



Avaya Solution & Interoperability Test Lab

Application Notes for Integrated Research PROGNOSIS VoIP Monitor 3.1 with Avaya Aura® Communication Manager 6.0 - Issue 1.0

Abstract

These Application Notes describe the procedures for configuring Integrated Research PROGNOSIS VoIP Monitor 3.1 to interoperate with Avaya Aura® Communication Manager 6.0.

PROGNOSIS VoIP Monitor is a single node software product which is designed to provide a comprehensive monitoring platform for Avaya Aura® Communication Manager IP telephony networks. It does this by collecting data, filtering it as required and then presenting it in a user-friendly format. An additional function allows for data to be used to generate email alerts and/or SNMP Traps when pre-defined conditions are exceeded.

PROGNOSIS integrates directly to Communication Manager using Secure Shell (SSH). At the same time, it processes Real-time Transport Control Protocol (RTCP) information from Communication Manager.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the compliance tested configuration used to validate Integrated Research PROGNOSIS VoIP Monitor 3.1 with Avaya Aura® Communication Manager 6.0.

PROGNOSIS VoIP Monitor is designed to provide a comprehensive monitoring platform for Avaya IP telephony networks. It does this by collecting data, filtering it as required and then presenting it in a user-friendly format, all in real-time. An additional function allows for data to be used to generate email alerts when pre-defined conditions are exceeded.

In order to collect and present data, the VoIP Monitor product must be installed on a dedicated server to monitor Communication Manager. The VoIP Monitor product includes a Web Interface component which is used to serve data to users through a web browser connection.

The PROGNOSIS VoIP Monitor product uses the following methods to monitor Communication Manager.

- **System Access Terminal (SAT)** - PROGNOSIS VoIP Monitor uses a pool of SSH connections to the SAT using the IP address of the Avaya Server. By default, the solution establishes two concurrent SAT connections to the Avaya Server and uses the connections to execute SAT commands.
- **Real Time Transport Control Protocol (RTCP) Collection** - PROGNOSIS VoIP Monitor collects RTCP information sent by the Avaya IP Media Processor (MEDPRO) boards, media gateways, IP Telephones and IP Softphones.

2. General Test Approach and Test Results

The general test approach was to use PROGNOSIS VoIP Monitor to display the configurations of Communication Manager and verify against what is displayed on the SAT interface. The SAT interface is accessed by using either telnet or Secure Shell (SSH) to the Avaya S8800 Server. Calls were placed between various Avaya endpoints and PROGNOSIS VoIP Monitor was used to display the RTCP information collected.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

For feature testing, PROGNOSIS VoIP Monitor was used to view the configurations of Communication Manager such as port networks, cabinets, media gateways, trunk groups, route patterns, CLAN, MEDPRO and DS1 boards, IP network regions, stations, processor occupancy, alarm and error information. For the collection of RTCP information, the endpoints included Avaya H.323, SIP (including Avaya Desktop Video Device), digital and analog telephones, and Avaya one-X Communicator users.

For serviceability testing, reboots were applied to the PROGNOSIS VoIP Monitor server and Avaya S8800 Server running Communication Manager to simulate system unavailability.

2.2. Test Results

All test cases passed successfully.

2.3. Support

For technical support on PROGNOSIS VoIP Monitor, contact the Integrated Research support team at:

- Phone: +61 (2) 9966 1066
- Email: support@prognosis.com
- Web: <http://voicequality.com/>

3. Reference Configuration

Figure 1 illustrates the test configuration used to verify Integrated Research PROGNOSIS VoIP Monitor interoperability with Communication Manager. It consists of an Avaya S8800 Server running Avaya Aura® Communication Manager with an Avaya G650 Media Gateway, an Avaya G450 Media Gateway, an Avaya G430 Media Gateway with EM200 Expansion Module and an Avaya G250-BRI Media Gateway. A pair of S8800 Servers running Avaya Aura® System Manager and Avaya Aura® Session Manager provided support for the SIP endpoints. The PBX has Avaya H.323, SIP (including Avaya Desktop Video Device), digital and analog telephones, and Avaya one-X Communicator users configured for making and receiving calls. Integrated Research PROGNOSIS VoIP Monitor was installed on a server running Microsoft Windows Server 2003 Standard Edition with Service Pack 2. All the systems and telephones are connected using an Avaya C364T-PWR Converged Stackable Switch for network connectivity.

