Avaya Solution & Interoperability Test Lab

Application Notes for NetScout nGenius with Avaya Communication Manager running on the Avaya S8300 Media Server and Avaya G700 Media Gateway - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for NetScout nGenius to successfully interoperate with the Avaya Communication Manager running on the Avaya S8300 Media Server and Avaya G700 Media Gateway. Features and functionality were validated and performance testing was conducted in order to verify operation under load. Information in these Application Notes has been obtained through 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 the compliance-tested configuration utilizing Avaya Communication Manager on an Avaya S8300 Media Server with NetScout nGenius monitoring the traffic via port mirroring.

NetScout nGenius provides customers a unified performance management solution. Key performance management disciplines, application and network monitoring, capacity planning, troubleshooting, fault prevention, and service-level management are fully integrated into a single management application, providing a total network view through a browser interface. For customers wanting to monitor their converged infrastructure, nGenius allows the monitoring of the RTP streams associated with IP telephony devices such as telephones and media gateways. In this configuration, the monitoring of RTP streams is done via port mirroring. This sample configuration utilizes an Avaya P333T-PWR switch, which requires a one-to-one mapping between the mirror source and destination ports (i.e., a number of ports cannot be mirrored to a single port). This is why the uplink port, rather than the phone ports or voice VLAN, is mirrored. Refer to the document "Application Notes for NetScout nGenius with Avaya Communication Manager and Extreme Networks Summit 48" for more information on port mirroring options that are better suited for Avaya Communication Manager running on Media Server and Media Gateways combinations other than the S8300/G700.

As seen in **Figure 1**, Avaya Communication Manager runs on the Avaya S8300 Media Server. In this sample configuration, Avaya IP Telephones have been configured with and without direct IP-IP connections. Either setting can be used, depending on the end customer requirements with regard to the monitoring of IP telephones. The P333T-PWR is functioning as a Layer 2 switch, where port 1/24 is the uplink to the network. The P333T-PWR provides power over Ethernet to the IP telephones, and a port provisioned to mirror the network uplink provides the information to the NetScout probe. A DHCP server and a TFTP server reside on the 192.45.50.0 network to support the IP telephones, but their configurations are not specific to the integration with NetScout. As such, they are not discussed.

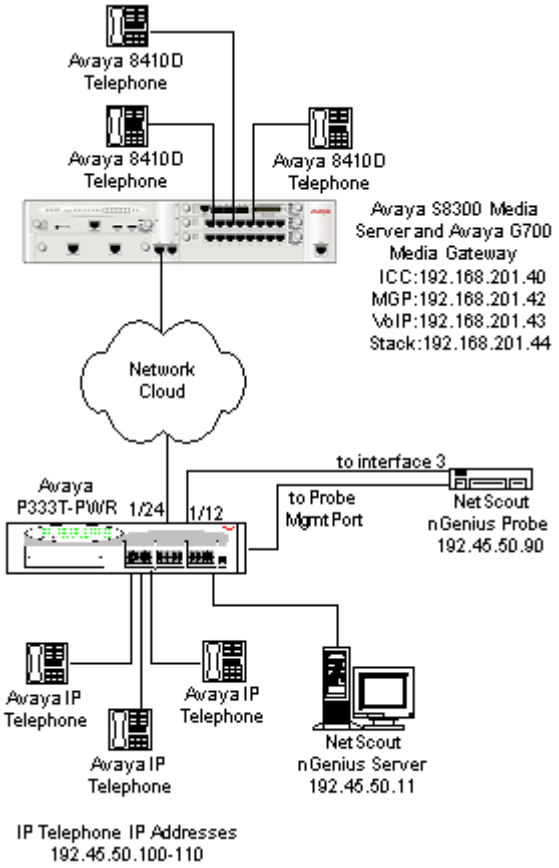


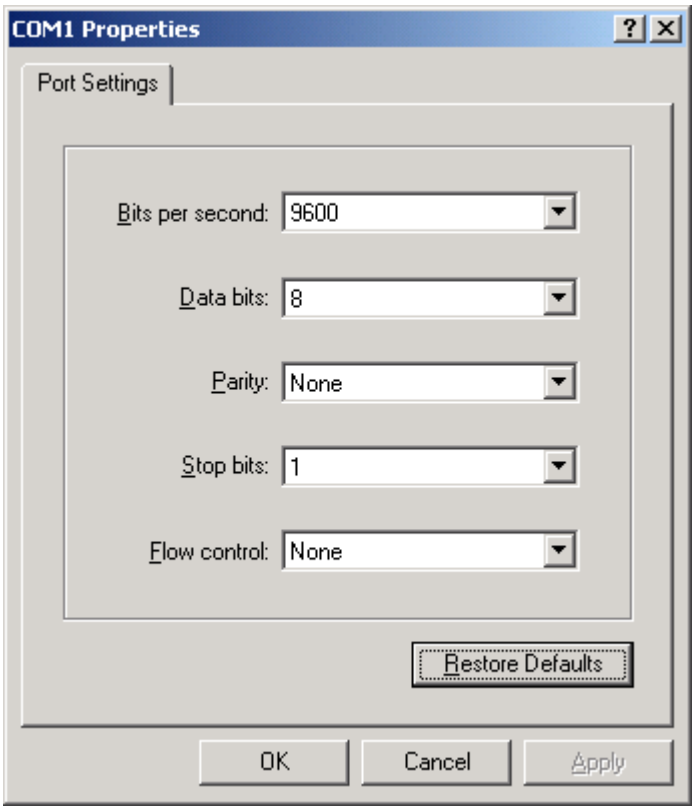
Figure 1: Avaya Developer*Connection* Compliance Test Configuration

