select IKE using Preshared Secret.
3. For Name, enter an appropriate name for this VPN SA.
4. For both the IPsec Primary and Secondary Gateways, enter 0.0.0.0. The remote TZ170 receives a dynamic IP address from the ISP, so an Aggressive Mode IKE is required.
5. For Shared Secret, enter an appropriate combination of characters and numbers.
6. For the Local IKE ID, select Sonicwall Identifier and enter the serial number of the Pro 4060.
7. For the Remote IKE ID, select Sonicwall Identifier and enter the serial number of the TZ170.
8. Select the Network Tab.
9. For the Local Network, choose the address object previously defined. For this example, we created an address object for the LAN subnet connected to the X0 interface (192.168.168.0/24). The VPN will only allow traffic from the X0 IP Subnet to the remote TZ170.
10. For Destination Networks, select the previously defined address object for the network located behind the TZ170 (192.168.1.0/24)

VPN Policy - Microsoft Internet Explorer

General Network Proposals Advanced

Security Policy

IPsec Keying Mode: IKE using Preshared Secret

Name: TO_TZ170

IPsec Primary Gateway Name or Address: 0.0.0.0

IPsec Secondary Gateway Name or Address: 0.0.0.0

Shared Secret: sonicwall

Local IKE ID (optional): SonicWALL Identifier 0007b2020628

Peer IKE ID (optional): SonicWALL Identifier 0007b2042818

Ready

OK Cancel Help

VPN Policy - Microsoft Internet Explorer

General Network Proposals Advanced

Local Networks

Choose local network from list X0 IP Subnet

Local network obtains IP addresses using DHCP through this VPN Tunnel

Any address

Destination Networks

Use this VPN Tunnel as default route for all Internet traffic

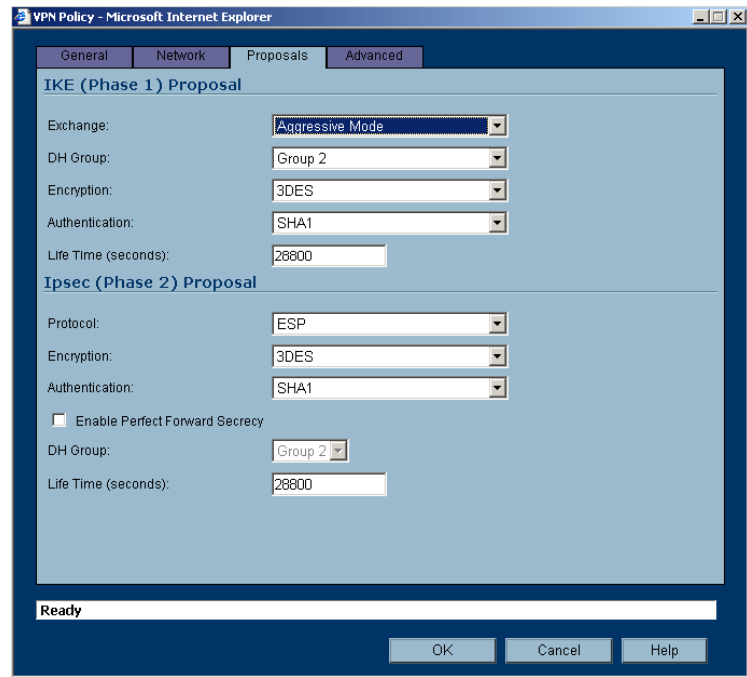
Destination network obtains IP addresses using DHCP through this VPN Tunnel

