Avaya Solution and Interoperability Test Lab

How to Configure the Juniper NetScreen 5GT to Support Avaya H.323 IP Telephony – Issue 1.0

Abstract

These Application Notes describe how to configure the Juniper NetScreen 5GT to support Avaya H.323 IP Telephony. The sample configuration presented in these Application Notes illustrates how a Juniper NetScreen 5GT firewall can be configured to protect Avaya C-LANs and Media Processor boards using security policies which only allow H.323 signaling, RTP, and H.248 traffic to pass through the firewall.

1. Introduction

These Application Notes describe how to configure the Juniper NetScreen 5GT to support Avaya H.323 IP Telephony. The sample configuration presented in these Application Notes illustrates how a Juniper NetScreen 5GT firewall can be configured to protect Avaya C-LANs and Media Processor boards using security policies which only allow H.323 signaling, RTP, and H.248 traffic to pass through the firewall.

The Juniper NetScreen-5GT appliance integrates multiple security functions - Stateful and Deep Inspection firewall, IPSec VPN (Virtual Private Network), denial of service protection, anti-virus and Web filtering. The focus of these Application Notes is on using the Juniper NetScreen 5GT as an "interior firewall", within the enterprise network, to protect the Avaya C-LAN and Media Processor boards.

The Juniper NetScreen 5GT has five Ethernet interfaces. One of the five Ethernet interfaces was configured for the public or "untrust" security zone. The C-LAN and Media Processors were connected to the other four interfaces which were configured for the private or "trust" security zone.

Each security zone is assigned to its own virtual router, "untrust-vr" for the "untrust" security zone and "trust-vr" for the "trust" security zone. This allows the Juniper NetScreen 5GT device to maintain two separate routing tables and to conceal the routing information in one virtual router from the other. A static route is configured for the trust-vr virtual router to define the untrust-vr as the next hop to allow traffic to pass between the two security zones.

In the configuration tested in these Application Notes:

- The H.323 Application Layer Gateway (ALG) was disabled.
- The Juniper NetScreen 5GT firewall was configured in "route" mode so Network Address Translation (NAT) is not used.
- The security polices defined were limited to traffic flows to and from the Avaya C-LAN and Media Processor boards.

The following items were tested when the Avaya C-LAN and Media Processor boards were placed behind the Juniper NetScreen 5GT firewall:

- Ability of the Avaya IP Telephones to register successfully and place calls
- Ability of the Avaya G350 Media Gateway to register successfully
- Ability of the Avaya Enterprise Survivable Server (ESS) to register successfully and participate in calls
- Ability of the Avaya S8300 Media Server in Local Survivable Processor (LSP) mode to register successfully
- File synchronization to successfully occur between the primary Avaya S8720 Media Servers and the ESS and LSP servers
- Shuffled and non-shuffled H.323 calls
- Failover from the primary Avaya S8720 Media Servers to the ESS and LSP servers and recovery back to the primary Media Servers

Table 2 lists the ports that were opened on the Juniper NetScreen 5GT to support the configuration shown in **Figure 1**. For more information regarding these ports, refer to [1] in Section 7.

From	TCP/UDP Port or Protocol	To	TCP/UDP Port or Protocol	Notes
Any endpoint	UDP any	Any C-LAN	UDP 1719	For endpoint registration (RAS).
Any endpoint	TCP any	Any C-LAN	TCP 1720	For H.225 call signaling.
Any endpoint	UDP any	Any MedPro	UDP 2048-3327 (UDP port range on the IP Network Region form)	To facilitate RTP/RTCP audio streams between MedPros and endpoints.
G700/G350/G250	TCP any	Any C-LAN	TCP 1039	For encrypted H.248 signaling between the Avaya G700 or G350 Media Gateway and call server.
G700/G350/G250	TCP any	Any C-LAN	TCP 2945	For unencrypted H.248 signaling between the Avaya G700 or G350 Media Gateway and call server.
Any endpoint	ICMP any	Any C-LAN and Any MedPro	ICMP any	For diagnostic purposes.

Table 1 – TCP/UDP Ports

Figure 1 illustrates the configuration that was used to verify these Application Notes.

***Note**: The administration of the network infrastructure shown in **Figure 1** is not the focus of these Application Notes and will not be covered. Instead, the focus of these Application Notes is on configuring the Juniper NetScreen 5GT as an "interior firewall".*

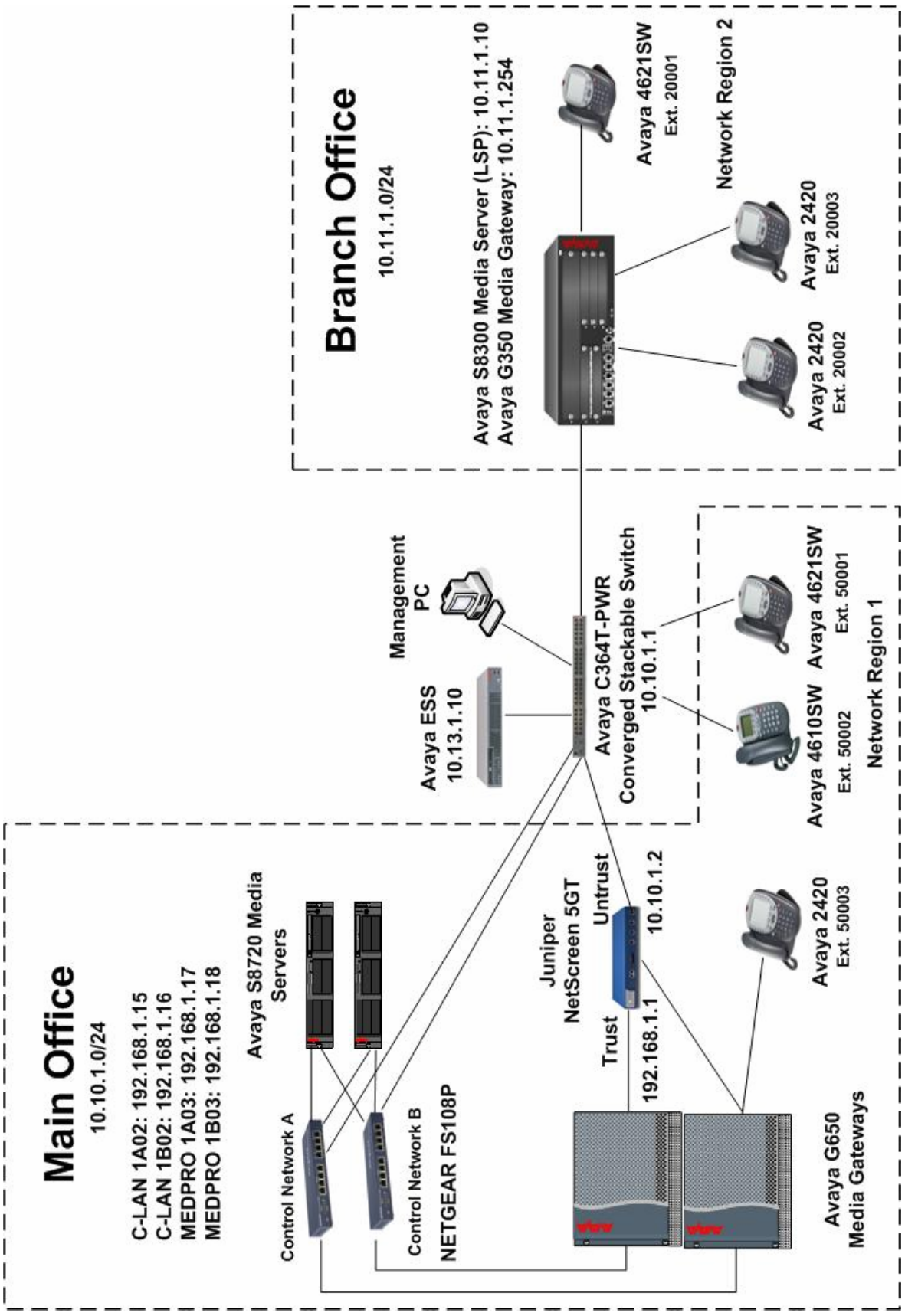


Figure 1 – Network Configuration Diagram

Table 1 lists the IP address assignment for the equipment shown in **Figure 1**.

Equipment	IP Network/Mask	Description
S8720 Media Server – 1		
Ethernet 0	1.1.1.1/24	Control Network A
Ethernet 1	192.11.13.6/30	Services Port
Ethernet 2	192.11.13.13/30	Server Duplication Link
Ethernet 3	2.2.2.1/24	Control Network B
Ethernet 4	10.10.1.11/24	Corporate LAN
Active Server	10.10.1.10/24	Active server address for Corporate Network
Gateway	10.10.1.1./24	Gateway address
S8720 Media Server – 2		
Ethernet 0	1.1.1.2/24	Control Network A
Ethernet 1	192.11.13.6/30	Services Port
Ethernet 2	192.11.13.14/30	Server Duplication Link
Ethernet 3	2.2.2.2/24	Control Network B
Ethernet 4	10.10.1.12/24	Corporate LAN
Active Server	10.10.1.10/24	Active server address for Corporate Network
Gateway	10.10.1.1./24	Gateway address
IPSI – A	1.1.1.3/24	IPSI connected to Control Network A
Gateway	1.1.1.254/24	Gateway address
IPSI – B	2.2.2.3/24	IPSI connected to Control Network B
Gateway	2.2.2.254/24	Gateway address
C-LAN – A	192.168.1.15/24	C-LAN in Avaya G650 A carrier
Gateway	192.168.l.1/24	Gateway address
C-LAN – B	192.168.1.16/24	C-LAN in Avaya G650 B carrier
Gateway	192.168.l.1/24	Gateway address
MedPro – A	192.168.1.17/24	Media Processor in Avaya G650 A carrier
Gateway	192.168.l.1/24	Gateway address
MedPro – B	192.168.1.18/24	Media Processor in Avaya G650 B carrier
Gateway	192.168.1.1/24	Gateway address
ESS (S8500)	10.13.1.10/24	Enterprise Survivable Server
LSP (S8300)	10.11.1.10/24	Local Survivable Processor
G350 (GW)	10.11.1.254/24	Avaya G350 Media Gateway
G350 (WAN)	10.12.1.2	Avaya G350 WAN interface
Avaya C364T-PWR	10.10.1.1	Router interface connected to Juniper NetScreen 5GT
Juniper NetScreen 5GT	10.10.1.2 192.168.1.1	Public interface address Private interface address

Table 2 – IP Address Assignment

2. Equipment and Software Validated

The following hardware and software versions were used for this configuration:

Equipment	Version
Avaya S8710 Media Server	3.1.1 Load 628.7 and Service Pack 11640
Avaya G650 Media Gateway Avaya TN2312BP IPSI Avaya TN799DP C-LAN Avaya TN2602AP MEDPRO	 HW12 FW030 HW01 FW017 HW20 FW108
Avaya S8500 Media Server (ESS)	3.1.1 Load 628.7 and Service Pack 11640
Avaya S8300 Media Server (LSP)	3.1.1 Load 628.7 and Service Pack 11640
Avaya C364T-PWR Converged Stackable Switch	4.5.14
Avaya G350 Media Gateway	25.23.0
Avaya 4610SW IP Telephone	2.4
Avaya 4621SW IP Telephone	2.4
Avaya 2420 Digital Telephone	---
Avaya 6408D+ Digital Telephone	---
Avaya 6211 Analog Telephone	---
Juniper NetScreen 5GT	5.3.0r2.0

Table 3 – Equipment and Version Validated

3. Juniper NetScreen 5GT Configuration

The following section describes the Juniper NetScreen 5GT configuration to support H.323 registration for Avaya IP telephones and Media Gateways.

3.1. Log in to the Juniper NetScreen 5GT Management Interface

Step	Description
1.	Enter the URL of the Juniper NetScreen 5GT management interface (e.g., http://<ip address of the Juniper NetScreen 5GT>) in a browser window and the login screen shown in **Figure 2** will appear. Log in using the appropriate credentials.

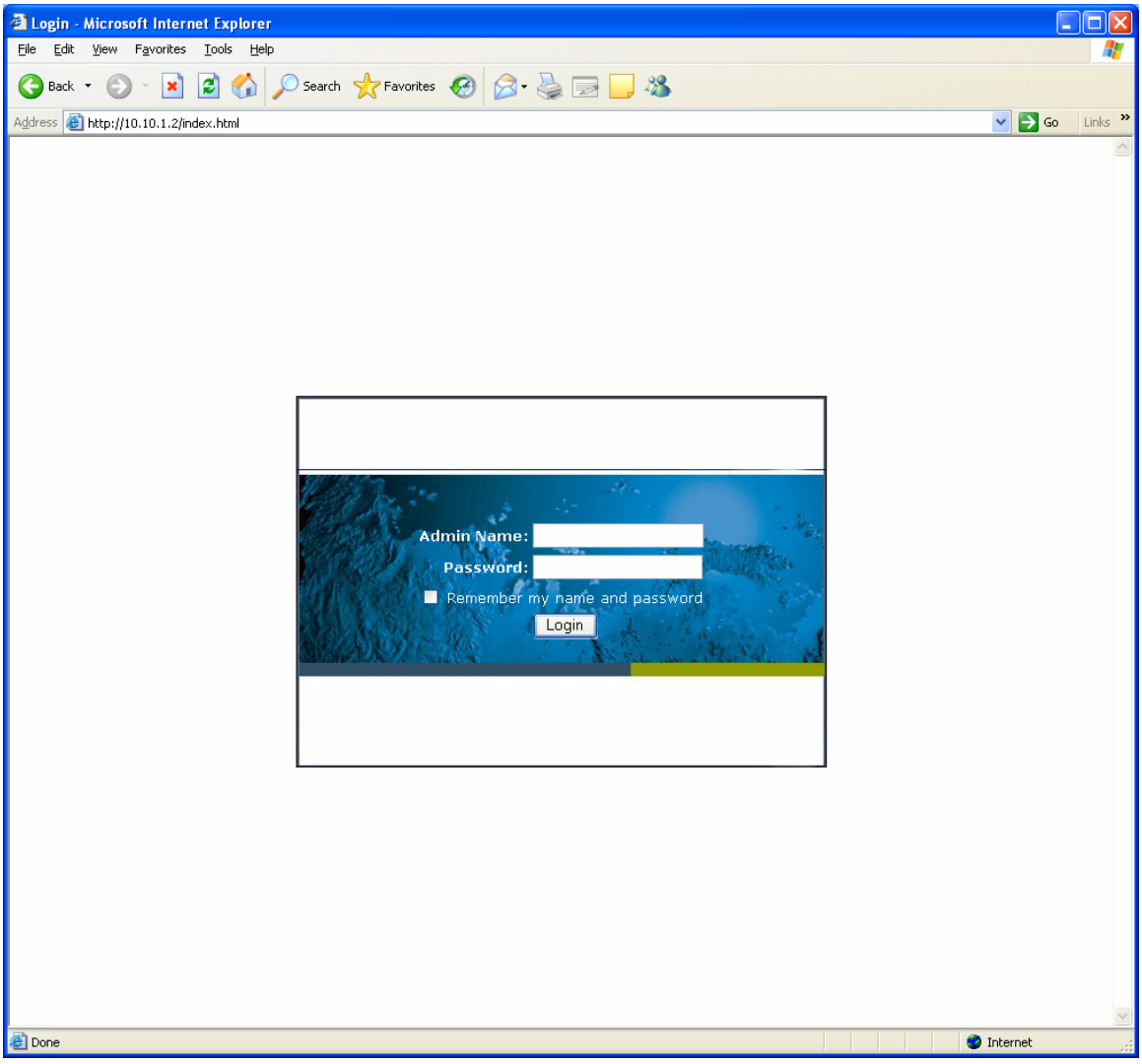


Figure 2 – Juniper NetScreen 5GT Login Screen

Step	Description
2.	The screen shown in **Figure 3** will be displayed after successful login.