2. Equipment and Software Validated

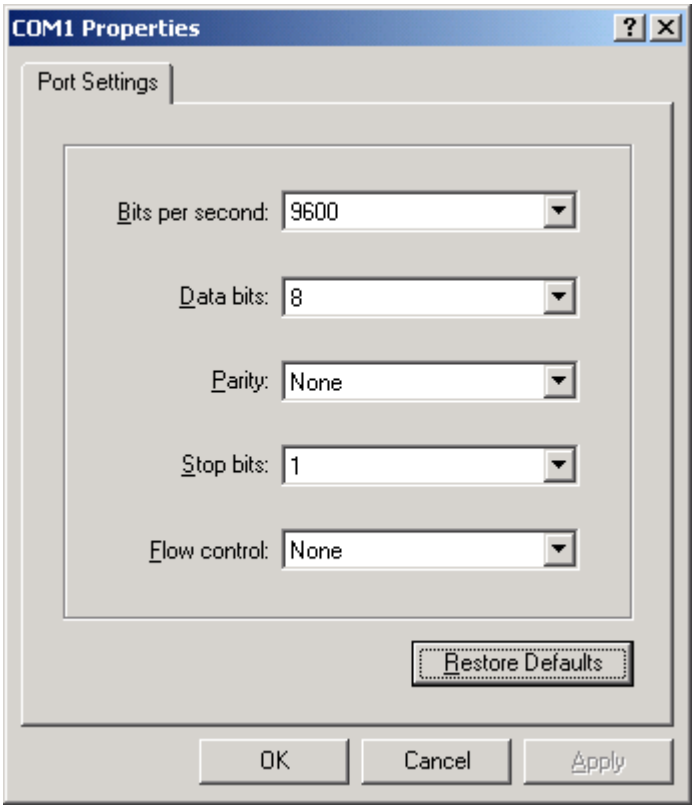
The following equipment and software were used for the sample configuration provided:

Equipment	Software
Avaya S8300 Media Server and Avaya G700 Media Gateway	Avaya Communication Manager 2.0
Avaya P333T-PWR Stackable Switch	3.12.1
Avaya IP Telephones • Avaya 4606 IP Telephone • Avaya 4620 IP Telephone • Avaya 4624 IP Telephone	R 1.81
NetScout nGenius Server	Version 2.0.1 Build 1420
NetScout nGenius 8241ET Probe	V6.0.1 (Build 109)

3. Configure the Avaya P333T-PWR

Step	Description
1.	Connect a console cable to the P333T-PWR. Use Hyperterm with the settings shown below: 
2.	Log in using the appropriate credentials and enter configuration mode. Enter the command "**set port mirror source-port 1/24 mirror-port 1/12 sampling always direction both**".
3.	Connect port 1/24 to the network.
4.	Connect port 1/12 to Interface 3 on the NetScout probe.

4. Configure the NetScout Probe

Step	Description
1.	Connect a console cable to the NetScout probe console port. Use Hyperterm with the settings shown below: 

Step	Description
2.	Once connected, enter **1** to change the IP address of the probe. When prompted, enter the IP address **192.45.50.90** and press Enter. ***** NetScout Model 8241ET V6.0.1 (Build 109 - Extended H323) ***** Interface number : 3 [1] Change IP Address 192.45.50.90 [2] Change Net Mask 255.255.255.0 [3] Change Default Gateway Address Not configured [4] Change Config Server Address Not configured [5] Change Read Community public [6] Change Write Community public [7] Select Interface FAST-ETHERNET [8] Software Options [9] Agent Options [10] Download Firmware [11] Enter Command-line mode [12] Reset Agent [13] Security Options [14] Console Logout Enter your response or hit Esc to Abort Selection#:
4.	Enter **3** to change the gateway address of the probe. When prompted, enter the IP address **192.45.50.1** and press Enter. ***** NetScout Model 8241ET V6.0.1 (Build 109 - Extended H323) ***** Interface number : 3 [1] Change IP Address 192.45.50.90 [2] Change Net Mask 255.255.255.0 [3] Change Default Gateway Address 192.45.50.1 [4] Change Config Server Address Not configured [5] Change Read Community public [6] Change Write Community public [7] Select Interface FAST-ETHERNET [8] Software Options [9] Agent Options [10] Download Firmware [11] Enter Command-line mode [12] Reset Agent [13] Security Options [14] Console Logout Enter your response or hit Esc to Abort Selection#:

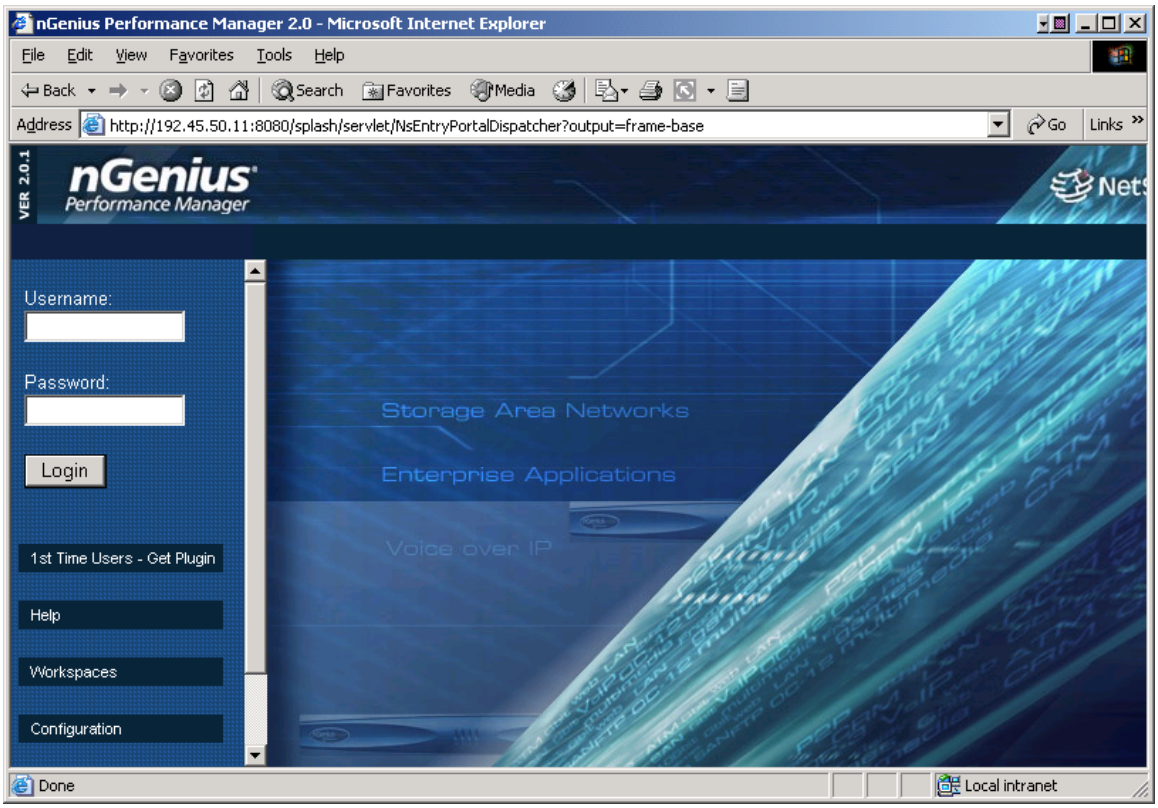
Step	Description
5.	Enter **8** to change Software Options. ***** NetScout Model 8241ET V6.0.1 (Build 109 - Extended H323) ***** Interface number : 3 [1] Change IP Address 192.45.50.90 [2] Change Net Mask 255.255.255.0 [3] Change Default Gateway Address 192.45.50.1 [4] Change Config Server Address Not configured [5] Change Read Community public [6] Change Write Community public [7] Select Interface FAST-ETHERNET [8] Software Options [9] Agent Options [10] Download Firmware [11] Enter Command-line mode [12] Reset Agent [13] Security Options [14] Console Logout Enter your response or hit Esc to Abort Selection#: 8
6.	At the Software Options Menu, enter **1** to set Multi-Media Monitor to **on**. Enter **99** to return to the main menu.. ***** NetScout Model 8241ET V6.0.1 (Build 109 - Extended H323) ***** Software Options Menu: [1] Multi-Media Monitor on [2] Response Time Monitor off [3] NL and AL Host off [4] NL and AL Conversation off [6] All Host off [7] All Conversation off [8] Tunnel Parsing off [99] Go Back to Main Menu

