



Avaya Solution & Interoperability Test Lab

Application notes for Integrated Research's Prognosis IP Telephony Manager 9.6.1 with Avaya Communication Server 1000 Release 7.5 – Issue 1.0

Abstract

These Application Notes describe a solution comprised of Avaya Communication Server 1000 Release 7.5 and Prognosis IP Telephony Manager 9.6. During the compliance testing, the Prognosis IP Telephony Manager was able to provide a monitoring and management solution for IP telephony networks by collecting data and filtering it as required and then presenting it in a user-friendly format. This test was performed to verify that the Prognosis IP Telephony Manager software also presented the information and data of Avaya Communication Server 1000 correctly and also has no adverse impact on the Avaya Communication Server 1000 system when used to monitor and manage the Avaya Communication Server 1000.

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

This is the interoperability test report for Avaya Communication Server 1000 Release 7.5 (hereafter referred to as CS1000) and the Prognosis IP Telephony Manager 9.6.1 (hereafter referred to as IPTM). During the compatibility testing session, the Prognosis IPTM was able to provide a wide range of metrics for monitoring performance and troubleshooting IP telephony networks by collecting data, filtering it as required and then presenting it in a user-friendly format. It was also able to collect data into databases for further analysis and reporting.

2. General Test Approach and Test Results

The general test approach was to connect IPTM to the CS1000 system via Secure Shell (SSH) to monitor activity and to manage the CS1000 IP telephony networks by placing various telephone calls within the CS1000.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute a full product performance or feature testing performed by third party vendors, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a third party solution.

2.1 Interoperability Compliance Testing

Interoperability compliance testing covered the following features and functionality:

- The operational status report of all CS1000 modules such as: Signaling Server, Media Gateway (MGC), Media Card, all IP Phones, all routes, all zones and the status of all commands executed on the CS1000 PBX.
- CS1000 Hardware configuration report such as Signaling Server, MGC, etc.
- All processes running on a Signaling Server.
- All IP Phones are registered to a Signaling Server. All IP Phones are configured on the CS1000 PBX.
- H.323 / SIP Gateway Calls
- The channel utilization report on a Route.
- The inter-zone bandwidth usage report for a Zone.
- CPU utilization.

2.2 Test Results

The objectives outlined in **Section 2.1** were verified and met. All tests were executed and passed. However, there are number of observations during the testing:

The following limitations are known at the time of the compliance testing:

1. The phone status update is only applicable for IP and IP soft-phone. All other type of phones such as Digital sets, Analog Sets, SIP clients will have “unknown” status. The command `isetShow` is used for determining the status of the telephone sets, up/down.
2. Only prime DN of a telephone set is discovered and associated with that telephone.
3. After disconnecting and re-connecting the LAN interface to the Prognosis IPTM server, the connection is automatically re-established but Prognosis IPTM cannot continue monitoring the PBX, and requires a restart for Prognosis IPTM.
4. The route utilization is just updated after making a call for 2 minutes.
5. If a command is executed by Prognosis when an overlay is in progress, the command is unsuccessful due to overlay conflict. The command will not run till its next scheduled time to execute (which could be up to 24hrs). To execute the command immediately, the user must restart Prognosis and the command will be executed.
6. When a new card is added to the system, it is not recognized by Prognosis until the user runs command “INV Generate Cards” first and then runs “INV PRT CARDS” to print it. We recommend customers enable automatic execution of “INV Generate All” every 24 hours to ensure that the PBX regenerates its inventory before Prognosis performs an inventory update.
7. If an error is received when clicking on the Status of MGC, it may be due to NTL-Status Log database not being started. Start the database via the GUI and it will update the status on the card.
8. In CS1000 release 7.5 the main IP Address of MGC cards are not shown. This is due to the existing command “PRT CAB” under LD 117 not being supported by these versions.
9. Information on member of the route which has more than 32 members is shown incorrectly. This is a performance limitation where Prognosis shows these records in two fields: LD 21/LTM reports a route may contain:
 - 32 channels in loop 100 1 01 with member number 1-32
 - 32 channels in loop 100 1 02 with member number 128-159.
10. Model of CPPM SS servers are shown incorrectly. This is due to the HostType field size being restricted to 10 characters for performance reasons.

The following items were not tested during the compliance testing:

- Generating alerts when predefined conditions are exceeded, and automatically running commands to rectify system problems.
- The voice quality measures report for a Zone. (QoS).

2.3 Support

For technical support on Prognosis IPTM, please contact Prognosis technical support team:

- **Telephone:** 1 800 942 7382
- **Email:** support.usa@prognosis.com
- **Web Site:** www.prognosis.com

3. Reference Configuration

Figure 1 illustrates a sample configuration between the CS1000 and the IPTM application server. In the configuration, the IPTM is connecting to the CS1000 system via SSH for accessing the Command Line Interface on the Call Server. There is IP connectivity for sending SNMP requests and receiving traps between IPTM and the CS1000.

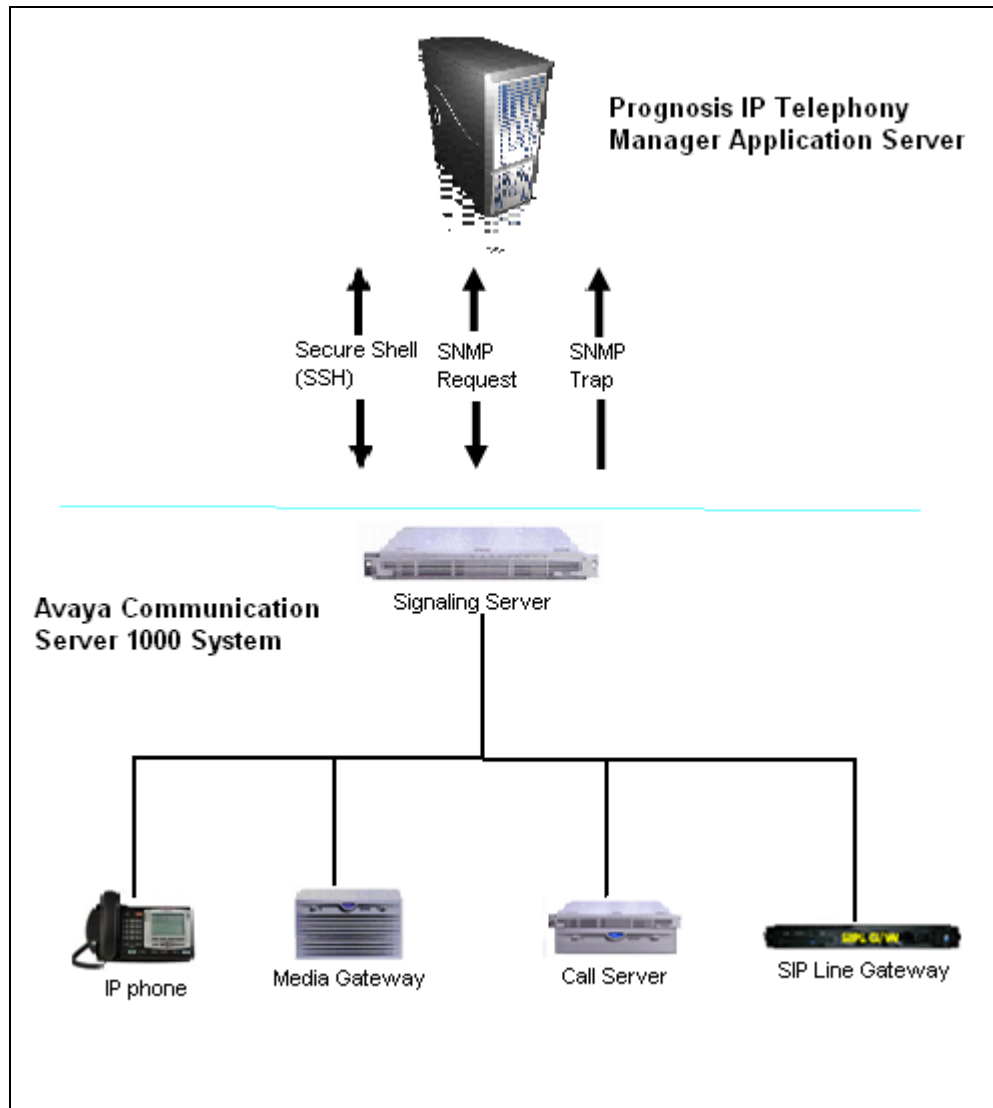


Figure 1: Avaya Communication Server 1000 System and Prognosis IP Telephony Manager Application Server.

