

Avaya Solution & Interoperability Test Lab

### **Application Notes for Configuring a SonicWALL VPN with an Avaya IP Telephony Infrastructure - Issue 1.0**

#### Abstract

These Application Notes describe the steps for configuring SonicWALL's VPN to support an Avaya IP Telephony infrastructure consisting of a Main site with Avaya Communication Manager, and two branch sites. During compliance testing, H.323 telephone calls traversing the VPN tunnel were successfully established and maintained while competing non-VoIP traffic queued according to bandwidth reservation defined in the SonicWALL devices. In addition, non-VoIP network traffic using Network Address Translation (NAT) outside of the VPN tunnel was successfully demonstrated. Information in these Application Notes has been obtained through Developer*Connection* compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

#### 1. Introduction

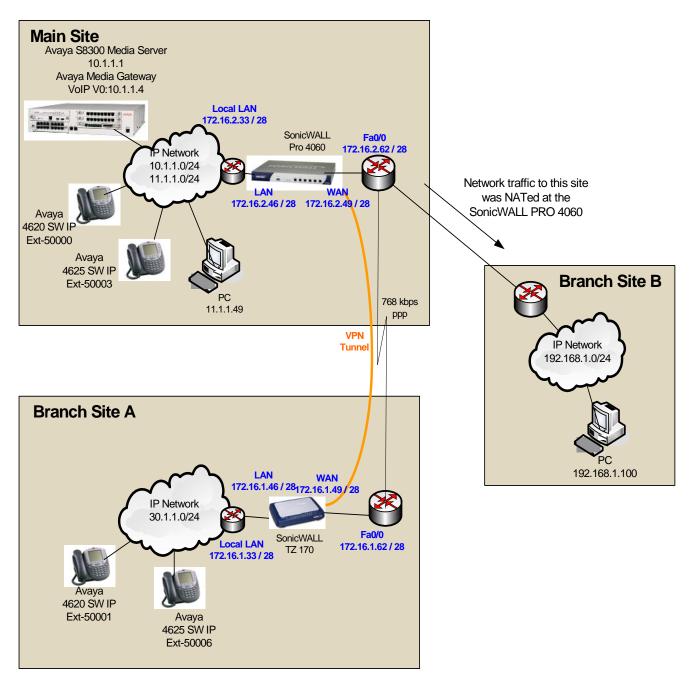
These Application Notes describe a compliance-tested solution comprised of Avaya Communication Manager, Avaya IP Telephones, and SonicWALL Unified Threat Management (UTM) devices. The SonicWALL UTM devices tested were the SonicWALL PRO 4060 and TZ 170.

The sample configuration simulates an enterprise with a Main Site, Branch Site A, and Branch Site B. The Main Site and Branch Site A are connected via a 768Kbps PPP WAN link. An Avaya S8300 Media Server at the Main Site is responsible for supporting Avaya IP telephones at the Main Site and Branch Site A. A SonicWALL UTM device is installed at these two sites between the WAN router and the local IP networks. Although the SonicWALL UTM device is capable of functioning as a firewall, that was not the focus of the compliance testing. A single VPN tunnel was established between the SonicWALL PRO 4060 at the Main Site and the TZ 170 at the Branch Site A. The SonicWALL UTM devices were configured to automatically recognize RTP traffic flow negotiated by the H.323 protocol and provide guaranteed bandwidth for the call. Guaranteed bandwidth for two simultaneous Avaya VoIP telephone calls was configured in the SonicWALL UTM devices.

Branch Site B simulated a PC only user site with no Avaya VoIP requirement. This site was used to demonstrate and verify that SonicWALL Network Address Translation does not interfere with Avaya VoIP traffic traversing the VPN tunnel between the Main Site and Branch Site A.

#### 1.1. Configuration

**Figure 1** illustrates the configuration used in these Application Notes. All Avaya IP telephones are registered with Avaya Communication Manager in the Main Site. A 768K PPP link simulating a WAN link connects the Main Site and Branch Site A while the SonicWALL UTM establishes the VPN tunnel over this link. A separate 10Mbps link simulating a WAN link connects the Main Site and Branch Site B. All data traffic destined to Branch Site B is NAT to the SonicWALL PRO 4060 WAN interface IP address.





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### 2. Equipment and Software Validated

The following equipment and software/firmware were used for the sample configuration provided:

| Equipment                                | Software/Firmware                 |
|--|-----------------------------------|
| Avaya S8300 Media Server with G700 Media | Avaya Communication Manager 3.0.1 |
| Gateway                                  | (R0.13x.00.0.346.0)               |
| Avaya 4620SW IP Telephones (H.323)       | 2.2.3                             |
| Avaya 4625SW IP Telephones (H.323)       | 2.5                               |
| SonicWALL Pro4060                        | SonicOS Enhanced 3.2.0.0-20e      |
| SonicWALL TZ170                          | SonicOS Enhanced 3.2.0.0-20e      |

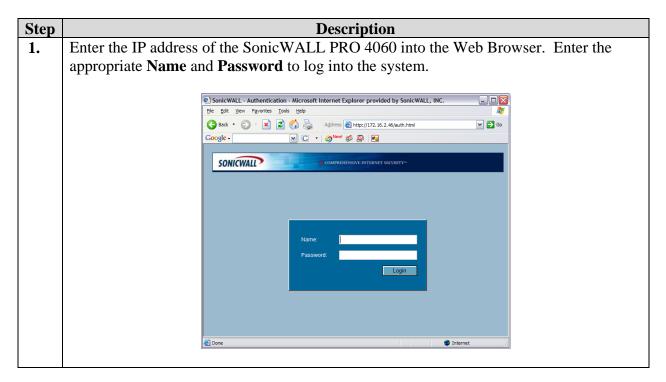
#### 3. SonicWALL Unified Threat Management

The SonicWALL Unified Threat Management (UTM) devices SonicWALL PRO 4060 and TZ 170, were used to establish a VPN tunnel between the Main Site and Branch site A and provide Network Address Translation between the Main Site and Branch Site B. The following steps outline the configuration for SonicWALL Unified Threat Management devices and the VPN tunnel.

The steps in this section depict the screen displays for the SonicWALL PRO 4060 at the Main Site. Repeat these steps for the SonicWALL TZ 170 at Branch Site A with the appropriate IP address information.

#### 3.1. General SonicWALL UTM Configuration

This section presents the SonicWALL VPN tunnel configuration.