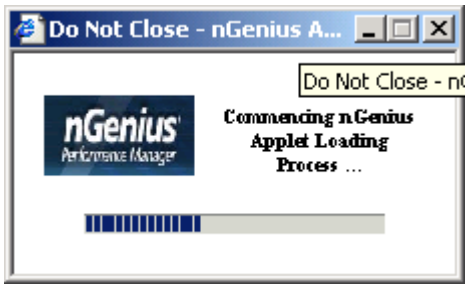
Step	Description
7.	At the main menu, enter **11** to Enter Command-line mode. ***** NetScout Model 8241ET V6.0.1 (Build 109 - Extended H323) ***** Interface number : 3 [1] Change IP Address 192.45.50.90 [2] Change Net Mask 255.255.255.0 [3] Change Default Gateway Address 192.45.50.1 [4] Change Config Server Address Not configured [5] Change Read Community public [6] Change Write Community public [7] Select Interface FAST-ETHERNET [8] Software Options [9] Agent Options [10] Download Firmware [11] Enter Command-line mode [12] Reset Agent [13] Security Options [14] Console Logout Enter your response or hit Esc to Abort Selection#: 11
8.	Type the command **get mmon** to view the Extended H323 settings. Enter "quit" to exit command-line mode % get mmon sccp_port 2000 mgcp_port 2427 sip_port 5060 Extended_H323 off

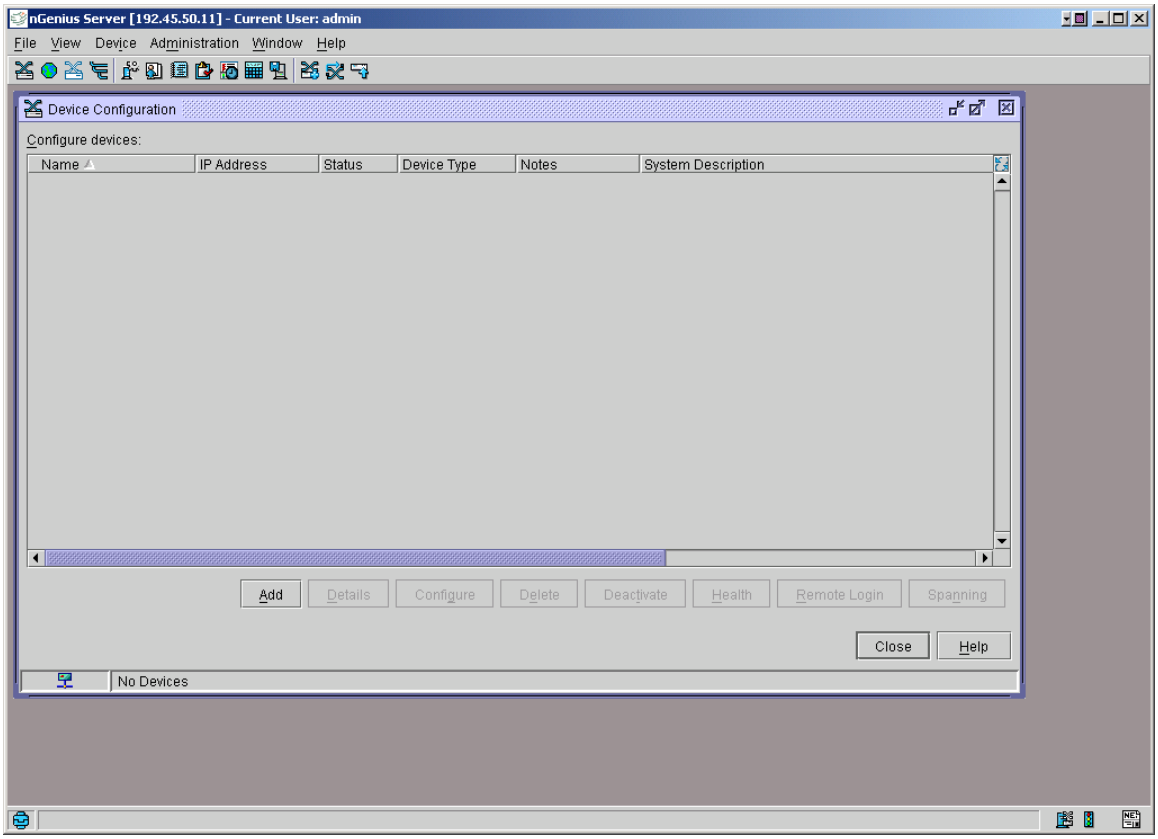
Step	Description
9.	Type the command **set mmon Extended_H323 on** to set the Extended H323 field. Enter **get mmon** to verify the modified Extended H323 settings. Enter "quit" to exit command-line mode % get mmon sccp_port 2000 mgcp_port 2427 sip_port 5060 Extended_H323 off % set mmon Extended_H323 on % get mmon sccp_port 2000 mgcp_port 2427 sip_port 5060 Extended_H323 on
10.	Reboot the probe by typing **do reset**. Enter **y** and press Enter to confirm. % do reset WARNING : agent will be reset, confirm [n] y