4. Equipment and Software Validated

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

| Equipment/Software | Release/Version |
|----------------------------------|---|
| Avaya Communication Server 1000E | Call Server: 7.50Q GA plus latest DEPLIST Signaling Server: 7.50.17 GA plus latest Service Update SIP Line Gateway: 7.50.17 GA plus latest Service Update |
| IP phones | <ul style="list-style-type: none">• 2007 - Model NTDU96• 1140E - Model NTYS05• 2004 – Model NTDU82 |
| Prognosis IPTM Server | Software release 9.6.1 |

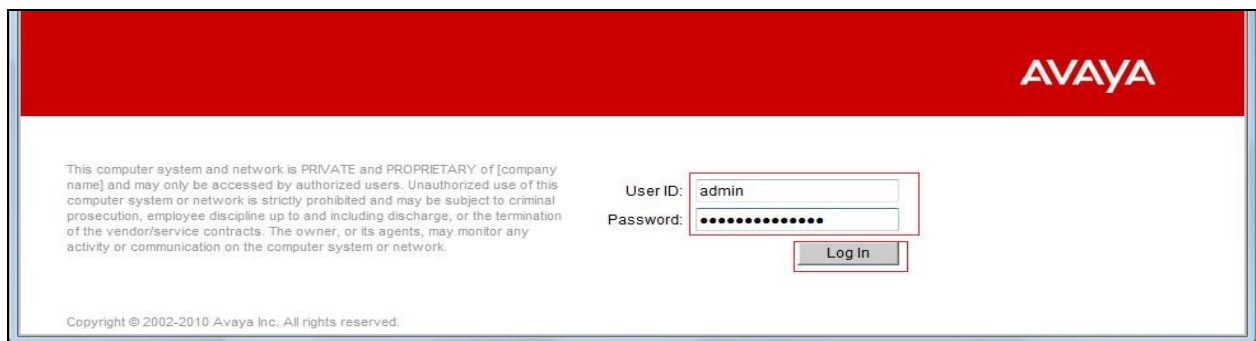
5. Configure Avaya Communication Server 1000

These Application Notes assumes that CS1000 is installed, configured and operational. For detailed information on how to configure and administer the Avaya Systems, please refer to **Section 9**.

The following section will describe how to configure the SNMP profile on the Avaya CS1000 for receiving the SNMP requests and sending traps to Prognosis IPTM server.

5.1 Log on to Unified Communication Manager of Avaya CS1000

Log on the UCM Common Services of the Avaya CS1000, using the Microsoft Internet Explorer 6.0260 or later to access the UCM by addressing the IP address or FQDN (Full Qualified Domain Name) of the UCM and then input the username/password which was defined during the primary security server setup.



AVAYA

This computer system and network is PRIVATE and PROPRIETARY of [company name] and may only be accessed by authorized users. Unauthorized use of this computer system or network is strictly prohibited and may be subject to criminal prosecution, employee discipline up to and including discharge, or the termination of the vendor/service contracts. The owner, or its agents, may monitor any activity or communication on the computer system or network.

User ID:

Password:

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Figure 2: Log on Screen of UCM

After log on the UCM, the **Avaya Unified Communications Management** is as shown in **Figure 3**.

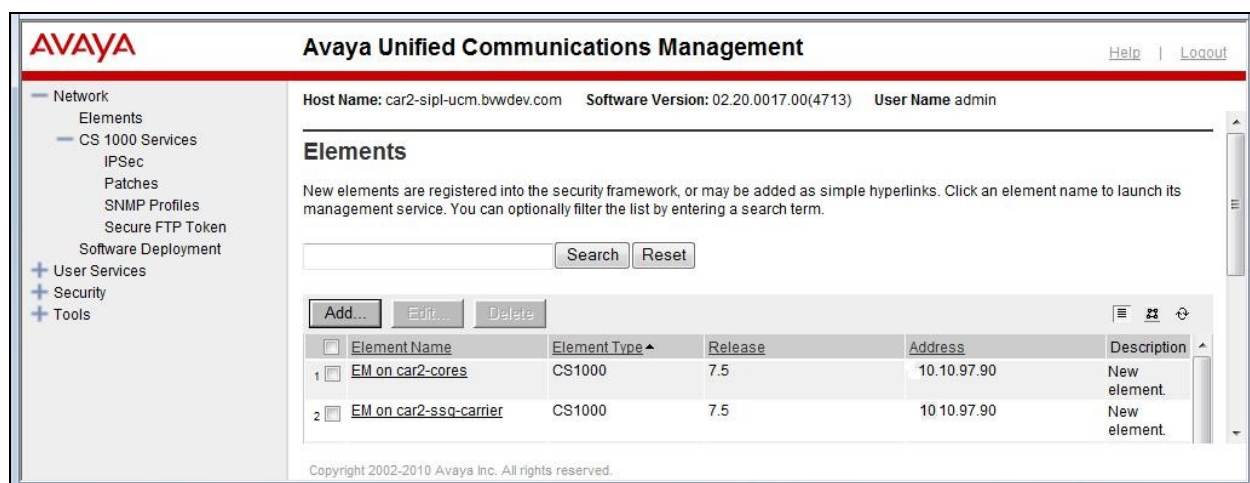


Figure 3: Avaya Unified Communications Management

5.2 Create SNMP Profile

Click on **SNMP Profile** in the left hand pane, the **SNMP Profile Manager** will appear as shown in **Figure 4**. Click on **SNMP Profile** in the right hand pane.

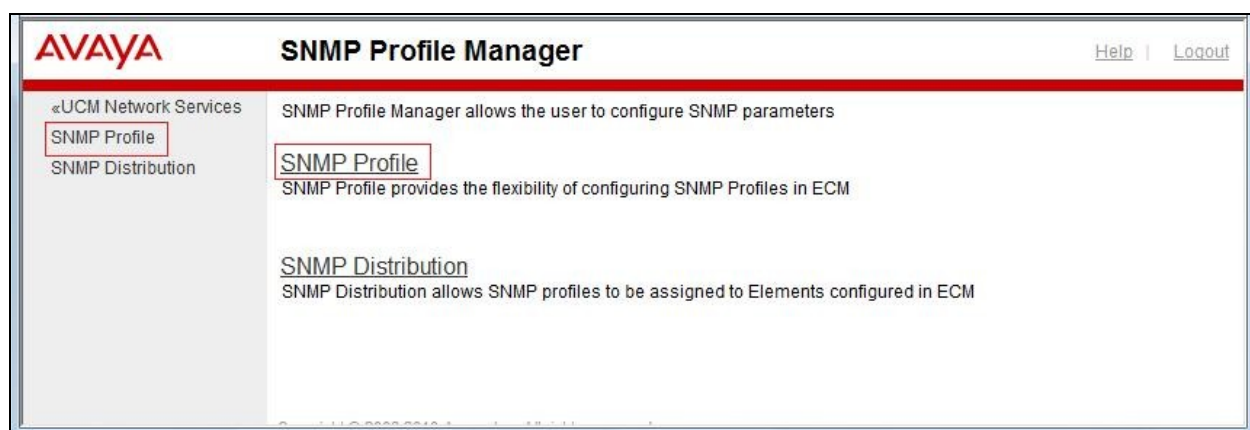


Figure 4: SNMP Profile Manager

The **SNMP Profiles** page will appear as shown in **Figure 5**. Click **Add**.