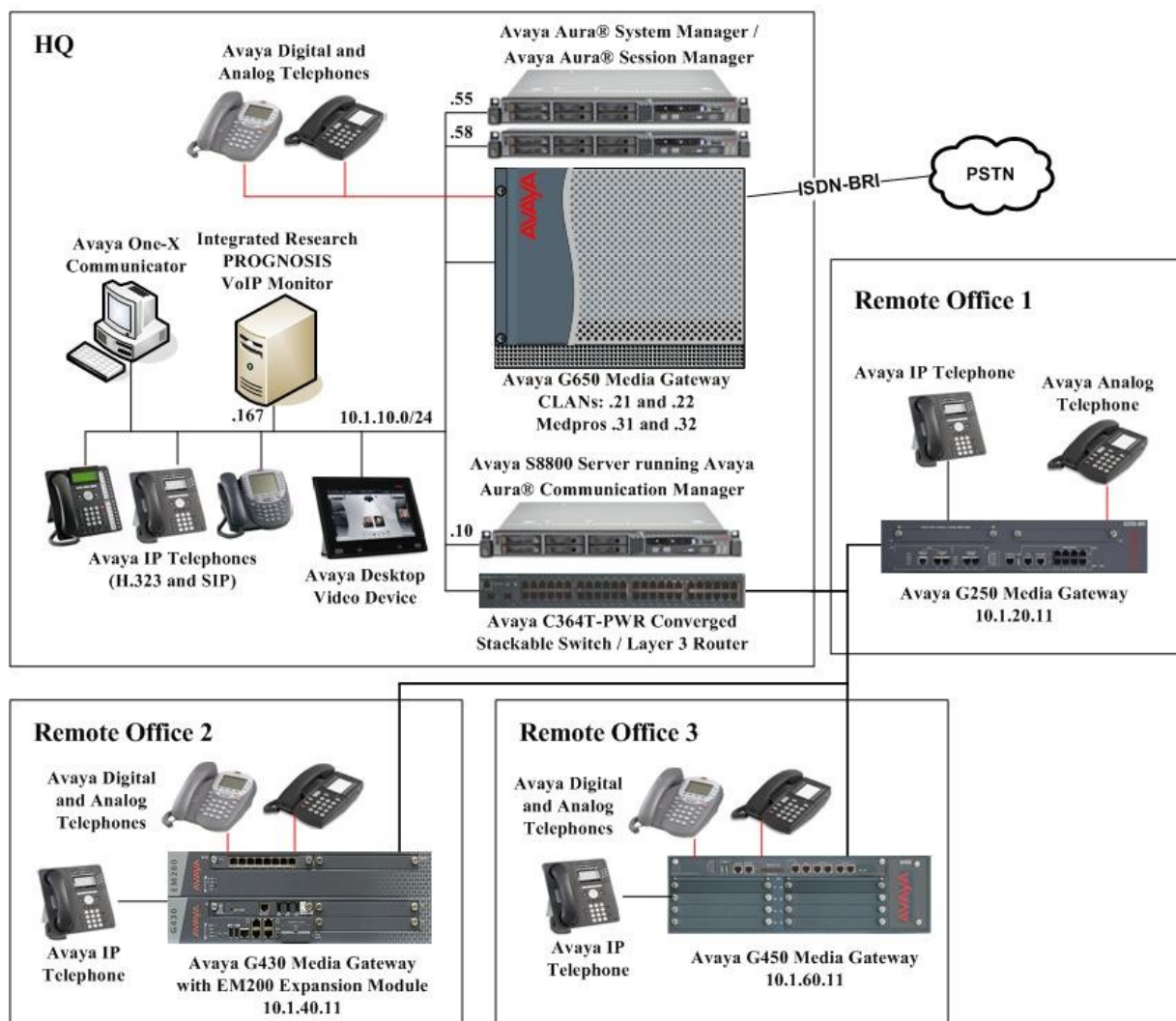


Figure 1: Test Configuration

4. Equipment and Software Validated

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

Equipment	Software
Avaya S8800 Server	Avaya Aura® Communication Manager 6.0 (Service Pack 00.0.345.0-18567)
Avaya G650 Media Gateway - TN2312BP IP Server Interface - TN799DP C-LAN Interface (x 2) - TN2602AP IP Media Processor - TN2302AP IP Media Processor - TN2464BP DS1 Interface - TN2464CP DS1 Interface - TN464F DS1 Interface - TN793CP Analog Line - TN2214CP Digital Line	- HW07, FW053 HW01, FW039 HW02 FW058 HW20 FW120 HW05, FW024 HW02 FW024 000014 HW09, FW010 HW08, FW015
Avaya G250-BRI Media Gateway	30.16.0
Avaya G450 Media Gateway - MM722AP BRI Media Module (MM) - MM712AP DCP MM - MM714AP Analog MM - MM717AP DCP MM - MM710BP DS1 MM	31.17.1 HW01 FW008 HW07 FW009 HW10 FW093 HW03 FW009 HW11 FW049
Avaya G430 Media Gateway - MM712AP DCP MM - MM714AP Analog MM - MM711AP Analog MM - MM710AP DS1 MM	31.17.1 HW04 FW009 HW04 FW073 HW31 FW093 HW05 FW021
Avaya S8800 Server	Avaya Aura® System Manager 6.0 Service Pack 2
Avaya S8800 Server	Avaya Aura® Session Manager 6.0 Service Pack 2
Avaya Desktop Video Device	1.0
Avaya 9600 Series IP telephones - 9630, 9640, 9650	3.1.1 (H.323) 2.6.3 (SIP)
Avaya 9670 IP telephones	3.1 (H.323)
Avaya 1608 IP telephones	1.300B (H.323)
Avaya 2420 digital telephones	-
Avaya 6221 analog telephones	-
Avaya one-X Communicator	6.0 Service Pack 1
Avaya C364T-PWR Converged Stackable Switch	4.5.18
Integrated Research PROGNOSIS VoIP Monitor	3.1

5. Configure Avaya Aura® Communication Manager

This section describes the steps needed to configure Communication Manager to interoperate with PROGNOSIS VoIP Monitor. This includes creating a login account and a SAT User Profile for PROGNOSIS VoIP Monitor to access Communication Manager and enabling RTCP reporting.

