



DevConnect Program

Application Notes for Integrated Research Collaborate - Prognosis R12.3 with Avaya IP Office Server Edition R11.1 - Issue 1.0

Abstract

These Application Notes describe the procedures for configuring Integrated Research Collaborate - Prognosis R12.3 (Prognosis) R12.3 to interoperate with Avaya IP Office Server Edition R11.1. Integrated Research Collaborate - Prognosis provides real-time monitoring and management solutions for IP telephony networks. Integrated Research Collaborate - Prognosis provides visibility of Avaya and other vendor's IP telephony solutions from a single console. Integrated Research Collaborate - Prognosis monitors Avaya IP Office Server Edition using SNMP and SNMP traps.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as the observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

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

1. Introduction

These Application Notes describe the compliance tested configuration used to validate Collaborate - Prognosis R12.3 (herein after referred to as Prognosis) with Avaya IP Office Server Edition R11.1. Prognosis is installed on a recommended Windows server and configured to monitor Avaya IP Office using SNMP. RTCP data shall be configured to be sent to Prognosis from IP phones and Avaya IP Office to monitor call traffic and voice quality information. SNMP traps from Avaya IP Office that provide alarm information are also presented by Prognosis.

2. General Test Approach and Test Results

The general test approach was to verify Prognosis using SNMP, SNMP traps and RTCP data to monitor and display IP Office health, IP Office status and call traffic.

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

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in these DevConnect Application Notes included the enablement of supported encryption capabilities in the Avaya products. Readers should consult the appropriate Avaya product documentation for further information regarding security and encryption capabilities supported by those Avaya products.

Support for these security and encryption capabilities in any non-Avaya solution component is the responsibility of each individual vendor. Readers should consult the appropriate vendor-supplied product documentation for more information regarding those products.

For the testing associated with these Application Notes, the interface between Avaya systems and the Prognosis did not include use of any specific encryption features as requested by Integrated Research.

2.1. Interoperability Compliance Testing

The feature test of the interoperability compliance testing was used to verify Prognosis using its web interface to display correct information from IP Office. SNMP Version 2c is used for Primary Server and SNMP Version 1 is used for Expansion Server.

- Verify IP Office is successfully configured to be monitored by Prognosis.
- Verify overall IP Office health including system Up time, IP Office IP address, routing table, ARP table, interfaces and Total Packets Per Interval.
- Verify Avaya IP Office PBX Status such as phone inventory, browse by phone status, browse by extension range, phone details along with its IP address, type, name and active voice stream detail.
- Verify SNMP traps received from IP Office such as Alarms (Critical, Major, Minor and Warning), SNMP Availability, Voice Stream, and Network Hops. Prognosis raised Alerts from SNMP traps.
- Verify IP Office Call Traffic detail information such as time start/end of call, local/remote PBX, phone type, MOS Cost, phone firmware and quality of service.

2.2. Test Results

All test cases were passed with following observations:

- For IP to IP call, “Network Hops” diagram in Avaya Voice Stream Details shows “There is no information available”. There is a limitation in showing detail diagram of network hop of call traffic detail since Prognosis does not receive a complete list of RTCP from IP phones. Avaya is investigating.
- Avaya Workplace Client connection status is not detected through SNMP. Avaya is investigating the issue.

2.3. Support

For technical support on Integrated Research Collaborate - Prognosis, contact the Integrated Research Support Team at:

- Hotline: +61 (2) 9966 1066
- Email: support@ir.com

3. Reference Configuration

Figure 1 illustrates the test configuration used to verify the Prognosis application with Avaya IP Office Server Edition.