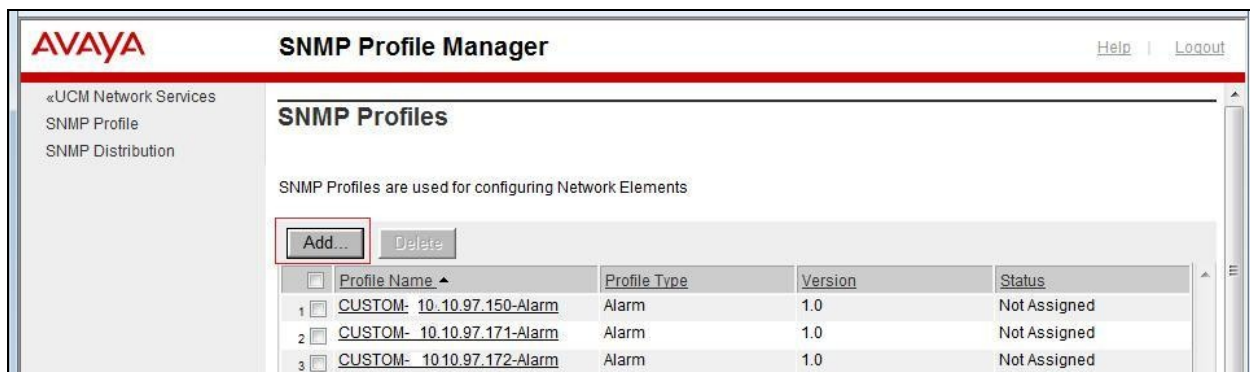


Figure 5: SNMP Profiles

The **New SNMP Profile** page will appear. Enter the information highlighted in the red-boxes. Others are left at default as shown in **Figure 6**. Click **Save**.

The screenshot shows the 'New SNMP Profile' page in the AVAYA SNMP Profile Manager. The left navigation menu is the same. The main header is 'SNMP Profile Manager' with 'Help' and 'Logout' links. The title 'New SNMP Profile' is displayed. The form contains the following fields and options:

- Profile Name: prognosis
- Profile Type: ALARM
- Trap community: public
- Alarm Threshold: None
- Option: ☒ Enable trap sending
- Trap Destinations:
 - IPAddress1: 10.10.98.99
 - Port1: 162

At the bottom right are 'Save' and 'Cancel' buttons. The footer text reads: 'Copyright © 2008,2010 Avaya Inc. All rights reserved.'

Figure 6: New SNMP Profile

Click **SNMP Profile** from the left pane, the SNMP Profiles list will appear and the *prognosis* SNMP profile is now being added as shown in **Figure 7**.

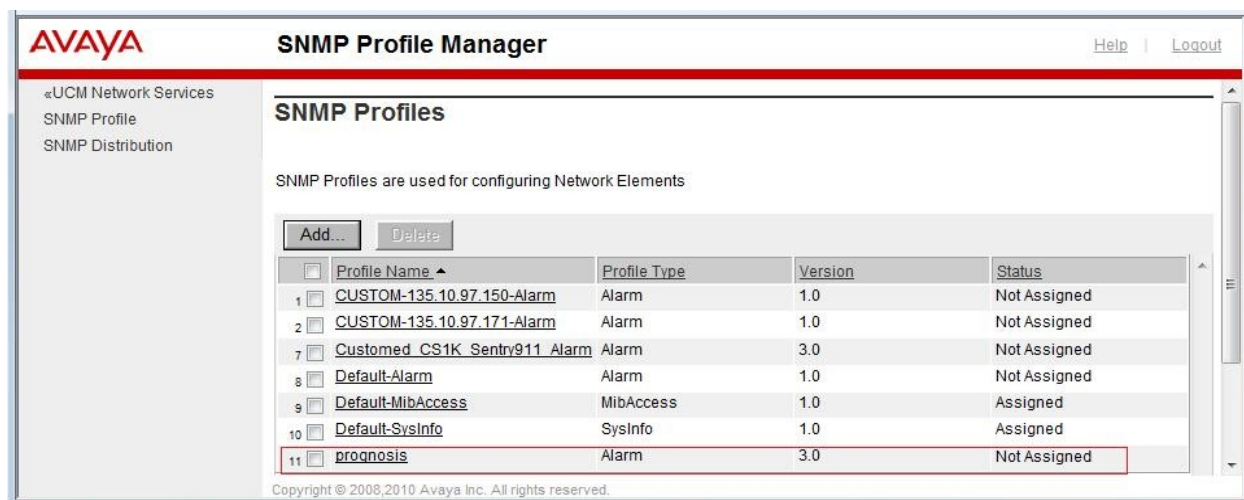


Figure 7: Prognosis SNMP Profile Added

5.3 Assign newly created SNMP profile to an Element

On the left menu panel, click on **SNMP Distribution**, the **SNMP Target Selection** page will appear as shown in **Figure 8**. Select the check box as shown in **Figure 8** and click **Next**.

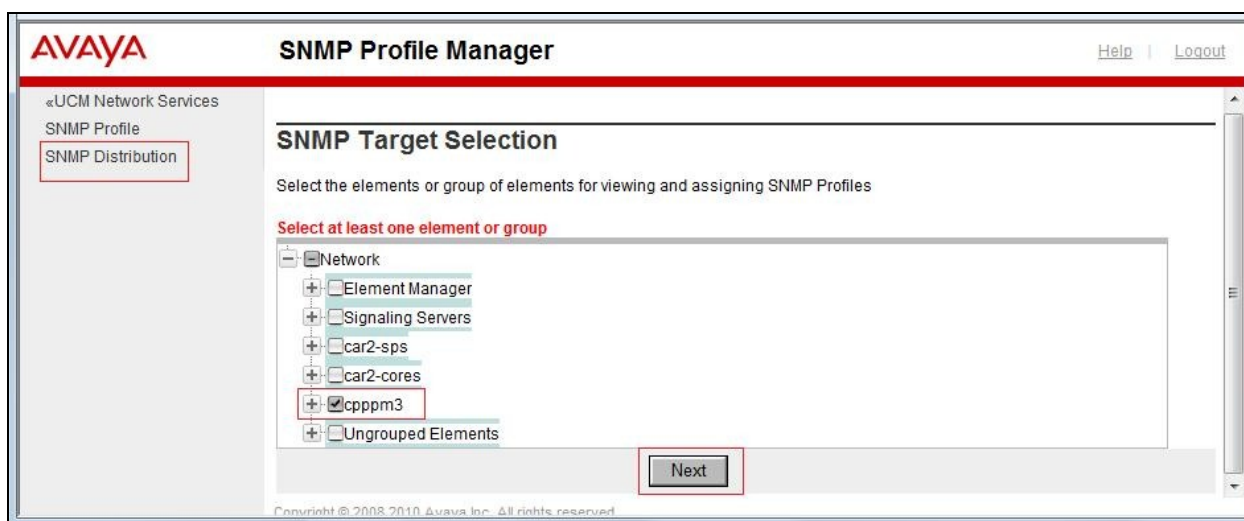


Figure 8: SNMP Target Selection

The **SNMP Profile Distribution** page will appear as shown in **Figure 9**. Click **Assign**.

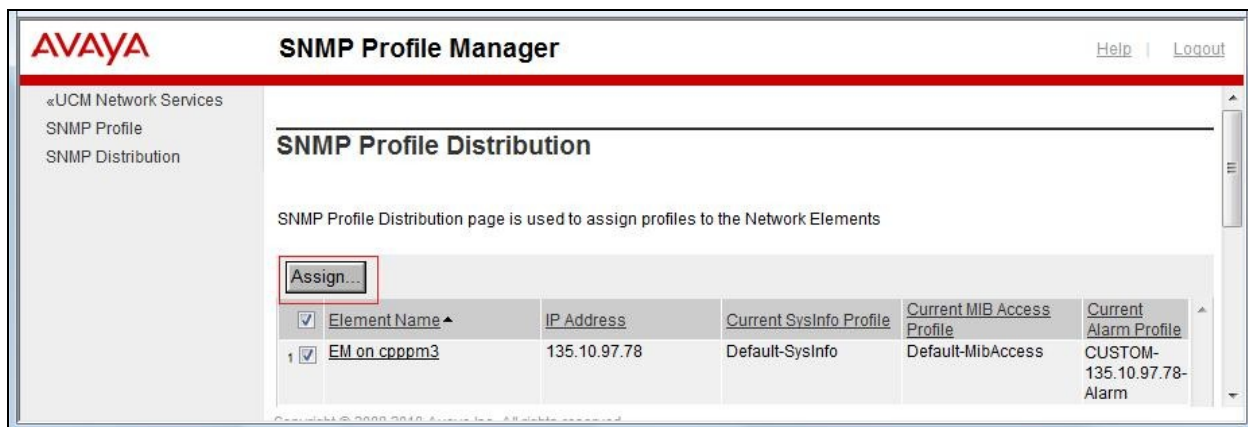


Figure 9: SNMP Profile Distribution

The SNMP Profile Distribution Details page will appear. Select and enter the information as highlighted in red-boxes as shown in **Figure 10**. Others are left at default. Click **Save**.