5.1. Configure SAT User Profile

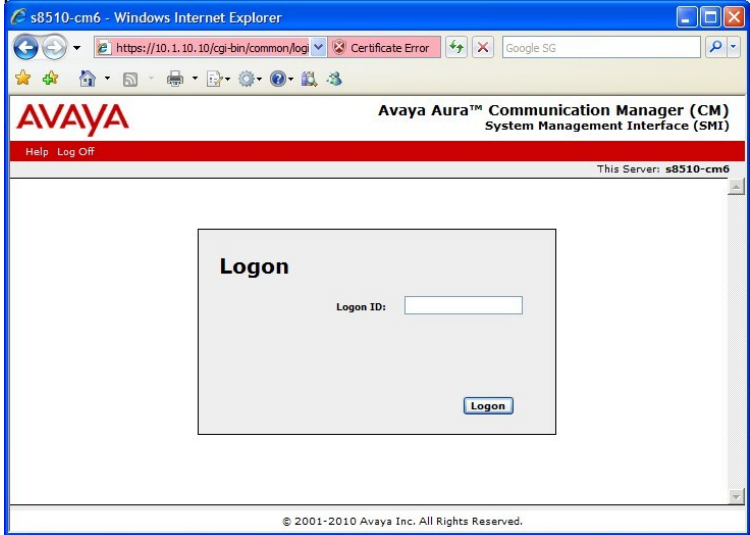
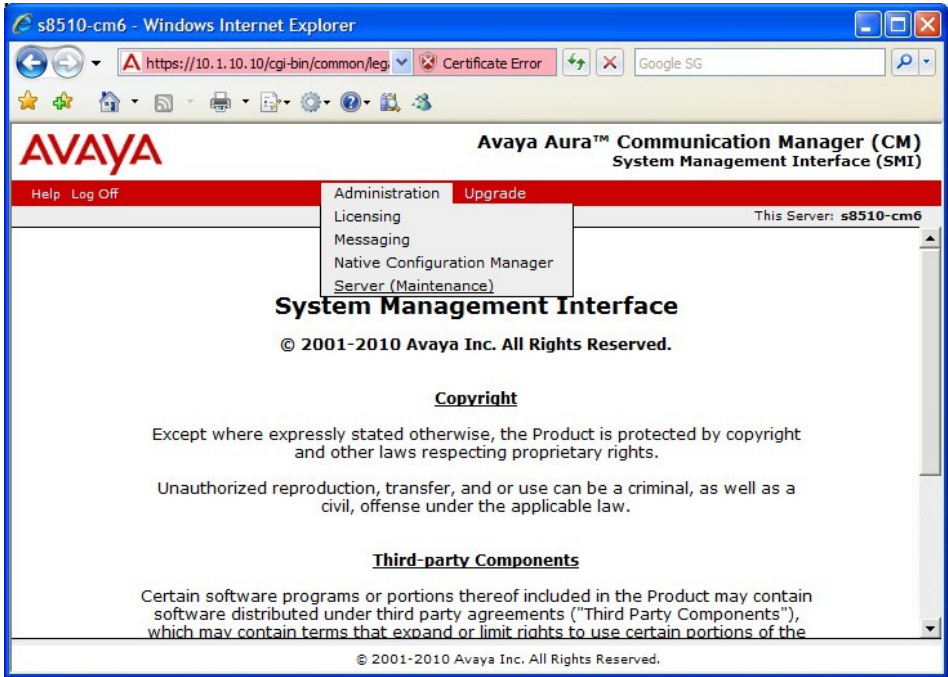
A SAT User Profile specifies which SAT screens may be accessed by the user assigned the profile and the type of access to each screen. As PROGNOSIS VoIP Monitor does not modify any system configuration, create a SAT User Profile with limited permissions to assign to the PROGNOSIS VoIP Monitor login account.

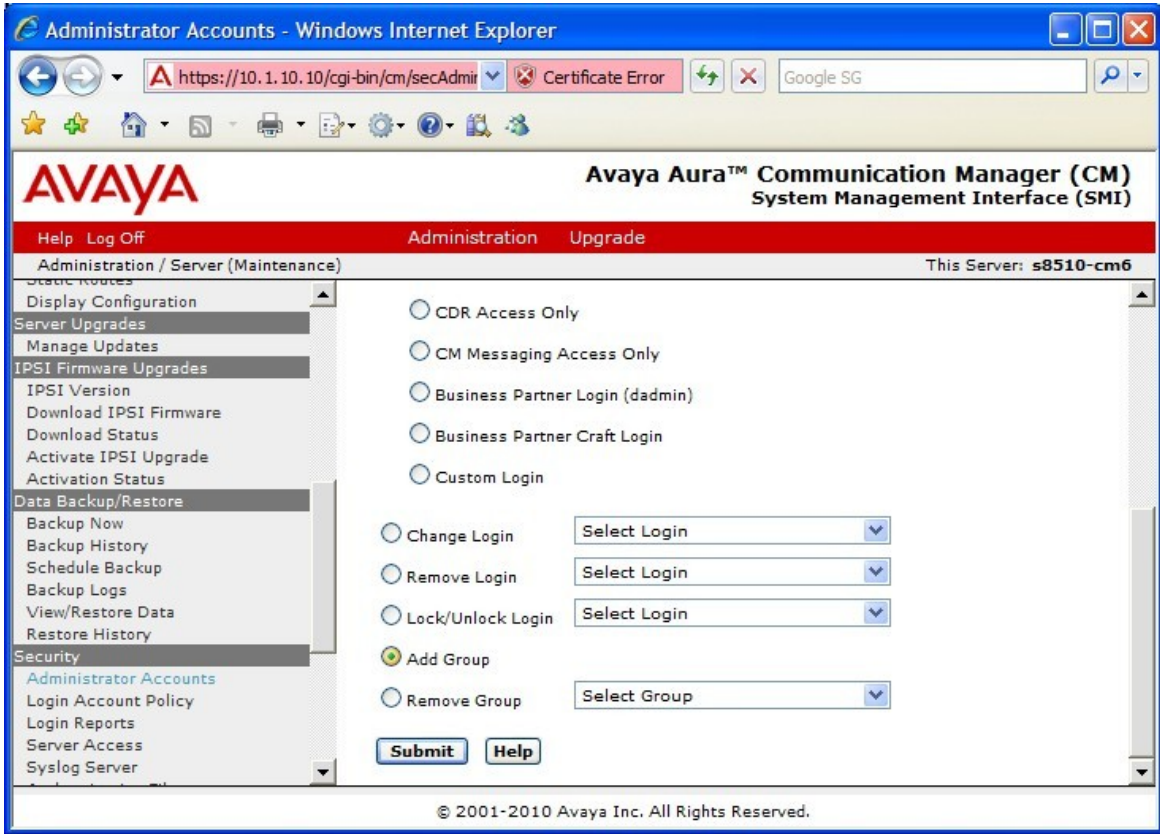
Step	Description
1.	<p>Enter the add user-profile n command, where n is an unused profile number. Enter a descriptive name for User Profile Name and enable all categories by setting the Enbl field to y. In this configuration, the user profile 22 is created.</p> <pre>add user-profile 22 Page 1 of 41 USER PROFILE 22 User Profile Name: PROGNOSIS This Profile is Disabled? n Shell Access? n Facility Test Call Notification? n Acknowledgement Required? n Grant Un-owned Permissions? n Extended Profile? n Name Cat Enbl Name Cat Enbl Adjuncts A y Call Center B y Features C y Hardware D y Hospitality E y IP F y Maintenance G y Measurements and Performance H y Remote Access I y Routing and Dial Plan J y Security K y Servers L y Stations M y System Parameters N y Translations O y Trunking P y Usage Q y User Access R y</pre>