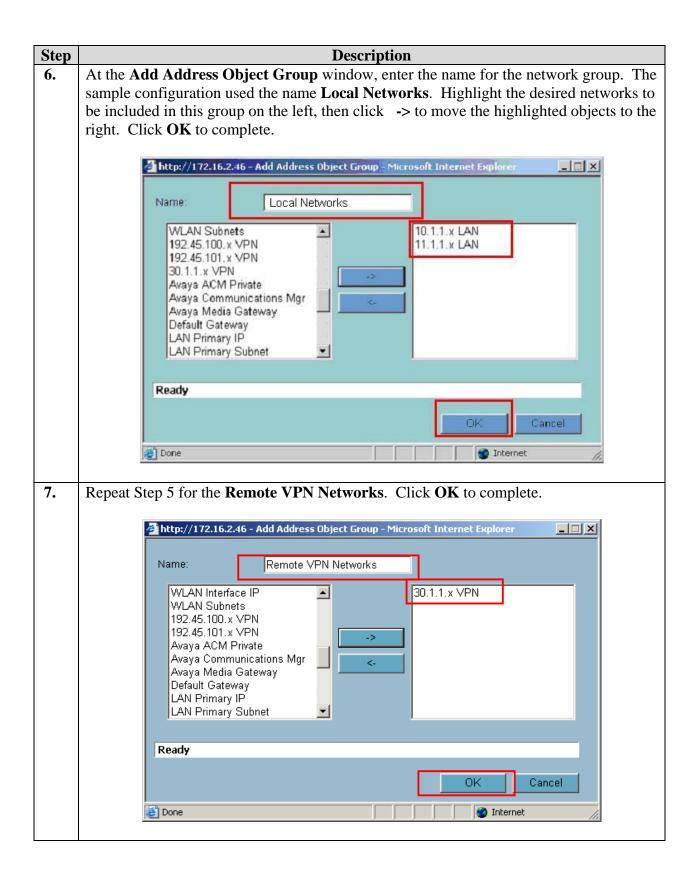


| Description           The System>Status screen is displayed after successfully logging on. Click on the        |   |   |   |   |   |             |  |  |  |  |  |  |
|--|---|---|---|---|---|-------------|--|--|--|--|--|--|
|  |   |   |   |   |   |             |  |  |  |  |  |  |
| Network tab on   | twork tab on the left to expand it.   |   |   |   |   |             |  |  |  |  |  |  |
|  | <b>T</b>  |   |   |   |   |             |  |  |  |  |  |  |
|  |   |   |   |   |   |             |  |  |  |  |  |  |
|  | SonicWALL - Administration for 0006B1029C38 - Microsoft Internet Explorer provided by SonicWALL, INC.   |   |   |   |   |             |  |  |  |  |  |  |
| <u>File E</u> dit <u>V</u> iew F <u>a</u> vori   | Ele Edit View Favorites Iools Help  |   |   |   |   |             |  |  |  |  |  |  |
| 🕞 Back 🝷 💮 🕤   | 🔹 😰 🏠 🍓 🛛 A <u>d</u> a  | dress 🕘 http://172.16.2.46/main.html  |   |   |   | 💌 🔁 G       |  |  |  |  |  |  |
| Google -   | ▼ G • Ø   | New! 🎲 🔊 🛛  |   |   |   |             |  |  |  |  |  |  |
|  |   |   |   |   |   |             |  |  |  |  |  |  |
| SONICWALL  | COMPR   | EHENSIVE INTERNET SECURITY~   |   |   |   |             |  |  |  |  |  |  |
| System   | 1   |   |   |   |   |             |  |  |  |  |  |  |
| 🕿 Status   | System > Status   |   |   |   | Wizards   | ?           |  |  |  |  |  |  |
| Licenses   |   |   |   |   |   |             |  |  |  |  |  |  |
| Administration   |   |   |   |   |   |             |  |  |  |  |  |  |
| Certificates   | System Messages • WARNING: A rule ex  | tists allowing HTTP/HTTPS management from   | the WAN. This is a potential v  | ulnerability. Choo  | ose a good password   | _           |  |  |  |  |  |  |
| 💼 Time   | The password hasn   |   | ale walk mie ie u potential v   | amorability, chot   | soo a good password.  |             |  |  |  |  |  |  |
| 🖿 Schedules  |   | ied a DNS server address; some functions wil  | Il not operate properly.  |   |   |             |  |  |  |  |  |  |
| 💼 Settings   |   |   |   |   |   |             |  |  |  |  |  |  |
| 💼 Diagnostics  |   |   |   |   |   |             |  |  |  |  |  |  |
| 💼 Restart  | System Information<br>Model:  | PRO 4060  | Security Services   | Status  |   |             |  |  |  |  |  |  |
|  | Serial Number:  | 0006B1029C38  | Service Name  | <u>Status</u>   |   | 2           |  |  |  |  |  |  |
|  | Authentication Code   |   | Nodes/Users   |   | Unlimited Nodes   |             |  |  |  |  |  |  |
|  | Firmware Version:   | SonicOS Enhanced 3.2.0.0-20e  | VPN   | Licensed  |   |             |  |  |  |  |  |  |
|  | ROM Version:  | SonicROM 3.1.0.11   | Global VPN Client   |   | - 1010 Licenses (0 in use)  |             |  |  |  |  |  |  |
|  | CPU (10s average):  | 0.00% - 2.0GHz Intel Processor  | CFS (Content Filter)  | Licensed  |   |             |  |  |  |  |  |  |
|  | Total Memory:   | 256MB RAM, 64MB Flash   | Network Anti-Virus  | Licensed  |   |             |  |  |  |  |  |  |
|  | System Time:  | 01/12/2006 07:39:38   | Gateway Anti-Virus  | Licensed  |   |             |  |  |  |  |  |  |
|  | Up Time:  | 0 Days 01:22:55   | Anti-Spyware  | Licensed  |   |             |  |  |  |  |  |  |
| Network  | Current Connections   |   | Intrusion Prevention  | Licensed  |   |             |  |  |  |  |  |  |
| SonicPoint   | Last Modified By:   | 10.1.1.205:X0 01/12/2006 07:31:02   | E-Mail Filter   | Licensed  |   |             |  |  |  |  |  |  |
| P  |   |   | ViewPoint   | Licensed  |   |             |  |  |  |  |  |  |
| Firewall   | Registration Code:  | ABSK7EL8  |   |   |   |             |  |  |  |  |  |  |
| Firewall<br>VoIP   |   | ABSK7EL8  | Network Interfaces  |   |   |             |  |  |  |  |  |  |
| Firewall<br>VoIP<br>VPN  | Latest Alerts   |   | Namo  | IP Address  | Link Status   | <b>&gt;</b> |  |  |  |  |  |  |
| Firewall<br>VoIP<br>VPN<br>Users   | Latest Alerts<br>Date/Time  | Message   |   | IP Address<br>172.16.2.46                                   | <u>Link Status</u><br>100 Mbps full-duplex                                    | Ð           |  |  |  |  |  |  |
| Firewall<br>VoIP<br>VPN<br>Users<br>Hardware Failover  | Latest Alerts Date/Time 01/12/2006 07:25:23   | Message<br>IPSec Replay Detected  | Name  |   |   | Ð           |  |  |  |  |  |  |
| Firewall<br>VoIP<br>VPN<br>Users<br>Hardware Failover<br>Security Services                                     | Latest Alerts Date/Time 01/12/2006 07:25:23 01/12/2006 07:24:16   | Message<br>IPSec Replay Delected<br>IPSec Replay Detected   | X0 (LAN)  | 172.16.2.46<br>172.16.2.49                                  | 100 Mbps full-duplex  | Đ           |  |  |  |  |  |  |
| Firewall<br>VoIP<br>VFN<br>Users<br>Hardware Failover<br>Security Services<br>Log                              | Latest Alerts Date/Time 01/12/2006 07:25:23 01/12/2006 07:24:16 01/12/2006 07:23:15   | Message<br>IPSec Replay Detected<br>IPSec Replay Detected<br>IPSec Replay Detected                          | Name           Image: State of the | 172.16.2.46<br>172.16.2.49<br>0.0.0.0                       | 100 Mbps full-duplex<br>100 Mbps full-duplex                                  | 2           |  |  |  |  |  |  |
| Firewall<br>VoIP<br>VFN<br>Users<br>Hardware Failover<br>Security Services<br>Log<br>Wizards                   | Latest Alerts Date/Time 01/12/2006 07:25:23 01/12/2006 07:24:16 01/12/2006 07:23:15 01/12/2006 07:23:05                                       | Message<br>IPSec Replay Detected<br>IPSec Replay Detected<br>IPSec Replay Detected<br>IPSec Replay Detected | Name       X0 (LAN)       X1 (WAN)       X2 (Unassigned)  | 172.16.2.46<br>172.16.2.49<br>0.0.0.0<br>0.0.0.0            | 100 Mbps full-duplex<br>100 Mbps full-duplex<br>No link                       | Đ           |  |  |  |  |  |  |
| Firewall<br>VoIP<br>VPN<br>Users<br>Hardware Failover<br>Security Services<br>Log<br>Wizards<br>Help           | Latest Alerts Date/Time 01/12/2006 07:25:23 01/12/2006 07:24:16 01/12/2006 07:23:15   | Message<br>IPSec Replay Detected<br>IPSec Replay Detected<br>IPSec Replay Detected<br>IPSec Replay Detected | Name           X0 (LAN)           X1 (WAN)           X2 (Unassigned)           X3 (Unassigned)  | 172.16.2.46<br>172.16.2.49<br>0.0.0.0<br>0.0.0.0<br>0.0.0.0 | 100 Mbps full-duplex<br>100 Mbps full-duplex<br>No link<br>No link            | Đ           |  |  |  |  |  |  |
| Firewall<br>VoIP<br>VFN<br>Users<br>Hardware Failover<br>Security Services<br>Log<br>Wizards<br>Help<br>Logout | Latest Alerts<br>Date/Time<br>01/12/2006 07:25:23<br>01/12/2006 07:24:16<br>01/12/2006 07:23:15<br>01/12/2006 07:20:05<br>01/12/2006 07:18:55 | Message<br>IPSec Replay Detected<br>IPSec Replay Detected<br>IPSec Replay Detected<br>IPSec Replay Detected | Name           State         X0 (LAN)           State         X1 (WAN)           State         X2 (Unassigned)           State         X3 (Unassigned)           State         X4 (Unassigned)  | 172.16.2.46<br>172.16.2.49<br>0.0.0.0<br>0.0.0.0<br>0.0.0.0 | 100 Mbps full-duplex<br>100 Mbps full-duplex<br>No link<br>No link<br>No link | Đ           |  |  |  |  |  |  |
| Firewall<br>VoIP<br>VPN<br>Users<br>Hardware Fallover<br>Security Services<br>Log<br>Wizards<br>Help<br>Logout | Latest Alerts Date/Time 01/12/2006 07:25:23 01/12/2006 07:24:16 01/12/2006 07:23:15 01/12/2006 07:23:05                                       | Message<br>IPSec Replay Detected<br>IPSec Replay Detected<br>IPSec Replay Detected<br>IPSec Replay Detected | Name           State         X0 (LAN)           State         X1 (WAN)           State         X2 (Unassigned)           State         X3 (Unassigned)           State         X4 (Unassigned)  | 172.16.2.46<br>172.16.2.49<br>0.0.0.0<br>0.0.0.0<br>0.0.0.0 | 100 Mbps full-duplex<br>100 Mbps full-duplex<br>No link<br>No link<br>No link | Đ           |  |  |  |  |  |  |