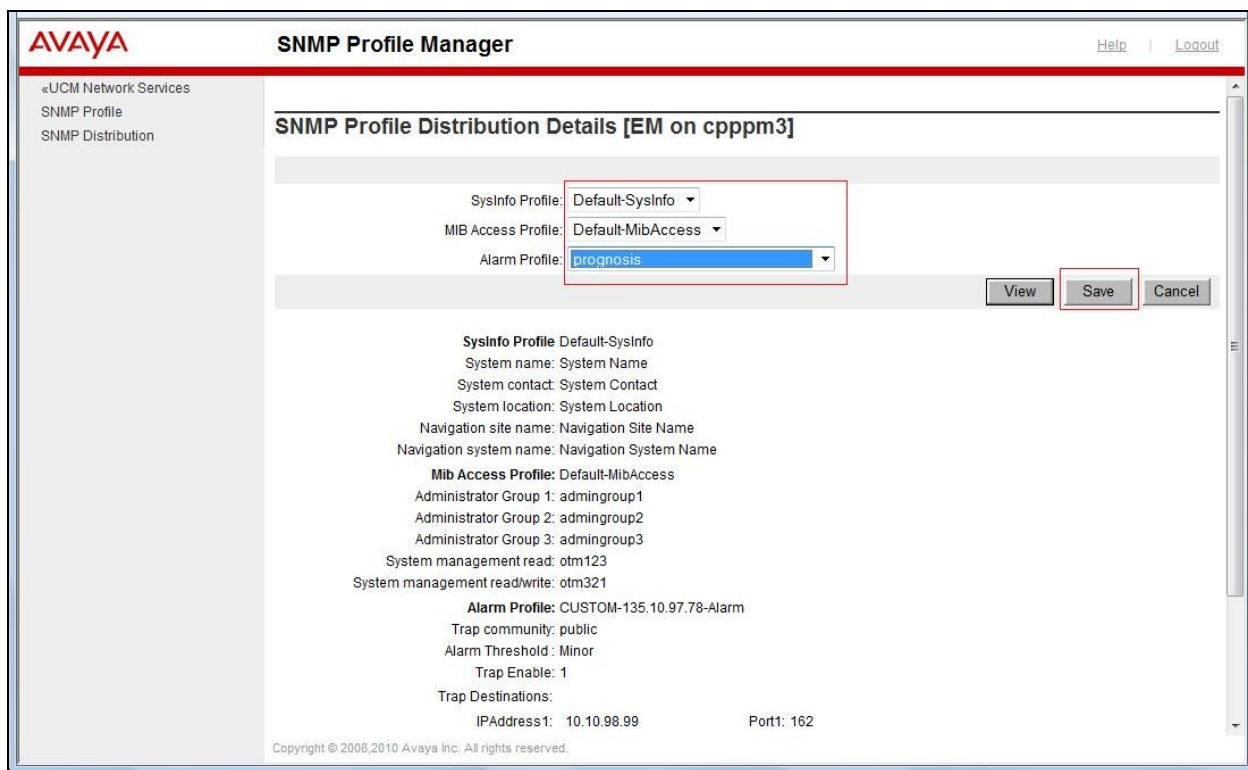


Figure 10: SNMP Profile Distribution Details

The newly created *prognosis* SNMP profile has now been assigned to the call server of the CS1000 as shown in **Figure 11**.

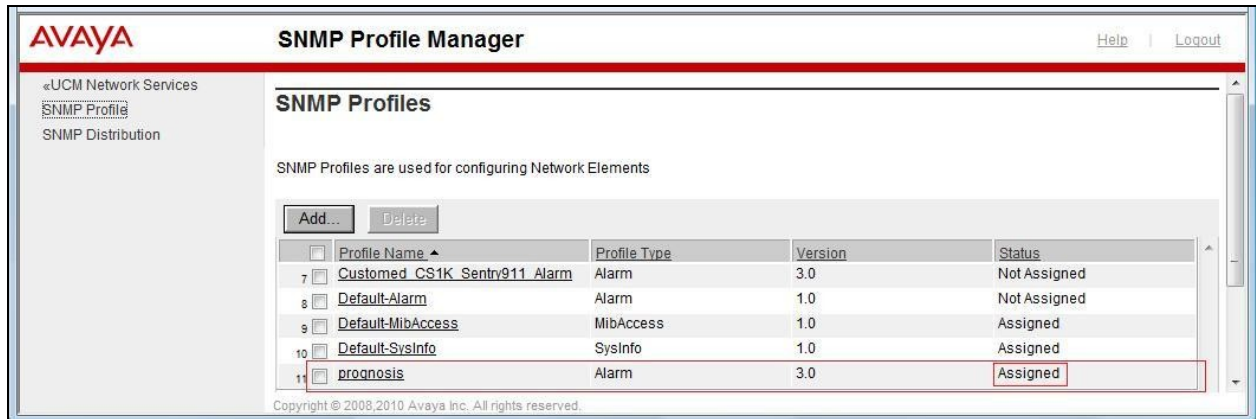
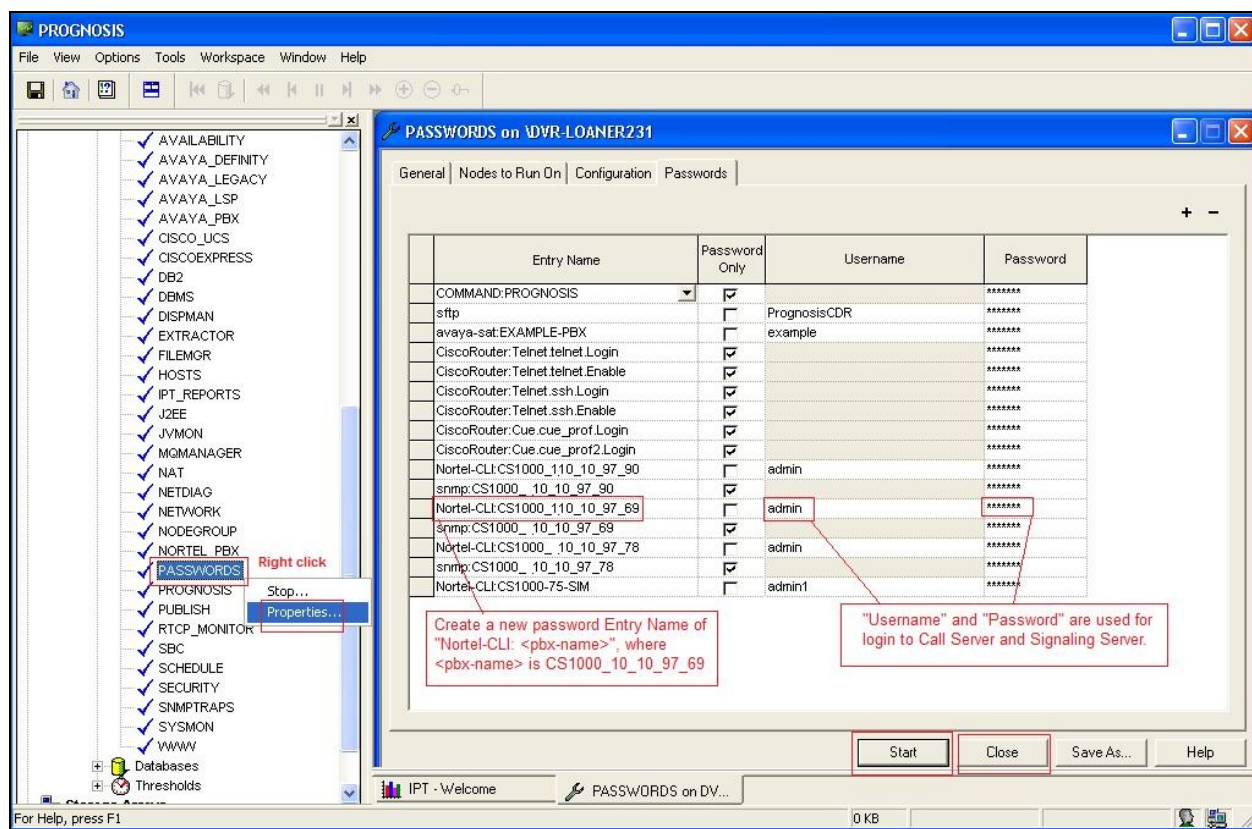


Figure 11: *prognosis* SNMP profile Assigned

6. Configure Prognosis IP Telephony Manager

The assumption here is that the Prognosis has been installed and operational. Please refer to **Section 9** for more information. This section describes the steps to configure IPTM for monitoring the CS1000.