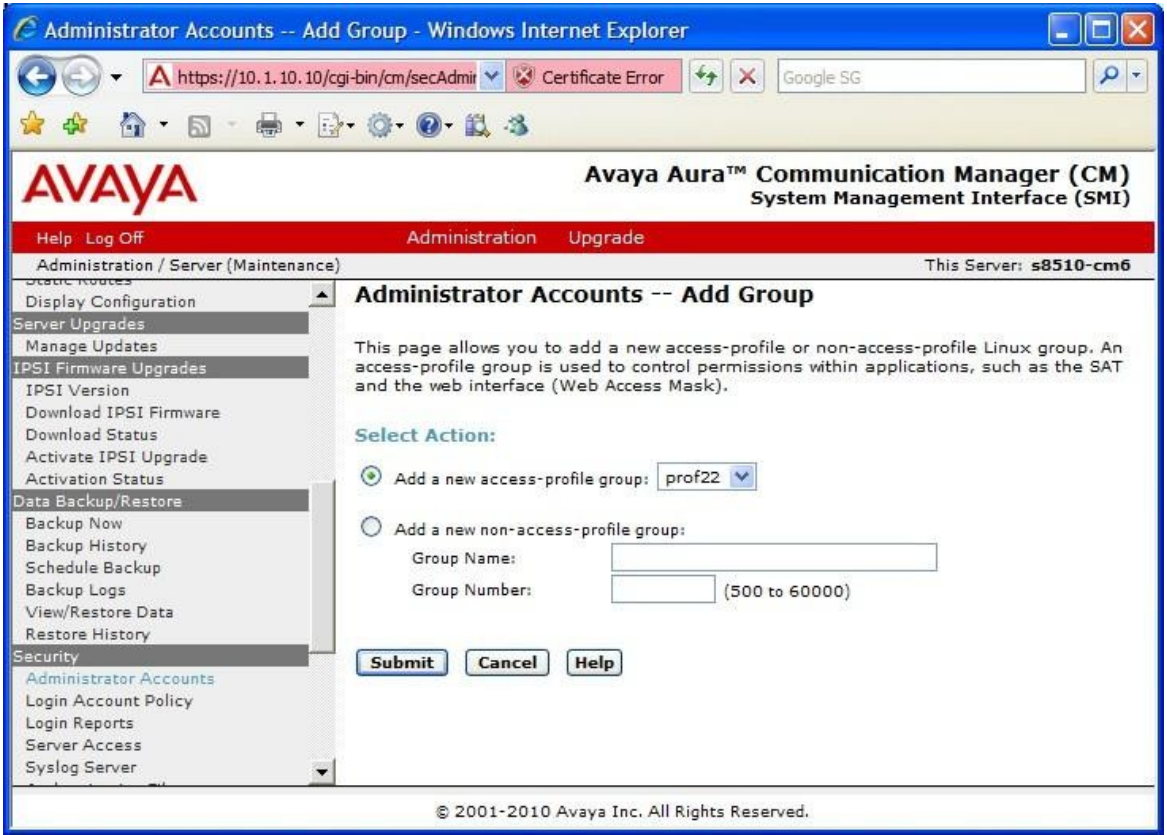
Step	Description																																													
2.	<p>On Pages 2 to 41 of the USER PROFILE forms, set the permissions of all objects to rm (read and maintenance). This can be accomplished by typing rm into the field Set All Permissions To. Submit the form to create the user profile.</p>																																													
	<div><div>add user-profile 22</div><div><div>USER PROFILE 22</div><div>Set Permissions For Category: To: Set All Permissions To: rm</div><div>'-'=no access 'r'=list,display,status 'w'=add,change,remove+r 'm'=maintenance</div><table><thead><tr><th>Name</th><th>Cat</th><th>Perm</th></tr></thead><tbody><tr><td> aar analysis</td><td>J</td><td>rm</td></tr><tr><td> aar digit-conversion</td><td>J</td><td>rm</td></tr><tr><td> aar route-chosen</td><td>J</td><td>rm</td></tr><tr><td>abbreviated-dialing 7103-buttons</td><td>C</td><td>rm</td></tr><tr><td> abbreviated-dialing enhanced</td><td>C</td><td>rm</td></tr><tr><td> abbreviated-dialing group</td><td>C</td><td>rm</td></tr><tr><td> abbreviated-dialing personal</td><td>C</td><td>rm</td></tr><tr><td> abbreviated-dialing system</td><td>C</td><td>rm</td></tr><tr><td> aca-parameters</td><td>P</td><td>rm</td></tr><tr><td> access-endpoints</td><td>P</td><td>rm</td></tr><tr><td> adjunct-names</td><td>A</td><td>rm</td></tr><tr><td> administered-connections</td><td>C</td><td>rm</td></tr><tr><td> aesvcs cti-link</td><td>A</td><td>rm</td></tr><tr><td> aesvcs interface</td><td>A</td><td>rm</td></tr></tbody></table></div><div>Page 2 of 41</div></div>	Name	Cat	Perm	aar analysis	J	rm	aar digit-conversion	J	rm	aar route-chosen	J	rm	abbreviated-dialing 7103-buttons	C	rm	abbreviated-dialing enhanced	C	rm	abbreviated-dialing group	C	rm	abbreviated-dialing personal	C	rm	abbreviated-dialing system	C	rm	aca-parameters	P	rm	access-endpoints	P	rm	adjunct-names	A	rm	administered-connections	C	rm	aesvcs cti-link	A	rm	aesvcs interface	A	rm
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administered-connections	C	rm																																												
aesvcs cti-link	A	rm																																												
aesvcs interface	A	rm																																												