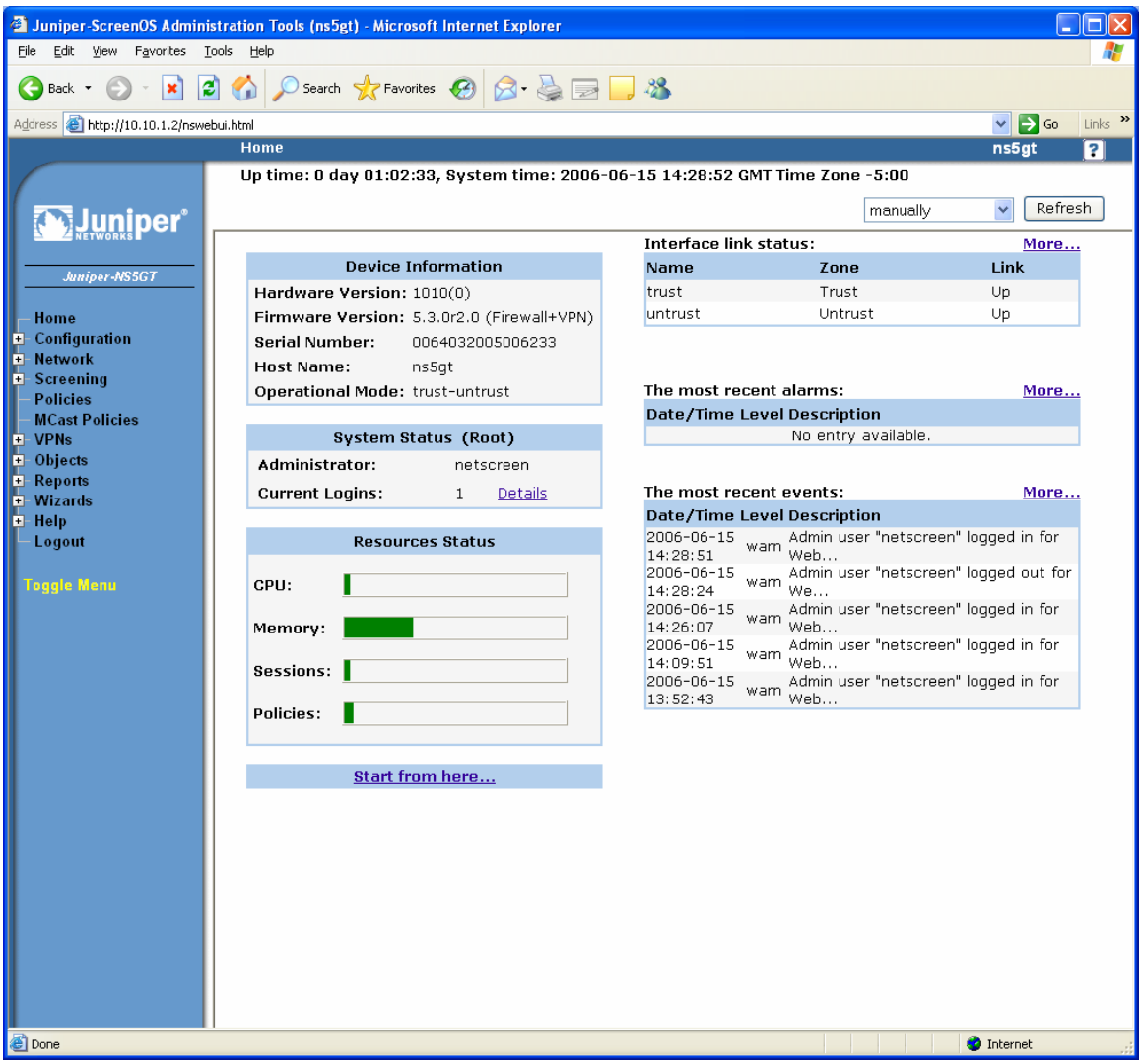


Figure 3 – Juniper NetScreen 5GT Home Page

3.2. Globally Disable the H.323 Application Layer Gateway

The required ports will be defined using the Juniper NetScreen 5GT security policies instead of using the H.323 Application Layer Gateway feature.

Step	Description
1.	From the navigation menu on the left, select **Configuration → Advanced → ALG → Configure**.
2.	Uncheck the **H.323 check box** to globally disable the H.323 Application Layer Gateway as shown in **Figure 4**. Click **Apply**.

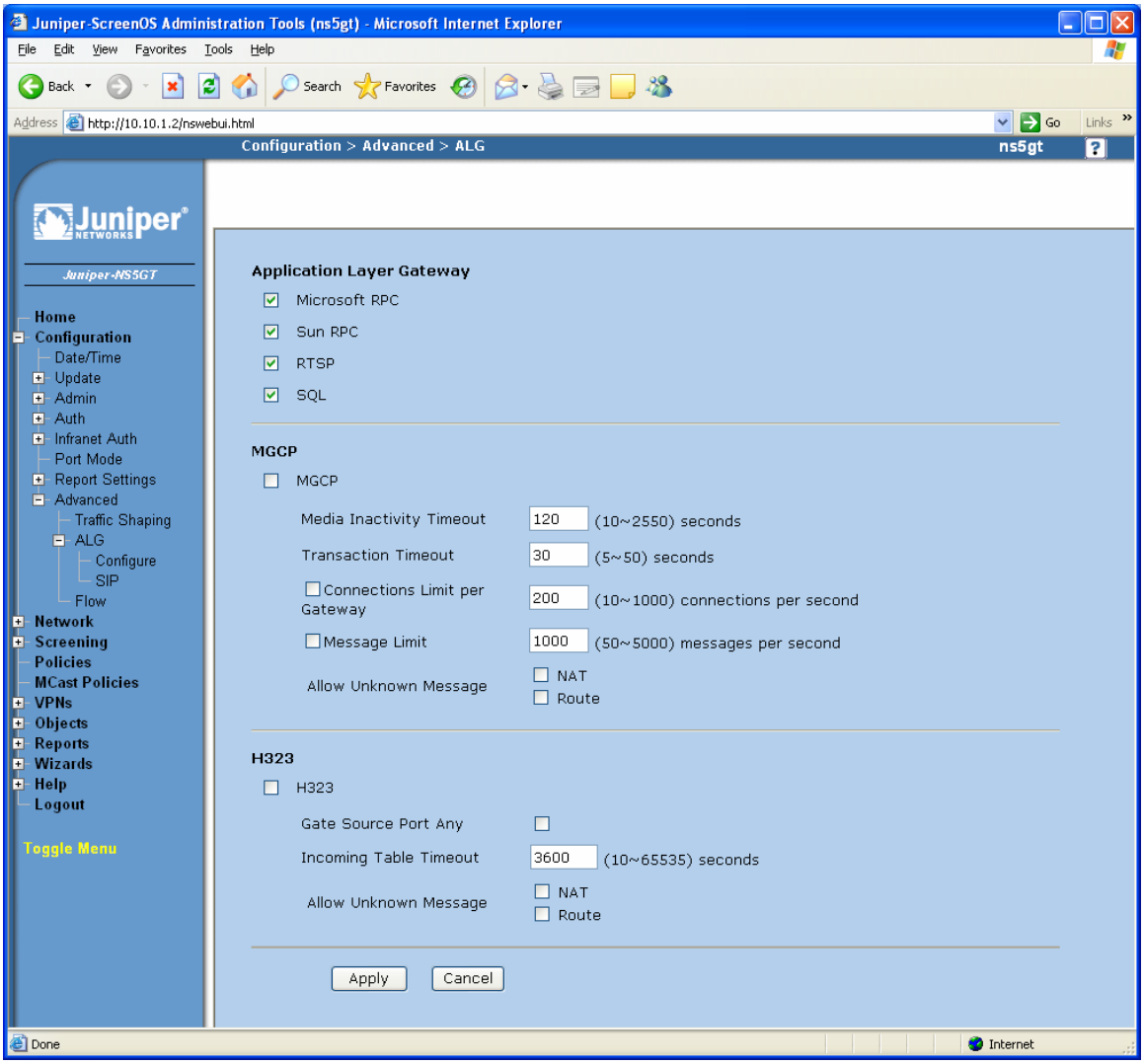


Figure 4 – ALG Configuration

3.3. Configure Security Zones

The steps in this section assigns virtual router name “trust-vr” to the “trust” or private security zone and “untrust-vr” to the “untrust” or public security zone.

Step	Description
1.	From the navigation menu on the left, select **Network → Zones** to view the network security zones of the Juniper NetScreen 5GT as shown in **Figure 5**.

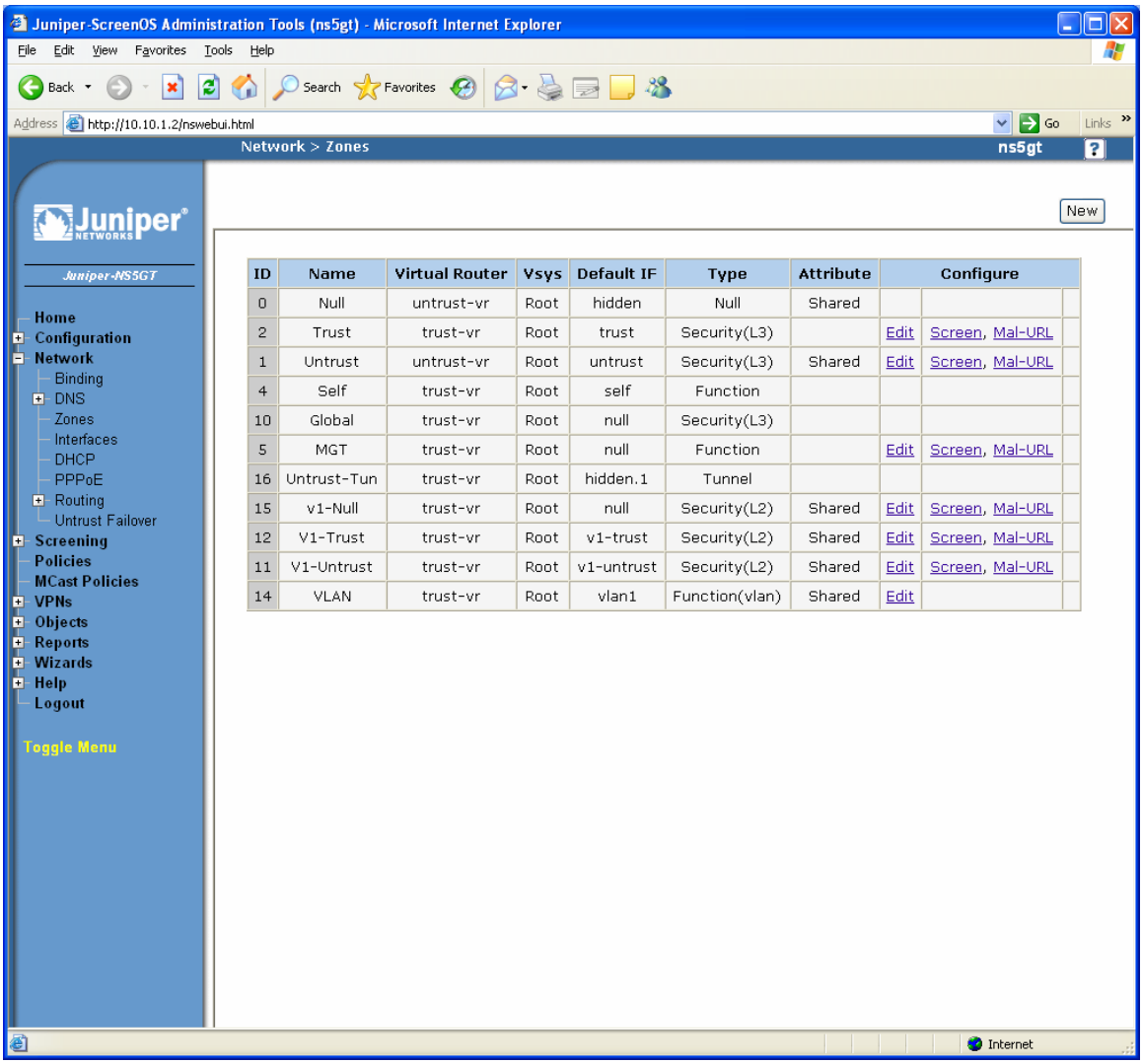


Figure 5 – Network Zones

Step	Description
2.	Click **Edit** on the row corresponding to "Trust" in **Figure 5** to view the properties for the **Trust** security zone. Select **trust-vr** from the drop-down list for the **Virtual Router Name** as shown in **Figure 6**. Accept the other default settings. Click **OK**.

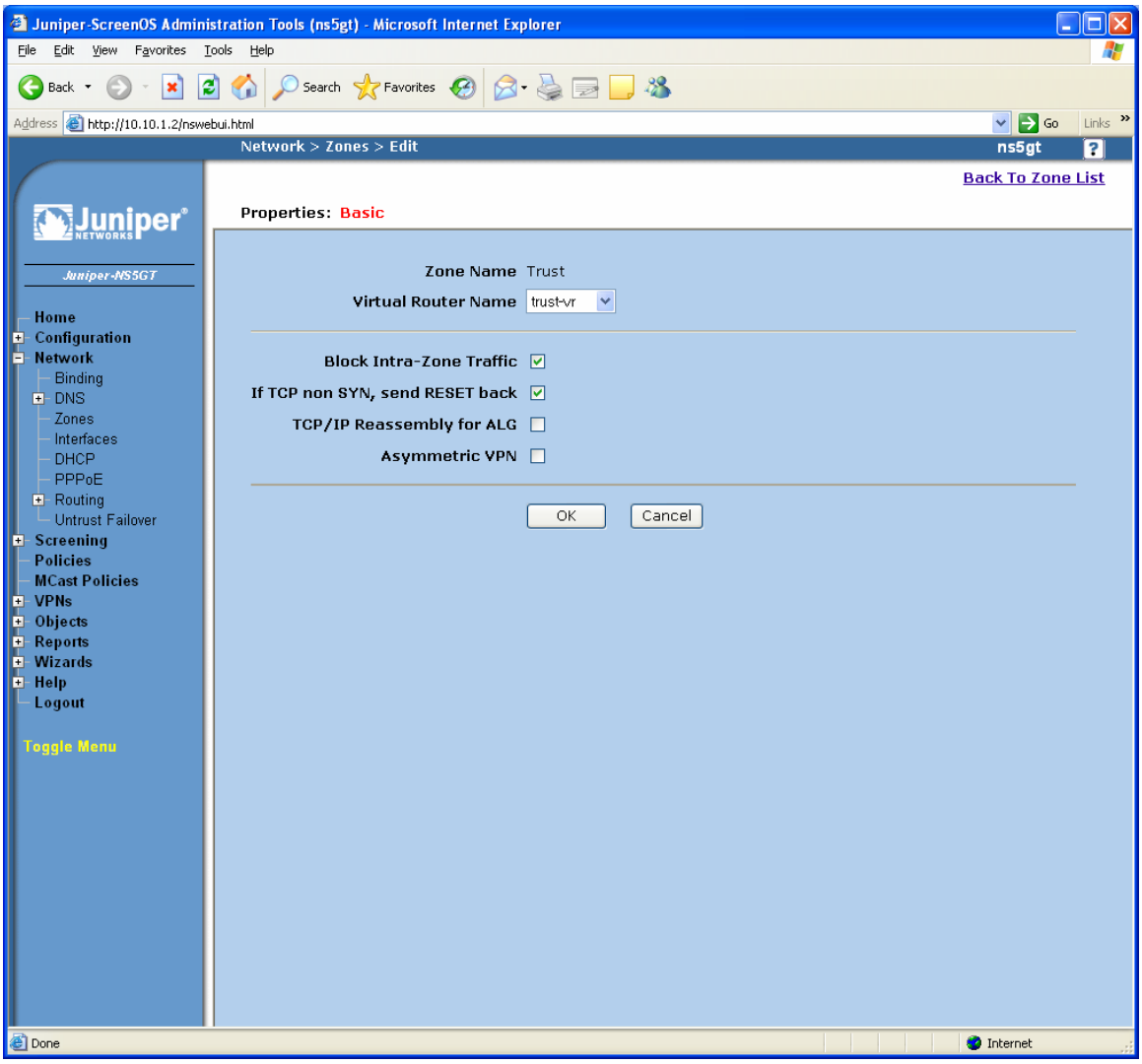


Figure 6 – Trust Zone Properties

Step	Description
3.	Click **Edit** on the row corresponding to "Untrust" in **Figure 5** to view the properties for the **Untrust** security zone. Select **untrust-vr** from the drop-down list for the **Virtual Router Name** as shown in **Figure 7**. Accept the other default settings. Click **OK**.