| p |  | Desc                              | ription                     |           |          |                  |  |  |  |  |
|---|--|-----------------------------------|-----------------------------|-----------|----------|------------------|--|--|--|--|
|   | Under the expanded N   | etwork tab on the lef             | t, select Address           | s Obje    | ects.    | Click the A      |  |  |  |  |
|   | button in the Address  | <b>Objects</b> panel to disp      | olay the Add Ad             | dress     | Obje     | ects pop-up      |  |  |  |  |
|   | window.  |                                   |                             |           | v        |                  |  |  |  |  |
|   |  |                                   |                             |           |          |                  |  |  |  |  |
|   | SonicWALL - Administration for 0006B1029C38 - Microsoft Internet Explorer       Image: Constraint of Constraints         Eile       Edit       View       Favorites       Iools       Help         SonicWALL - Administration for 0006B1029C38 - Microsoft Internet Explorer       Image: Constraint of Constraints       Image: |                                   |                             |           |          |                  |  |  |  |  |
|   |  |                                   |                             |           |          |                  |  |  |  |  |
|   |  |                                   |                             |           |          |                  |  |  |  |  |
|   | Address<br>http://172.16.2.46  | /main.html                        |                             |           | -        | 🔁 Go 🛛 Links 📆 🔹 |  |  |  |  |
|   | SONICWALL  | COMPREHENSIVE INTERN              | NET SECURITY**              |           |          |                  |  |  |  |  |
|   | System   | View Style: O All Address Objects | Custom Address Objects      | Default A | ddress O | bjects           |  |  |  |  |
|   | interfaces   | 📕 🗉 # Name                        | Address Detail              | Туре      | Zone     | Configure        |  |  |  |  |
|   | 🖿 WAN Failover & LB  | 1 Remote VPN Networks             |                             | Group     |          | ۵ 😚              |  |  |  |  |
|   | 💼 Zones  | 🗖 🛨 2 Local Neworks               |                             | Group     |          | 8 B 🔰            |  |  |  |  |
|   | 🕿 Address Objects  | Add Group Delete                  |                             |           |          | Delete All       |  |  |  |  |
|   | Routing  |                                   |                             |           |          |                  |  |  |  |  |
|   | <ul> <li>NAT Policies</li> <li>ARP</li> <li>DHCP Server</li> </ul>   | Address Objects                   |                             | Items 1   | to 9 (   | (of9) KI <  ▷ KI |  |  |  |  |
|   | 💼 IP Helper  | 🔲 # Name                          | Address Detail              | Type      | Zone     | Configure        |  |  |  |  |
|   | Web Proxy Dynamic DNS  | 🗖 1 10.1.1.x LAN                  | 10.1.1.0/255.255.255.0      | Network   | LAN      | 80               |  |  |  |  |
|   |  | 2 LAN Router                      | 172.16.2.33/255.255.255.255 | Host      | LAN      | 80 B             |  |  |  |  |
|   | SonicPoint   | 🗖 3 11.1.1.x LAN                  | 11.1.1.0/255.255.255.0      | Network   | LAN      | 80 🕅             |  |  |  |  |
|   | Firewall   | 🗖 4 30.1.1.xVPN                   | 30.1.1.0/255.255.255.0      | Network   | VPN      | 806              |  |  |  |  |
|   | VoIP   | □ 5 192.45.101.x VPN              | 192.45.101.0/255.255.255.0  | Network   | VPN      | 80 6             |  |  |  |  |
|   | Users  | 6 192.45.100.x VPN                | 192.45.100.0/255.255.255.0  | Network   | VPN      | 8                |  |  |  |  |
|   | Hardware Failover  | 🗖 7 Avaya Communications Mgr      | 10.1.1.1/255.255.255.255    | Host      | LAN      | 80 6             |  |  |  |  |
|   | Security Services  | 🗖 8 Avaya Media Gateway           | 10.1.1.4/255.255.255.255    | Host      | LAN      | 80               |  |  |  |  |
|   | Log<br>Wizards   | 9 Avaya ACM Private               | 10.1.1.1/255.255.255.255    | Host      | LAN      | 8                |  |  |  |  |
|   | Help   | Add Delete                        |                             |           | I        | Delete All       |  |  |  |  |
|   | Logout   |                                   |                             |           |          |                  |  |  |  |  |
|   | Status: Ready  |                                   |                             |           |          |                  |  |  |  |  |
|   | <b>e</b>   |                                   |                             |           | 🥑 Ir     | nternet          |  |  |  |  |

| Step |  | ]                  | Description   | n               |                        |
|------|--|--------------------|---------------|-----------------|------------------------|
| 4.   | Define all the IP netwo<br>after entering the infor<br>configuration that need<br>follows: | mation. There a    | re three IP   | networks and t  | wo hosts in the sample |
|      | Name:  | Zone<br>Assignment | Туре          | Network         | Netmask                |
|      | 10.1.1.x   | LAN                | Network       | 10.1.1.0        | 255.255.255.0          |
|      | 10.1.1.x<br>11.1.1.x   | LAN                | Network       |                 | 255.255.255.0          |
|      | 30.1.1.x   | VPN                | Network       |                 | 255.255.255.0          |
|      | LAN Router   | LAN                | Host          |                 |                        |
|      | Avaya  | LAN                | Host          |                 | N/A                    |
|      | Media  |                    |               |                 |                        |
|      | Repeat step 3 and 4 un   |                    |               | nosts above are | defined.               |
|      |  | Name:              | 10.1.1.x      |                 |                        |
|      |  | Zone Assignment:   | LAN           | ~               |                        |
|      |  | Туре:              | Network       | ~               |                        |
|      |  | Network:           | 10.1.1.0      |                 |                        |
|      |  | Netmask:           | 255.255.255.0 | 1               |                        |
|      |  | Ready              | ОК            | Cancel          |                        |
|      |  | Cone Done          | <b>9</b> I    | nternet 🥂       |                        |

| Step | Description   |                                   |                             |            |          |                |          |  |  |  |  |  |  |
|------|---|-----------------------------------|-----------------------------|------------|----------|----------------|----------|--|--|--|--|--|--|
| 5.   | Define the group where the Address Objects belong. In the sample configuration, the |                                   |                             |            |          |                |          |  |  |  |  |  |  |
|      | were two groups. The Local Networks was composed of all the locally connected IP    |                                   |                             |            |          |                |          |  |  |  |  |  |  |
|      | networks, and the Remote VPN Networks was composed of all the IP networks on t      |                                   |                             |            |          |                |          |  |  |  |  |  |  |
|      | other end of the VPN  |                                   | was composed o              | 1 411 0    | 10 11    | neevoon        |          |  |  |  |  |  |  |
|      |   | tunnen.                           |                             |            |          |                |          |  |  |  |  |  |  |
|      | Click Add Group to display the Add Address Object Group pop-up windows.             |                                   |                             |            |          |                |          |  |  |  |  |  |  |
|      | Click Add Group to display the Add Address Object Group pop-up windows.             |                                   |                             |            |          |                |          |  |  |  |  |  |  |
|      | SonicWALL - Administration for 000681029C38 - Microsoft Internet Explorer           |                                   |                             |            |          |                |          |  |  |  |  |  |  |
|      | File Edit View Favorites  |                                   | net Explorer                |            |          |                |          |  |  |  |  |  |  |
|      | G Back - 🕞 - 🗙  | 🗿 🚮 🔎 Search 🔶 Favorites          | 🚱 🖂 - 🤮 💽 - 🗖               | 1 🛍 👌      | 8        |                |          |  |  |  |  |  |  |
|      | Address 🕘 http://172.16.2.4   | 5/main.html                       |                             | <b>, 1</b> |          | 🗲 Go 🛛 Links 🍳 | <b>1</b> |  |  |  |  |  |  |
|      | SONICWALL   | COMPREHENSIVE INTER               | NET CECHDITVIN              |            |          |                |          |  |  |  |  |  |  |
|      |   | COMPREMENSIVE INTER               |                             |            |          |                |          |  |  |  |  |  |  |
|      | System<br>Network   | View Style: C All Address Objects | Custom Address Objects      | Default A  | ddress O | bjects         |          |  |  |  |  |  |  |
|      | interfaces  | 🔲 🗉 # Name                        | Address Detail              | Туре       | Zone     | Configure      |          |  |  |  |  |  |  |
|      | 🖿 WAN Failover & LB   | □ 1 Remote VPN Networks           |                             | Group      |          | 6 🎸            |          |  |  |  |  |  |  |
|      | 💼 Zones<br>💼 DNS  | 🗖 🗉 2 Local Neworks               |                             | Group      |          | 6 🞸            |          |  |  |  |  |  |  |
|      | Address Objects   | Add Group Delete                  |                             |            |          | Delete All     |          |  |  |  |  |  |  |
|      | 💼 Routing   |                                   |                             |            |          |                |          |  |  |  |  |  |  |
|      | NAT Policies ARP  | Address Objects                   |                             | Items 1    | to 9 (i  | of 9) 🕅 🔍 🕨 🕅  |          |  |  |  |  |  |  |
|      | DHCP Server   |                                   |                             | -          | -        | 0.5            |          |  |  |  |  |  |  |
|      | 💼 IP Helper<br>💼 Web Proxy  | ■ # Name                          | Address Detail              | Type       | Zone     | Configure      |          |  |  |  |  |  |  |
|      | 💼 Dynamic DNS   |                                   | 10.1.1.0/255.255.255.0      | Network    |          |                |          |  |  |  |  |  |  |
|      |   | 2 LAN Router                      | 172.16.2.33/255.255.255.255 |            | LAN      | 80 B<br>N A    |          |  |  |  |  |  |  |
|      | SonicPoint  | □ 3 11.1.1.x LAN                  | 11.1.1.0/255.255.255.0      | Network    |          | 80 10<br>No    |          |  |  |  |  |  |  |
|      | Firewall  | 4 30.1.1.x VPN                    | 30.1.1.0/255.255.255.0      | Network    |          | 80 B<br>N A    |          |  |  |  |  |  |  |
|      | VPN   | 5 192.45.101.x VPN                | 192.45.101.0/255.255.255.0  | Network    |          | 80 B           |          |  |  |  |  |  |  |
|      | Users   | 6 192.45.100.x VPN                | 192.45.100.0/255.255.255.0  | Network    |          | 80             |          |  |  |  |  |  |  |
|      | Hardware Failover<br>Security Services  | 7 Avaya Communications Mgr        |                             | Host       | LAN      | 80 B           |          |  |  |  |  |  |  |
|      | Log   | 🗖 8 Avaya Media Gateway           | 10.1.1.4/255.255.255.255    | Host       | LAN      | 806            |          |  |  |  |  |  |  |
|      | Wizards   | 🔲 9 Avaya ACM Private             | 10.1.1.1/255.255.255.255    | Host       | LAN      | 80 6           |          |  |  |  |  |  |  |
|      | Help  | Add Delete                        |                             |            |          | Delete All     |          |  |  |  |  |  |  |
|      | Logout  |                                   |                             |            |          |                |          |  |  |  |  |  |  |
|      | Status: Ready   |                                   |                             |            |          |                |          |  |  |  |  |  |  |
|      | 10 A  |                                   |                             |            | 🔮 Ir     | iternet        | 11.      |  |  |  |  |  |  |