5.2. Configure Login Group

Create an Access-Profile Group to correspond to the SAT User Profile created in **Section 4.1**.

Step	Description
1.	<p>Using a web browser, enter https://<IP address of Avaya Server> to connect to the Avaya S8800 Server and log in using appropriate credentials.</p> 
2.	<p>Click Administration > Server (Maintenance). This will open up the Server Administration Interface that will allow the user to complete the configuration process.</p> 

Step	Description
3.	<p>From the navigation panel on the left side, click Administrator Accounts. Select Add Group and click Submit.</p> 

Step	Description
4.	<p>Select Add a new access-profile group and select prof22 from the drop-down box to correspond to the user-profile created in Section 5.1 Step 1. Click Submit. This completes the creation of the login group.</p> 

5.3. Configure Login

Create a login account for PROGNOSIS VoIP Monitor to access Communication Manager.

Step	Description
1.	<p>From the navigation panel on the left side, click Administrator Accounts. Select Add Login and SAT Access Only to create a new login account with SAT access privileges only. Click Submit (not shown).</p>

Step	Description
2.	<p>For the field Login name, enter the login. In this configuration, the login voipmon is created. Configure the other parameters for the login as follows:</p> <ul style="list-style-type: none"> • Primary group: users [Limits the permissions of the login] • Additional groups (profile): prof22 [Select the login group created in Section 5.2.] • Select type of authentication: Password [Uses a password for authentication.] • Enter password or key / Re-enter password or key [Define the password] <p>Click Submit (not shown) to continue. This completes the configuration of the login.</p>

Administrator Accounts -- Add Login: SAT Access Only - Windows Internet Explorer

https://10.1.10.10/cgi-bin/cm/secAdminAcct/w_adminAcct

Avaya Aura™ Communication Manager (CM)
System Management Interface (SMI)

Help Log Off Administration Upgrade

Administration / Server (Maintenance)

Administrator Accounts -- Add Login: SAT Access Only

This page allows you to create a login that is intended to have access only to the Communication Manager System Administration Terminal (SAT) interface.

Login name: voipmon

Primary group: ☐ users ☒ users

Additional groups (profile): prof22

Linux shell: /opt/ecs/bin/autosat

Home directory: /var/home/voipmon

Lock this account: ☐

Date after which account is disabled-blank to ignore (YYYY-MM-DD):

Select type of authentication: ☒ Password ☐ ASG: enter key ☐ ASG: Auto-generate key

Enter password or key:

Re-enter password or key:

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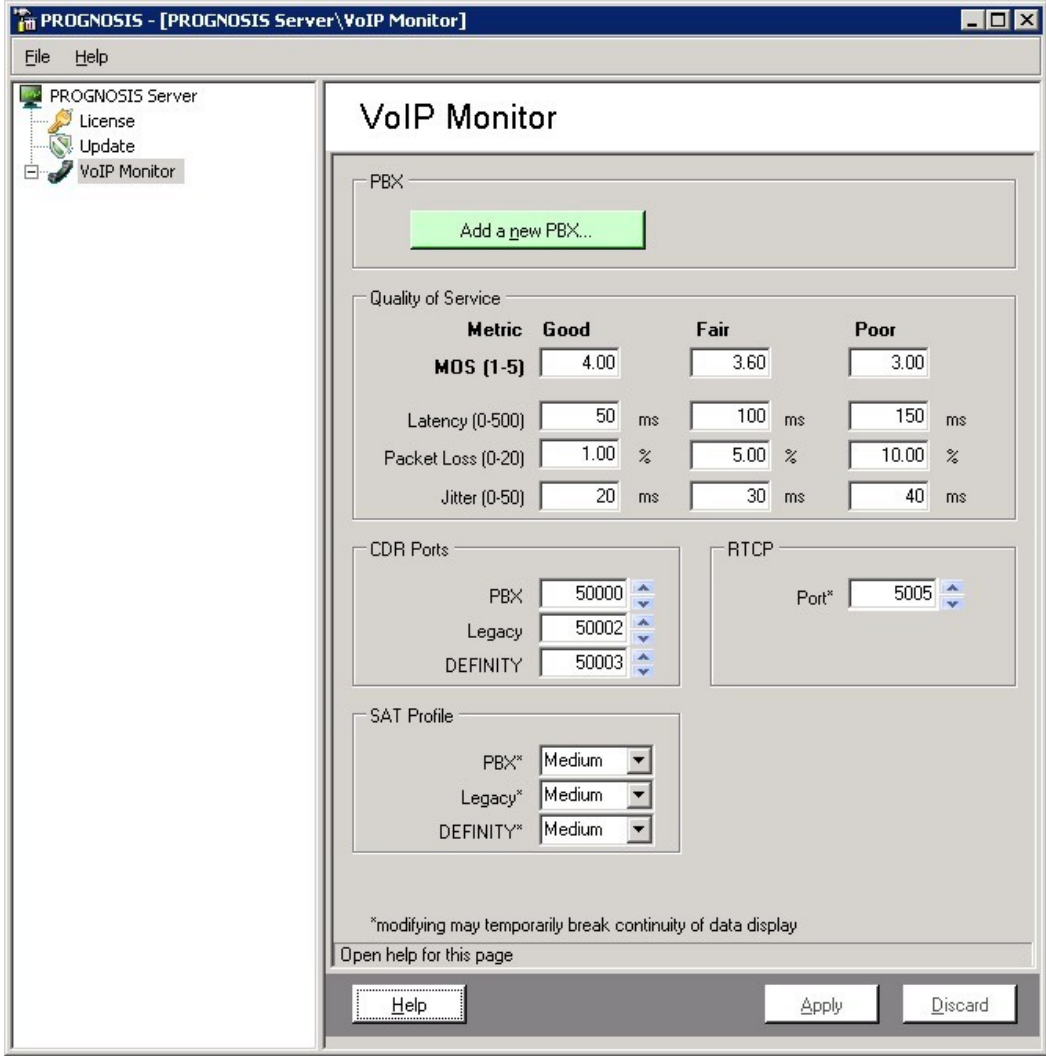
5.4. Configure RTCP Monitoring