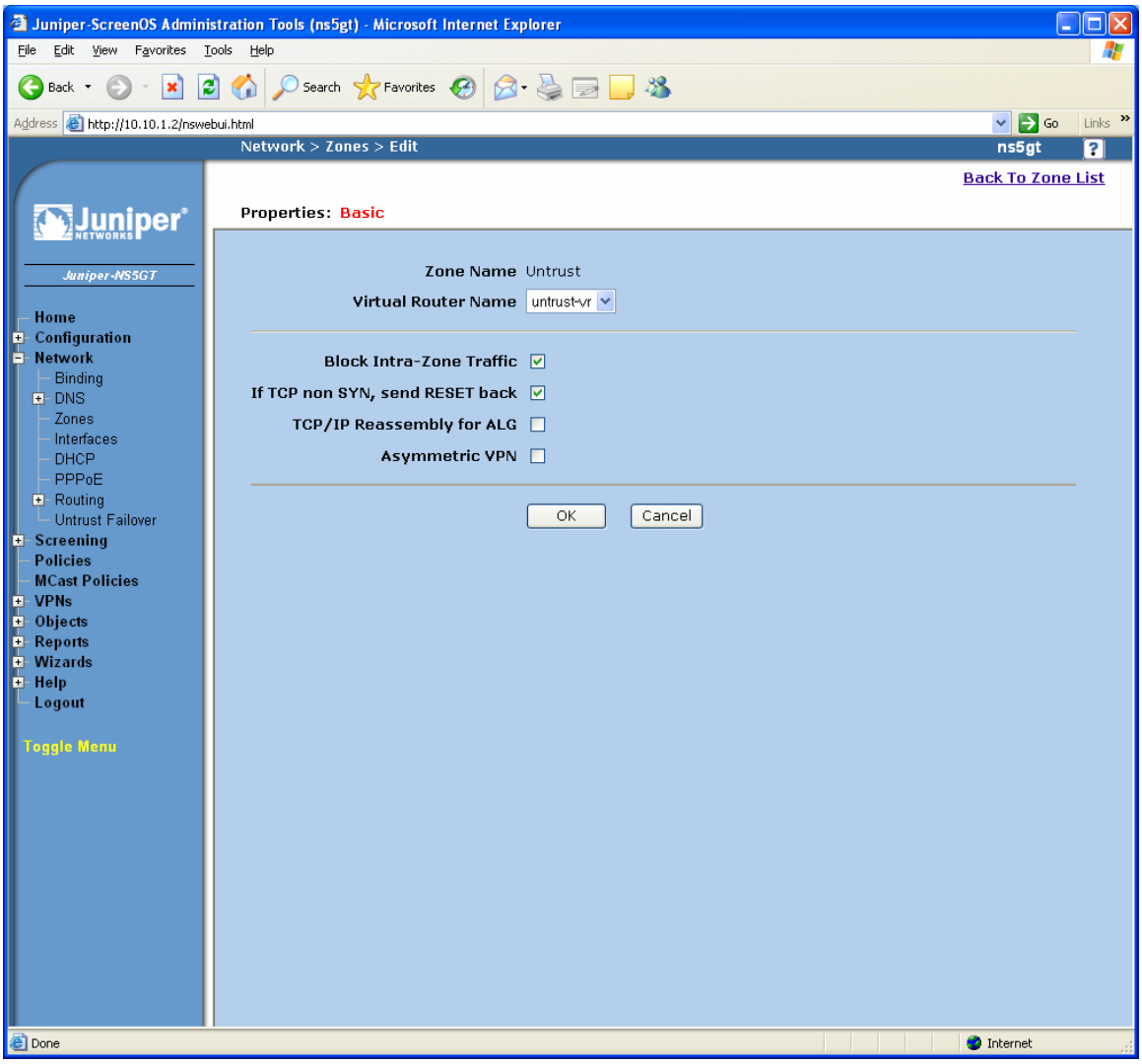


Figure 7 – Trust Zone Properties

3.4. Configuring Interfaces

The steps in this section assign an IP address to the interfaces for the "trust" and "untrust" security zone. Each interface will operate in "route" mode and function as a separate router. A static route is configured for the trust-vr virtual router to define the untrust-vr as the next hop to allow traffic to pass between the "trust" and "untrust" security zones.

Step	Description
1.	From the navigation menu on the left, select **Network → Interfaces** to view the network interfaces of the Juniper NetScreen 5GT as shown in **Figure 8**.

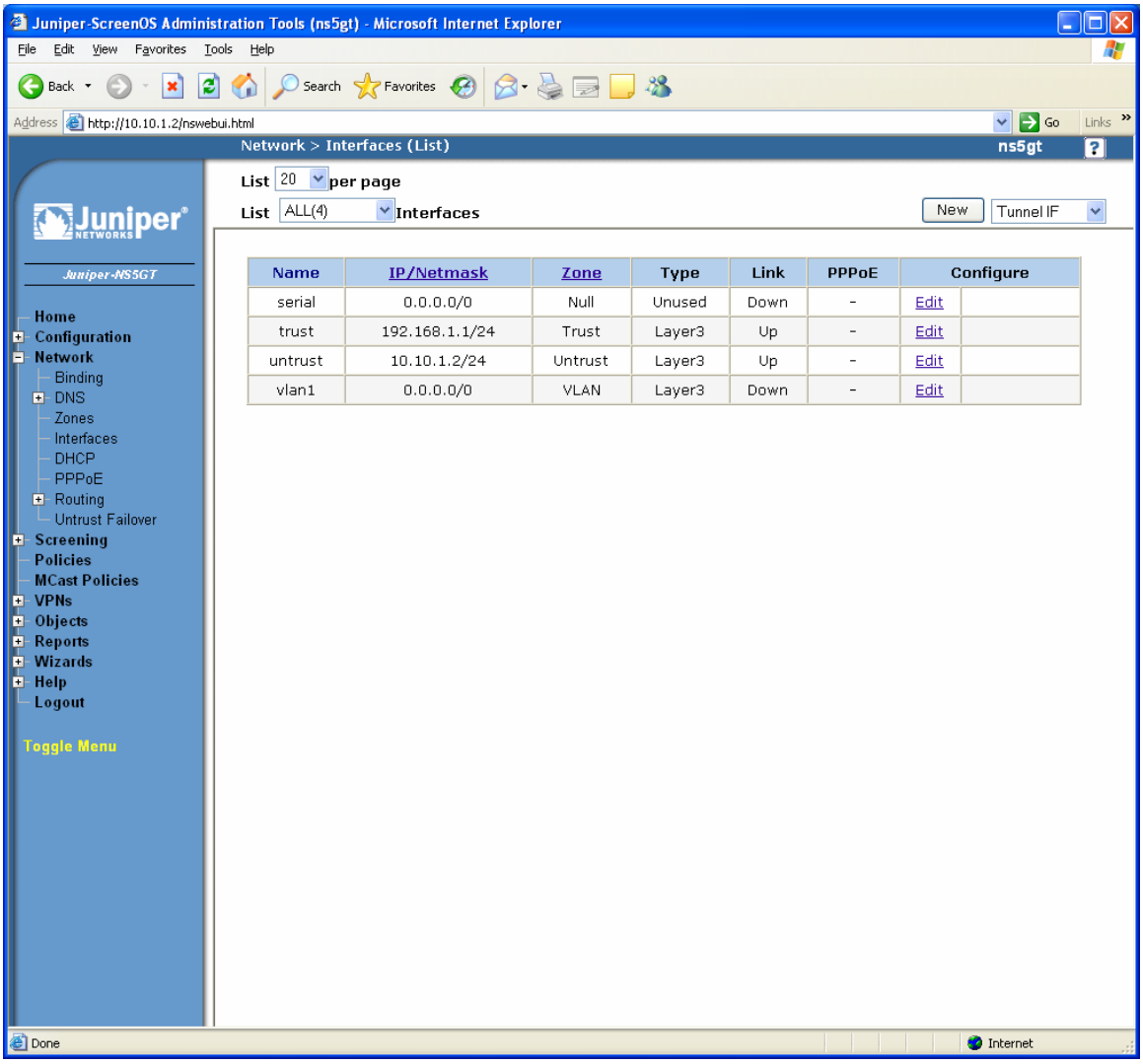


Figure 8 – Network Interfaces

Step	Description
2.	Click **Edit** on the row corresponding to **Trust** in **Figure 8** to view the interface configuration for the **Trust** security zone. Enter the following information on the screen shown in **Figure 9**: • **Zone Name**: Select **Trust** from the drop-down list. • **IP Address / Netmask**: Enter the IP address for the **Trust** interface. • **Interface Mode**: Select **Route** Mode. • **Service Options**: Select the desired options for this interface. Click **OK**.

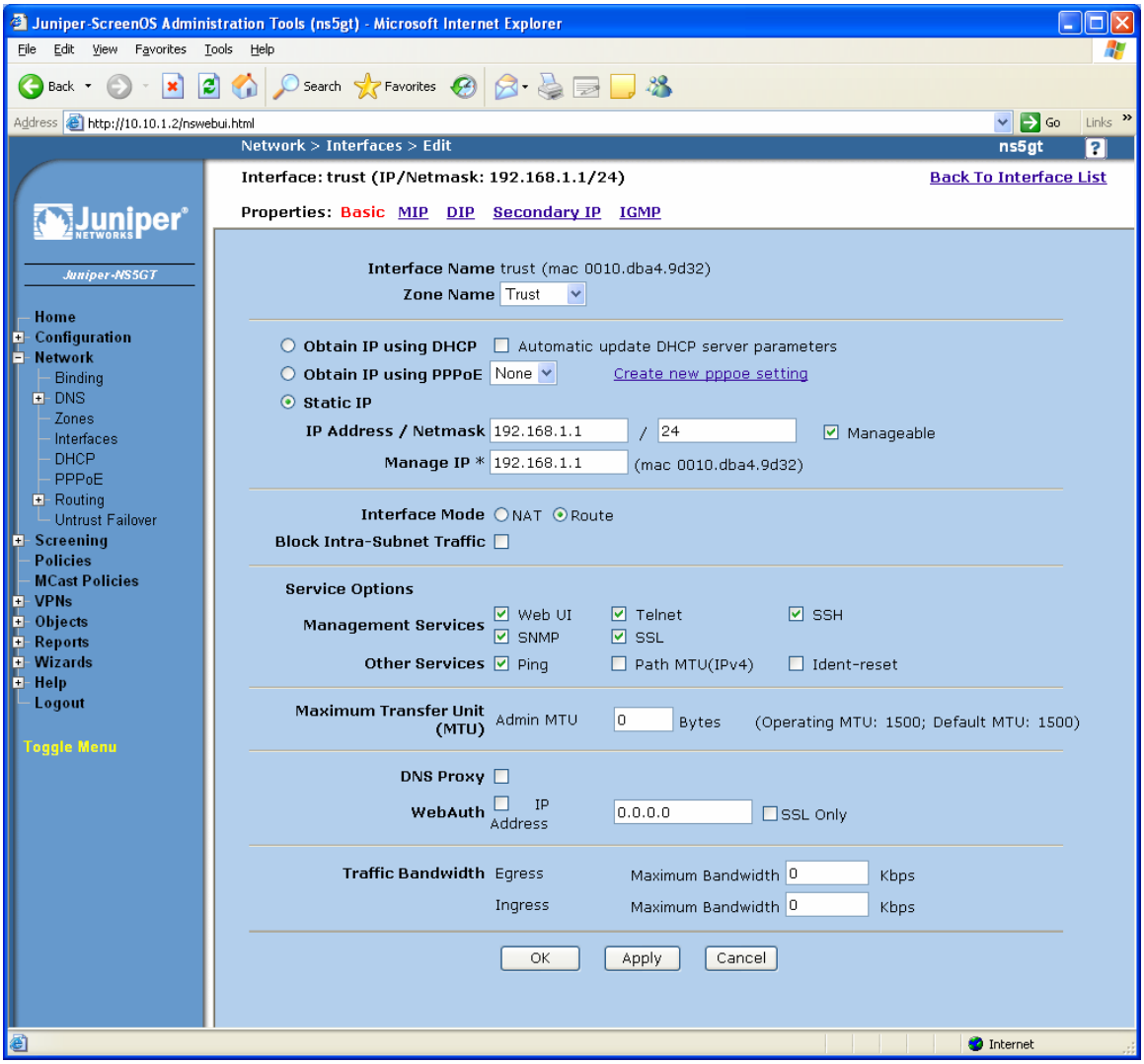
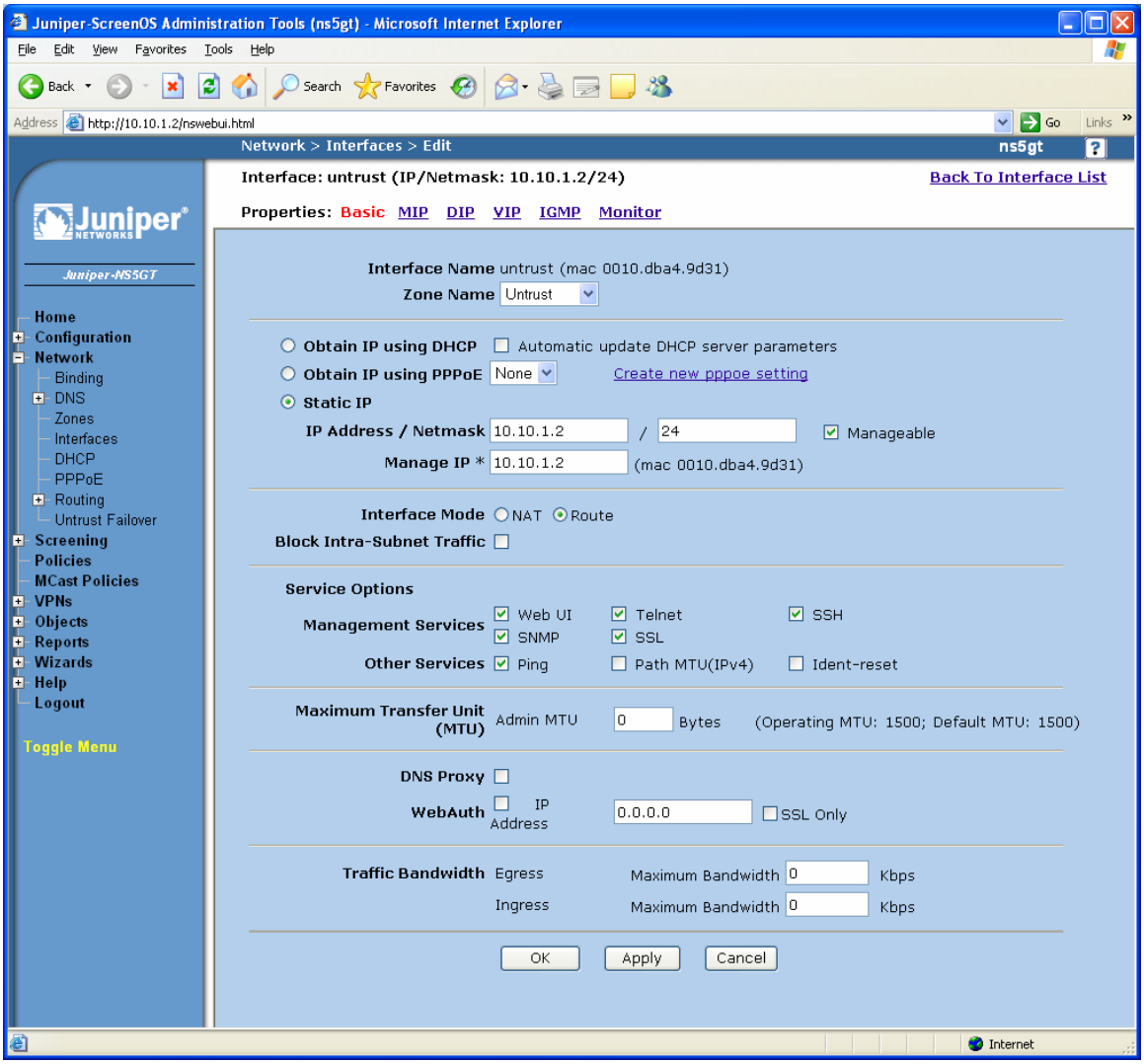


Figure 9 – Trust Network Interface

Step	Description
3.	Click **Edit** on the row corresponding to **Untrust** in **Figure 8** to view the interface configuration for the **Untrust** security zone. Enter the following information on the screen shown in **Figure 10**: • **Zone Name**: Select **Untrust** from the drop-down list. • **IP Address / Netmask**: Enter the IP address for the **Untrust** interface. • **Interface Mode**: Select **Route** Mode. • **Service Options**: Select the desired options for this interface. ***Note**: The **Manageable** and **Telnet checkbox** was enabled for the "untrust" interface for ease of administration of the Juniper NetScreen 5GT from PCs located in the "untrust" security zone. These options do not have to be enabled.* Click **OK**.  **Figure 10 – Untrust Network Interface**

Step	Description
4.	Configure a static route for the trust-vr virtual router to define the untrust-vr interface as the next hop to allow traffic to pass between the "trust" and "untrust" security zones. From the navigation menu on the left, select **Network →Routing→ Destination**. Click **New** to create a static route for the **Trust** virtual router as shown in **Figure 11**. Enter the Destination **Network IP Address** (e.g., **10.0.0.0**) and the **Netmask** (e.g., **8**) for the "untrust" zone. Select **Gateway** and select the **untrust** interface from the drop-down list. Enter the **Gateway IP address** (e.g., **10.10.1.1**) of the next hop router and accept the other default settings. In the configuration shown in **Figure 1**, the next hop router is the Avaya C364T-PWR connected directly to the Juniper NetScreen 5GT. Click **OK**.