| Description   |  |   |   |             |                      |          |               |              |          |                     |
|---|--|---|---|-------------|----------------------|----------|---------------|--------------|----------|---------------------|
| Define the routing configuration of the SonicWALL PRO 4060 by clicking on Rou     |  |   |   |             |                      |          |               |              |          |                     |
| under the Network tab on the left. Click Add under the Route Policies panel to di |  |   |   |             |                      |          |               |              |          |                     |
| the <b>Add Route Policy</b> pop-up windows.                                       |  |   |   |             |                      |          |               |              |          |                     |
|   |  |   |   |             |                      |          |               |              |          |                     |
|   | 🛃 SonicWALL - Adminis                                | stration for 0006B1029C38 - N   | icrosoft Internet Explo   | rer provi   | ded by SonicWALL     | ., INC.  |               |              |          | _ □ 🛛               |
|   | Eile Edit View Favorite                              |   |   |             |                      |          |               |              |          | <b>//</b>           |
|   |  | <ul> <li>▲ ddress ▲</li> <li>▲ ddress ▲</li> <li>▲ C</li> <li>✓ Ø<sup>New!</sup> %</li> </ul> | http://172.16.2.46/main.h   | tml         |                      |          |               |              |          | 🚩 🄁 Go              |
|   | SONICWALL  |   | E INTERNET SECURITY**   |             |                      |          |               |              |          |                     |
|   | System   | 11  |   |             |                      |          |               |              |          |                     |
|   | Network  | Network > Routing   |   |             |                      |          |               |              |          | ?                   |
|   | Interfaces WAN Failover & LB                         | Route Advertisemen  |   |             |                      |          |               |              |          |                     |
|   | 💼 Zones<br>💼 DNS                                     | Routing Mode: Simple RIF  | Advertisement 💌   |             |                      |          |               |              |          |                     |
|   | <ul> <li>Address Objects</li> <li>Routing</li> </ul> | Interface (Zone)  |   |             | Status               |          |               | Config       | jure     |                     |
|   | MAT Policies   | X0 (LAN)<br>X1 (WAN)  |   |             | Disabled<br>Disabled |          |               | &<br>&       |          |                     |
|   | DHCP Server  | X2 (N/A)  |   |             | Disabled             |          |               | 8            |          |                     |
|   | IP Helper Web Proxy                                  | X3 (N/A)  |   |             | Disabled             |          |               | 8            |          |                     |
| 1   | 💼 Dynamic DNS  | X4 (N/A)<br>X5 (N/A)  |   |             | Disabled<br>Disabled |          |               | - 89<br>- 89 |          |                     |
|   |  |   |   |             |                      |          |               |              |          | =                   |
|   |  | Route Policies  |   |             |                      |          |               | Ite          | ems 1 to | o6 (of 6) KI ⊲ ▷ KI |
|   |  | View Style:      All Policies   | Ocustom Policies  | efault Poli | des                  |          |               |              |          |                     |
|   | SonicPoint   | # Source  | Destination   | Servio      | e Gateway            | Interfa  | ce Metri      | c Priori     | ty Comme | ent Configure       |
|   | Firewall<br>VoIP                                     | 🗆 1 Any   | 255.255.255.255/32  | Any         | 0.0.0.0              | X0       | 20            | 1            | Ø        | ¥ 6                 |
|   | VPN  | 2 Any   | Default Gateway   | Any         | 0.0.0.0              | X1       | 20            | 2            | 9        | <b>8</b>            |
|   | Users<br>Hardware Failover                           | 3 Any<br>4 Any  | LAN Primary Subnet<br>WAN Primary Subnet  | Any<br>Any  | 0.0.0.0              | X0<br>X1 | 20<br>20      | 3            | 9        |                     |
|   | Security Services                                    | 5 WAN Primary Subne   |   | Any         | Default Gateway      |          | 20            | 4<br>5       | 9        | ¥8                  |
|   | Wizards  | 6 Anv   | 0.0.0/0   | Any         | 172.16.2.62          | X1       | 20            | 6            | ø        | ۵ 🐨                 |
|   | Help<br>Logout                                       | Add De  | ete   |             |                      |          |               |              |          | Delete All          |
|   | Status: Ready  |   |   |             |                      |          |               |              |          |                     |
|   | é  |   |   |             |                      |          |               |              |          | Internet            |
| _   | ~  |   |   |             |                      |          |               |              |          |                     |
| De  | fine a route po                                      | olicy as shown  | :   |             |                      |          |               |              |          |                     |
|   |  |   |   |             |                      |          |               |              |          |                     |
|   |  | v source destin   |   |             |                      |          |               |              | rvice    | use <i>LAN</i>      |
| Ro  | uter gateway   | reachable fron  | n interface   | X0          | with a m             | etric    | of <b>1</b> . | •            |          |                     |
|   |  |   |   |             |                      |          |               |              |          |                     |
| Lo  | cal Networks   | and LAN Rou   | <i>ter</i> were de  | efine       | d in ster            | 5 6 ai   | nd 4 a        | abov         | e res    | pectively.          |
|   |  |   |   |             | 1                    |          |               |              |          |                     |
|   |  | (e) http  | ://172.16.2.46 - A  | id Route    | Policy - Micros      | (a) (    |               |              |          |                     |
|   |  |   | General   |             |                      |          |               |              |          |                     |
|   |  |   | oute Policy Setti   | nge         |                      |          |               |              |          |                     |
|   |  | R   |   |             |                      |          |               |              |          |                     |
|   |  |   | sace Any  |             | 100                  |          |               |              |          |                     |
|   |  | 9.<br>D   |   | worka       | 2 P                  |          |               |              |          |                     |
|   |  | 9<br>0<br>9<br>0  | inter Any<br>Internation Local Ne<br>Internation Any<br>Internation LAN Rec   | 25.3500     | 2                    |          |               |              |          |                     |
|   |  | a<br>D<br>a<br>tr   | surce Any<br>estimation Local Ne<br>intos Any   | 25.3500     | ×                    |          |               |              |          |                     |
|   |  | 9.<br>0.<br>0.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.  | sarce Any<br>refination Local Ne<br>mice Any<br>Reway LAN Rec<br>enface X0  | 25.3500     | 2                    |          | I             |              |          |                     |
|   |  | a<br>5<br>4<br>9<br>1<br>1<br>1<br>1<br>0   | seco Any<br>rotration Local Ne<br>revoc Any<br>Revoy LAN Rou<br>Reflace X0<br>afric 1                                 | flør        | ×                    |          |               |              |          |                     |
|   |  | a<br>5<br>4<br>9<br>1<br>1<br>1<br>1<br>0   | seco Any<br>estimation: Local Ne<br>nece Any<br>tervay LAN Ro,<br>entrace X0<br>abit: 1<br>chastie route when t       | flør        | i v<br>v<br>v        | ed       |               |              |          |                     |
|   |  |   | sece Any<br>estimation Local Ne<br>nece Any<br>steway LAN Ro.<br>entrace X0<br>able: 1<br>chastle route when 1<br>ady | flør        | ×                    |          |               |              |          |                     |

## 3.2. Configure the VPN tunnel for the SonicWALL UTM devices

| Step |   |                              | Descr                              | ription                       |                     |                |                     |
|------|---|------------------------------|------------------------------------|-------------------------------|---------------------|----------------|---------------------|
| 1.   | Begin configuration   | on of the VI                 | PN tunnel by cl                    | icking on Set                 | tings unde          | er the VI      | <b>N</b> tab on the |
|      | left. Click Add ur  | nder the VP                  | N policies pan                     | el to display t               | he Securit          | y Policy       | y pop-up            |
|      | window.   |                              |                                    |                               |                     |                |                     |
|      |   |                              |                                    |                               |                     |                |                     |
|      | SonicWALL - Administration                                    | n for 0006B1029C38 -         | Microsoft Internet Explorer p      | rovided by SonicWALL, INC.    |                     |                | _ 🗆 🛛               |
|      | <u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> or | ols <u>H</u> elp             |                                    |                               |                     |                | <b>N</b>            |
|      | G Back 🔹 🕥 🔹 😫  |                              | http://172.16.2.46/main.html       |                               |                     |                | 💌 🔁 Go              |
|      | Google -  | ⊻ G ▼ Ø <sup>New!</sup>      | 1                                  |                               |                     |                |                     |
|      | SONICWALL   | COMPREHENS                   | SIVE INTERNET SECURITY**           |                               |                     |                |                     |
|      | System<br>Network   |                              |                                    | 1/011                         | Dellas Missad       | Anata          |                     |
|      | SonicPoint  | VPN > Settings               |                                    | VPN                           | Policy Wizard       | Apply          | Cancel ?            |
|      | Firewall V<br>VoIP  | PN Global Settings           | 5                                  |                               |                     |                |                     |
|      | VPN   | Enable VPN                   |                                    |                               |                     |                |                     |
|      | Settings  | Unique Firewall Identifier:  | 0006B1029C38                       | _                             |                     |                |                     |
|      | Advanced  | PN Policies                  |                                    |                               |                     | Items 1 to 3 ( | of 3) 比 ◁ ▷ 比       |
|      | L2TP Server   | # Name                       | Gateway                            | Destinations Crypt            | o Suite             | Enable         | Configure           |
|      |   | 1 WAN GroupVPN               |                                    |                               | DES HMAC SHA1 (IKE) |                | 888                 |
|      |   | 2 WLAN GroupVPN              |                                    | ESP 30                        | DES HMAC SHA1 (IKE) |                | 8 B 6 C             |
|      |   | 3 Avaya DevConnec            | 172.16.1.49                        | 30.1.1.1 - 30.1.1.255 ESP 30  | DES HMAC SHA1 (IKE) |                | 808                 |
|      |   | Add                          | elete                              |                               |                     |                | Delete All          |
|      | s s   | Site To Site Policies: 1 Pol | licies Defined, 1 Policies Enabled | , 3000 Maximum Policies Allow | ed                  |                |                     |
|      | G   | GroupVPN Policies: 2 Poli    | cies Defined, 0 Policies Enabled,  | 20 Maximum Policies Allowed   |                     |                |                     |
|      | C   | urrently Active VP           | N Tunnels                          |                               |                     | Items 1 to 2 ( | of 2) 🕅 🗸 🗅 🕅       |
|      | Users   | # Name                       | Local                              | Remote                        | Gateway             |                |                     |
|      | Hardware Failover   | 1 Avaya DevCo                | nnect 11.1.1.1 - 11.1.1.255        | 30.1.1.1 - 30.1.1.255         | 172.16.1.49         | Renegotiate    | illi ⇔              |
|      | Security Services   | 2 Avaya DevCo                | nnect 10.1.1.1 - 10.1.1.255        | 30.1.1.1 - 30.1.1.255         | 172.16.1.49         | Renegotiate    | illi ⇔              |
|      | Wizards   |                              |                                    |                               |                     |                |                     |
|      | Help 2<br>Logout  | 2 Currently Active VPN Tun   | nels                               |                               |                     |                |                     |
|      | Status: The configuration ha                                  | s been updated.              |                                    |                               |                     |                |                     |
|      | <u>é</u>  |                              |                                    |                               |                     | 🔮 Ir           | iternet             |
|      | <u>.</u>  |                              |                                    |                               |                     |                |                     |