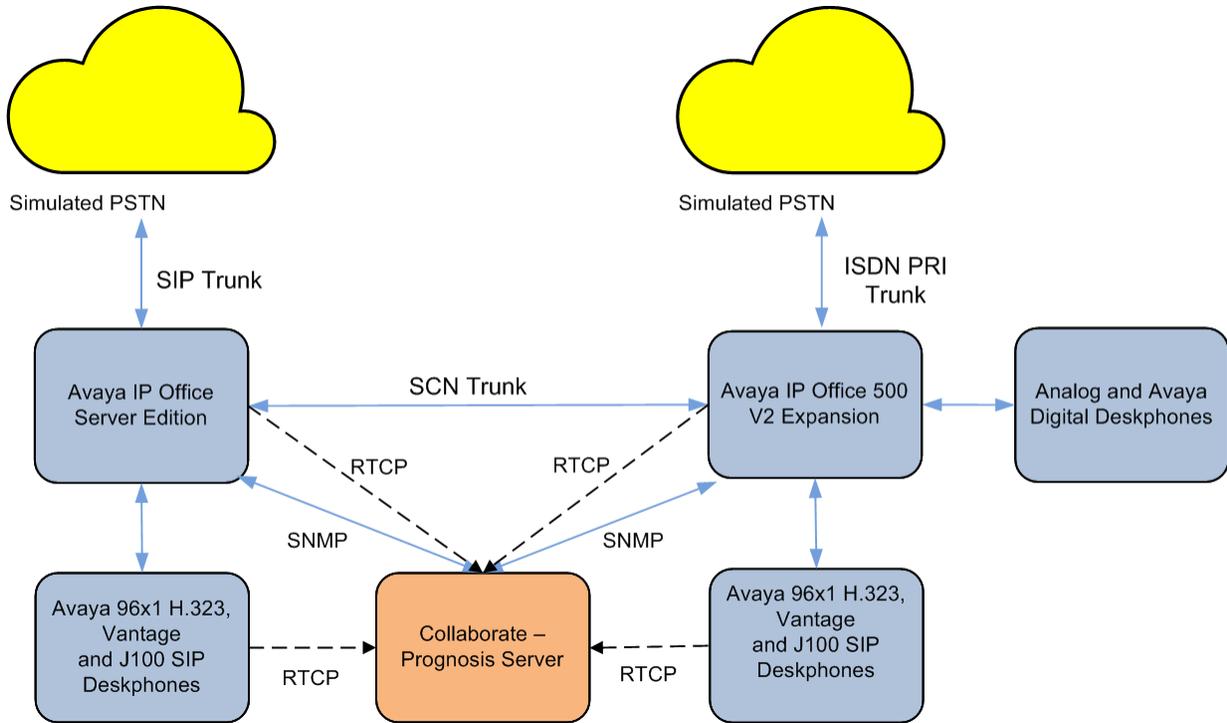


Figure 1: Test Configuration Diagram

4. Equipment and Software Validated

The following equipment and software were used for the compliance test provided:

Equipment/Software	Release/Version
Avaya IP Office Server Edition Primary Linux Server	11.1.3.1.0 Build 34
Avaya IP Office 500 V2 Expansion Server	11.1.3.1.0 Build 34
Avaya 9600 Series IP Telephones (H.323)	6.8541
Avaya J100 Series IP Telephones (SIP)	4.1.1.0
Avaya Vantage Release 3.0 K155	3.1.1.2
Avaya 9500 Series Digital Phones	R60
Analog Phone	-
Avaya Workplace Client for Windows	3.35.1
Integrated Research Collaborate - Prognosis running on Windows 2019	12.3

Noted: *Compliance Testing is applicable when the tested solution is deployed with a standalone IP Office 500 V2 and also when deployed with IP Office Server Edition in all configurations.*

5. Configure Avaya IP Office Server Edition

This section covers the configuration required for Prognosis to monitor IP Office using RTCP and SNMP. Note that similar configuration is done for the IP Office Primary Server and the Expansion Server. The initial administration of IP Office is assumed to be in place and will not be covered here. The IP Office configuration is performed using the IP Office Manager application.

- Configure RTCP
- Configure SNMP Agent and SNMP Traps

5.1. Configure RTCP

This section describes step to configure the dual-unicast functionality to send RTCP packets to Prognosis.