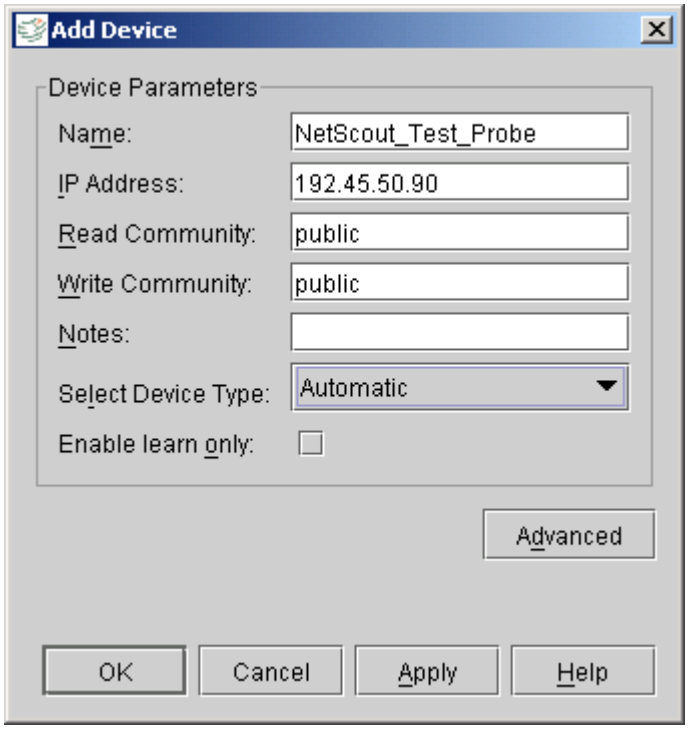
5. Configure the NetScout nGenius Server

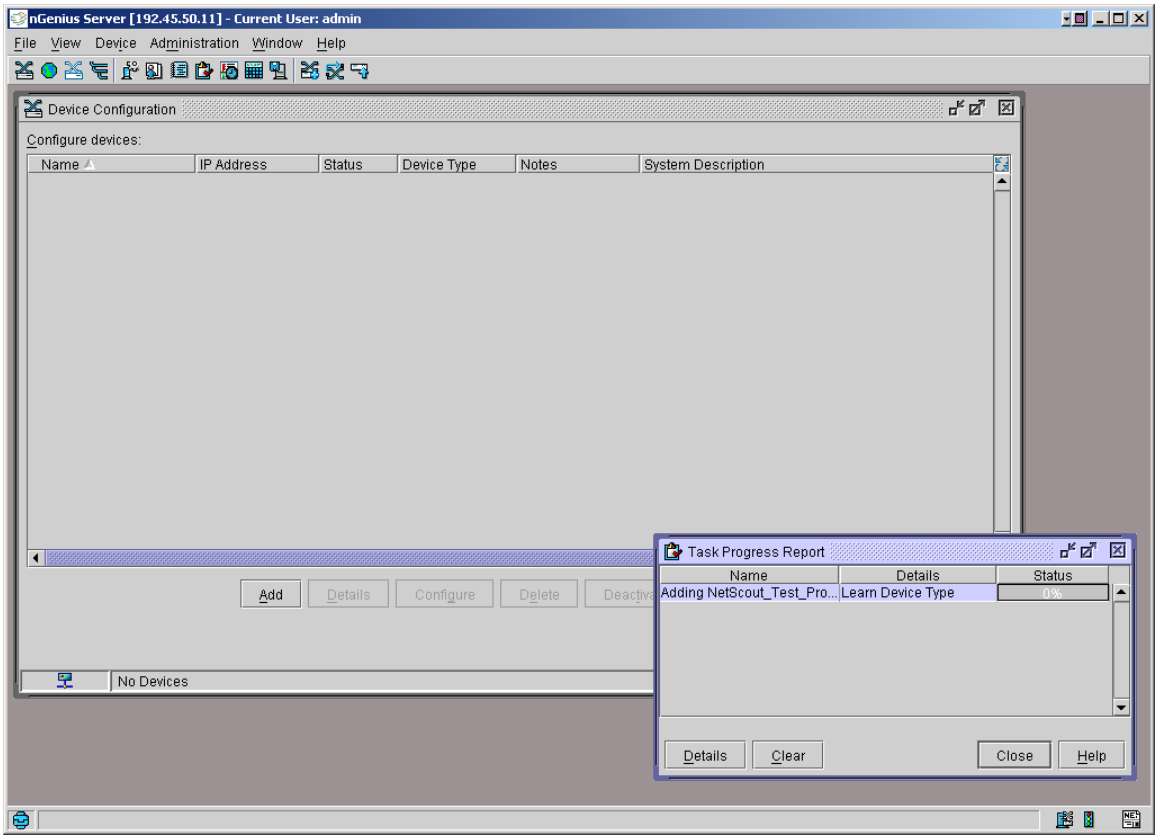
Installation of the NetScout server software is a straightforward task that requires no additional instruction. In some cases, NetScout may ship a pre-installed server to the end customer. As such, the installation process of the server is not documented in these Application Notes. However, the probes must be provisioned on the nGenius server. This is done via the web as shown in the following steps.