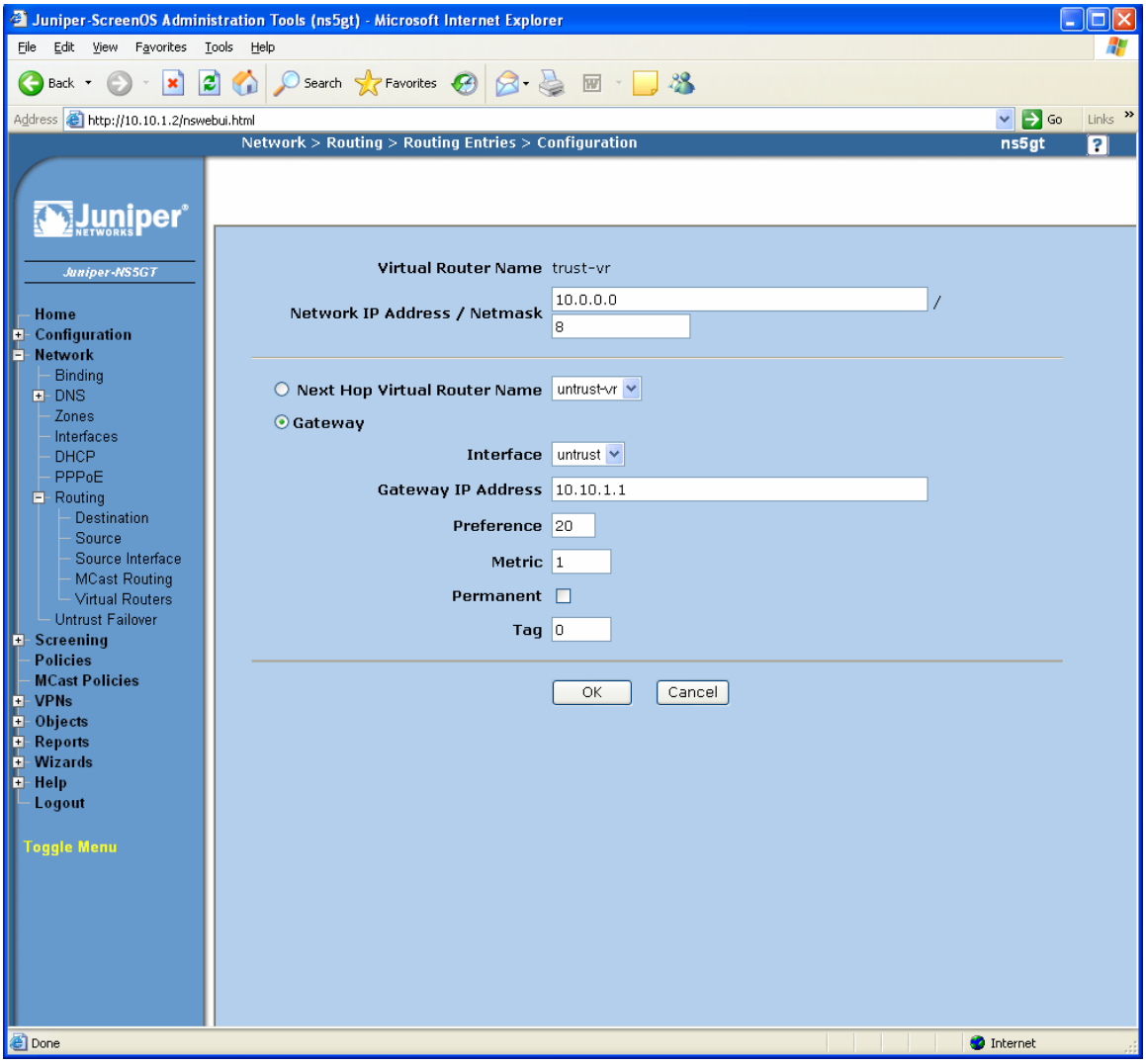
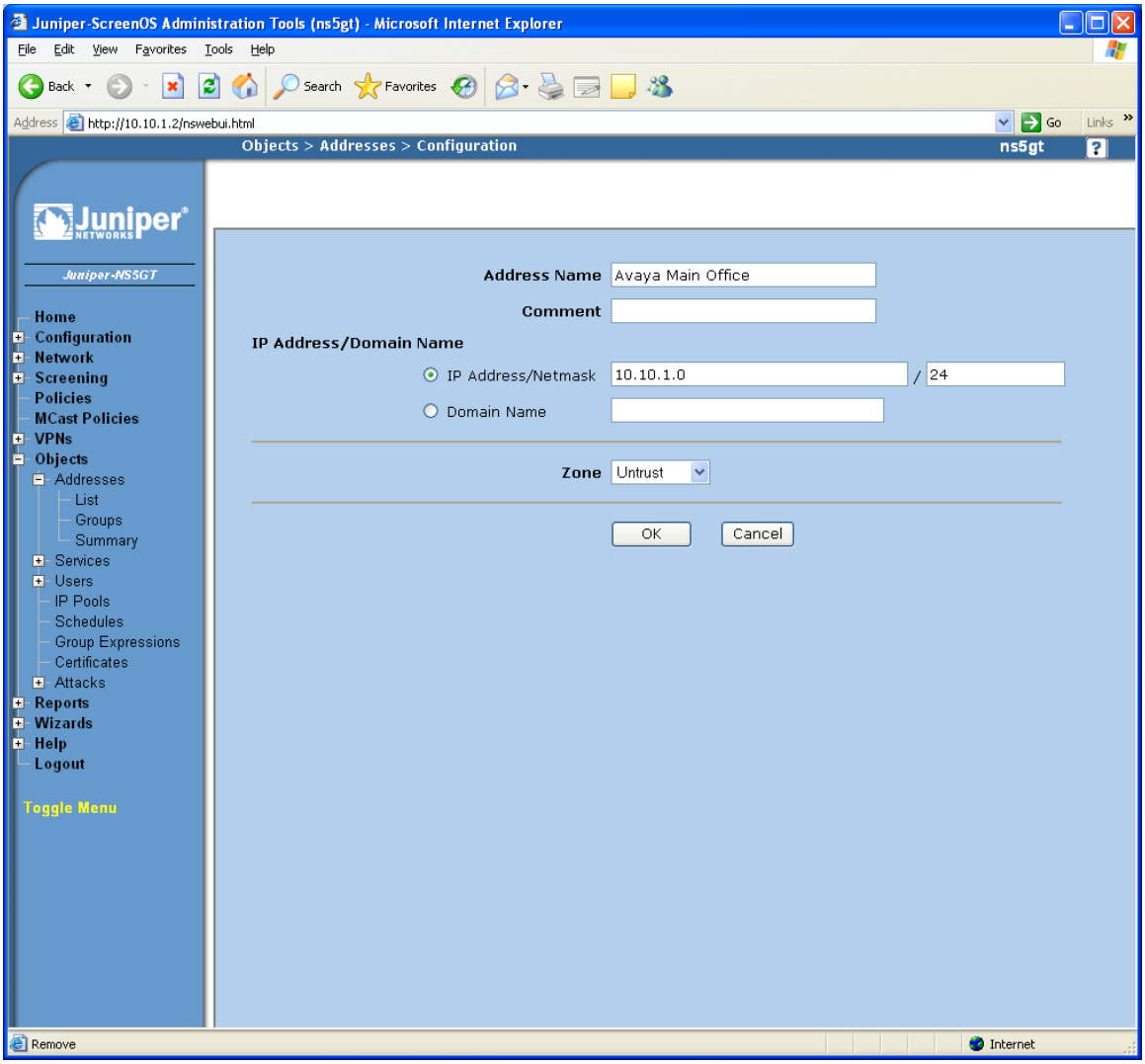
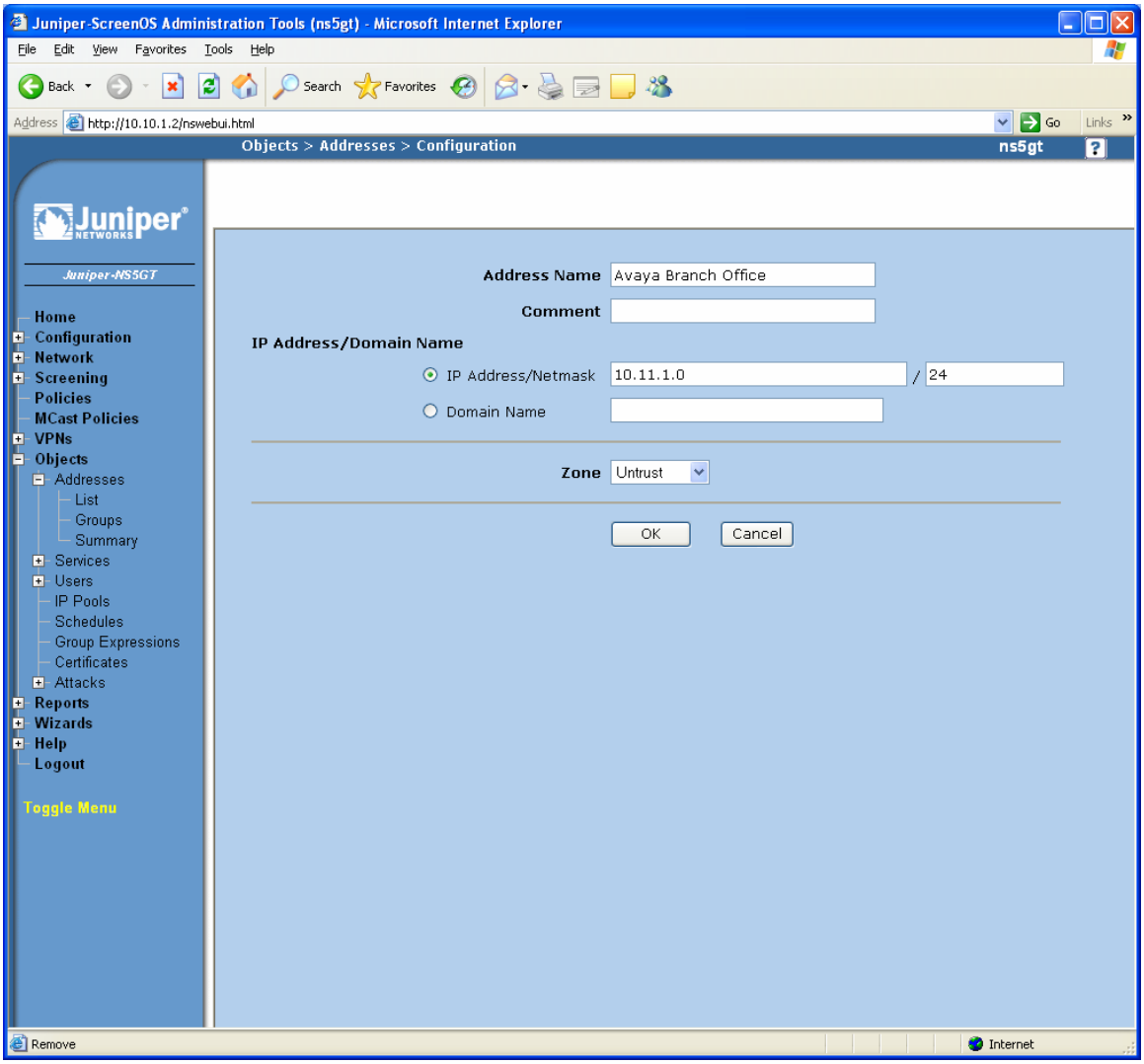


Figure 11 – Static Route for trust-vr

3.5. Create Address Book Entries

Address book entries are used to define resources referenced by security polices. Network addresses are used to specify the subnets of the Main and Branch Office. Individual IP addresses are specified for the Avaya ESS, C-LANs and Media Processors.

Step	Description
1.	From the navigation menu on the left, select **Objects → Addresses → List.** The address list page is displayed. Click the **New** button on top right corner of page to create a new address book entry for the range of IP addresses used by equipment at the Main Office. Enter the following information on the screen shown in **Figure 12**: • **Address Name**: **Avaya Main Office** • **IP Address/Netmask**: IP address and subnet mask of the Main Office network • **Zone**: Select **Untrust** from the drop down list Click **OK**.  **Figure 12 – Avaya Main Office Address Book Entry**

Step	Description
2.	From the navigation menu on the left, select **Objects → Addresses → List.** The address list page is displayed. Click the **New** button on top right corner of page to create a new address book entry. Enter the following information on the screen shown in **Figure 13**: • **Address Name**: **Avaya Branch Office** • **IP Address/Netmask**: IP address and subnet mask of the Branch Office network • **Zone**: Select **Untrust** from the drop down list Click **OK**.  **Figure 13 – Avaya Branch Office Address Book Entry**

Step	Description
3.	From the navigation menu on the left, select **Objects → Addresses → List.** The address list page is displayed. Click the **New** button on top right corner of page to create a new address book entry. Enter the following information on the screen shown in **Figure 14**: • **Address Name**: **Avaya ESS** • **IP Address/Netmask**: IP address and subnet mask of the ESS • **Zone**: Select **Untrust** from the drop down list Click **OK.**

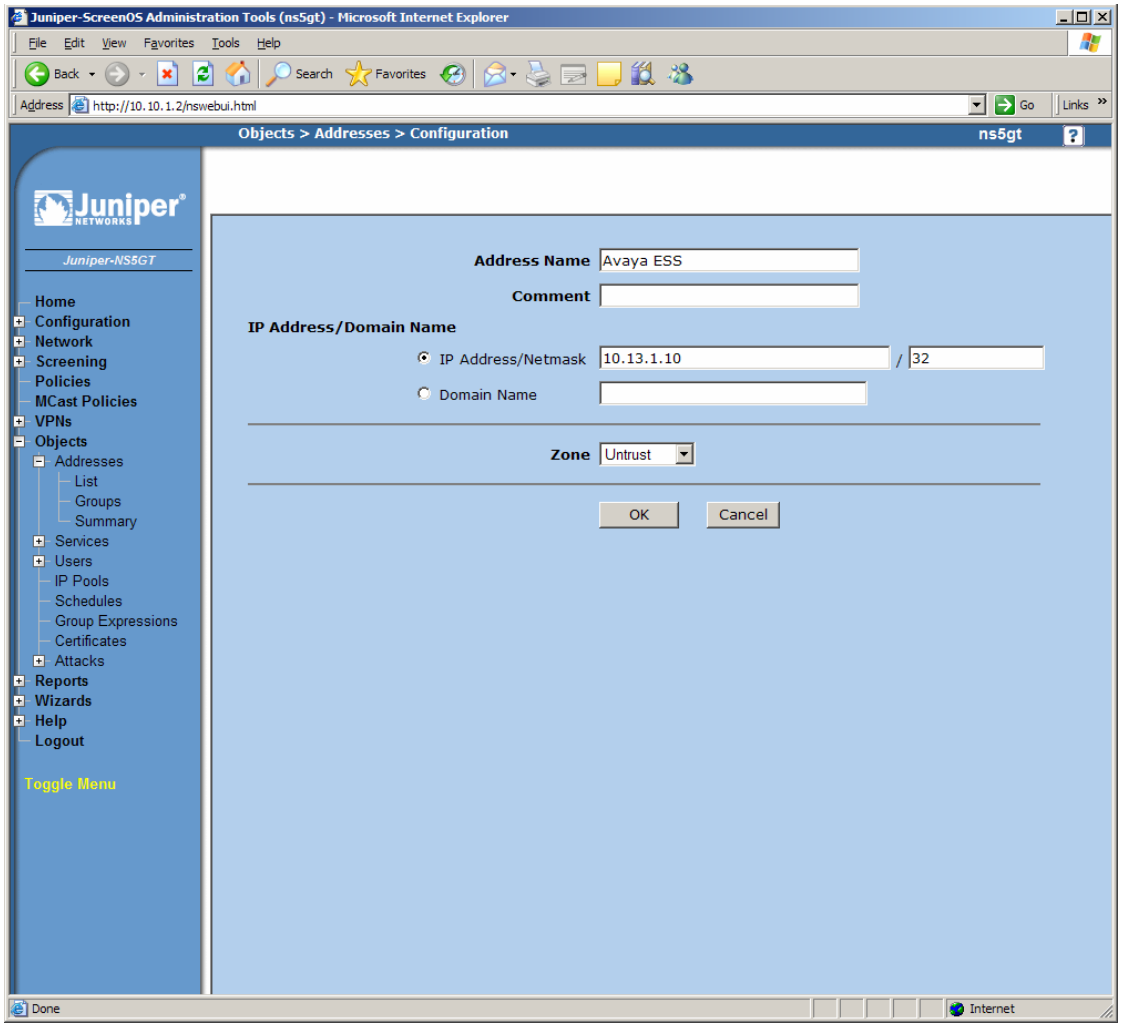
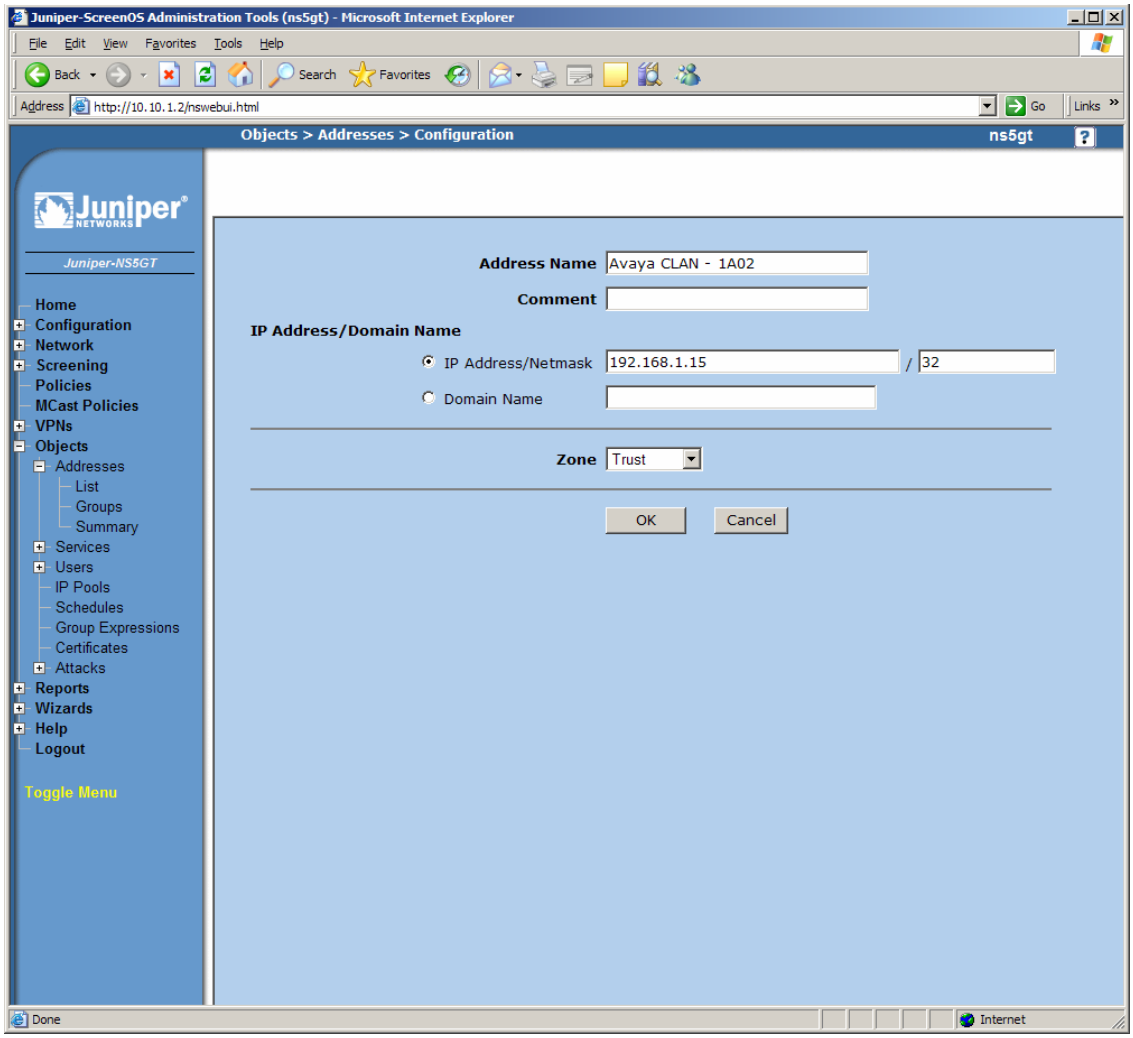