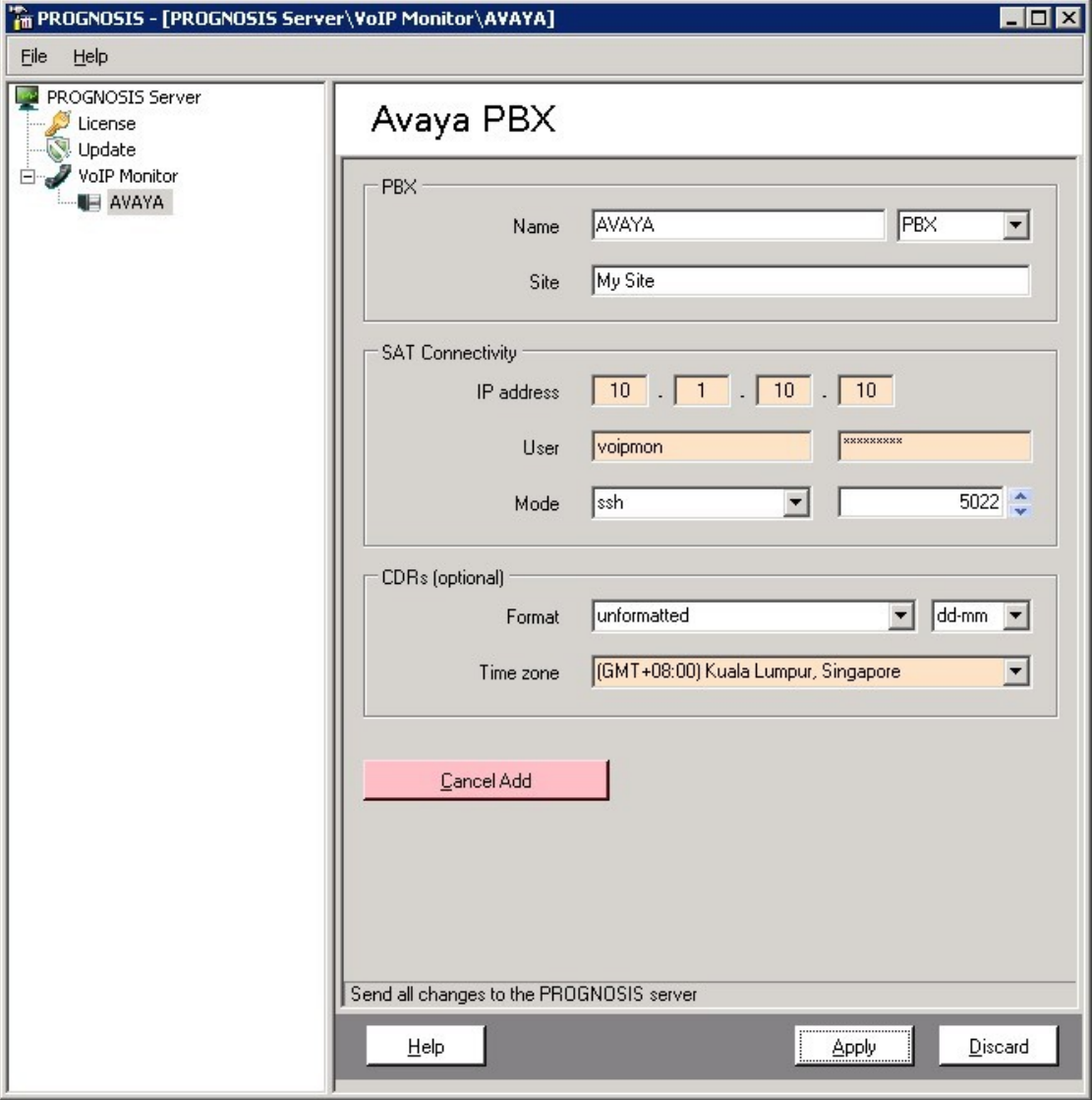
To allow PROGNOSIS VoIP Monitor to monitor the quality of IP calls, configure Communication Manager to send RTCP reporting to the IP address of the PROGNOSIS VoIP Monitor server.