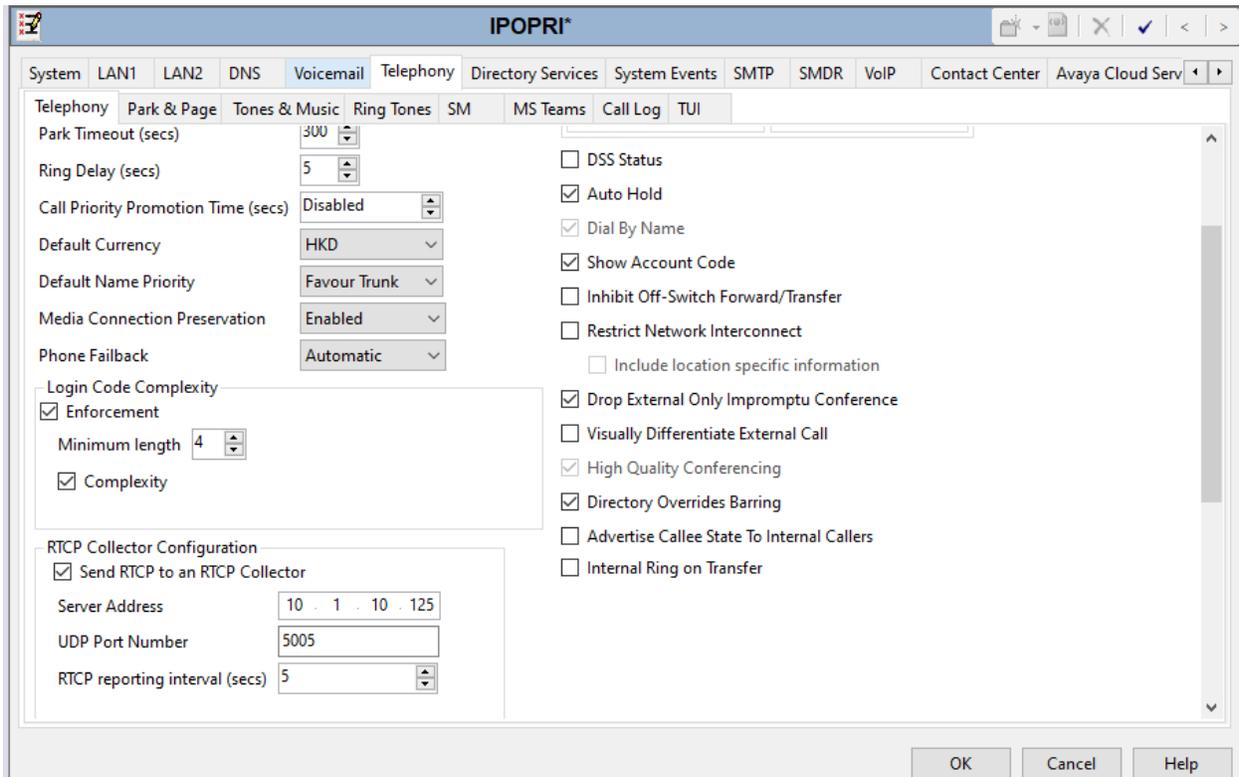
Enabling RTCP call quality reporting from phones is done centrally from the System setting. On System window, click **LAN1 → VoIP**. In the **RTCP collector IP address for phones** section, enter Prognosis IP address, in this e.g., **10.1.10.125**. This will instruct Avaya IP phones at registration to send their RTCP monitoring messages to Prognosis as shown below.

The screenshot displays the IPOPRI* configuration window, specifically the LAN1 VoIP Network Topology section. The interface includes several configuration fields and sections:

- Minimum**: 40750, **Maximum**: 50750
- Enable RTCP Monitoring on Port 5005**
- RTCP collector IP address for phones**: 10 . 1 . 10 . 125
- Keepalives**:
 - Scope**: Disabled
 - Periodic timeout**: 0
 - Initial keepalives**: Disabled
- DiffServ Settings**:
 - B8 DSCP(Hex)**: B8, **Video DSCP(Hex)**: FC, **DSCP Mask (Hex)**: 88, **SIG DSCP (Hex)**: 88
 - 46 DSCP**: 46, **Video DSCP**: 46, **DSCP Mask**: 63, **SIG DSCP**: 34
- DHCP Settings**:
 - Primary Site Specific Option Number (4600/5600)**: 176
 - Secondary Site Specific Option Number (1600/9600)**: 242
 - VLAN**: Not Present
 - 1100 Voice VLAN Site Specific Option Number (SSON)**: 232
 - 1100 Voice VLAN IDs**: (empty field)

For IP Office Release 10.0 and higher, in addition to having the individual phones send RTCP call quality reports, the system can also send RTCP reports for calls by configuring the setting below.

On System window, click **Telephony** → **Telephony** sub tab. In the **RTCP collector Configuration** section, check the **Send RTCP to an RTCP Collector** and enter Prognosis IP address in the **Server Address**, in this e.g., **10.1.10.125**. Leave the rest as default.