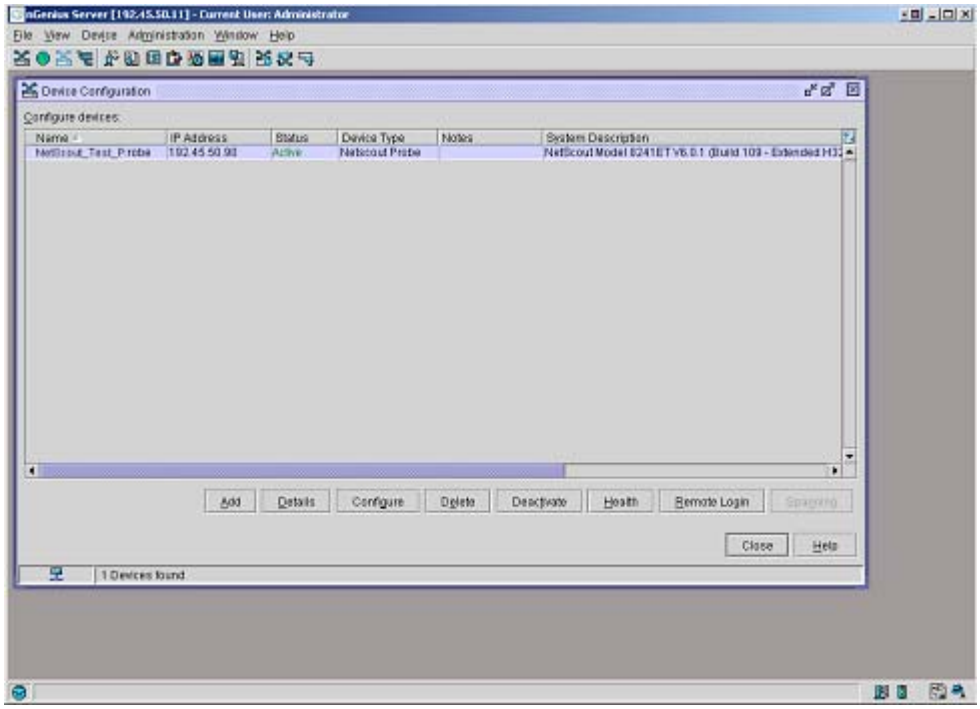
Step	Description
1.	Open a browser and enter the IP address of the NetScout nGenius Server, followed by **:8080** , as shown below. 

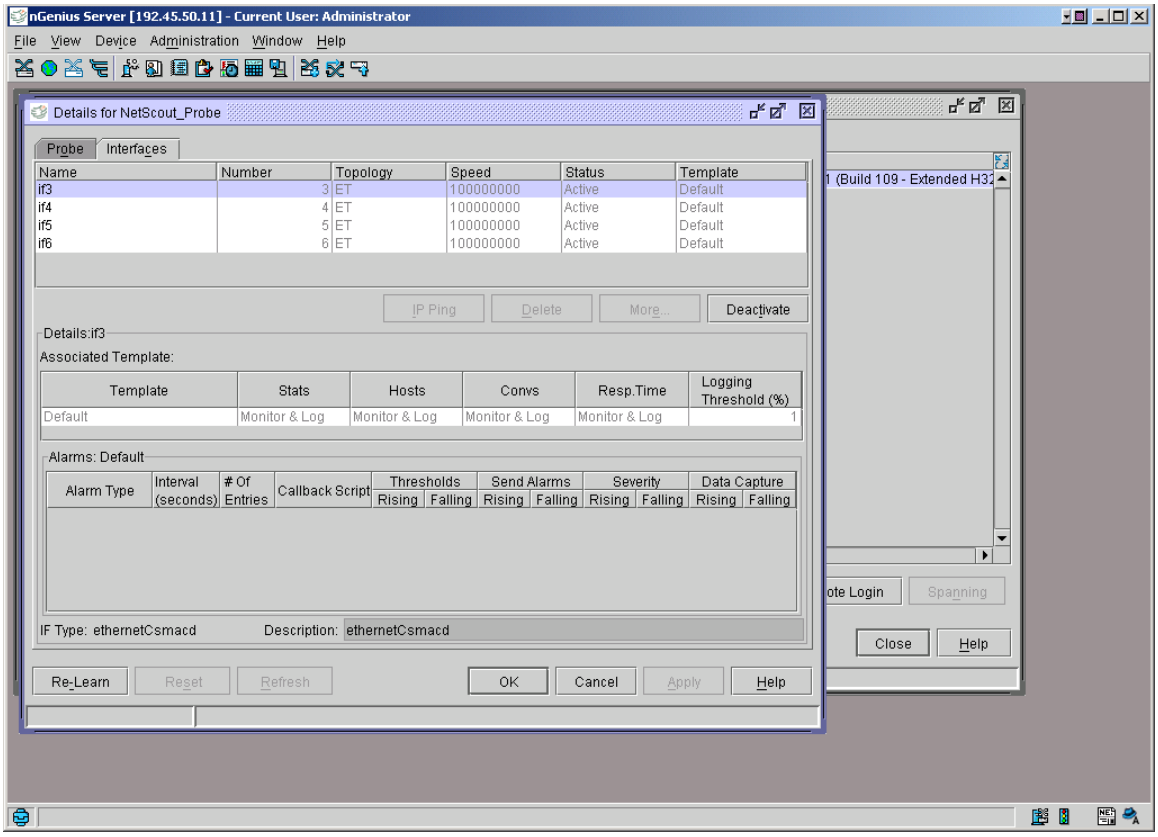
Step	Description
2.	Enter the proper credentials and log into the server. The following dialog box will be displayed. Click **Always**. 
3.	The following box will be displayed. At some point, this box will minimize to the task bar and will no longer be seen. 