Figure 14 – Avaya ESS Address Book Entry

Step	Description
4.	From the navigation menu on the left, select **Objects → Addresses → List.** The address list page is displayed. Click the **New** button on top right corner of page to create a new address book entry. Enter the following information on the screen shown in **Figure 15**: • **Address Name**: **Avaya CLAN – 1A02** • **IP Address/Netmask**: IP address and subnet mask of the C-LAN in slot 1A02 • **Zone**: Select **Trust** from the drop down list Click **OK**.  **Figure 15 – Avaya CLAN-1A02 Address Book Entry**

Step	Description
5.	From the navigation menu on the left, select **Objects → Addresses → List.** The address list page is displayed. Click the **New** button on top right corner of page to create a new address book entry. Enter the following information on the screen shown in **Figure 16**: • **Address Name**: **Avaya CLAN – 1B02** • **IP Address/Netmask**: IP address and subnet mask of the C-LAN in slot 1B02 • **Zone**: Select **Trust** from the drop down list Click **OK**.

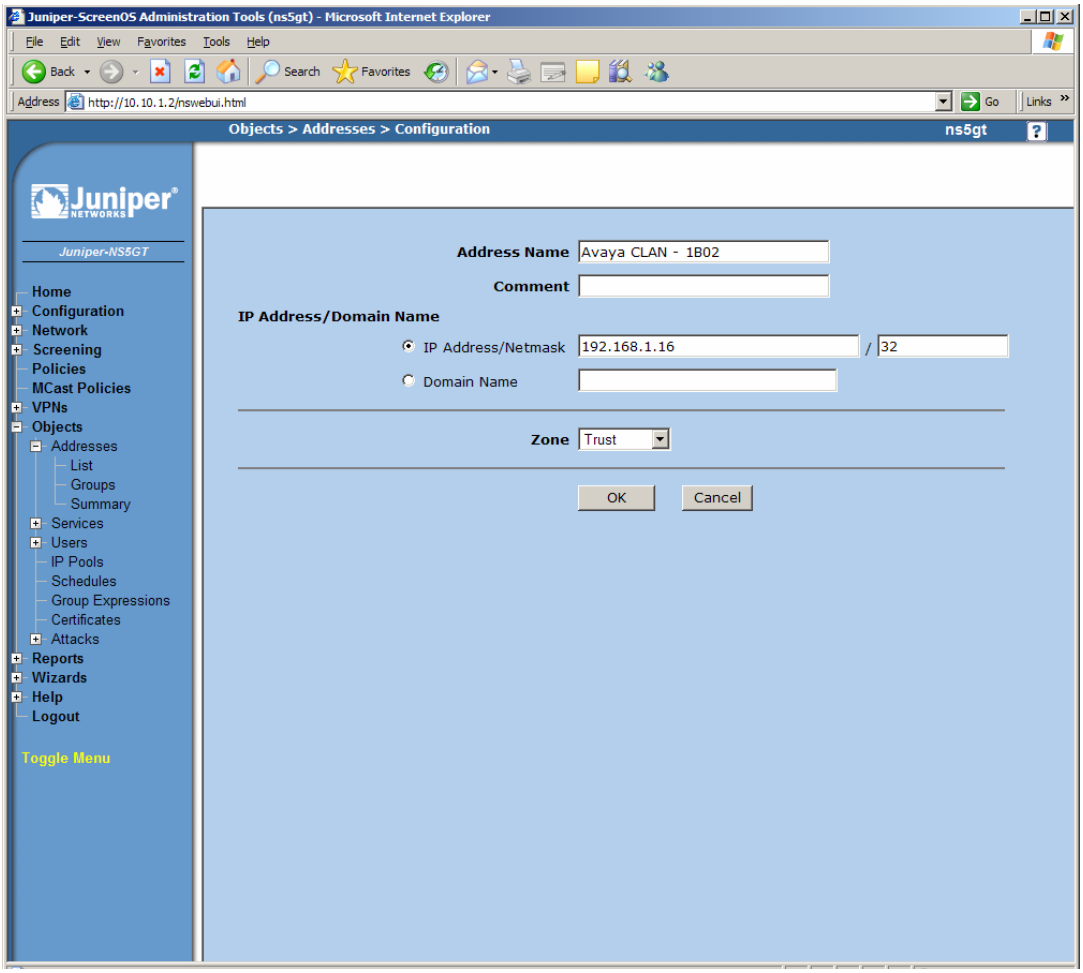


Figure 16 – Avaya CLAN-1A02 Address Book Entry

Step	Description
6.	From the navigation menu on the left, select **Objects → Addresses → List.** The address list page is displayed. Click the **New** button on top right corner of page to create a new address book entry. Enter the following information on the screen shown in **Figure 17**: • **Address Name**: **Avaya MEDPRO – 1A03** • **IP Address/Netmask**: IP address and subnet mask of the MEDPRO located in slot 1A03 • **Zone**: Select **Trust** from the drop down list Click **OK**.

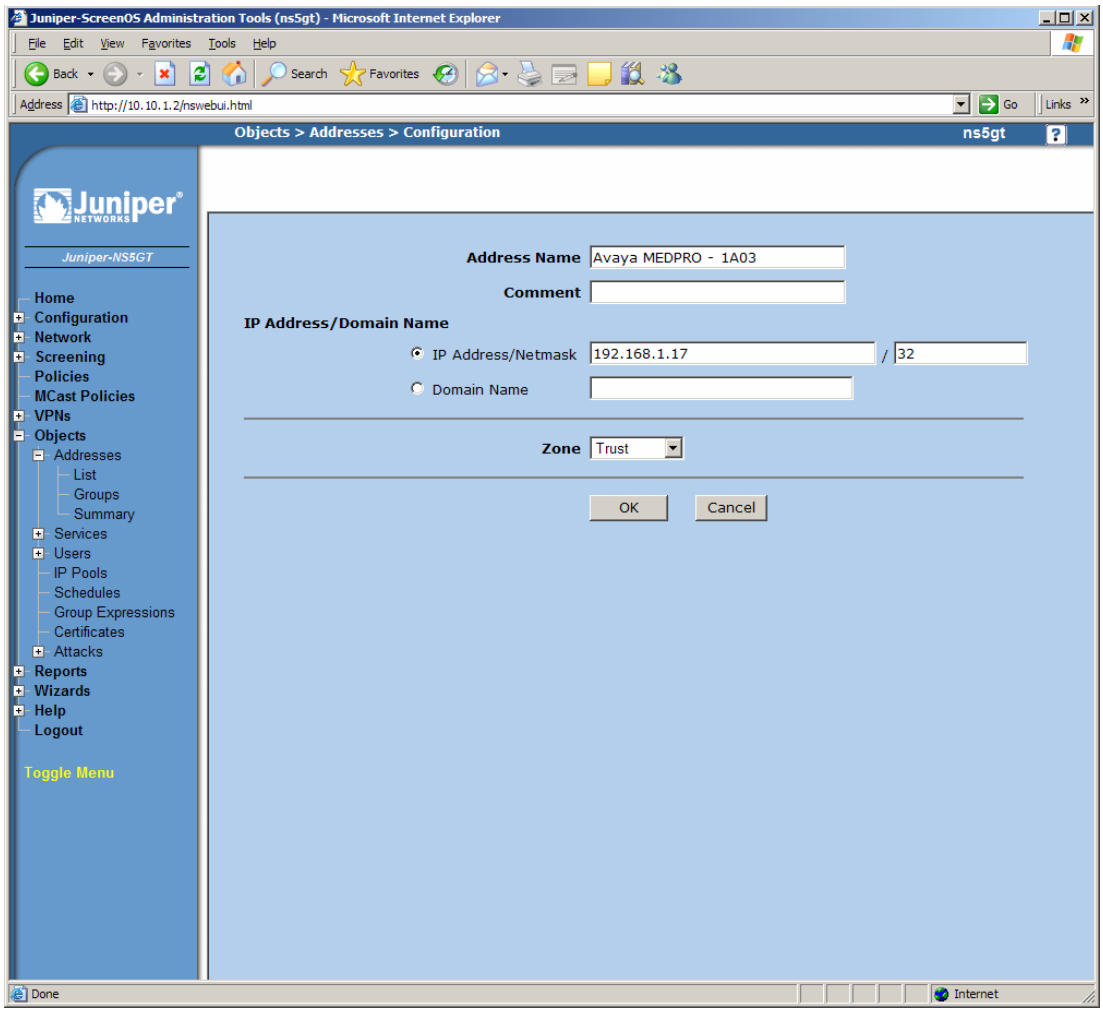


Figure 17 – Avaya MEDPRO – 1A03 Address Book Entry

Step	Description
7.	From the navigation menu on the left, select **Objects → Addresses → List.** The address list page is displayed. Click the **New** button on top right corner of page to create a new address book entry. Enter the following information on the screen shown in **Figure 18**: • **Address Name**: **Avaya MEDPRO – 1B03** • **IP Address/Netmask**: IP address and subnet mask of the MEDPRO located in slot 1B03 • **Zone**: Select **Trust** from the drop down list Click **OK**.

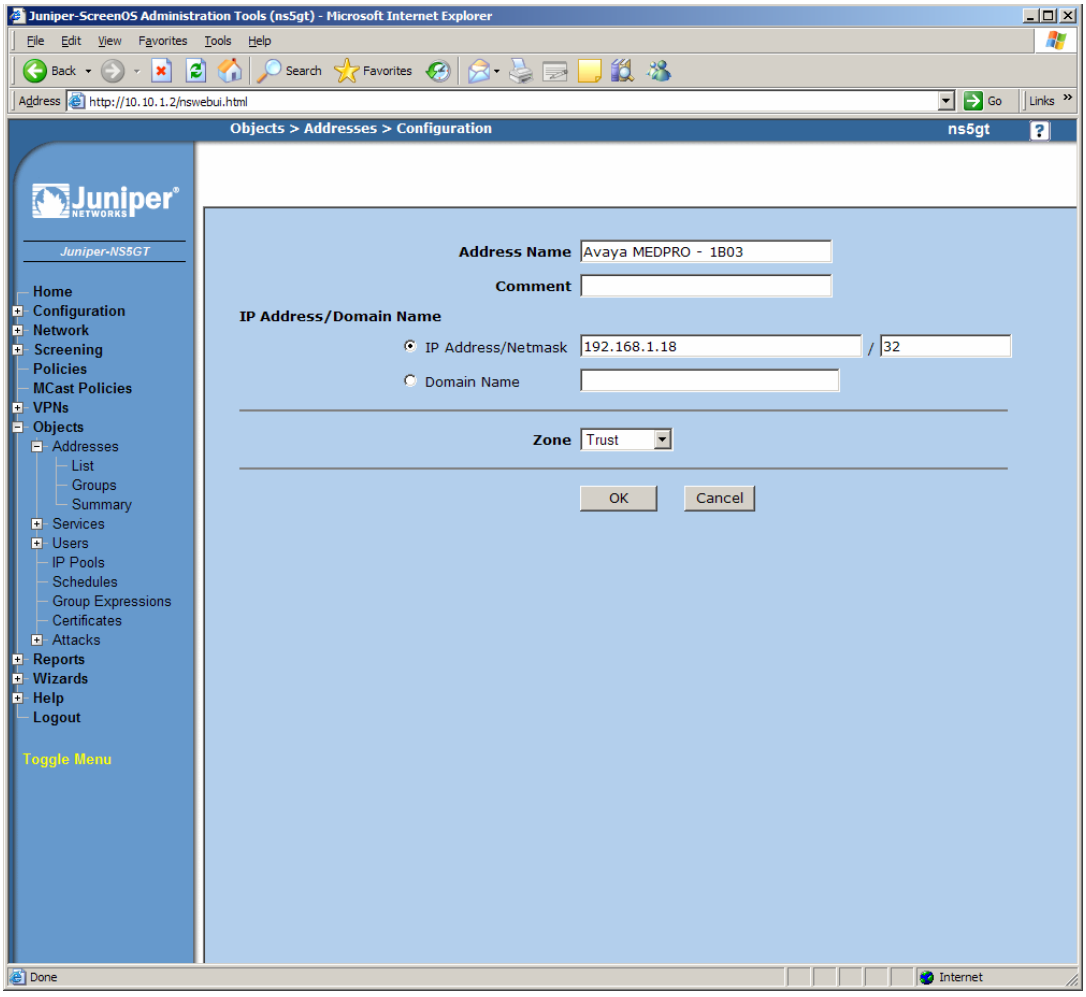


Figure 18 – Avaya MEDPRO – 1B03 Address Book Entry

3.6. Configuring Custom Service

Custom services allow for the specification of protocols that are not pre-defined on the NetScreen. Three custom services are defined in this section. The first custom service is used to support Avaya H.323 signaling. The second custom service is used to support RTP traffic. The third custom service is used to support H.248 signaling between the C-LAN and Media Gateway.

Step	Description
1.	From the navigation menu on the left, select **Objects → Services → Custom**. The Custom Services page is displayed. Click the **New** button on top right corner of page to create a new custom service. Enter the following information in the screen shown in **Figure 19**. • **Service Name**: **Avaya_H323** • **Service Timeout**: **Use protocol default**. This is the default setting. The UDP and TCP ports specified are described in **Table 1**. Click **OK**.