1. Open the **IP Telephony Manager GUI** and login.
 2. Open the “**PASSWORDS**” configuration from the **Manager Nodes**.
 3. Create a new password entry name of “**Nortel-CLI:<pbx-name>**”.
 4. The password **Entry Name** can be selected from the drop down list in the **Entry Name** column.
 5. Ensure that the **Password Only** column is not selected.
 6. Enter the **Username (User ID)** to be used for login to the CS1000.
- Note:** The **Username (User ID)** and **Password** is used for login to the Call Server and all Signaling Servers within the CS1000 similar to **Section 5.1**.
7. Enter the **Password** (with verification).

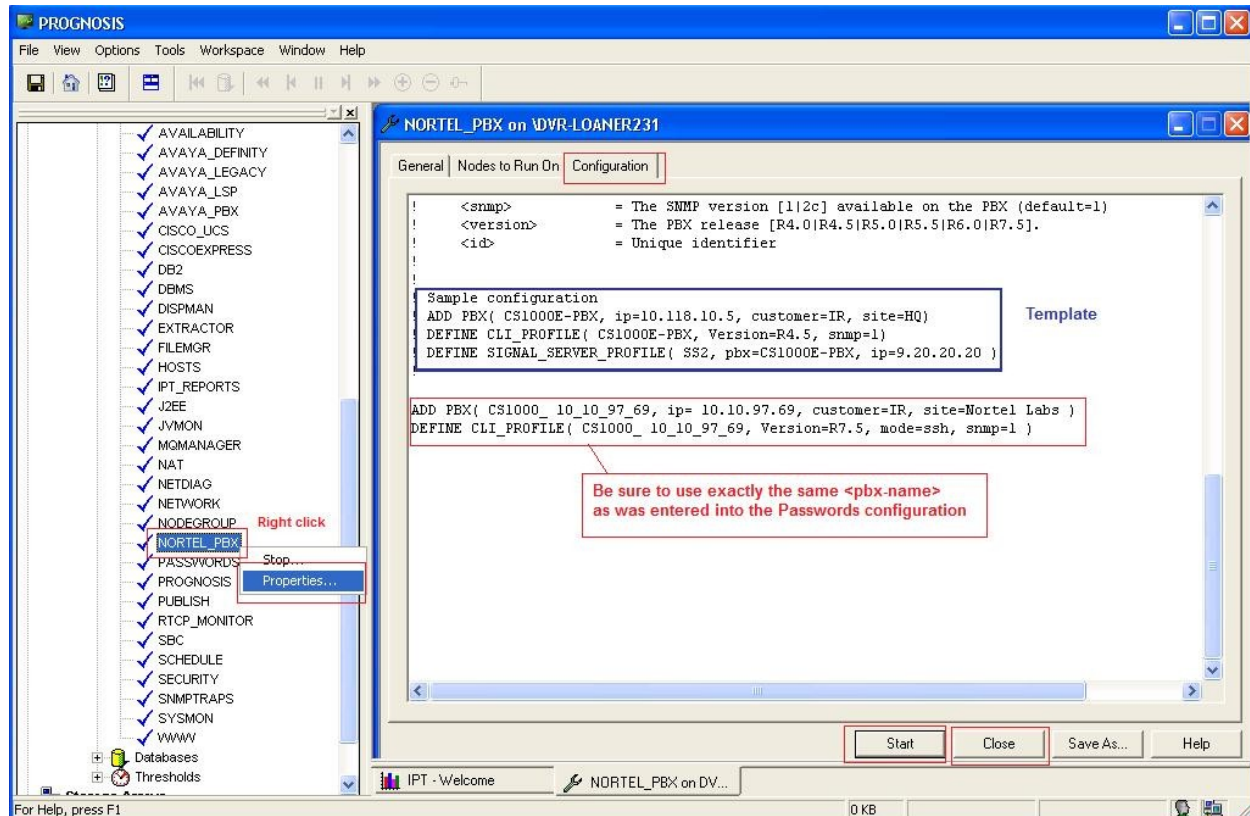


8. Select **Start**.
9. Select **Close**.

10. Open the **NORTEL_PBX** configuration from the **Manager Nodes**.

11. Create a new entry for the **CS1000 PBX** using the template defined.

Note: Be sure to use exactly the same **<pbx-name>** as was entered into the **Passwords** configuration.



12. Select **Start**.

13. Select **Close**.

14. Click **View > Document Folders > UCC-Welcome**, the **Unified Communications and Collaboration Central** page will display.

The screenshot shows the PROGNOSIS UCC-Welcome interface. The left sidebar displays a tree view of document folders, with 'UCC - Welcome' selected. The main window displays the 'UCC Ecosystem' and 'UCC Ecosystem Summary'.

UCC Ecosystem

- Alcatel-Lucent
- OmniPCX Enterprise
- Avaya
 - SMGR / SM
 - CM
 - CS1000
 - Modular Messaging
- Cisco
 - CUCM 3.3 & 4
 - CUCM 5+
 - UCCX
 - CUC
 - CUP
 - CME
 - UCS B-Series
 - UCS C-Series
 - Microsoft Lync
 - SBC

UCC Ecosystem Summary

| Name | Vendor | Customer - Site | Cont | Alerts/Alarms | CPU | Endpoints | Destination |
|---------------------|------------------|------------------|------|------------------|----------|-----------|-------------|
| ICS1000_10_10_97_69 | Avaya CS1000 PBX | IR - Nortel Labs | Yes | 0 (Crit) 0 (Err) | 0 of 111 | 0 of 6 | |
| ICS1000_10_10_97_78 | Avaya CS1000 PBX | IR - Nortel Labs | Yes | 0 (Crit) 0 (Err) | 0 of 111 | 0 of 8 | |
| ICS1000_10_10_97_90 | Avaya CS1000 PBX | IR - Nortel Labs | Yes | 0 (Crit) 0 (Err) | 0 of 58 | 0 of 11 | |

15. Observe that the new Avaya CS1000 node appears in the **Entire Network** and in the **UCC Ecosystem Summary** window of the **UCC- Welcome** display.

16. Click on the **CS1000** >> link in the **UCC Ecosystem** panel, the **Avaya CS1000 System** will be displayed. This display provides a summary of the configured CS1000 devices.

The screenshot displays the PROGNOSIS software interface. The main window is titled "NTL-Monitor PBXs" and shows the "Avaya CS1000 Systems" configuration. The interface includes a left-hand navigation pane with a tree view of the system hierarchy, a central data table, and a bottom section for "Voice Quality Samples".

Left-hand navigation pane:

- My Displays & Configurations
 - IP Telephony Manager
 - Alcatel
 - Avaya
 - Cisco
 - Common
 - Management Reporter
 - Microsoft
 - Network Diagnostics
 - Nortel
 - SBC
 - Telephony
 - Virtualization
 - Web Publishing
 - Windows
 - UCC - Configuration
 - UCC - Welcome
- DVR-LOANER231
 - Entire Network
 - VCS1000_10_10_97_69
 - VCS1000_10_10_97_78
 - VCS1000_10_10_97_90
 - DVR-LOANER231
 - All Clusters
 - All Telephony Systems
 - Applications
 - Management Reporter
 - Manager Nodes
 - IP Telephony Express
 - DVR-LOANER231
 - Analysts
 - IPTelephonyAnalyst
 - IPTX-Analyst
 - RollUpAnalyst
 - Configurations
 - ALCATEL_PBX
 - APPRESPONSE
 - AVAILABILITY

Central Data Table:

| Avaya CS1000 Systems | | | | | | | | | | | |
|-----------------------------------|---------|----------|-------------|------|------|-------------|---------|--------|--------|--|--|
| Connected to: DVR-LOANER231 | | | | | | | | | | | |
| by Customer by Site Voice Quality | | | | | | | | | | | |
| Name | Site ID | Customer | Site | Ver | Cont | IP | Routes | Zones | Change | | |
| VCS1000_10_10_97_69 | 46379 | IR | Nortel Labs | R7.5 | Yes | 10.10.97.69 | 0 of 6 | 6 of 6 | Config | | |
| VCS1000_10_10_97_78 | 46379 | IR | Nortel Labs | R7.5 | Yes | 10.10.97.78 | 0 of 8 | 6 of 6 | Config | | |
| VCS1000_10_10_97_90 | 46379 | IR | Nortel Labs | R7.5 | Yes | 10.10.97.90 | 0 of 11 | 3 of 3 | Config | | |

Bottom Section: Voice Quality Samples

A line graph titled "Voice Quality Samples" showing a y-axis from 0 to 1 and an x-axis with time intervals from 12:05:10 to 12:14:10. The graph area is currently empty.