Step	Description
4.	Return to the browser shown in Step 1 and click **Server Administration**. The following window is displayed. Click **Add**. 

Step	Description
5.	Enter the name and IP address for the nGenius Probe as shown below (other settings are default). Click **Apply** and **OK**. 

Step	Description
6.	The window will display an update as the probe is being added to the system, as shown below. When the status is shown as complete, click **Close**. 

Step	Description
7.	The probe will now be listed. Highlight the entry and click **Details.** 

Step	Description
8.	Verify the interfaces listed for the probe. Click **Re-learn** to complete loading the configuration. When complete, click **OK**. 

6. Configure Avaya Communication Manager

The following steps describe how to toggle the Direct IP-IP Audio Connections field as per end customer requirements. If the end customer determines that only IP telephone calls to and from the media server are to be monitored (as is the case when calls require the media gateway, i.e. analog or digital tunks), then the Direct IP-IP Audio Connections can be set to **yes**. Otherwise, if calls between IP telephones on the same edge device are to be monitored, then set the Direct IP-IP Audio Connections field to **no**. Note that setting this field to **no** will require additional VoIP resources on the gateway and WAN bandwidth.

Direct IP-IP Audio Connections must be administered in the IP network region. For completeness, it is recommended to set the IP Audio Hairpinning field to the same value. For this configuration, this value shall be set to **no**, in order to monitor the IP telephone media streams.

Basic administration, such as initial provisioning of the media server and the adding of IP telephones, is assumed and is therefore beyond the scope of these Application Notes.

Step	Description
1.	Connect to the System Access Terminal (SAT) and log in with the proper credentials and terminal type. The following screen will be displayed:

```
This system is restricted to authorized users
for legitimate business purposes. Unauthorized
access is a criminal violation of the law.

     Copyright (c) 1992 - 2003 Avaya Inc.
      Unpublished & Not for Publication
             All Rights Reserved
```

Step	Description
2.	Enter the command **change ip-network-region 1**. Set the Intra-region and **Inter-region Direct IP-IP Audio Connections** and **IP Audio Hairpinning** fields to the desired value, in this case **no** and **n**, respectively.

```
change ip-network-region 1                                      Page   1 of  19
                                IP NETWORK REGION
  Region: 1
Location:                  Home Domain:
    Name:
                                Intra-region IP-IP Direct Audio: no
AUDIO PARAMETERS                Inter-region IP-IP Direct Audio: no
   Codec Set: 1                            IP Audio Hairpinning? n
UDP Port Min: 2048
UDP Port Max: 3028                       RTCP Reporting Enabled? y
                             RTCP MONITOR SERVER PARAMETERS
DIFFSERV/TOS PARAMETERS       Use Default Server Parameters? y
 Call Control PHB Value: 34
        Audio PHB Value: 46
802.1P/Q PARAMETERS
 Call Control 802.1p Priority: 7
        Audio 802.1p Priority: 6      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


ESC-x=Cancel Esc-e=Submit Esc-p=Prev Pg Esc-n=Next Pg Esc-h=Help Esc-r=Refresh
```