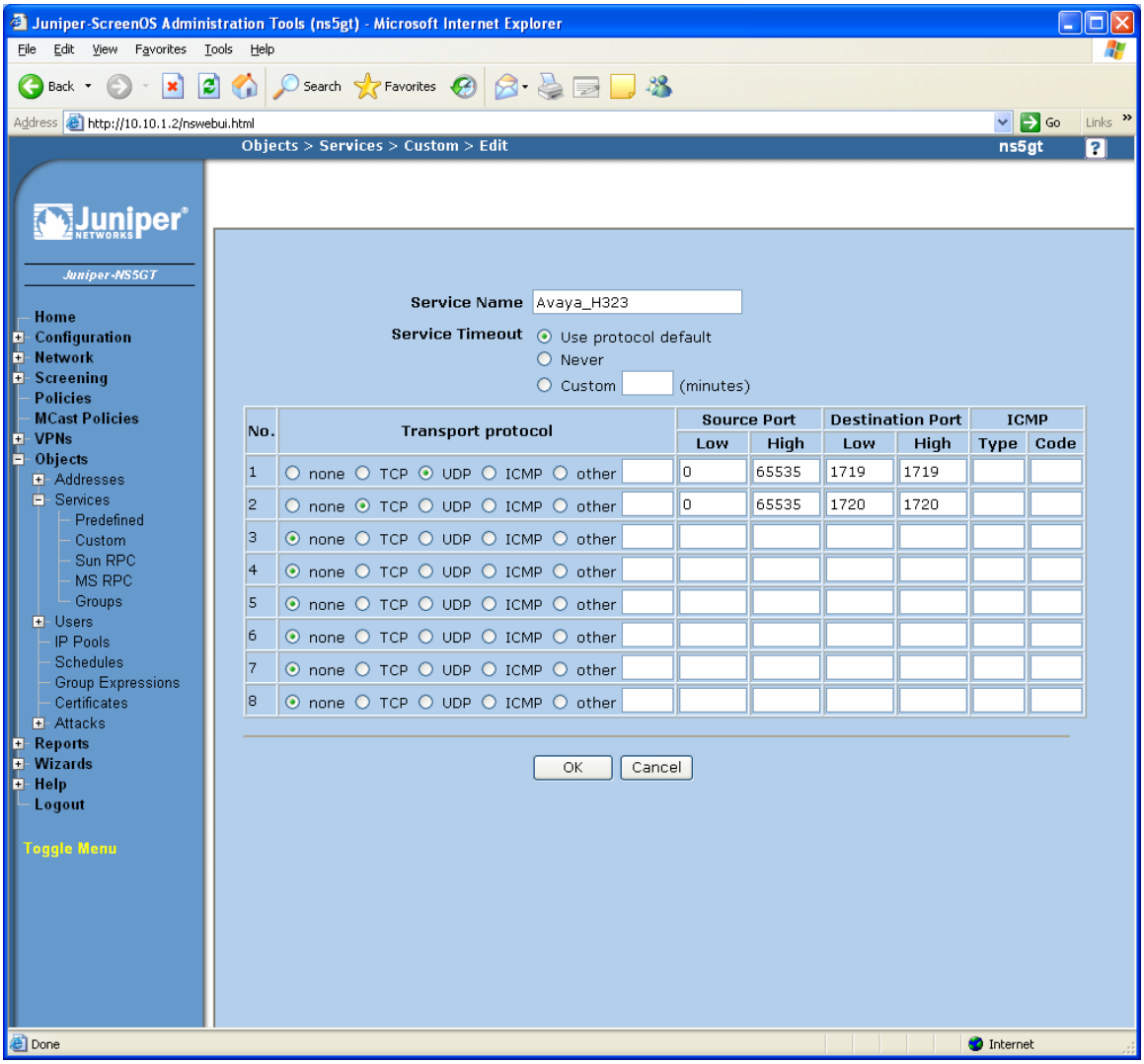


Figure 19 – Avaya H323 Custom Service

Step	Description
2.	From the navigation menu on the left, select **Objects → Services → Custom**. The Custom Services page is displayed. Click the **New** button on top right corner of page to create a new custom service. Enter the following information in the screen shown in **Figure 20**. • **Service Name**: **Avaya_RTP** • **Service Timeout**: **Use protocol default**. This is the default setting. The UDP ports specified are described in **Table 1**. The **Destination Port** range corresponds to the UDP port range specified on the IP Network Region form in **Figure 30**. Click **OK**.

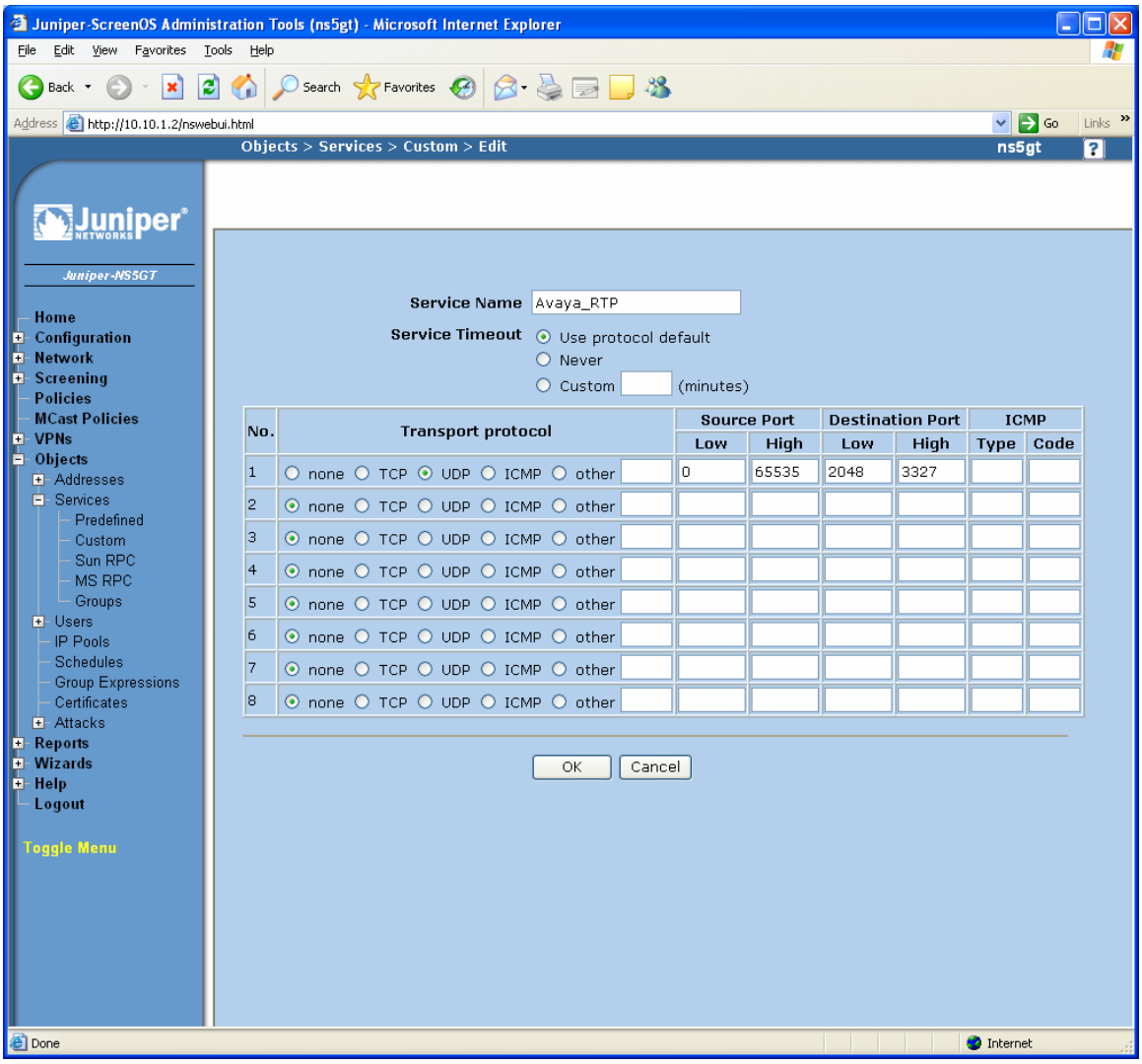


Figure 20 – Avaya RTP Custom Service

Step	Description
3.	From the navigation menu on the left, select **Objects → Services → Custom**. The Custom Services page is displayed. Click the **New** button on top right corner of page to create a new custom service. Enter the following information in the screen shown in **Figure 21**. • **Service Name**: **Avaya_H248** • **Service Timeout**: **Use protocol default**. This is the default setting. The TCP ports specified are described in **Table 1**. Click **OK**.

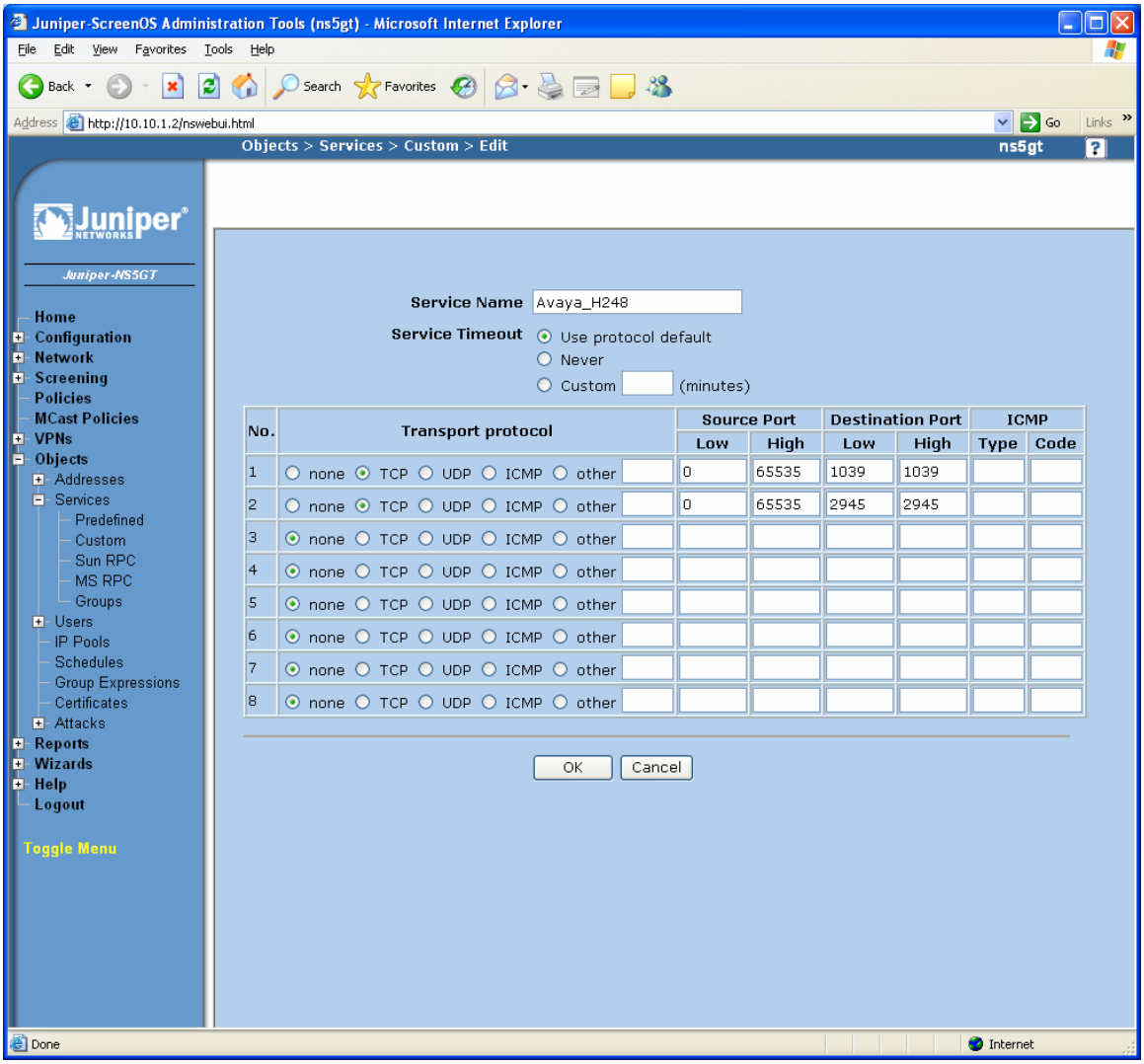


Figure 21 – Avaya H248 Custom Service

3.7. Creating Security Policies

Two security policies must be created on the Juniper NetScreen 5GT to allow traffic to flow between the "trust" and the "untrust" zones. The security policy created in Section 3.7.1 allows all traffic to flow from the "trust" zone to the "untrust" zone. The security policy created in Section 3.7.2 only allows ICMP and traffic defined by the custom services in Section 3.6 to flow from the "untrust" zone to the "trust" zone.

3.7.1. Trust to Untrust Policy

Step	Description
1.	From the navigation menu on the left, select **Policies**. On the top of the Policies page, select **Trust** on the **From** drop-down list and **Untrust** on the **To** drop-down list. Click the **New** button on the top right corner of the page to create a new security policy. Enter the following information in the screen shown in **Figure 22**: • **Name**: **Avaya Private-to-Public** • **Source Address**: See Step 2 below. • **Destination Address**: See Step 3 below. • **Service**: Select **ANY** from the drop-down list. • **Application**: Select **None** from the the drop-down list. • **Action**: Select **Permit** from the drop-down list. • **Logging**: Enable logging by checking the box to see events in the Juniper NetScreen 5GT log.

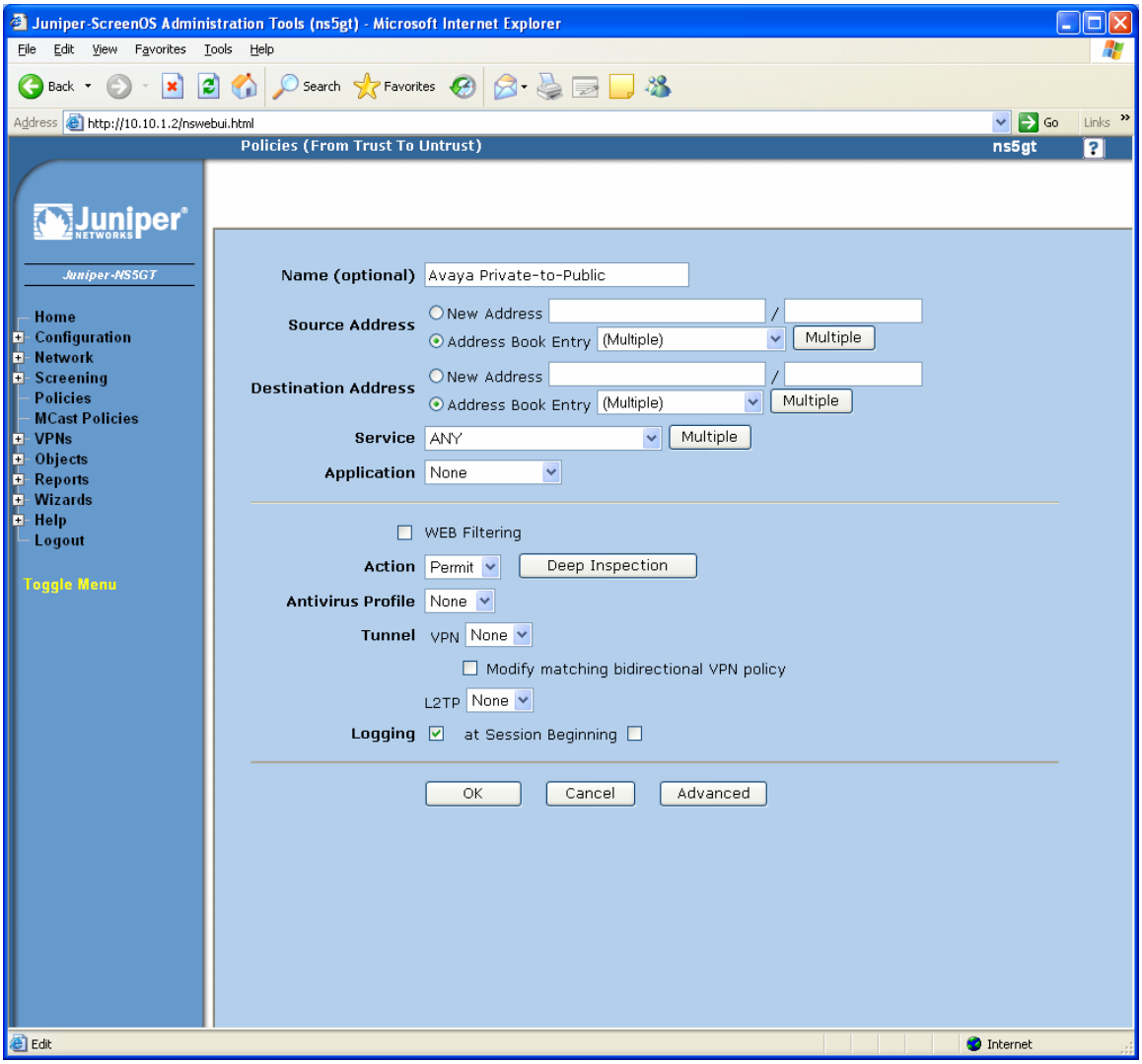
Step	Description
	

Figure 22 – Trust to Untrust Policy

Step	Description
2.	From the Policies (Trust to Untrust) screen in **Figure 22**, select **Address Book Entry** for the **Source Address** and click the **Multiple** button. Select the Address Book entries created for the C-LAN and MEDPRO boards from the **Available Members** window and move these over to the **Selected Members** window as shown in **Figure 23**. Click **OK**.