Choose destination network from list TZ170 Remote LAN

Ready

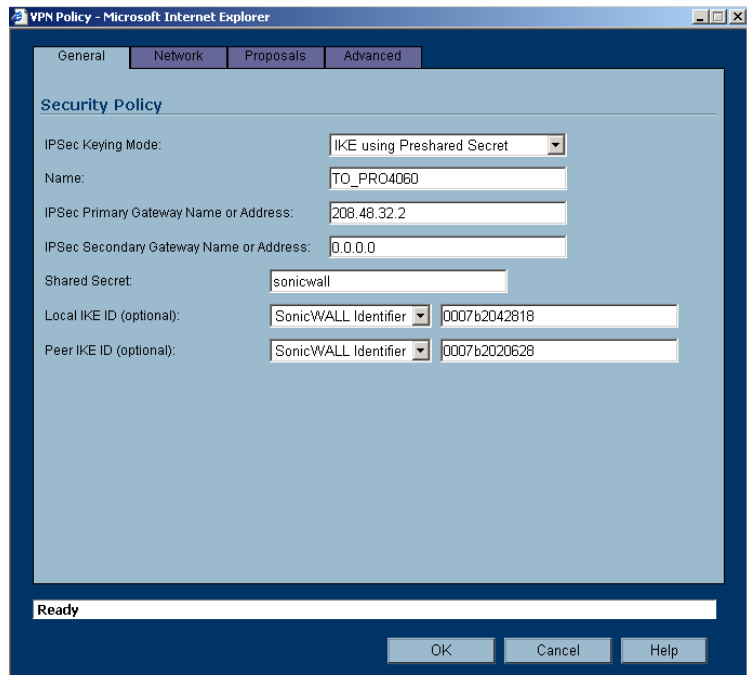
OK Cancel Help

11. Select the Proposal tab.
12. For Exchange, select Aggressive Mode. Remember, the TZ170 receives a dynamic IP address from the ISP.
13. Select the rest of the Phase 1 and 2 proposal settings as required. Ensure that they match up with the settings you make on the TZ170.
14. We will not use any of the Advanced Setting for this example.
15. Click OK.

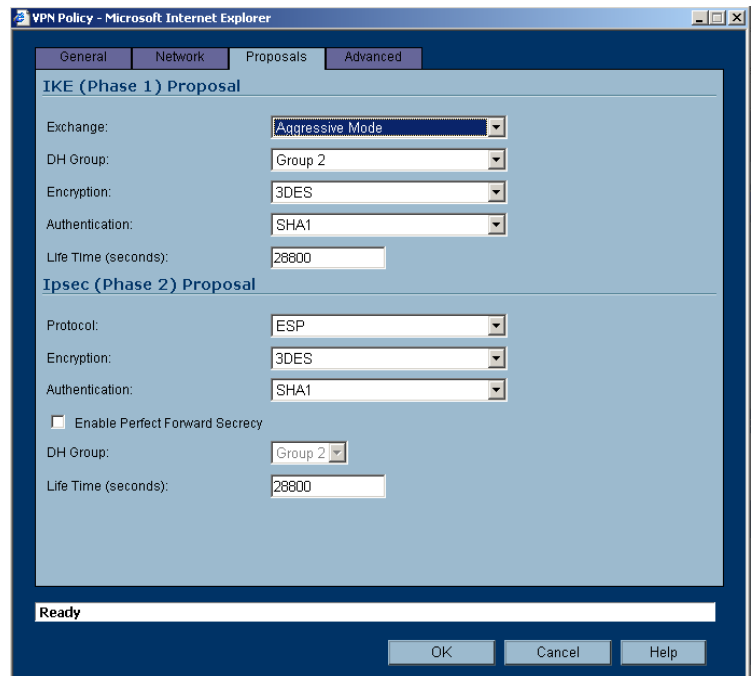
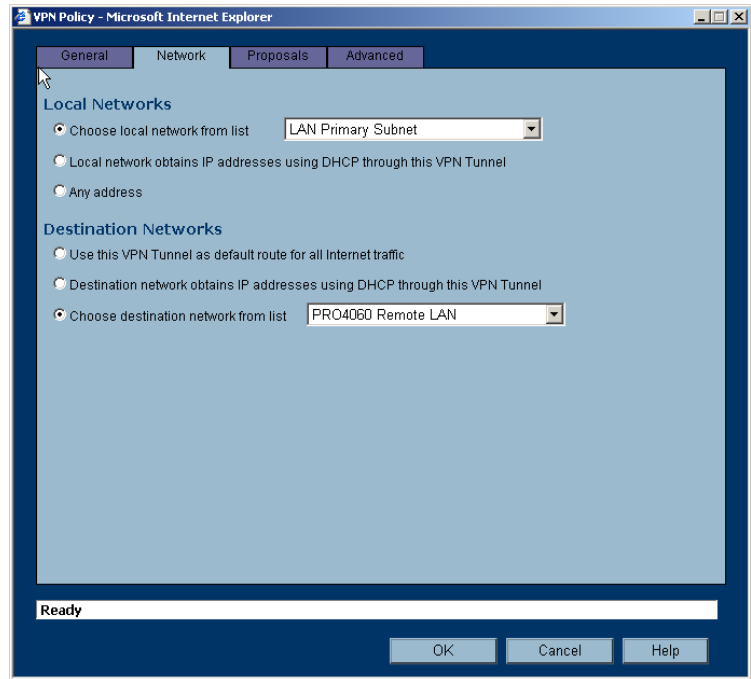