Bottom Status Bar:

- UCC - Welcome
- NTL-Monitor PBXs
- 0 KB

7. Verification Steps

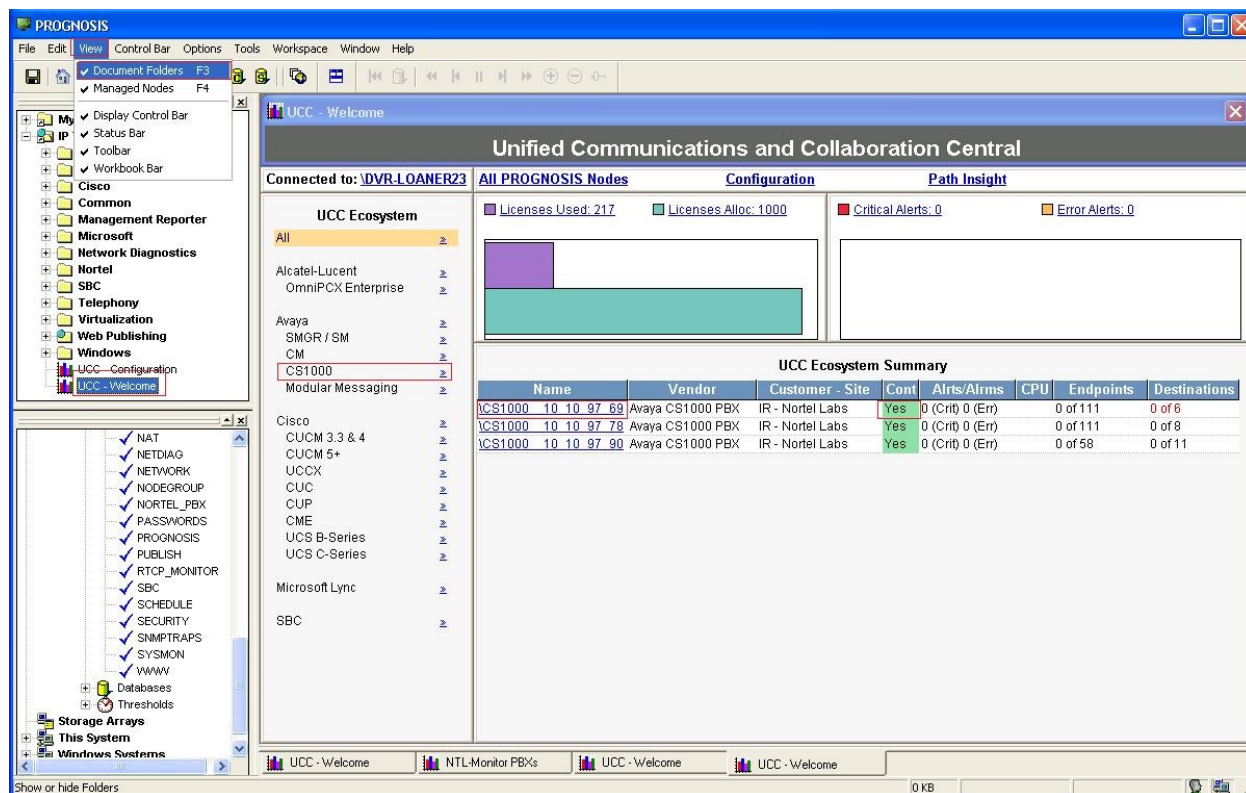
This section provides some steps that can be followed to verify the Avaya CS1000 system and Prognosis IPTM.

7.1 Measure the CS1000 PBX performance under test conditions.

1. Establish a SSH connection to the CS1000 Signaling Server.
2. Login to the Signaling Server.
3. At a frequency of once every minute for a period of 10 minutes perform the following:
4. Enter the command **memShow** and note the memory usage.
5. Check CPU load on PBX.
6. Login to the Call Server by executing “**cslogin**” command.
7. Enter **pdt** mode on the Call Server by holding down <Ctrl> and typing **PDT**.
8. At a frequency of once every minute for a period of 10 minutes perform the following:
9. Enter the command **memShow** and note the memory usage.
10. Check CPU load on PBX.
11. Exit pdt mode by typing **exit**.

7.2. The status of all commands executed on the Avaya Communication Server 1000.

1. Open the PROGNOSIS GUI and login.
2. In the **Manager Nodes**, check if a node exists for the CS1000.



3. In the “**Manager Nodes**”, observe that the node for the CS1000 PBX is shown as active.
4. Click **View > Document Folders > UCC-Welcome**, from the **Unified Communications and Collaboration Central** page, click on **CS1000 >>** link to open the “**Avaya CS1000 Systems**” page.
5. Observe the connection status appears as “**Yes**”.

The screenshot shows the PROGNOSIS software interface. The left sidebar contains a tree view with the following structure:

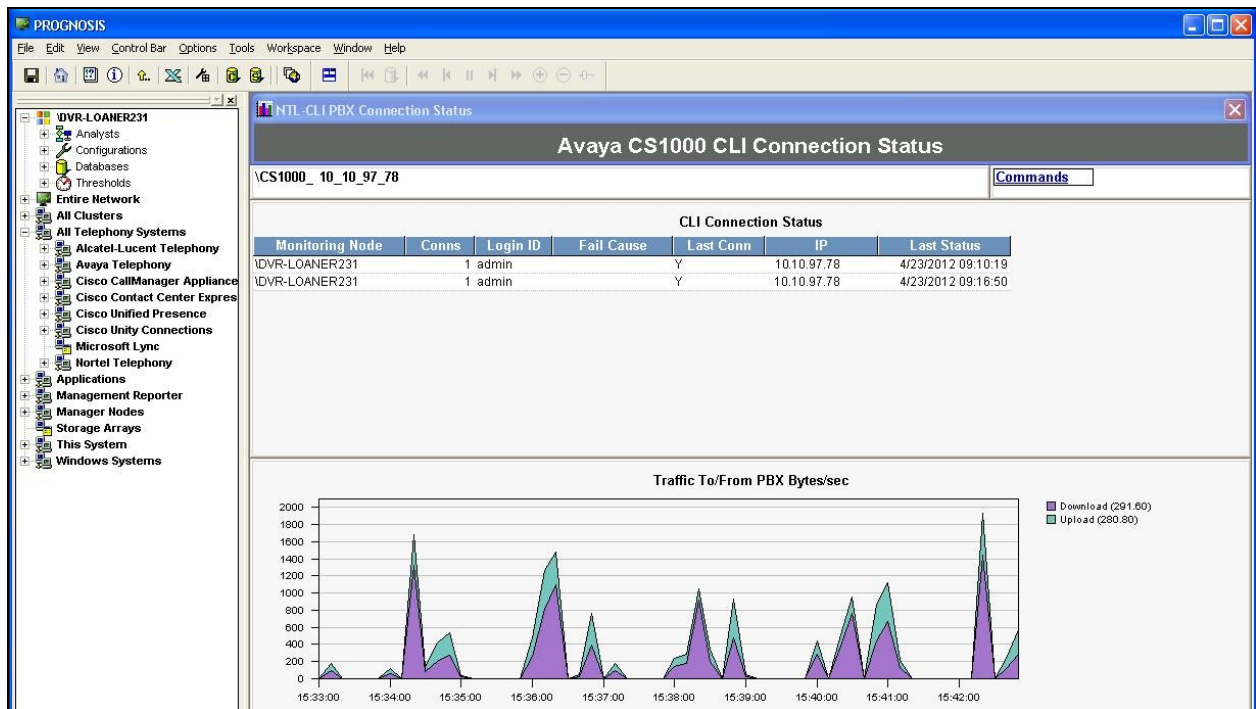
- My Displays & Configurations
 - IP Telephony Manager
 - Alcatel
 - Avaya
 - Cisco
 - Common
 - Management Reporter
 - Microsoft
 - Network Diagnostics
 - Nortel
 - SBC
 - Telephony
 - Virtualization
 - Web Publishing
 - Windows
 - UCC - Configuration
 - UCC - Welcome
- DVR-LOANER231
 - Entire Network
 - ICS1000_10_10_97_69
 - ICS1000_10_10_97_78
 - ICS1000_10_10_97_90
 - All Clusters
 - All Telephony Systems
 - Applications
 - Management Reporter
 - Manager Nodes
 - IP Telephony Express
 - DVR-LOANER231
 - Analysts
 - IPTelephonyAnalyst
 - IPTX-Analyst
 - RollUpAnalyst
 - Configurations
 - ALCATEL_PBX
 - APPRESPONSE
 - AVAILABILITY