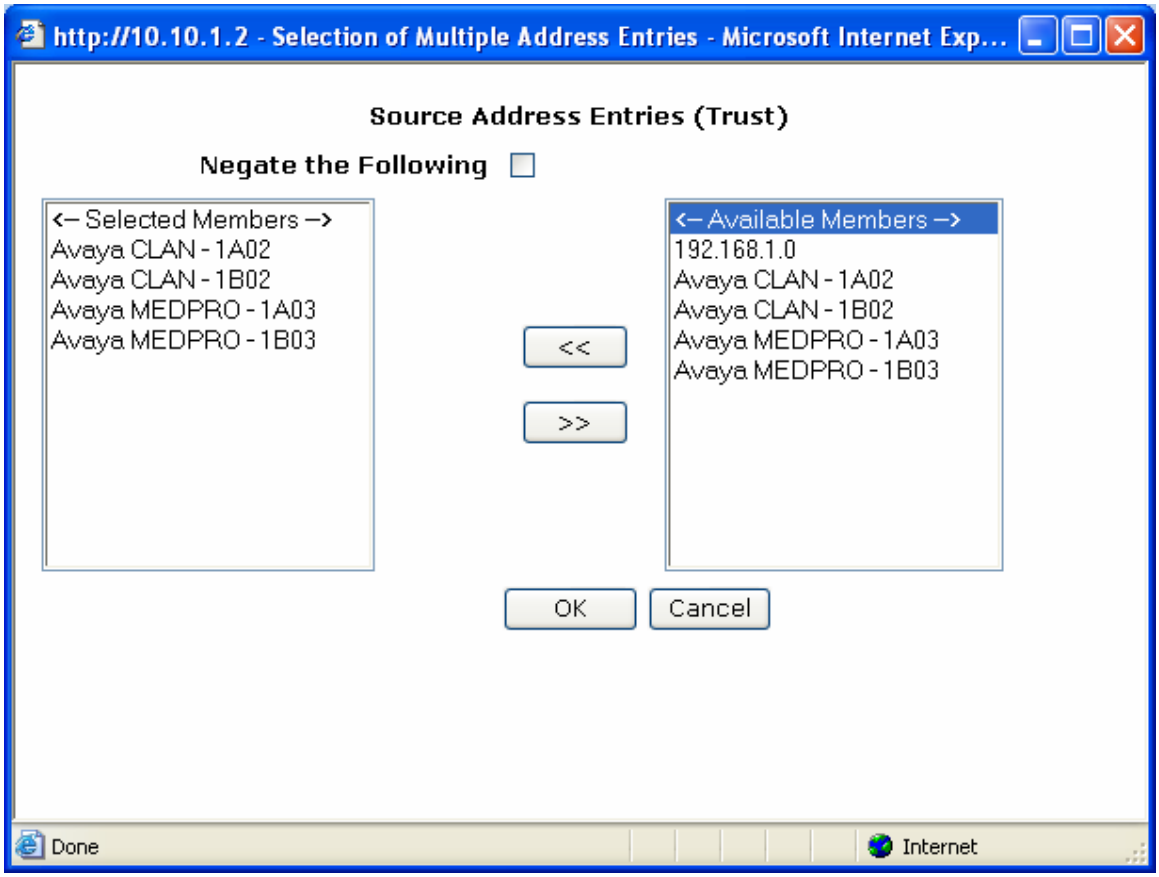
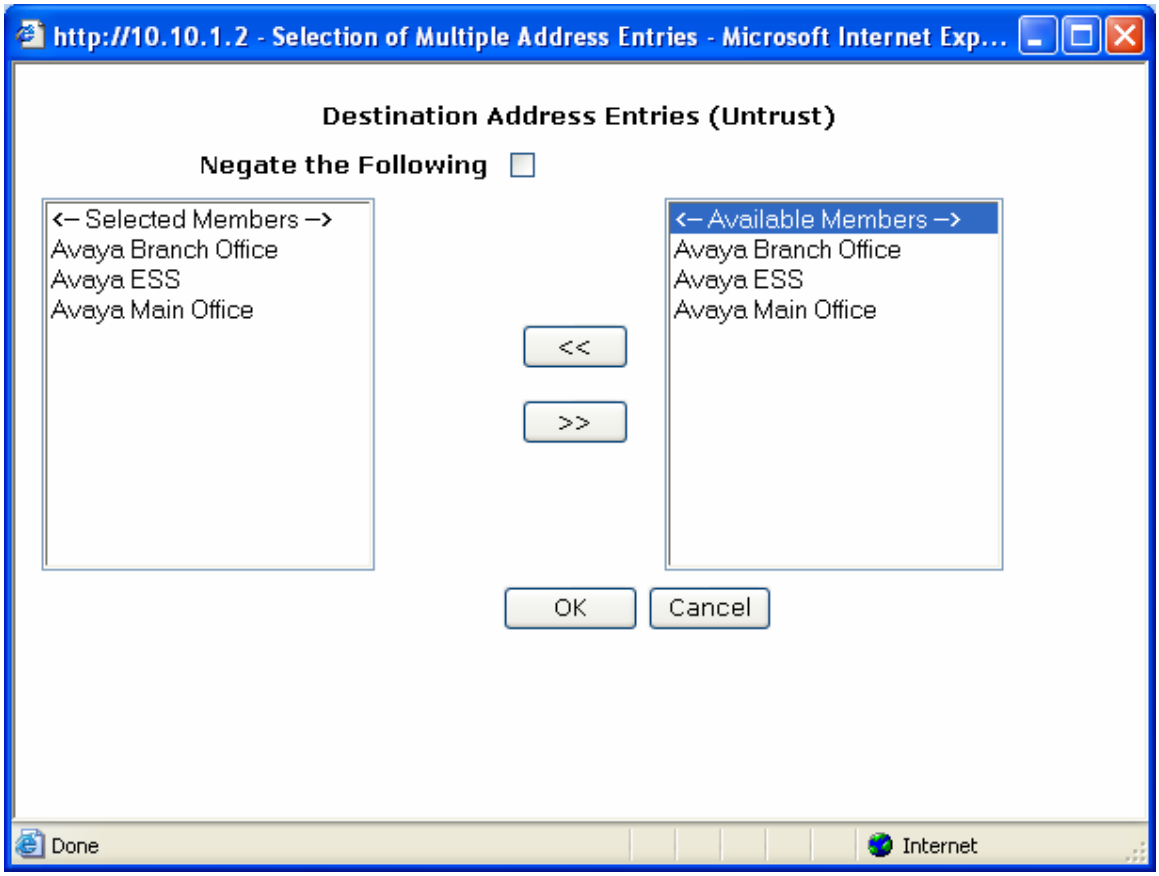
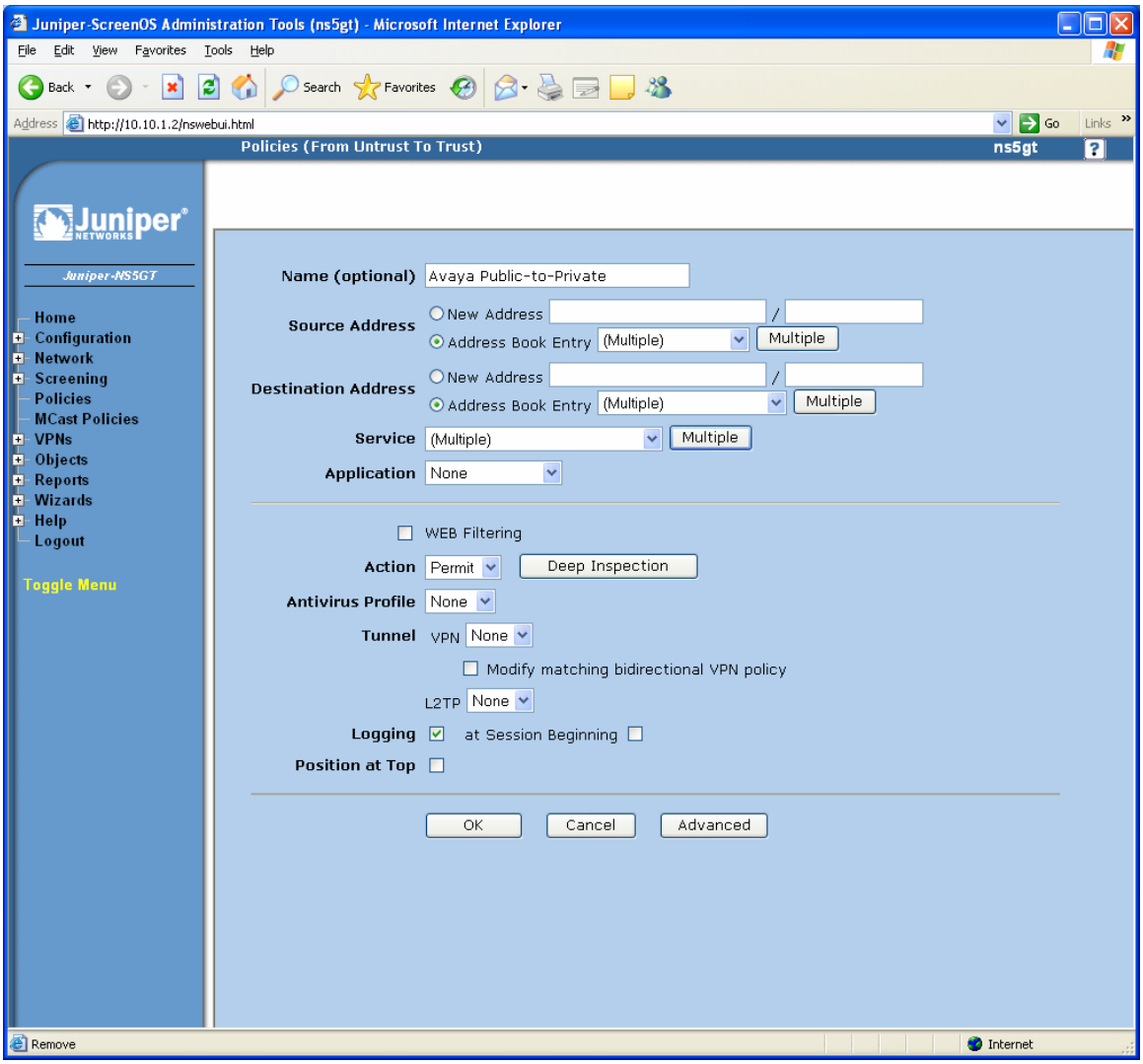


Figure 23 – Source Address Entries (Trust)

Step	Description
3.	From the Policies (Trust to Untrust) screen in **Figure 22**, select **Address Book Entry** for the **Destination Address** and click the **Multiple** button. Select the Address Book entries created for the Branch Office, ESS, and Main Office from the **Available Members** window and move these over to the **Selected Members** window as shown in **Figure 24**. Click **OK** to continue. Click **OK** to save the **Trust** to **Untrust** policy.  **Figure 24 – Destination Address Entries (Untrust)**

3.7.2. Untrust to Trust Policy

Step	Description
1.	From the navigation menu on the left, select **Policies**. On the top of the Policies page, select **Untrust** on the **From** drop-down list and **Trust** on the **To** drop-down list. Click the **New** button on the top right corner of the page to create a new security policy. Enter the following information in the screen shown in **Figure 25**: • **Name**: **Avaya Public-to-Private** • **Source Address**: See Step 2 below. • **Destination Address**: See Step 3 below. • **Service**: See Step 4 below. • **Application**: Select **None** from the drop-down list. • **Action**: Select **Permit** from the drop-down list. • **Logging**: Enable logging by checking the box to see events in the NetScreen log. Click **OK**.  **Figure 25 – Trust to Untrust Policy**

Step	Description
2.	From the Policies (Untrust to Trust) screen in **Figure 25**, select **Address Book Entry** for the **Source Address** and click the **Multiple** button. Select the Address Book entries created for the Branch Office, ESS, and Main Office from the **Available Members** window and move these over to the **Selected Members** window as shown in **Figure 26**. Click **OK**.

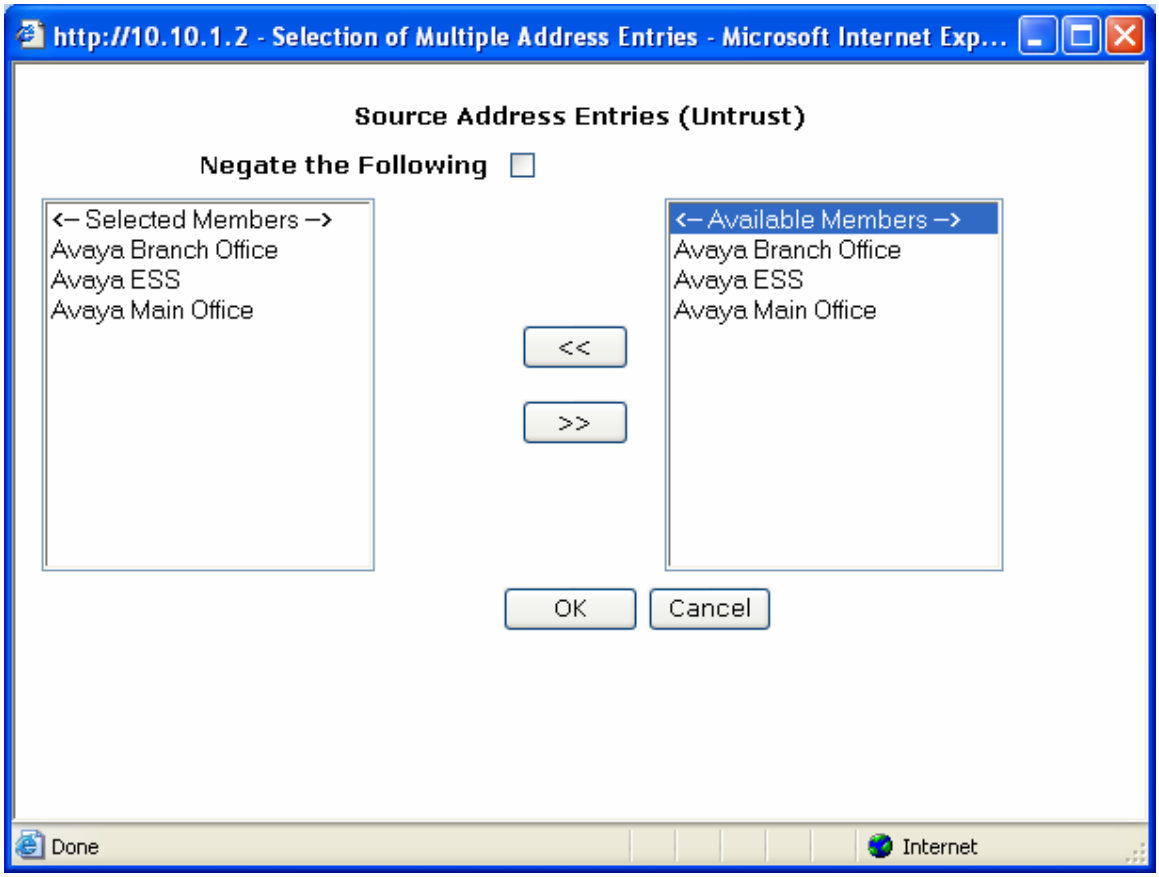


Figure 26 – Source Address Entries (Untrust)

Step	Description
3.	From the Policies (Untrust to Trust) screen in **Figure 25**, select **Address Book Entry** for the **Destination Address** and click the **Multiple** button. Select the Address Book entries created for the C-LAN and MEDPRO boards from the **Available Members** window and move these over to the **Selected Members** window as shown in **Figure 27**. Click **OK**.