| Step |  | Description   |
|------|--|---|
| 2.   | •  | <b>Policy</b> pop-up window, enter the following                |
|      | information for the VPN tunnel.  |   |
|      | -  | ect (a descriptive name for the VPN tunnel)                     |
|      | IPsec Primary Gateway Name of  |   |
|      | <i>1/2.10.1.49</i> (the 1 interface)                                   | IP address of the remote SonicWALL's WAN                        |
|      | IPsec Secondary Gateway Name   | e or Address:   |
|      | 0.0.0.0  |   |
|      | Shared Secret: 1234 (a secret stri                                     | ring that will be entered into both SonicWALL devices)          |
|      | Click on the <b>Network</b> tab after ent                              | tering the above information.                                   |
|      |  |   |
|      | http://172.16.2.46 - VPN Policy -                                      | - Microsoft Internet Explorer provided by SonicWALL, INC. 📃 🗖 🔀 |
|      | General Network Pro  | roposals Advanced   |
|      | Security Policy  |   |
|      | Authentication Method:   | IKE using Preshared Secret                                      |
|      | Name:  | Avaya DevConnect  |
|      | IPsec Primary Gateway Name or Add<br>IPsec Secondary Gateway Name or A |   |
|      | IKE Authentication   |   |
|      | Shared Secret  |   |
|      | Confirm Shared Secret  | •••• Mask Shared Secret   |
|      | Local IKE ID:  | IP Address  |
|      | Peer IKE ID:   | IP Address  |
|      |  |   |
|      |  |   |
|      |  |   |
|      | Ready  |   |
|      |  | OK Cancel Help  |
|      | 🖉 Done   | 🔹 🔹 Internet  |
|      |  |   |

| Step |  | Description   |
|------|--|---|
| 3.   | Under the Network tab. select Local          | Networks and Remote VPN Networks as defined                     |
|      | in Section 3.1 step 6 and 7 respective       |   |
|      |  |   |
|      | 🐔 http://172.16.2.46 - VPN Policy - N        | Nicrosoft Internet Explorer provided by SonicWALL, INC. 🛛 🗔 🗆 🔯 |
|      | General Network Prop                         | osals Advanced  |
|      | Local Networks                               |   |
|      |  |   |
|      | Choose local network from list               | Local Networks  |
|      |  | es using DHCP through this VPN Tunnel                           |
|      | O Any address 🔎                              |   |
|      | Destination Networks                         |   |
|      | O Use this VPN Tunnel as default ro          | ute for all internet traffic                                    |
|      |  | dresses using DHCP through this VPN Tunnel                      |
|      | Choose destination network from              | list Remote VPN Networks  |
|      |  |   |
|      |  |   |
|      |  |   |
|      |  |   |
|      |  |   |
|      |  |   |
|      | Ready  |   |
|      | Ready  |   |
|      |  | OK Cancel Help  |
|      | 8  | Internet 🔮  |
|      |  |   |
| 4.   | All the fields in the <b>Proposal</b> tab we | ere left at the default value in the sample                     |
|      | configuration. Click on the Advanc           | ed tab to continue.   |
|      |  |   |
|      | @ http://172.16.2.46 - VPN Policy - I        | Microsoft Internet Explorer provided by SonicWALL, INC. 🛛 🖃 🔀   |
|      | General Network Pro                          | posals Advanced   |
|      | IKE (Phase 1) Proposal                       |   |
|      | Exchange:                                    | Main Mode   |
|      | DH Group:                                    | Group 2   |
|      | Encryption:                                  | 3DES V  |
|      | Authentication:                              | SHA1  |
|      | Life Time (seconds):                         | 28800   |
|      | Ipsec (Phase 2) Proposal                     |   |
|      | Protocol:                                    | ESP   |
|      | Encryption:                                  | 3DES V  |
|      | Authentication:                              | SHA1  |
|      | Enable Perfect Forward Secrecy               |   |
|      | DH Group:                                    | Group 2   |
|      | Life Time (seconds):                         | 28800   |
|      |  |   |
|      |  |   |
|      | Ready  |   |
|      |  | OK Cancel Help  |
|      | <b>e</b>                                     | 🥥 Internet  |
|      |  |   |

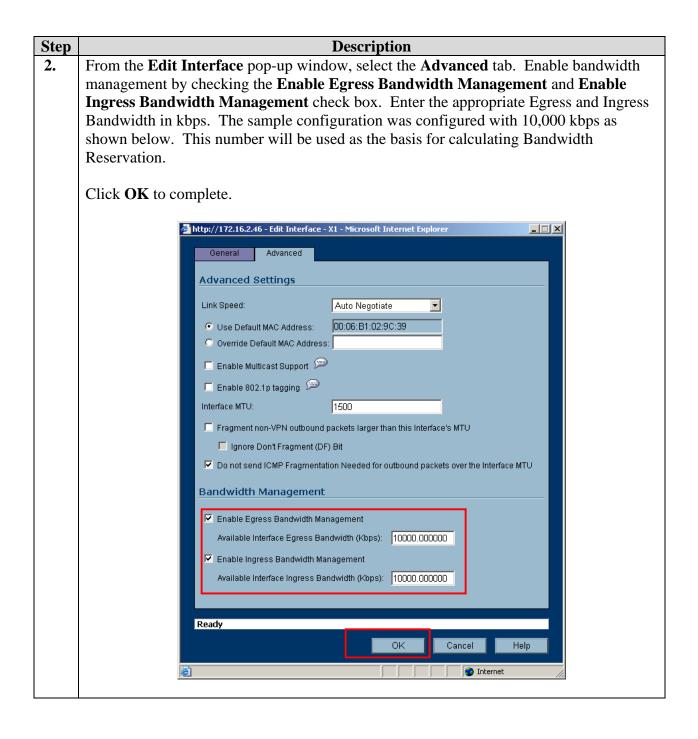
Solution & Interoperability Test Lab Application Notes ©2006 Avaya Inc. All Rights Reserved.

| Step | Description   |
|------|---|
| 5.   | Under the <b>Advanced</b> tab, <b>Enable Keep Alive</b> by clicking the check box on the left.    |
|      | Click <b>OK</b> to complete.  |
|      | 1   |
|      | 🐔 http://172.16.2.46 - VPN Policy - Microsoft Internet Explorer provided by SonicWALL, INC. 📃 🗆 🔀 |
|      | General Network Proposals Advanced  |
|      | General Ivelwork Proposals Advanced   |
|      | Advanced Settings   |
|      | Enable Keep Alive   |
|      | Suppress automatic Access Rules creation for VPN Policy   |
|      | Require authentication of VPN clients by XAUTH  |
|      | User group for XAUTH users:Select a user group  |
|      | Enable Windows Networking (NetBIOS) Broadcast   |
|      | Enable Multicast  |
|      | Apply NAT Policies  |
|      | Translated Local Network:Select Translated Local Network-   |
|      | Translated Remote Network:Select Translated Remote Network-                                       |
|      | Management via this SA: HTTP HTTPS  |
|      | User login via this SA:   |
|      | Default LAN Gateway (optional): 0.0.0.0   |
|      | VPN Policy bound to: Zone WAN 💌   |
|      |   |
|      |   |
|      | Ready   |
|      | OK Cancel Help  |
|      | Internet  |
| I    |   |

# 3.3. Configure the Firewall Access Rules and Bandwidth Reservation for the SonicWALL VPN Tunnel.

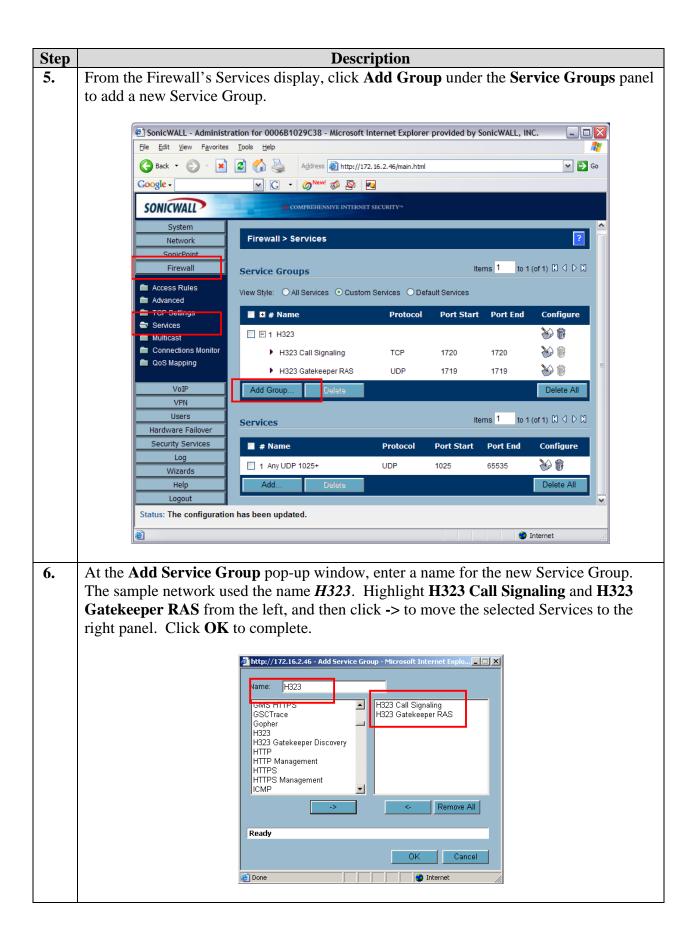
This section defines the necessary Firewall Access Rules and Bandwidth Reservation for VoIP traffic for the VPN Tunnel.