The main window displays the "Avaya CS1000 Systems" page. It shows a table of system status with the following data:

| Avaya CS1000 Systems | | | | | | | | | | |
|-----------------------------------|---------|----------|-------------|------|------|-------------|---------|--------|--------|--|
| Connected to: \DVR-LOANER231 | | | | | | | | | | |
| by Customer by Site Voice Quality | | | | | | | | | | |
| Name | Site ID | Customer | Site | Ver | Cont | IP | Routes | Zones | Change | |
| ICS1000_10_10_97_69 | 46379 | IR | Nortel Labs | R7.5 | Yes | 10.10.97.69 | 0 of 6 | 6 of 6 | Config | |
| ICS1000_10_10_97_78 | 46379 | IR | Nortel Labs | R7.5 | Yes | 10.10.97.78 | 0 of 8 | 6 of 6 | Config | |
| ICS1000_10_10_97_90 | 46379 | IR | Nortel Labs | R7.5 | Yes | 10.10.97.90 | 0 of 11 | 3 of 3 | Config | |

Below the table, there is a section titled "Voice Quality Samples" with a graph showing a line plot over time from 12:05:10 to 12:14:10. The y-axis ranges from 0 to 1.0.

6. Click on **Yes** of **Cont** field to drill down on the connection status field to open the **Avaya CS1000 CLI Connection Status** display.
7. Drill down on **Commands** to open the **Avaya CS1000 Commands** display.



8. Select “View All Cmds” to show all commands executed.

Command Summary

| Server | Cmds |
|-------------|----------|
| 10.10.97.78 | 20 of 22 |

Command Execution - All Servers All Commands

| Name | Server IP | Type | Exec | Supp | Last Exec | Fail | Exp Err |
|----------------------------------|-------------|------|------|------|--------------------|------|---------|
| H323GwShow all | 10.10.97.78 | SS | N | Y | 4/21/2012 02:28:30 | 1 | 0 |
| LD 117 / STAT SERV IP %ELANIPAD% | 10.10.97.78 | CS | N | Y | 4/21/2012 02:28:35 | 59 | 0 |
| electShow | 10.10.97.78 | SS | Y | Y | 4/20/2012 19:15:49 | 0 | 0 |
| isetShow | 10.10.97.78 | SS | Y | Y | 4/21/2012 02:25:50 | 0 | 0 |
| nrsGWEndpointShow 0 | 10.10.97.78 | SS | Y | Y | 4/20/2012 19:15:49 | 0 | 0 |
| pbtLinkShow | 10.10.97.78 | SS | Y | Y | 4/20/2012 19:15:48 | 0 | 0 |
| swVersionShow | 10.10.97.78 | SS | Y | Y | 4/18/2012 19:15:35 | 0 | 0 |
| vtrkShow all | 10.10.97.78 | SS | Y | Y | 4/23/2012 14:52:17 | 1 | 0 |
| LD 117 / ECNT ZONE %ZONENUMB% | 10.10.97.78 | CS | Y | Y | 4/23/2012 11:26:40 | 1 | 0 |
| LD 117 / INV PRT CARDS | 10.10.97.78 | CS | Y | Y | 4/20/2012 19:15:57 | 1 | 0 |
| LD 117 / PRT INTRAZONE | 10.10.97.78 | CS | Y | Y | 4/23/2012 14:50:59 | 60 | 0 |
| LD 117 / PRT IPR | 10.10.97.78 | CS | Y | Y | 4/20/2012 19:15:58 | 0 | 0 |
| LD 117 / PRT ZALT | 10.10.97.78 | CS | Y | Y | 4/20/2012 19:16:01 | 0 | 0 |
| LD 117 / PRT ZBW | 10.10.97.78 | CS | Y | Y | 4/20/2012 19:16:02 | 0 | 0 |
| LD 117 / PRT ZDP | 10.10.97.78 | CS | Y | Y | 4/20/2012 19:16:04 | 0 | 0 |
| LD 117 / STAT IPMG | 10.10.97.78 | CS | Y | Y | 4/23/2012 14:50:58 | 61 | 0 |
| LD 135 / STAT IPL | 10.10.97.78 | CS | Y | Y | 4/23/2012 14:50:53 | 60 | 0 |
| LD 21 / LTM / | 10.10.97.78 | CS | Y | Y | 4/20/2012 19:16:00 | 0 | 0 |
| LD 22 / tid | 10.10.97.78 | CS | Y | Y | 4/20/2012 19:16:04 | 0 | 0 |
| LD 60 / STAT | 10.10.97.78 | CS | Y | Y | 4/23/2012 14:51:59 | 124 | 0 |
| LD 83 / LST / / | 10.10.97.78 | CS | Y | Y | 4/20/2012 03:31:05 | 0 | 0 |
| LD 96 / STAT DCH | 10.10.97.78 | CS | Y | Y | 4/23/2012 14:52:18 | 94 | 0 |

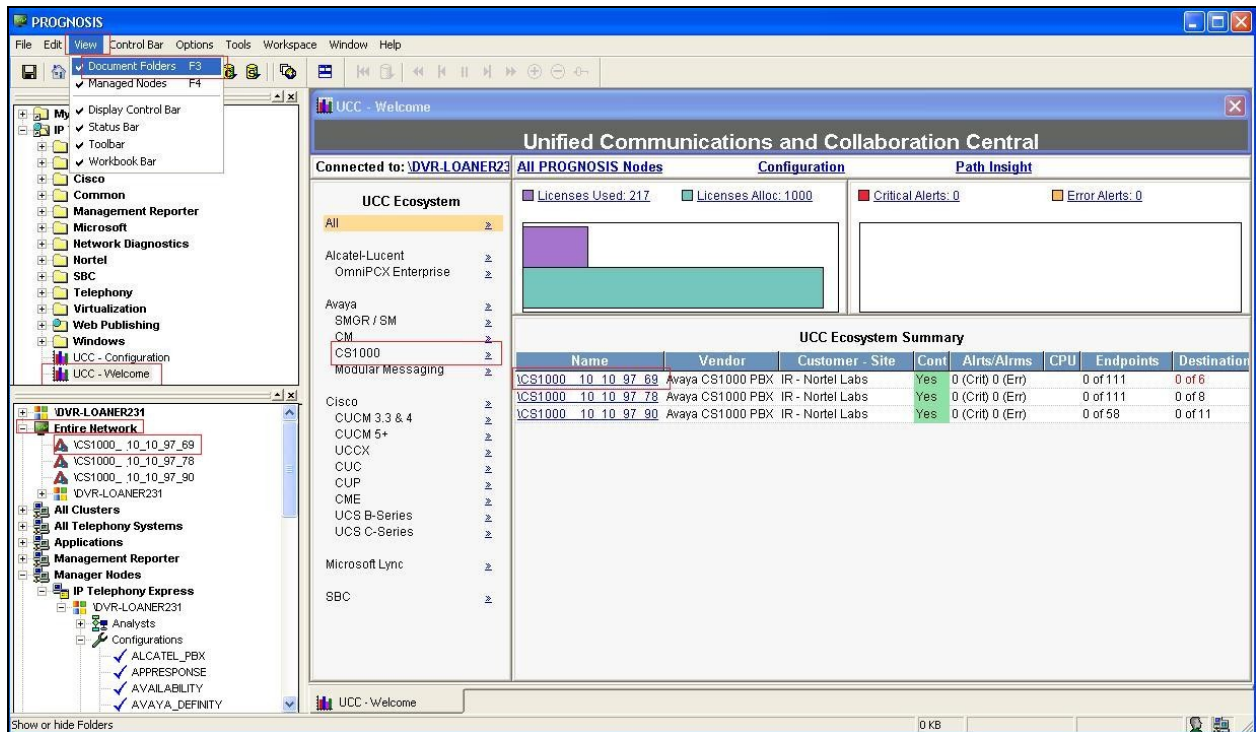
[View All Cmds](#) [View Unsuccessful Cmds](#)