For the TZ170, we assume that it is also running the Enhanced software. Define the TZ170 SA as follows:

1. From the GUI, select the VPN option, and then click ADD.
2. For IPsec Keying Mode, select IKE using Preshared Secret.
3. For Name, enter an appropriate name for this VPN SA.
4. For the IPsec Primary Gateway, enter 208.48.32.2. This is the IP address assigned to the X1 WAN interface of the Pro4060.
5. For the IPsec Secondary Gateway, enter 0.0.0.0. The X2 WAN interface of the Pro 4060 receives a dynamic IP via PPPoE. If it was a static IP, you could enter its IP as the IPsec Secondary Gateway.
6. For Shared Secret, enter the same value as the Pro 4060 Shared Secret.
7. For the Local IKE ID, select Sonicwall Identifier and enter the serial number of the TZ170.



8. For the Remote IKE ID, select Sonicwall Identifier and enter the serial number of the Pro 4060.
9. Select the Network Tab.
10. For the Local Network, choose LAN Primary Subnet. This is a pre-defined address object for the LAN interface of the TZ170.
11. For Destination Networks, select the previously defined address object for the network located behind the Pro 4060 (192.168.168.0/24)
12. Select the Proposal tab.
13. For Exchange, select Aggressive Mode. Remember, the TZ170 receives a dynamic IP address from the ISP.
14. Select the rest of the Phase 1 and 2 proposal settings as required. Ensure they match up with the settings you've made on the Pro 4060.
15. Select the Advanced tab.
16. Check (turn on) the Enable Keep Alive option. This will keep the tunnel active and will renegotiate the tunnel if the WAN IP of the TZ170 changes.
17. Click OK.
18. You should now be able to communicate between the two Sonicwalls via the VPN.



WAN-WAN Load Balancing & Fail Over

SonicOS Enhanced provides the capability to connect two WAN links and configure them for Load Balancing and/or Fail Over. This is the perfect feature for customers who want to back up their T1 lines with DSL or Cable. The dual WAN links can be setup either as Active-Active or Active-Passive. Depending on your customer's requirements, you'll need to determine which set up best fits their needs.

Active-Active This provides outbound load balancing between the two WAN links based on one of the three available algorithms. Inbound load balancing is not directly supported. However, selected services (E-Mail and VPN) can be configured to failover from one WAN link to the other. These two scenarios require static IP addresses on both WAN links.

Link states can be monitored in one of two ways. By default, each WAN link will be monitored at the physical level. For most applications, customers will also want to configure Probe Monitoring, which adds monitoring at a logical level using either TCP connection requests or ICMP. This allows a failure of an upstream device to be detected.

Active-Passive Only the Primary WAN link is active, unless a link failure is detected. Although the Secondary link is unused except during a failure of the Primary, greater redundancy can be achieved for inbound traffic. For example, a third-party dynamic DNS client could be used to ensure that DNS records always reflect the currently active WAN link.

WAN Failover

In order to configure the Failover and Load Balancing feature, you must first configure the second WAN interface and assign it to the WAN Zone. For our example, the Secondary WAN is an xDSL line with a dynamic IP via PPPoE. You'll need to configure your Secondary WAN based on the type of connection your customer provides.

On the Pro 4060, configure the settings as follows:

1. From the GUI, select the NETWORK button and then WAN Failover & LB.
2. To enable outbound load balancing, click the enable checkbox. With only this checkbox enabled, the Sonicwall only tests the physical link status.