| Step |  |                |                   |               |              |               |           |              |               |                |          |  |
|------|--|----------------|-------------------|---------------|--------------|---------------|-----------|--------------|---------------|----------------|----------|--|
| 1.   | Begin by defining  | the Ban        | dwidth fo         | or the V      | VAN          | interfa       | ice by    | y selecti    | ng <b>Int</b> | terfaces u     | ınder    |  |
|      | the <b>Network</b> tab on the left. Click on the $\bigotimes$ icon on the right for the WAN Zone |                |                   |               |              |               |           |              |               |                |          |  |
|      | under the Interface  |                |                   |               |              | 10011 0       |           | 119110 10    |               |                | 10       |  |
|      |  | Setting        | s punei.          |               |              |               |           |              |               |                |          |  |
|      | 🏄 SonicWALL - Administrati   | on for 0006B10 | 29C38 - Microsoft | t Internet Ex | olorer       |               |           |              |               | _              |          |  |
|      | File Edit View Favorites Iools Help  |                |                   |               |              |               |           |              |               |                |          |  |
|      | 🕞 Back - 🕤 - 🖹 🙆 🏠 🔎 Search 👷 Favorites 🤪 🔗 - 🍃 🔯 - 🗍 🎇 🦄  |                |                   |               |              |               |           |              |               |                |          |  |
|      | Address 🛃 http://172.16.2.46   | /main.html     |                   |               |              |               |           |              | •             | 🔁 Go 🛛 Links   | <b>1</b> |  |
|      | SONICWALL  |                | COMPREHENSIVE     | INTERNET SEC  | URITY        |               |           |              |               |                |          |  |
|      | Cystem   |                |                   |               |              |               |           |              |               |                |          |  |
|      | Network  | Networ         | k > Interfaces    |               |              |               | Setu      | ıp Wizard    | Clea          | r Statistics ? |          |  |
|      | 🕿 Interfaces   |                |                   |               |              |               |           |              |               |                |          |  |
|      | 💼 WAN Failover & LB  | Interface      | e Settings        |               |              |               |           |              |               |                |          |  |
|      | 💼 Zones<br>💼 DNS   | 🗖 Name         | Zone              |               |              | Mask IP A     | _         |              | Comm          |                |          |  |
|      | Address Objects  | E X0           | LAN               |               |              | 255.240 Stati |           | 100 Mbps ful |               |                |          |  |
|      | Routing  | E X1           | WAN               |               |              | 255.240 Stati |           | 100 Mbps ful | l-duplex De   | efault WAN 🔬   |          |  |
|      | NAT Policies ARP   | E X2           | Unassigne         | d 0.0.0.0     | 0.0.0        | .0 N/A        | (         | No link      |               |                |          |  |
|      | DHCP Server  | E X3           | Unassigne         | d 0.0.0.0     | 0.0.0        | .0 N/A        | ۱.        | No link      |               | 8              |          |  |
|      | 💼 IP Helper  | E ×4           | Unassigne         | d 0.0.0.0     | 0.0.0        | .0 N/A        | 1         | No link      |               | 8              |          |  |
|      | 🛍 Web Proxy  | ⊡ ×5           | Unassigne         | d 0.0.0.0     | 0.0.0        | .0 N/A        | k.        | No link      |               | 8              |          |  |
|      |  | Add Inte       | rface             |               |              |               |           |              |               |                |          |  |
|      | SonicPoint   |                |                   |               |              |               |           |              |               |                |          |  |
|      | Firewall   | Interface      | e Traffic Stati   | stics         |              |               |           |              |               |                | -        |  |
|      | VoIP   | Interface T    | raffic Statistics |               |              |               |           |              |               |                | _        |  |
|      | VPN  | Traffic Stat   |                   | <u>x(</u>     |              | <u>X1</u>     | <u>X2</u> | <u>X3</u>    | <u>X4</u>     | <u>×5</u>      |          |  |
|      | Users  | Rx Unicast     |                   |               | 6145         | 486757<br>0   | 0<br>0    | 0            | 0             | 0              |          |  |
|      | Hardware Failover<br>Security Services   | Rx Bytes:      | ast Packets:      | 54<br>48      | 4<br>9766161 | 355059269     |           | 0            | 0             | 0              |          |  |
|      | Log  | Tx Unicast     | Packets:          |               | 1433         | 300627        | 0         | 0            | 0             | 0              |          |  |
|      | Wizards  | Tx Broadca     | ast Packets:      | 3             |              | 4307          | 0         | 0            | 0             | 0              |          |  |
|      | Help   | Tx Bytes:      |                   | 24            | 9513674      | 265103080     | 0         | 0            | 0             | 0              |          |  |
|      | Logout   |                |                   |               |              |               |           |              |               |                |          |  |
|      | Status: Ready  |                |                   |               |              |               |           |              |               |                |          |  |
|      | e  |                |                   |               |              |               |           |              |               | ) Internet     | 11.      |  |



| <u>Step</u><br>3. | *                                      |   |                     |                 |              |                  |     |  |  |  |
|-------------------|--|---|---------------------|-----------------|--------------|------------------|-----|--|--|--|
|                   |  | wall services by selectin                                       |                     |                 |              |                  |     |  |  |  |
|                   | left. Click on Add u                   | under Services panel to   | display the         | e Add Sei       | rvice po     | op-up winde      | ow. |  |  |  |
|                   |  |   |                     |                 |              |                  | _   |  |  |  |
|                   |  | tration for 0006B1029C38 - Microsoft                            | nternet Explore     | r provided by S | onicWALL, II |                  |     |  |  |  |
|                   | <u>File Edit View Favorite</u>         |   |                     |                 |              |                  |     |  |  |  |
|                   | 🕒 Back 🔹 🐑 🐇 🗶                         | ] 💈 🏠 🖕 A <u>d</u> dress 🖉 http://17                            | 2.16.2.46/main.html |                 |              | 💌 🄁 🛛            | Go  |  |  |  |
|                   | Google -                               | 💌 G 🔹 🧭 🕬 🔛   | 4                   |                 |              |                  |     |  |  |  |
|                   | SONICWALL                              | COMPREHENSIVE INTERNE   | r security™         |                 |              |                  |     |  |  |  |
|                   | System                                 |   |                     |                 | _            | _                |     |  |  |  |
|                   | Network                                | Firewall > Services   |                     |                 |              | ?                |     |  |  |  |
|                   | Firewall                               |   |                     | Ito             | ms 1 to 1    | 1 (of 1) [X]     |     |  |  |  |
|                   |  | Service Groups  |                     | ne              |              |                  |     |  |  |  |
|                   | Access Rules                           | View Style: O All Services O Custom Services O Default Services |                     |                 |              |                  |     |  |  |  |
|                   | TOP Settings                           | 📕 🗄 # Name  | Protocol            | Port Start      | Port End     | Configure        |     |  |  |  |
|                   | Services                               | 🗌 🗉 1 H323  |                     |                 |              | 80 B             |     |  |  |  |
|                   | Connections Monitor                    | H323 Call Signaling   | TCP                 | 1720            | 1720         | X) 🕅             |     |  |  |  |
|                   | 🛍 QoS Mapping                          | H323 Gatekeeper RAS   | UDP                 | 1719            | 1719         | <b>N n</b>       | ≡   |  |  |  |
|                   | VoIP                                   | Add Group Delete  |                     |                 |              | Delete All       |     |  |  |  |
|                   | VPN                                    |   |                     |                 |              |                  |     |  |  |  |
|                   | Users                                  | Services  |                     | Ite             | ms 1 to f    | 1 (of 1) 🕅 🖣 🖯 🕅 |     |  |  |  |
|                   | Hardware Failover<br>Security Services | # Name  | Protocol            | Port Start      | Port End     | Configure        |     |  |  |  |
|                   | Log                                    |   |                     |                 |              |                  |     |  |  |  |
|                   | Wizards                                | 1 Any UDP 1025+   | UDP                 | 1025            | 65535        | <u> </u>         |     |  |  |  |
|                   | Help<br>Logout                         | Add Delete  |                     |                 |              | Delete All       |     |  |  |  |
|                   | Status: The configurati                | on has been updated.  |                     |                 |              |                  |     |  |  |  |
|                   |  | en nac soon apaatoa.  |                     |                 |              |                  |     |  |  |  |
|                   | ۲                                      |   |                     |                 |              | Internet         | :   |  |  |  |

| Step |   | Description  |  |  |  |
|------|---|--|--|--|--|
| 4.   | Enter the following information for the new Firewall service. |  |  |  |  |
|      | Name:<br>Protocol:<br>Port Range:                             | Any UDP 1025+ (a descriptive name for the Firewall service)<br>UDP(17)<br>1025 - 65535 |  |  |  |
|      | This rule is desi<br>H.323.                                   | gned to filter out all UDP traffic that has not been negotiated using the              |  |  |  |
|      | Click <b>OK</b> after entering all the information.           |  |  |  |  |
|      |   | 🎒 http://172.16.2.46 - Add Service - Microsoft Internet Exp 💶 🗵                        |  |  |  |
|      |   | Name: Any UDP 1025+  |  |  |  |
|      |   | Protocol: UDP(17)  |  |  |  |
|      |   | Port Range: 1025 _ 65535   |  |  |  |
|      |   | Sub Type: None 💌   |  |  |  |
|      |   | Beath  |  |  |  |
|      |   | Ready  |  |  |  |
|      |   | OK Cancel  |  |  |  |
|      |   |  |  |  |  |
|      |   | 🖉 Done   |  |  |  |
|      |   |  |  |  |  |