Step	Description
1.	<p>Enter the change system-parameters ip-options command. In the RTCP MONITOR SERVER section, set Server IPV4 Address to the IP address of the PROGNOSIS VoIP Monitor server. Set IPV4 Server Port to 5005 and RTCP Report Period(secs) to 5.</p> <pre>change system-parameters ip-options Page 1 of 4 IP-OPTIONS SYSTEM PARAMETERS IP MEDIA PACKET PERFORMANCE THRESHOLDS Roundtrip Propagation Delay (ms) High: 800 Low: 400 Packet Loss (%) High: 40 Low: 15 Ping Test Interval (sec): 20 Number of Pings Per Measurement Interval: 10 Enable Voice/Network Stats? n RTCP MONITOR SERVER Server IPV4 Address: 10.1.10.167 RTCP Report Period(secs): 5 IPV4 Server Port: 5005 Server IPV6 Address: IPV6 Server Port: 5005 AUTOMATIC TRACE ROUTE ON Link Failure? y H.323 IP ENDPOINT H.248 MEDIA GATEWAY Link Loss Delay Timer (min): 5 Link Loss Delay Timer (min): 5 Primary Search Time (sec): 75 Periodic Registration Timer (min): 20 Short/Prefixed Registration Allowed? y</pre>
2.	<p>Enter the change ip-network-region n command, where n is IP network region number to be monitored. On Page 2, set RTCP Reporting Enabled to y and Use Default Server Parameters to y.</p> <pre>change ip-network-region 1 Page 2 of 20 IP NETWORK REGION RTCP Reporting Enabled? y RTCP MONITOR SERVER PARAMETERS Use Default Server Parameters? y</pre>
3.	<p>Repeat Step 2 for all IP network regions that are required to be monitored by PROGNOSIS VoIP Monitor.</p>

6. Configure Integrated Research PROGNOSIS VoIP Monitor

This section describes the configuration of Integrated Research PROGNOSIS VoIP Monitor required to interoperate with Communication Manager.

Step	Description
1.	On the Integrated Research PROGNOSIS VoIP Monitor server, click Start > All Programs > PROGNOSIS VoIP Monitor > Configure to start the configuration application.
2.	<p>Select VoIP Monitor on the left pane and make sure the RTCP Port is the same as that configured in Communication Manager in Section 5.4 Step 1. In the SAT Profile section, select an appropriate performance profile settings to set the level of monitoring to balance CPU load with the frequency of monitoring. For this testing, the default Medium profile is used. Click Add a new PBX to continue.</p> 

Step	Description
3.	<p>Specify a Name and select PBX in the drop-down box. Set IP address to that of the Avaya S8800 Server, which in this configuration is 10.1.10.10. Enter the login account created in Section 5.3 for User and password. The remaining fields may be left at their defaults. Click Apply to save the changes.</p>  <p>The screenshot shows the 'Avaya PBX' configuration window within the PROGNOSIS application. The window title is 'PROGNOSIS - [PROGNOSIS Server\VoIP Monitor\AVAYA]'. On the left is a tree view with 'PROGNOSIS Server', 'License', 'Update', 'VoIP Monitor', and 'AVAYA'. The main area contains the 'Avaya PBX' configuration form. The 'PBX' section has 'Name' set to 'AVAYA' and a dropdown menu set to 'PBX'. The 'Site' field is 'My Site'. The 'SAT Connectivity' section has 'IP address' set to '10.1.10.10', 'User' set to 'voipmon', and 'Mode' set to 'ssh'. The 'CDRs (optional)' section has 'Format' set to 'unformatted' and 'Time zone' set to '(GMT+08:00) Kuala Lumpur, Singapore'. At the bottom, there is a 'Cancel Add' button, a 'Send all changes to the PROGNOSIS server' checkbox, and 'Help', 'Apply', and 'Discard' buttons.</p>

7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Communication Manager and PROGNOSIS VoIP Monitor.