The screenshot shows the 'Interface 'X2' Settings' window in the SonicWall GUI. The 'General' tab is active. The configuration includes:

- Zone: WAN
- IP Assignment: PPPoE
- User Name: Tom
- User Password: ****
- Comment: DSL, Verizon
- Management: HTTP, HTTPS, Ping, SNMP
- User Login: HTTP, HTTPS
- Inactivity Disconnect (minutes): 10
- Obtain IP Address Automatically
- Specify IP Address: 0.0.0.0
- Obtain DNS Server Address Automatically
- Specify DNS Servers: 0.0.0.0, 0.0.0.0

The status bar at the bottom indicates 'Ready'.

3. Customize the probing interval, deactivate, and reactivate values as required.

NOTE – Be careful with the values you set. Making them too small may cause the Sonicwall to identify a link as down even if connectivity was only briefly interrupted.

4. Select the Enable Probe Monitoring, if you want to do both physical and logical link monitoring. If selected, you will also need to configure the monitoring.
5. Click the configure button.
6. Set up your probe sites, as required, based on the customer's needs.
7. Click OK.

Probe Settings Logic

AND The AND option requires that **both** the Probe Target and the Optional Probe Target are active for the link to be considered UP. Both the Probe Target and the Optional Probe Target must have valid entries.

OR The OR option requires that **only one** of the probe targets be active for the link to be considered UP. The Optional Probe Target is not required when using the OR logic.

As you can see, you have the option to probe 1 and/or 2 locations for each WAN link to determine if the link is functioning. You also have the option to probe using a protocol other than ICMP (ping).

For the Primary WAN, we are testing via DNS to our ISP's two DNS Servers. If connectivity is good to either DNS server, the link is considered UP.

For the Secondary WAN, we are using two public web sites, via ping, for testing the status of the xDSL link.

WAN Failover & Load Balancing

Enable Load Balancing

Primary WAN Interface:

Secondary WAN Interface:

Check Interface every seconds

Deactivate Interface after missed intervals

Reactivate Interface after successful intervals

Enable Probe Monitoring

Primary WAN Probe Settings

	Probe Target	IP Address	Port
Probe Target:	TCP	216.182.1.1	53
Optional Probe Target:	TCP	216.182.1.2	53

OR

Secondary WAN Probe Settings

	Probe Target	IP Address	Port
Probe Target:	Ping (ICMP)	66.218.71.198	80
Optional Probe Target:	Ping (ICMP)	198.133.219.25	80

Ready

WAN Load Balancing

As previously mentioned, the Load Balancing capability can be Active-Passive, or Active-Active. If you decide to use the Active-Active option, you will select one of the three load balancing algorithms.

Round Robin The Sonicwall balances the outgoing traffic on a per-destination basis by examining source and destination IP addresses.

Spill Over The Sonicwall balances the outgoing traffic on a spillover basis when a bandwidth maximum is reached on the Primary WAN. You must specify the maximum bandwidth to use on the Primary WAN before traffic is sent via the Secondary WAN.

Percentage The Sonicwall balances the outgoing traffic on a percentage basis of the total bandwidth available on the two WAN links. You must specify the percentage of bandwidth for the Primary WAN link and the Sonicwall automatically allocates the remaining percentage to the Secondary link.

1. From the GUI, select the type of Load Balancing that fits your customer's needs.
2. For other than Round Robin, enter the appropriate bandwidth amount or spillover percentage.
3. Don't forget to click the Apply button at the top of the page!

NOTE – Before the load balancing is complete, you must create a NAT rule for the second WAN interface.

4. From the GUI, select the Network button and then the NAT Policies option.
5. Click the ADD button.
6. For Original Source, select LAN Subnets. We need to NAT any LAN traffic outbound through the Secondary WAN.
7. For Translated Source, select X2 IP. NAT outbound traffic to the dynamic PPPoE IP of the Secondary WAN.
8. For Original Destination, select ANY. Any traffic destined for the Internet.

9. For Translated Destination, select Original. We want the traffic to still go to its original destination.
10. For Original Service, select ANY. Leave the service as the original service.
11. For Translated Service, select Original. Again, we want the traffic to go to its original destination, via its original service (protocol).
12. For Inbound Interface, select ANY or you could select the X0 LAN interface only.
13. For Outbound Interface, select X2. NAT all outbound traffic to the IP of the X2 Secondary WAN IP.
14. Click OK to add the NAT policy.

With the addition of the new NAT rule, any load balanced traffic going out through the X2 Secondary WAN link is NAT'ed to its IP address.

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