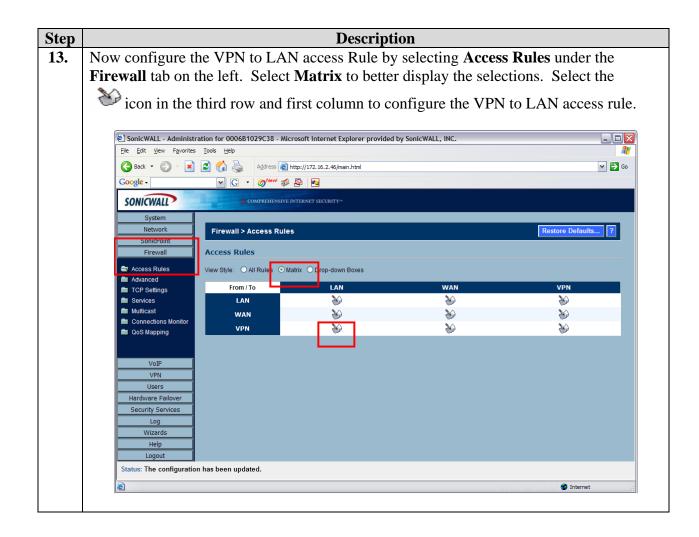
| Step  |  |   | Descript                         | tion                 |                     |  |  |  |  |  |
|---|--|---|----------------------------------|----------------------|---------------------|--|--|--|--|--|
| 7.  | Select <b>Access Rules</b> under the <b>Firewall</b> tab on the left to configure the Firewall's rules.<br>Select <b>Matrix</b> to better display all the selections. There are two sides of the firewall that |   |                                  |                      |                     |  |  |  |  |  |
|   |  |   |                                  |                      |                     |  |  |  |  |  |
| need to be configured. One is LAN to VPN and the other is VPN to LAN. Sel |  |   |                                  |                      |                     |  |  |  |  |  |
|   |  | $\overset{\circ}{\sim}$ icon in the first row and third column to configure the LAN to VPN Access rule. |                                  |                      |                     |  |  |  |  |  |
|   | 🖤 icon in the f  | irst row and thi  | rd column to c                   | onfigure the LAN     | to VPN Access rule. |  |  |  |  |  |
|   |  |   |                                  |                      |                     |  |  |  |  |  |
|   | SonicWALL - Administra   | ation for 0006B1029C38 - Micro  | osoft Internet Explorer provideo | d by SonicWALL, INC. |                     |  |  |  |  |  |
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|   | Google -   | 🖌 🖸 🖌 🎯 New! 🚿 🗄  | P 2                              |                      |                     |  |  |  |  |  |
|   | SONICWALL  | COMPREHENSIVE IN  | TERNET SECURITY**                |                      |                     |  |  |  |  |  |
|   | System   | _   |                                  |                      |                     |  |  |  |  |  |
|   | Network  | Firewall > Access Rules   |                                  |                      | Restore Defaults ?  |  |  |  |  |  |
|   | Firewall   | Access Rules  |                                  |                      |                     |  |  |  |  |  |
|   | 🚔 Access Rules   | View Style: 🔿 All Rules 💿 Mat   | rix OC rop-down Boxes            |                      |                     |  |  |  |  |  |
|   | Advanced TCP Settings  | From / To   | LAN                              | WAN                  | VPN                 |  |  |  |  |  |
|   | Services   | LAN   | 8                                | 2                    | 8                   |  |  |  |  |  |
|   | Multicast  | WAN   | 2                                | 2                    | <b>N</b>            |  |  |  |  |  |
|   | Cos Mapping  | VPN   | 8                                | 8                    | 8                   |  |  |  |  |  |
|   |  |   |                                  |                      |                     |  |  |  |  |  |
|   | VoIP   |   |                                  |                      |                     |  |  |  |  |  |
|   | Users  |   |                                  |                      |                     |  |  |  |  |  |
|   | Hardware Failover  |   |                                  |                      |                     |  |  |  |  |  |
|   | Security Services  |   |                                  |                      |                     |  |  |  |  |  |
|   | Log<br>Wizards   |   |                                  |                      |                     |  |  |  |  |  |
|   | Help   |   |                                  |                      |                     |  |  |  |  |  |
|   | Logout   | have been used at a d   |                                  |                      |                     |  |  |  |  |  |
|   | Status: The configuration  | n nas been updated.   |                                  |                      |                     |  |  |  |  |  |
|   | <u>é</u>   |   |                                  |                      | 🔮 Internet 🥂        |  |  |  |  |  |
|   |  |   |                                  |                      |                     |  |  |  |  |  |

|     |                                |                               |                               | Descript               | ion              |         |       |              |          |                     |
|-----|--------------------------------|-------------------------------|-------------------------------|------------------------|------------------|---------|-------|--------------|----------|---------------------|
| Cli | ck on <b>Add</b> un            | der the I                     | Firewall > A                  | ccess Rul              | es > LA          | N >     | VPI   | <b>V</b> pan | el to    | add a ne            |
|     | ess Rule.                      |                               |                               |                        |                  |         |       | 1            |          |                     |
|     |                                |                               |                               |                        |                  |         |       |              |          |                     |
|     | SonicWALL - Administ           | tration for 0006B             | 1029C38 - Microsoft Intern    | et Explorer provided   | by SonicWALL, II | NC.     |       |              |          | _ 0                 |
|     | <u>File Edit View Favorite</u> | es <u>T</u> ools <u>H</u> elp |                               |                        |                  |         |       |              |          |                     |
|     | G Back 🝷 🕥 🕤 🗙                 | ) 💈 🏠 🎍                       | Address 🚵 http://172.16.2.    | 46/main.html           |                  |         |       |              |          | 💌 🄁 🗸               |
|     | Google -                       | ▼ G                           | • Ø <sup>New!</sup> 🚳 🗟 🔤     |                        |                  |         |       |              |          |                     |
|     | SONICWALL                      |                               | COMPREHENSIVE INTERNET SECUR  | UTY <sup>as</sup>      |                  |         |       |              |          |                     |
|     | System                         |                               |                               |                        |                  |         |       |              |          |                     |
|     | Network                        | Firewall >                    | Access Rules > LAN > Vi       | PN 🚺                   | Public Server Wi | zard    | Clear | Statistics   | Restore  | Defaults ?          |
|     | SonicPoint<br>Firewall         |                               |                               |                        |                  |         |       | Items        | 1 to 5   | j(of5) [X] <] ▷ [X] |
|     | 🚔 Access Rules                 |                               | es (LAN > VPN)                |                        |                  |         |       | items        | 10 0     |                     |
|     | Advanced                       | View Style: O                 | All Rules   Matrix   Drop-    | down Boxes             |                  |         |       |              |          |                     |
|     | TCP Settings Services          | 🔳 # Priori                    | ity Source                    | Destination            | Service          | Action  | Users | Comment      | Enable   | e Configure         |
|     | Multicast                      | □ 1 1 🕄                       | Local Neworks                 | Remote VPN<br>Networks | H323             | Allow   | All   | 7            | <b>V</b> | 11 🏷 🖗              |
|     | QoS Mapping                    | 🗆 2 2 ÎÎ                      | Avaya Media Gateway           | Remote VPN<br>Networks | Any UDP<br>1025+ | Discard | All   |              | <b>V</b> | 11 🏷 🕅              |
|     |                                | 33                            | WAN RemoteAccess<br>Networks  | Any                    | Any              | Allow   | All   | ø            |          | 11 📎 🖗              |
|     | VoIP<br>VPN                    | 4 4                           | WLAN RemoteAccess<br>Networks | Any                    | Any              | Allow   | All   | 9            |          | ۲                   |
|     | Users<br>Hardware Failover     | 55                            | Local Neworks                 | Remote VPN<br>Networks | Any              | Allow   | All   | @ _`         | <b>~</b> | ۱ 🎸 🛍               |
|     | Security Services              | Add                           | Delete                        |                        |                  |         |       |              | Res      | tore Defaults       |
|     | Log<br>Wizards                 |                               |                               |                        |                  |         |       |              |          |                     |
|     | Help                           |                               |                               |                        |                  |         |       |              |          |                     |
|     | Logout                         |                               |                               |                        |                  |         |       |              |          |                     |
|     | Status: The configurati        | on has been upd               | ated.                         |                        |                  |         |       |              |          |                     |
|     | ۲                              |                               |                               |                        |                  |         |       |              | 0        | Internet            |