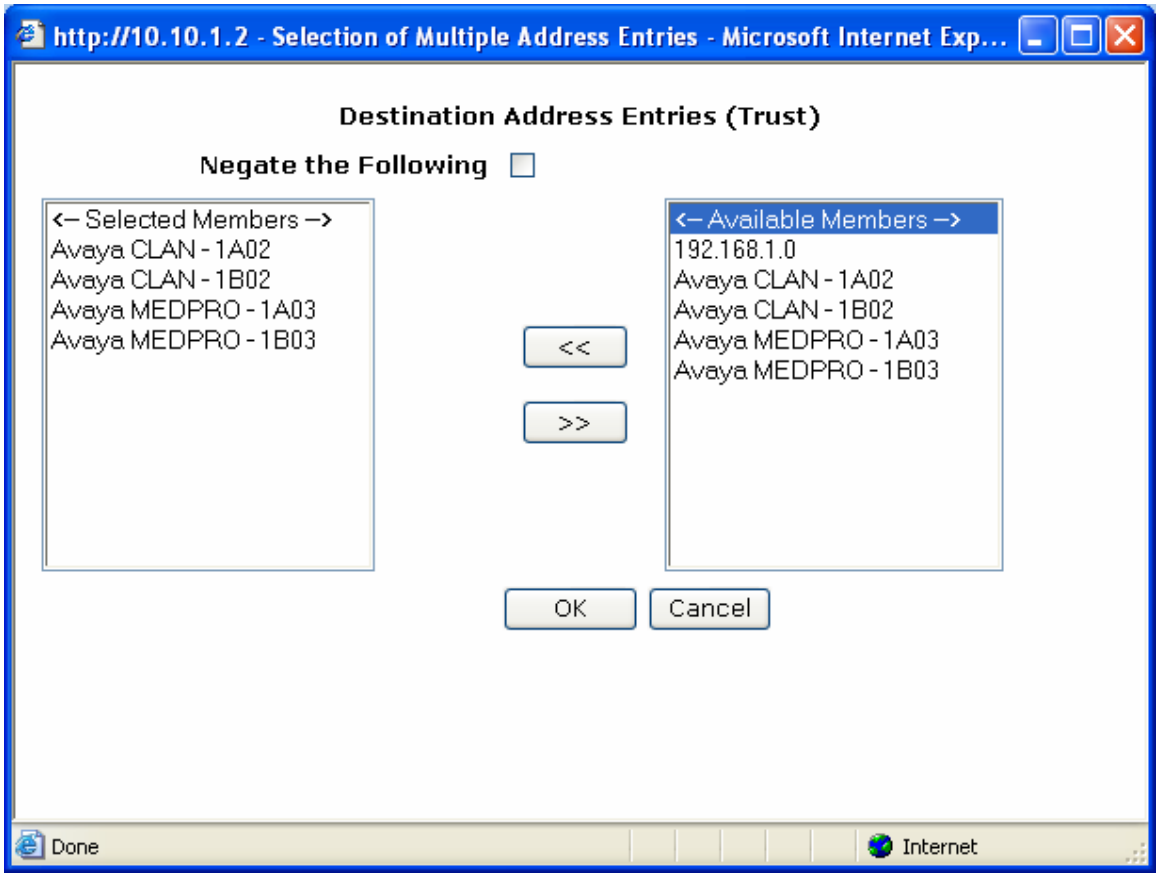
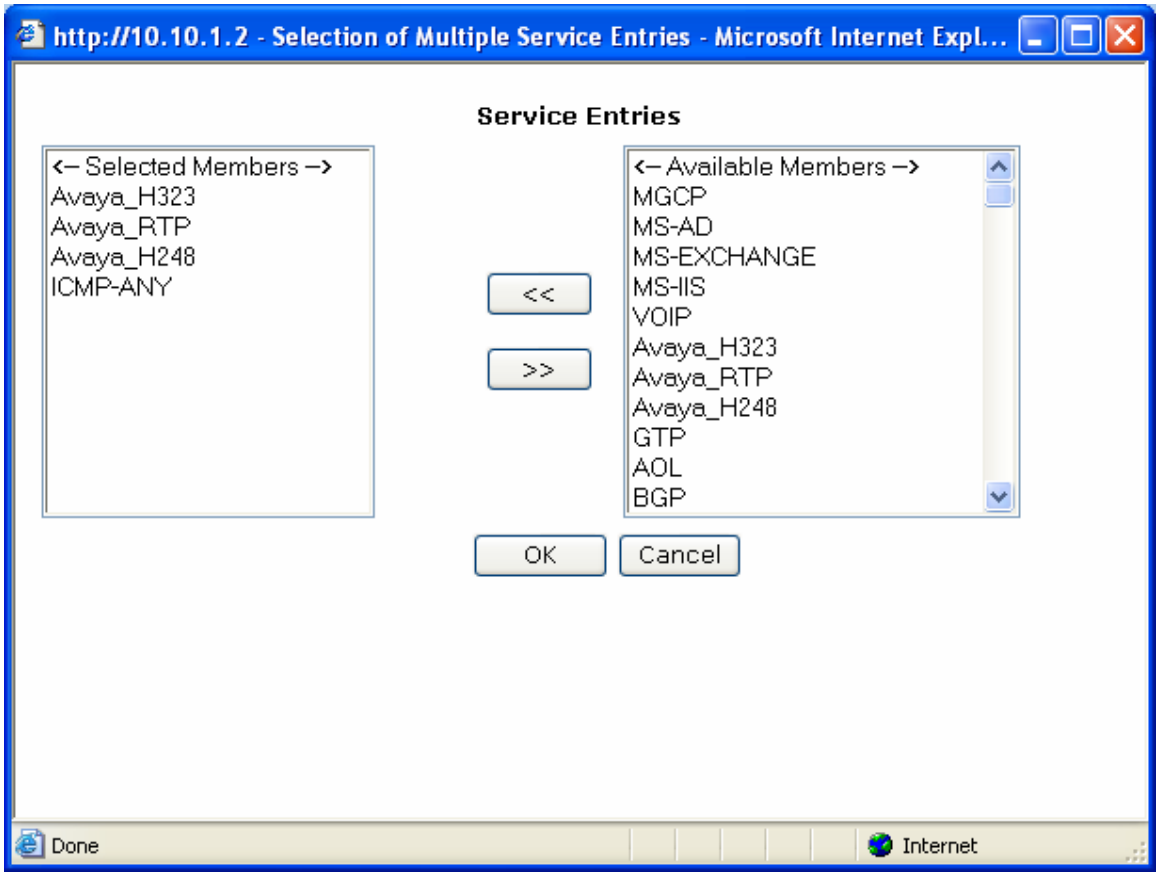


Figure 27 – Source Address Entries (Untrust)

Step	Description
4.	From the Policies (Untrust to Trust) screen in **Figure 25**, click the **Multiple** button for **Service**. Select the Custom Services created in Section 3.6 from the **Available Members** window and move these over to the **Selected Members** window as shown in **Figure 28**. Click **OK** to continue. Click **OK** to save the **Untrust to Trust** policy.  **Figure 28 – Service Entries**

3.7.3. Summary of Security Policies to Support Avaya IP Telephony

From the Juniper NetScreen 5GT Home Page, click **Policies** to display the two security policies created in Sections 3.7.1 and 3.7.2.

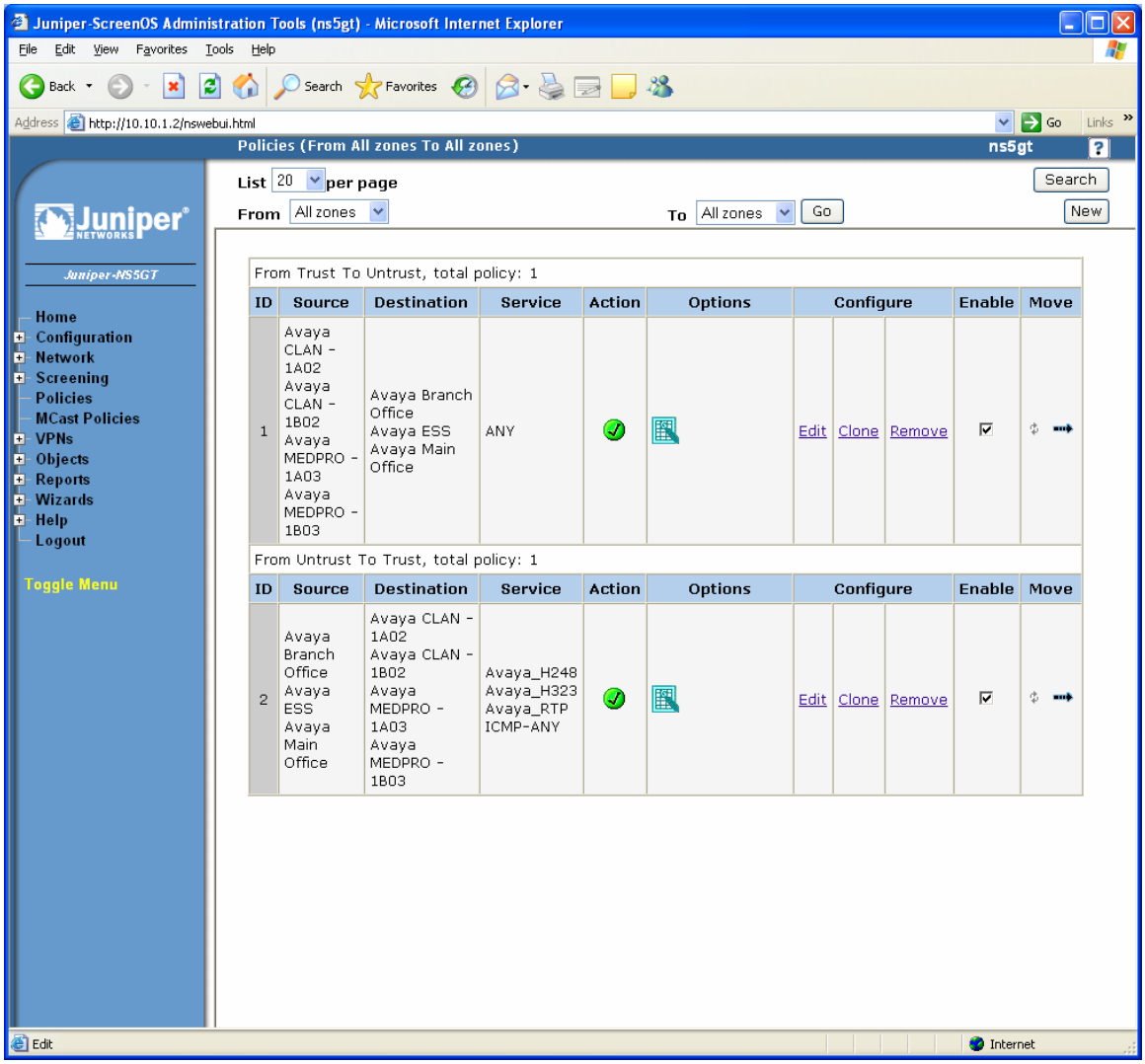


Figure 29 – Service Entries

4. Avaya Communication Manager Configuration

From the System Access Terminal (SAT), enter the "**change ip-nework-region n**" command, where n represents the region number. Enter the UDP port range (minimum and maximum) under **Media Parameters** as shown in **Figure 30** for Network Region 1. This port range must match the Custom Service port range used in Step 2 of Section 3.6. The Main Office uses Network Region 1 and the Branch Office (not shown) uses Network Region 2. The same UDP port range is specified for each Network Region.

```
change ip-network-region 1                                    Page   1 of
19
                              IP NETWORK REGION
  Region: 1
Location: 1       Authoritative Domain:
    Name:
MEDIA PARAMETERS                Intra-region IP-IP Direct Audio: yes
      Codec Set: 1              Inter-region IP-IP Direct Audio: yes
   UDP Port Min: 2048                        IP Audio Hairpinning? n
   UDP Port Max: 3327
DIFFSERV/TOS PARAMETERS                  RTCP Reporting Enabled? y
 Call Control PHB Value: 46      RTCP MONITOR SERVER PARAMETERS
        Audio PHB Value: 46       Use Default Server Parameters? y
        Video PHB Value: 26
802.1P/Q PARAMETERS
 Call Control 802.1p Priority: 6
        Audio 802.1p Priority: 6
        Video 802.1p Priority: 5      AUDIO RESOURCE RESERVATION PARAMETERS
H.323 IP ENDPOINTS                                       RSVP Enabled? n
  H.323 Link Bounce Recovery? y
 Idle Traffic Interval (sec): 20
   Keep-Alive Interval (sec): 5
            Keep-Alive Count: 5
```

Figure 30 – IP Network Region Form

5. Verification Steps

The following steps can be performed to verify that the Juniper NetScreen 5GT can support Avaya IP Telephones, Avaya Media Gateways, Avaya Enterprise Survivable Servers, and Avaya Local Survivable Processors:

Step	Description
1.	From the System Access Terminal (SAT), use the "**list registered-ip-stations**" command to verify that the Juniper NetScreen 5GT configuration allows the Avaya IP Telephones (e.g., 20001, 50001-50002) to register to a C-LAN.

```
list registered-ip-stations

                            REGISTERED IP STATIONS

Station  Set     Product    Prod  Station         Net Orig    Gatekeeper     TCP
Ext      Type    ID         Rel   IP Address      Rgn Port    IP Address     Skt
20001    4621    IP_Phone   2.400 10.11.1.21      2           192.168.1.15    y
50001    4621    IP_Phone   2.400 10.10.1.51      1           192.168.1.15    y
50002    4610    IP_Phone   2.400 10.10.1.52      1           192.168.1.15    y
```

Figure 31 – Registered IP Stations

2.	From the System Access Terminal (SAT), use the "**list media-gateway**" command to verify that the Juniper NetScreen 5GT configuration allows the Avaya G350 Media Gateway to register to a C-LAN.

```
list media-gateway

                               MEDIA-GATEWAY REPORT

Num Name                 Serial No/       IP Address/       Type    NetRgn Reg?
                         FW Ver/HW Vint   Cntrl IP Addr              RecRule

1   g350                 05IS35724296     10 .11 .1  .254  g350     2      y
                         25 .23 .0  /1    192.168.1  .15             1
```

Figure 32 – Media-Gateway Report

Step	Description
3.	From the System Access Terminal (SAT), use the "**status ess clusters**" command to verify that the Juniper NetScreen 5GT configuration allows both Cluster 1 (Primary Servers) and Cluster 2 (ESS Server) to register. **status ess clusters** Cluster ID 1 ESS CLUSTER INFORMATION Cluster ID / Enabled? / Active Server ID / Registered? / Translations Updated / Software Version **1** y 1 **y** 22:00 7/4/2006 R013x.01.1.628.7 **2** y 3 **y** 22:00 7/4/2006 R013x.01.1.628.7 **Figure 33 – ESS Cluster Information**
4.	From the System Access Terminal (SAT), use the "**list survivable-processor**" command to verify that the Juniper NetScreen 5GT configuration allows both the Avaya S8300 (g350-lsp) and the Avaya S8500 (8500-ess) to register. File synchronization is working properly because both servers have the same time and date in the **Translations Updated** field. **list survivable-processor** SURVIVABLE PROCESSORS Name / Type / IP Address / Reg / LSP Act / **Translations Updated** / Net Rgn **g350-lsp** LSP 10 .11 .1 .10 **y** n 22:00 7/4/2006 2 **8500-ess** ESS 10 .13 .1 .10 **y** 22:00 7/4/2006 1 **Figure 34 – ESS Cluster Information**
5.	Verify shuffled and non-shuffled calls can be placed successfully when a primary media server is active from the Avaya IP Telephones at both the Main and Branch Offices.
6.	Verify shuffled and non-shuffled calls can be placed successfully when the ESS server is active from the Avaya IP Telephones at both the Main and Branch Offices.

6. Conclusion

These Application Notes describe how to configure the Juniper NetScreen 5GT to support Avaya H.323 IP Telephony. The sample configuration presented in these Application Notes illustrated how a Juniper NetScreen 5GT firewall can be configured to protect Avaya C-LANs and Media Processor boards using security policies which only allow H.323 signaling, RTP, and H.248 traffic to pass through the firewall.

7. Additional References

The following Avaya product documentation can be found at http://support.avaya.com.

[1] *Avaya Application Solutions: IP Telephony Deployment Guide,* Issue 4.2, February 2006, Document ID: 555-245-600.

[2] *Configuring the Juniper NetScreen Firewall Security Policies to support Avaya IP Telephony*, Issue 1.0.

The following Juniper NetScreen documentation can be found at http://www.juniper.net.

[3] *NetScreen Concepts & Examples, ScreenOS Reference Guide, Volume 2: Fundamentals,* ScreenOS 5.0.0 P/N 093-1345-000, Rev. A.

Please e-mail any questions or comments pertaining to these Application Notes along with the full title and filename, located in the lower right corner, directly to the Avaya Solution & Interoperability Test Lab at interoplabnotes@list.avaya.com