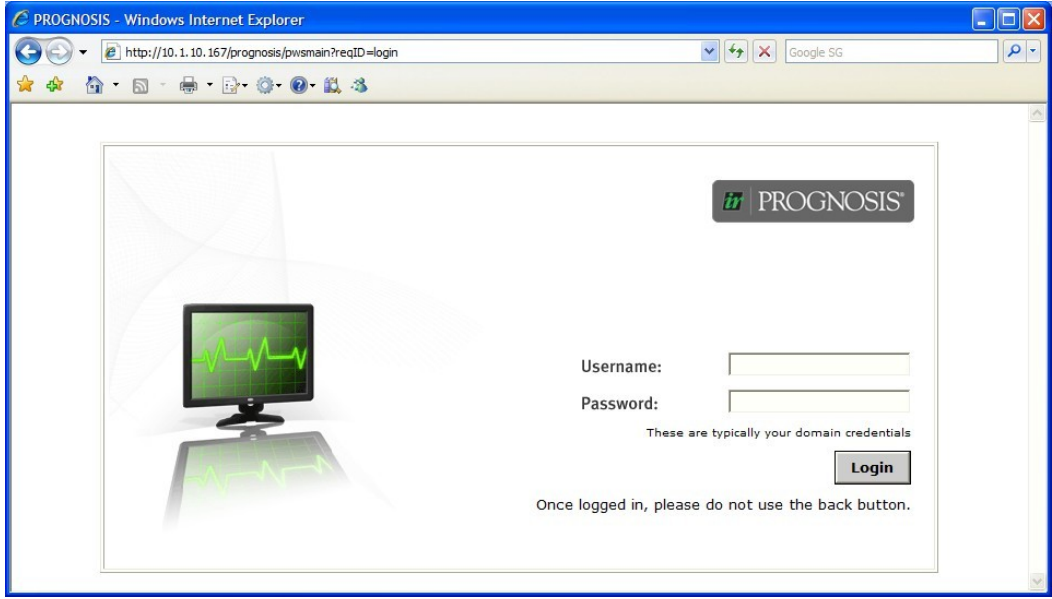
7.1. Verify Communication Manager

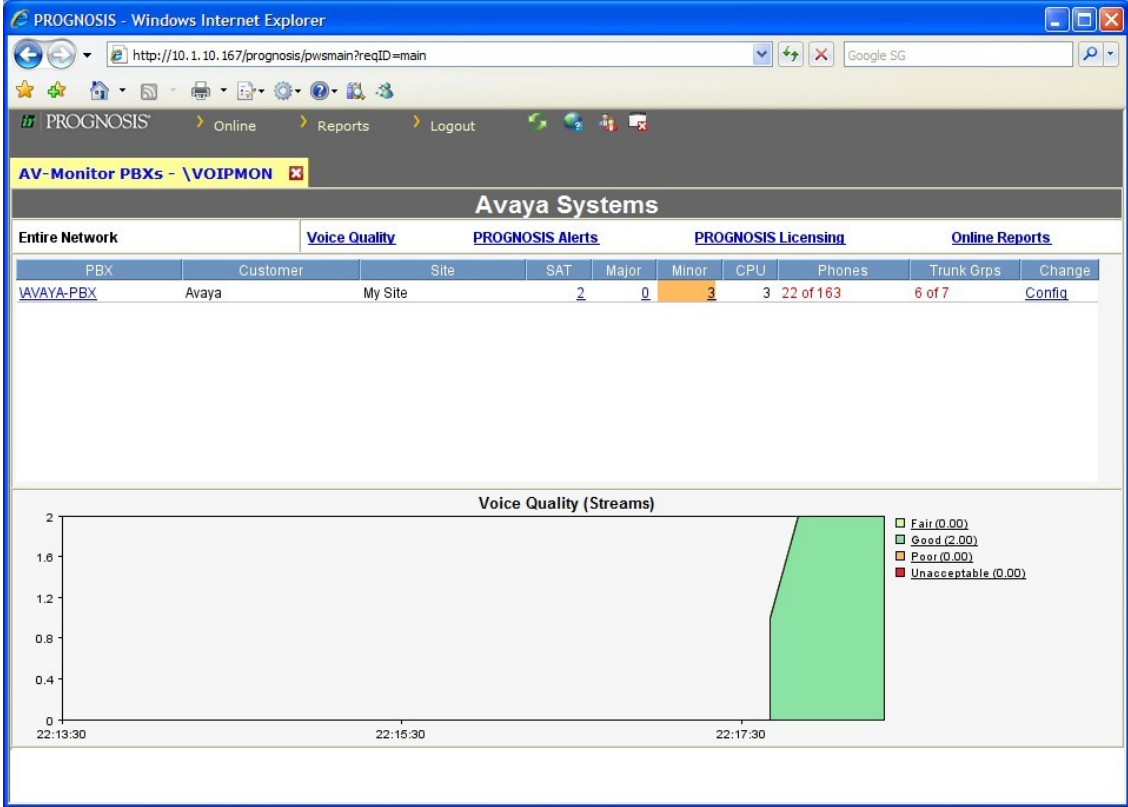
Verify that PROGNOSIS VoIP Monitor has established two concurrent SSH connections to the SAT by using the **status logins** command.

status logins				
COMMUNICATION MANAGER LOGIN INFORMATION				
Login	Profile	User's Address	Active Command	Session
voipmon	22	10.1.10.167		1
voipmon	22	10.1.10.167		3
*craft	3	10.1.10.99	stat logins	4

7.2. Verify Integrated Research PROGNOSIS VoIP Monitor

The following steps are done using the PROGNOSIS VoIP Monitor web interface.

Step	Description
1.	<p>Using Microsoft Internet Explorer, browse to http://<IP address of PROGNOSIS VoIP Monitor> and login using a valid Windows user account.</p> 

Step	Description
2.	<p>In the Avaya Systems page, verify that the SAT field shows 2 connections. Make a call between two Avaya IP telephones that belong to an IP Network Region that is being configured to send RTCP information to the PROGNOSIS VoIP Monitor server. Verify that the Voice Quality (Streams) section shows two active voice streams reflecting the quality of the call.</p> 

8. Conclusion

These Application Notes describe the procedures for configuring the Integrated Research PROGNOSIS VoIP Monitor to interoperate with Avaya Aura® Communication Manager. In the configuration described in these Application Notes, the PROGNOSIS VoIP Monitor established SSH connections to the SAT to view the configurations of Communication Manager and to monitor for failures. PROGNOSIS VoIP Monitor also processed the RTCP information to monitor the quality of IP calls. During compliance testing, all test cases were completed successfully.

9. Additional References

The following documents can be found at <http://support.avaya.com/>:

- [1] *Avaya Aura™ Communication Manager Feature Description and Implementation*, Release 6.0, Issue 8.0, June 2010, Document Number 555-245-205.
- [2] *Administering Avaya Aura™ Communication Manager*, Release 6.0, Issue 6.0, June 2010, Document Number 03-300509.

The following documents are provided by Integrated Research and can be found at <http://voicequality.com/>.

- [3] *PROGNOSIS VoIP Monitor 3.1 Installation and Configuration Guide*, October 2010.
- [4] *PROGNOSIS VoIP Monitor 3.1 User Guide*, October 2010.

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