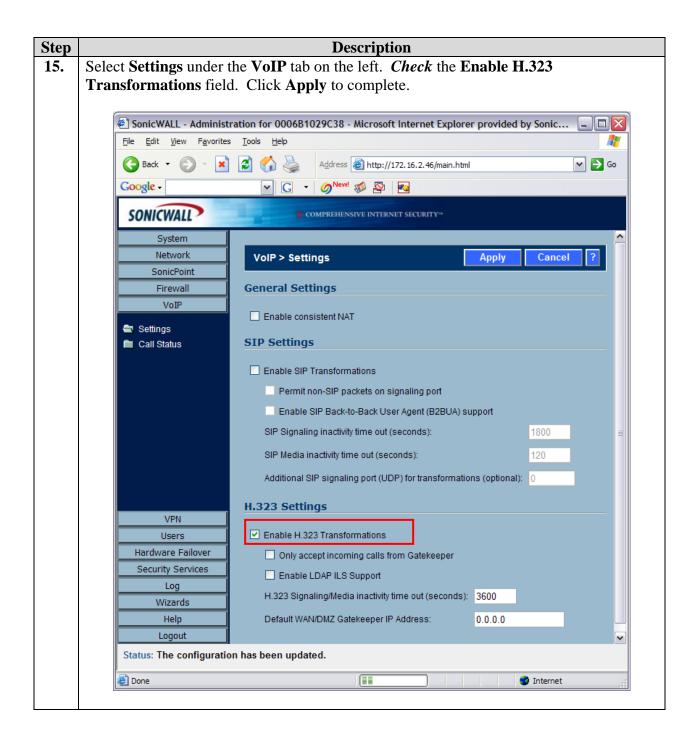
| Step |  | Description  |
|------|--|--|
| 9.   | Under the <b>Gen</b> information:              | eral tab of the Add Rules pop-up window, enter the following   |
|      | Action:<br>Service:<br>Source:<br>Destination: | <i>Allow</i> radio button selected<br><i>H323</i> (defined in section 3.3 step 6)<br><i>Local Networks</i> (defined in section 3.1 step 6)<br><i>Remote VPN Networks</i> (defined in section 3.1 step 7)   |
|      | Click on the <b>B</b>                          | andwidth tab to continue.  |
|      |  | Settings   Action:   Caneral   Advanced   Oo8   Bandwidth     Settings   Action:   Callow   Deny   Discard   From Zone:   LAN   Service:   H323   Source:   Local Networks   Destination:   Remote VPN Networks   Users Allowed:   All   Schedule:   Always on |
|      |  | Comment  Enable Logging Allow Fragmented Packets  Ready  OK Cancel Help  Thernet   |

| Step | n   | escription  |
|------|---|---|
| 10.  |   | h and priority are defined for the Outbound and     |
| 10.  | Inbound traffic.  | in and priority are defined for the Outbound and    |
|      | The <b>H323</b> Access Rule in the sample ne                                    | twork has defined the following:                    |
|      | Outbound Bandwidth Management   | _   |
|      | Guaranteed Bandwidth (%):   | 5   |
|      | Maximum Bandwidth (%):  | 10  |
|      | Bandwidth Priority:   | 0 highest   |
|      | Inbound Bandwidth Management  |   |
|      | Guaranteed Bandwidth (%):   | 5   |
|      | Maximum Bandwidth (%):  | 10  |
|      | <b>Bandwidth Priority:</b>  | 0 highest   |
|      | After entering all the information, click                                       | <b>OK</b> to complete.                              |
|      |   | 1   |
|      | Note: The percentage is based on the W. Step 2, not the bandwidth of the VPN tu | AN interface bandwidth defined in Section 3.3 nnel. |
|      | http://172.16.2.46 - Add Rule - Microsoft                                       | Internet Explorer                                   |
|      | General Advanced Qo   | S Bandwidth   |
|      | Bandwidth Management  |   |
|      | 🔽 Enable Outbound Bandwidth Manag   | gement ( 'allow' rules only)                        |
|      | Guaranteed Bandwidth (%):   | 5   |
|      | Maximum Bandwidth (%):  | 10  |
|      | Bandwidth Priority:   | 0 highest 💌   |
|      | 🔽 Enable Inbound Bandwidth Manage   | ment ( 'allow' rules only)                          |
|      | Guaranteed Bandwidth (%):   | 5   |
|      | Maximum Bandwidth (%):  | 10  |
|      | Bandwidth Priority:   | 0 highest 💌   |
|      |   |   |
|      |   |   |
|      |   |   |
|      | Ready   |   |
|      |   | OK Cancel Help                                      |
|      | ē   | 📄 📄 🔯 Internet                                      |
|      |   |   |

|   | Description  |  |  |  |
|---|--|--|--|--|
| Click Add again from the Firewall > Access Rule > LAN > VPN menu in Section 3.3 |  |  |  |  |
| -   | nother access rule.  |  |  |  |
| Under the Gen information:  | eral tab of the Access Rules pop-up window, enter the following  |  |  |  |
| Action:<br>Service:<br>Source:<br>Destination:                                  | Discard radio button selected<br>Any UDP 1025 + (defined in section 3.3 step 2)<br>10.1.1.x LAN (defined in section 3.1 step 4)<br>Remote VPN Networks (defined in section 3.1 step 7) |  |  |  |
| This rule disca   | rds RTP traffic that has not been negotiated using H.323.  |  |  |  |
| Click on the <b>O</b>   | <b>K</b> tab to complete.  |  |  |  |
|   | 🖉 http://172.16.2.46 - Add Rule - Microsoft Internet Explorer  |  |  |  |
|   | General Advanced QoS Bandwidth   |  |  |  |
|   | Settings   |  |  |  |
|   | Action: C Allow C Der  |  |  |  |
|   | From Zone:   |  |  |  |
|   | To Zone: VPN   |  |  |  |
|   | Service: Any UDP 1025+   |  |  |  |
|   | Source: 10.1.1.x LAN   |  |  |  |
|   | Destination: Remote VPN Networks   |  |  |  |
|   | Schedule: Always on  |  |  |  |
|   | Comment:   |  |  |  |
|   | C Enable Logging   |  |  |  |
|   | Allow Fragmented Packets   |  |  |  |
|   | Ready  |  |  |  |
|   | OK Cancel Help   |  |  |  |
|   | Done   |  |  |  |
| After entering  | the "H323" and "Any UDP 1025 +" access rules, make sure the rules  |  |  |  |
| order is as disp  | played in Step 8 of this section. The "H323" must be before the "Any   |  |  |  |
|   | Access Rule. If necessary, use the <sup>11</sup> icon to move the selected rule up or  |  |  |  |
| down to obtain  | the appropriate order.   |  |  |  |
|   | Step 6 to add a<br>Under the Gen<br>information:<br>Action:<br>Service:<br>Source:<br>Destination:<br>This rule disca<br>Click on the O  |  |  |  |



| Step | Description   |
|------|---|
| 14.  | Repeat Steps 8-13 in this Section to configure the same Access Rules for the VPN to LAN direction.<br>Note: Make sure in Step 9 the <b>Source</b> is <i>Remote VPN Networks</i> and the <b>Destination</b> is   |
|      | Avaya Media Gateway as shown below.   |
|      | 🚰 http://172.16.2.46 - Add Rule - Microsoft Internet Explorer   |
|      | General Advanced QoS Bandwidth Settings   |
|      | Action: C Allow C Dem Discard   |
|      |   |
|      | Service: Any UDP 1025+  Source: Remote VPN Networks   |
|      | Destination:       Avaya Media Gateway       Image: Comparison of the second se |
|      | Comment:  |
|      | <ul> <li>✓ Enable Logging</li> <li>✓ Allow Fragmented Packets</li> </ul>  |
|      |   |
|      | Ready   |
|      | OK Cancel Help  |
|      | Internet  |



## 4. Interoperability Compliance Testing

The interoperability compliance testing focused on assessing the ability of the SonicWALL PRO 4060 and TZ170 to establish a VPN tunnel that would support an infrastructure consisting of Avaya Communication Manager, and Avaya 46xx IP telephones while providing guaranteed bandwidth management for Avaya VoIP traffic.

#### 4.1. General Test Approach

The general test approach was to verify that the Avaya IP telephones could successfully place and receive calls through the network as shown in **Figure 1** while competing with simulated non-VoIP low priority traffic. In addition, network traffic to Branch Site B was Network Address Translated to that of the IP address of the SonicWALL PRO 4060 WAN interface.

The main objectives were to verify:

- SonicWALL UTM devices can automatically allow RTP traffic streams based on H.323 signaling.
- Calls between telephones at the different locations were successfully completed and maintained with good voice quality.
- Multiple telephone calls between sites could be completed as per the desired bandwidth configured in the SonicWALL UTM devices.
- Non-VoIP traffic did not encroach upon the bandwidth reserved for the voice application.
- The solution supports G.711 and G.729 codecs.
- The solution supports DTMF.
- Preservation of Layer-3 DiffServ information.
- Network Address Translation (NAT) was implemented between the Main Site and Branch Site B.

#### 4.2. Test Results

The objectives were successfully verified during compliance testing. Multiple telephone calls were successfully placed and received as per the bandwidth policy defined by the SonicWall UTM devices during varying levels of simulated competing traffic. Voice quality was good throughout testing regardless of traffic flow. DTMF was verified via access to the Meet-me Conference configured the Avaya Communication Manager.

## 5. Verification Steps

The following steps may be used to verify the configuration:

- Make sure all the SonicWALL UTM devices interfaces are reachable.
- Place and receive call from the Avaya telephones.
- From the SonicWALL UTM devices, verify the status of the VPN Link.
- From the SonicWALL UTM devices, verify the Access Rules are configured correctly by placing the mouse pointer over the bar chart icon in Step 8 Section 3.3. A pop-up window will display the packet count and byte processed by the Access Rule.

## 6. Support

For technical support on the SonicWALL UTM, contact SonicWALL, Inc. at <a href="http://www.sonicwall.com/support/contact.html">http://www.sonicwall.com/support/contact.html</a>

North America 1-888-777-1476

## 7. Conclusion

These Application Notes have described the administration steps required to configure the SonicWALL UTM devices to interoperate with and prioritize WAN bandwidth for Avaya IP H.323 phone traffic. During compliance testing, H.323 phone calls traversing the WAN link were successfully established and maintained while sharing the link with non-VoIP traffic.

## 8. Additional References

- [1] Administrator Guide for Avaya Communication Manager, Doc # 03-300509, Issue 1, June 2005
- [2] Avaya Communication Manager Advanced Administration Quick Reference, Doc # 03-300364, Issue 2, June 2005 Release 3.0
- [3] SonicOS Enhanced 3.0 Administrator's Guide

Product documentation for Avaya products may be found at <u>http://support.avaya.com</u>

Product documentation for SonicWALL products may be found at <a href="http://www.sonicwall.com">http://www.sonicwall.com</a>

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