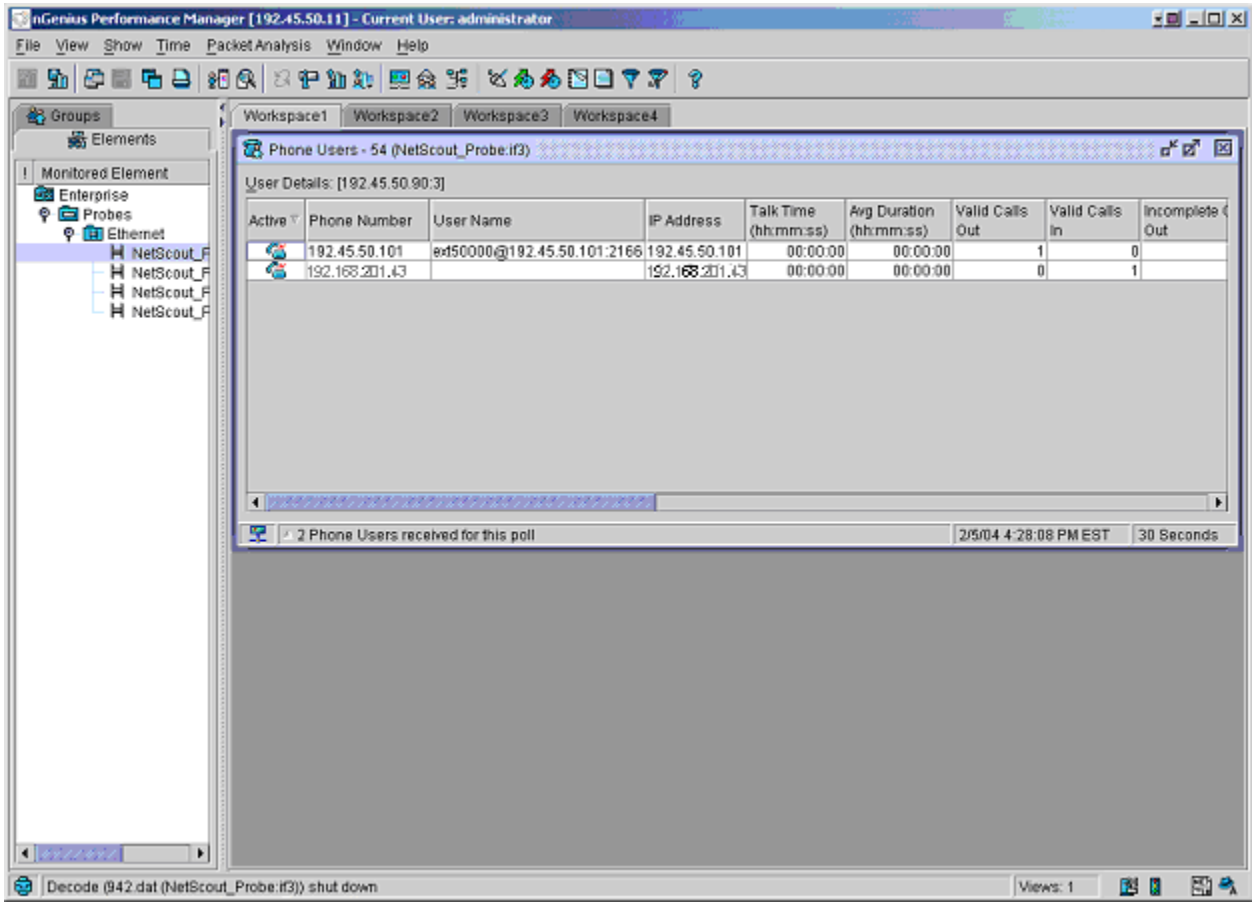
7. Interoperability Compliance Testing

Interoperability compliance tests included feature, functionality, and performance testing. Feature and functionality testing examined the nGenius client's ability to monitor IP telephone features such as making, receiving, transferring, and conferencing calls. Feature and functionality testing was verified using manual methods. Performance testing was conducted using a bulk call generator to place calls to IP telephones and verifying the results shown by the nGenius client.

8. Verification Steps

This configuration was verified in a test environment with the use of network tools. In the field, the following verification steps can be performed to test the interoperability at stages where incorrect configuration is most likely.

a) Network Connectivity – Ping between the media server and the nGenius server, from the nGenius server to the nGenius Probe, and from the nGenius server to the IP Telephone. Verify all devices ping each other successfully.
b) Telephony Connectivity: Station – Place calls to and from the IP Telephone. Verify that the calls are shown by the nGenius Client. A sample screen is shown below, indicating an active call between an IP telephone and the media gateway's VoIP resource.



9. Support

Technical support at NetScout can be reached at 1-888-357-7667. Alternatively, they can be reached by sending email to support@netscout.com.

10. Conclusion

These Application Notes describe the configuration steps required to configure NetScout nGenius and Avaya Communication Manager to successfully interoperate. Features and functionality were tested, and performance testing was conducted to validate the solution.

11. Additional References

The following documents may be used for more information:

- "Application Notes for NetScout nGenius with Avaya Communication Manager and Extreme Summit48," available at http://www1.avaya.com/enterprise/resourcelibrary/applicationnotes/devconnect.html
- Administration for Network Connectivity for Avaya MultiVantage™ Software – Document ID 555-233-504, available at http://support.avaya.com.
- Administrators Guide for Avaya MultiVantage™ Software – Document ID 555-233-506, available at http://support.avaya.com.
- NetScout nGenius Probe Agent Administrator Guide
- NetScout Probe Hardware Guide

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya Developer*Connection* Program at devconnect@avaya.com.