9. Observe that all commands being executed in the list.

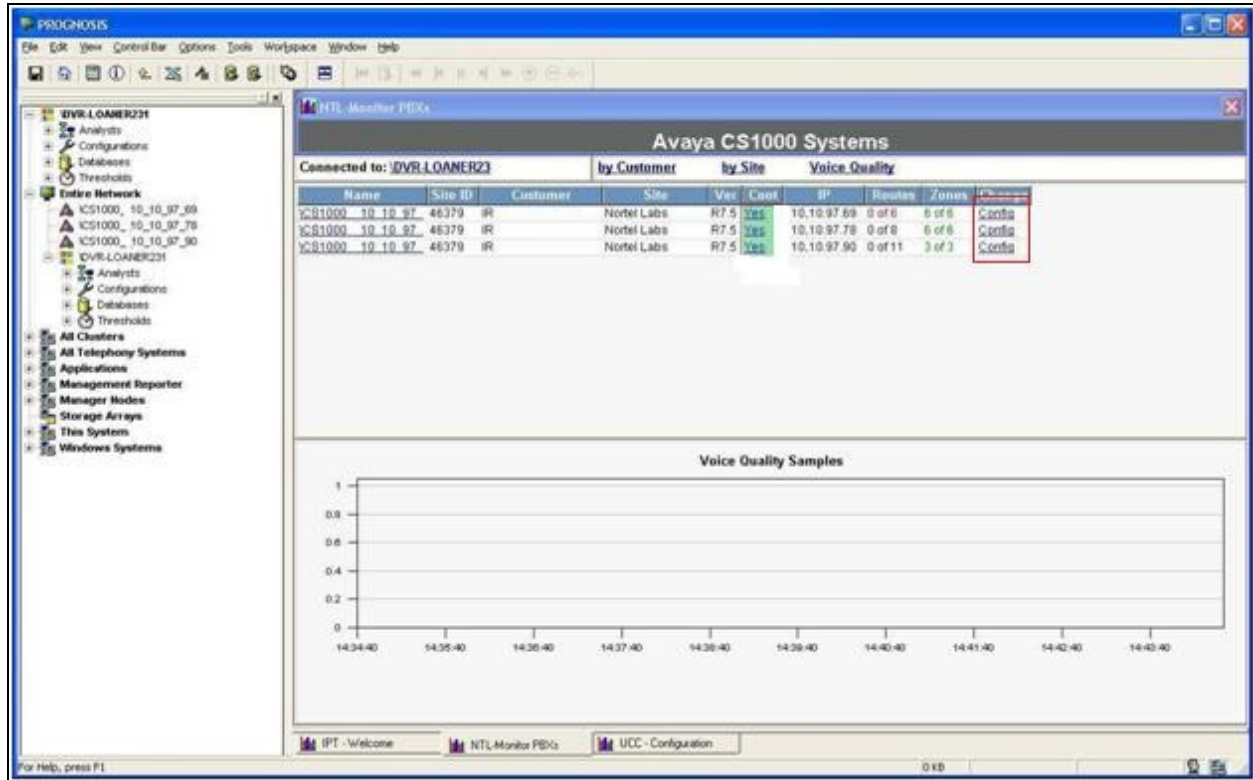
10. Observe that execution status for all commands is displayed and successful.

7.3. Observe the CPU utilization.

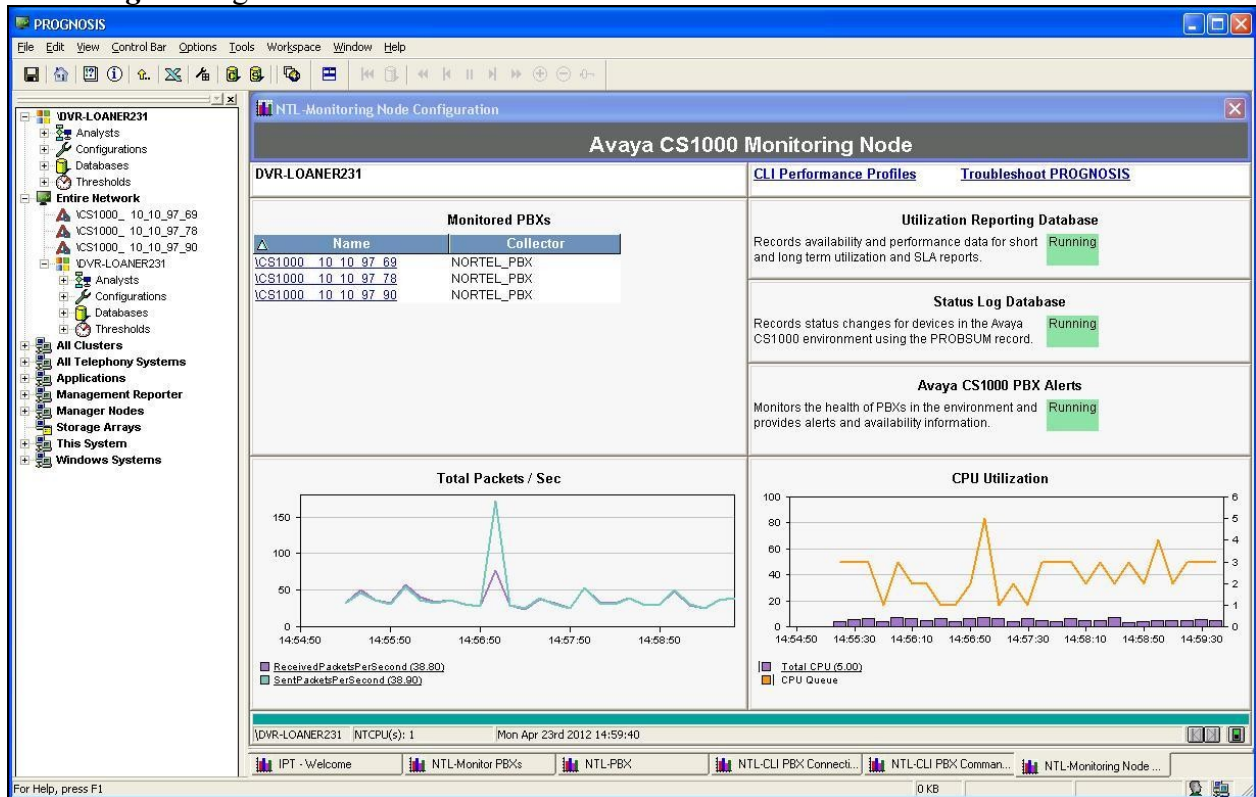
1. Open the PROGNOSIS GUI and login.
2. In the **Manager Nodes** page, observe a node exists for the CS1000 under the **Name** column, which is the **CS1000_10_10_97_69**.



3. Under **UCC Ecosystem**, click on **CS1000** > link, the **Avaya CS1000 Systems** page appear.



4. Click on **Config** to open the **Avaya CS1000 Monitoring Node** page, make sure that the status is **running** in the green box bellow.



8. Conclusion

These Application Notes describe a solution comprised of Avaya Communication Server 1000 Release 7.5 and Prognosis IP Telephony Manager 9.6.1. All of the executed test cases have passed and met the objectives outlined in **Section 2.2**.

9. References

This section references the Avaya documentation relevant to these Application Notes. The following Avaya product documentation is available at <http://support.avaya.com>.

- [1] *Communication Server 1000 Installation and Commissioning*, April 2012, Release 7.5, Issue 05.08, Document Number NN43041-310.
- [2] *Signaling Server IP Line Applications Fundamentals for Avaya Communication Server 1000 (Avaya CS 1000)*, April 2012, Release 7.5, Issue 03.11, Document Number NN43001-125.

Product documentation for Prognosis IPTM may be found in the Prognosis release CD. For more information, please refer to the link www.prognosis.com

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