5.2. Configure SNMP

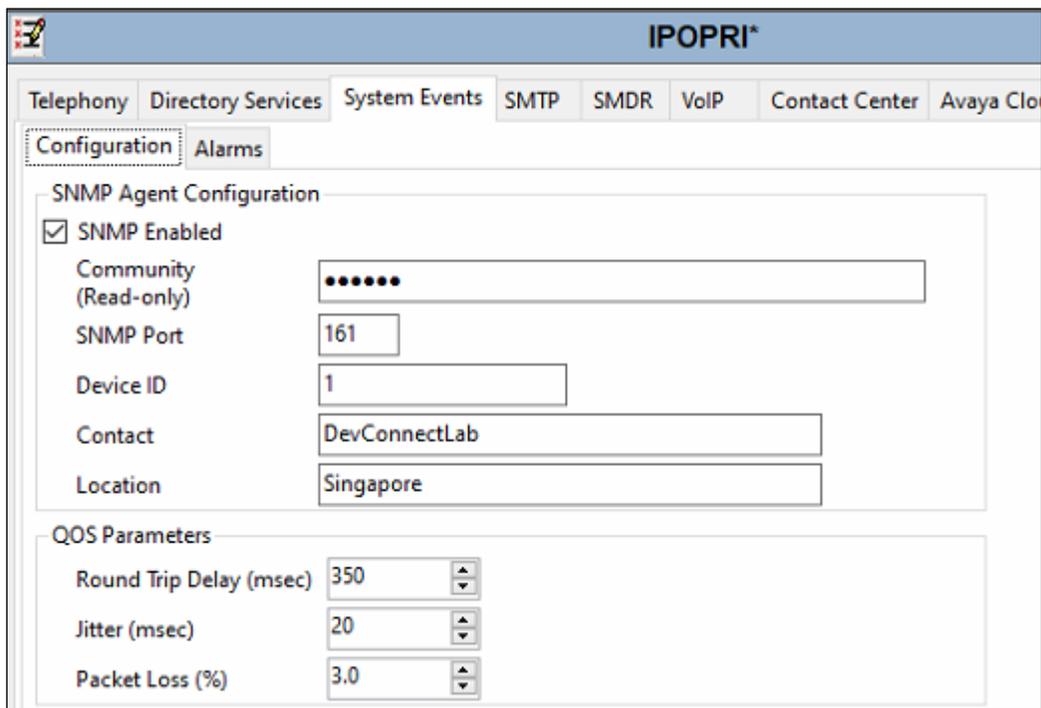
This section describes steps to configure SNMP Agent and configure IP Office to send traps to Prognosis.

5.2.1. Configure SNMP Agent

On System window, click on **System Events** → **Configuration**, check **SNMP Enabled** checkbox. Enter the following information:

- **Community (Read-only)** enter community string, e.g., **public**.
- **SNMP Port** use default port **161**.
- **Device ID** enter a unique number for identification
- **Contact** enter a contact name
- **Location** enter location name

Click **OK** (not shown) and save the configuration to apply the change.



The screenshot shows the IPOPRI* configuration interface. The 'System Events' tab is selected, and the 'Configuration' sub-tab is active. The 'SNMP Agent Configuration' section is expanded, showing the following settings:

- SNMP Enabled**
- Community (Read-only)**: [.....]
- SNMP Port**: [161]
- Device ID**: [1]
- Contact**: [DevConnectLab]
- Location**: [Singapore]

The 'QoS Parameters' section is also visible, showing the following settings:

- Round Trip Delay (msec)**: [350]
- Jitter (msec)**: [20]
- Packet Loss (%)**: [3.0]

5.2.2. Configure Avaya IP Office to Send SNMP Traps to Prognosis

On System window, click **System Events** → **Alarms**, click on **Add** and enter the following detail for the pop-up **New Alarms** form as shown below:

- **Server Address** Enter the Prognosis Server IP address.
- **Port** Enter **162** for the default.
- **Community** Enter string configured earlier, e.g., **public**.
- **Format** Select **IP Office**.
- **Minimum Severity Level** Select **Warnings**. The events with severity level lower than this will not be collected and sent.
- **Events** Select types of system events that should be collected and sent, e.g., all events are selected.

Click **OK** to save it. To have the new alarm in place, click OK again to save the **Alarms** settings. Make sure that the configuration is saved (**File** → **Save Configuration** or **Ctrl + S**) and choose the option to reboot the physical box immediately.

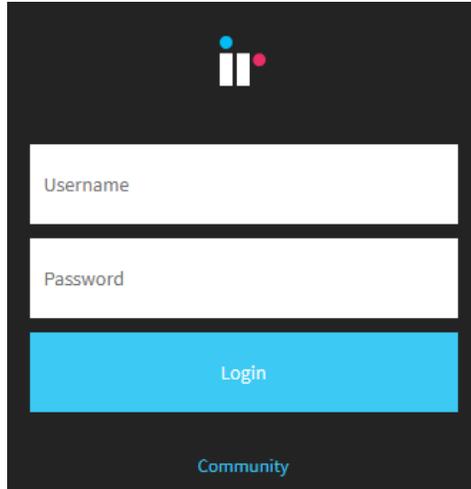
The screenshot shows the IPOPRI configuration interface. The 'System Events' tab is active, and the 'Alarms' sub-tab is selected. A 'New Alarm' dialog box is open, showing the following configuration:

- Destination:** Trap, Syslog, Email
- Server Address:** 10.1.10.125
- Port:** 162
- Community:** public
- Format:** IP Office
- Minimum Severity Level:** Warnings
- Events:** A list of events with checkboxes: Application (checked), Service (checked), Trunk (checked), Link (checked), Invalid Disk (checked), Free Capacity (checked).

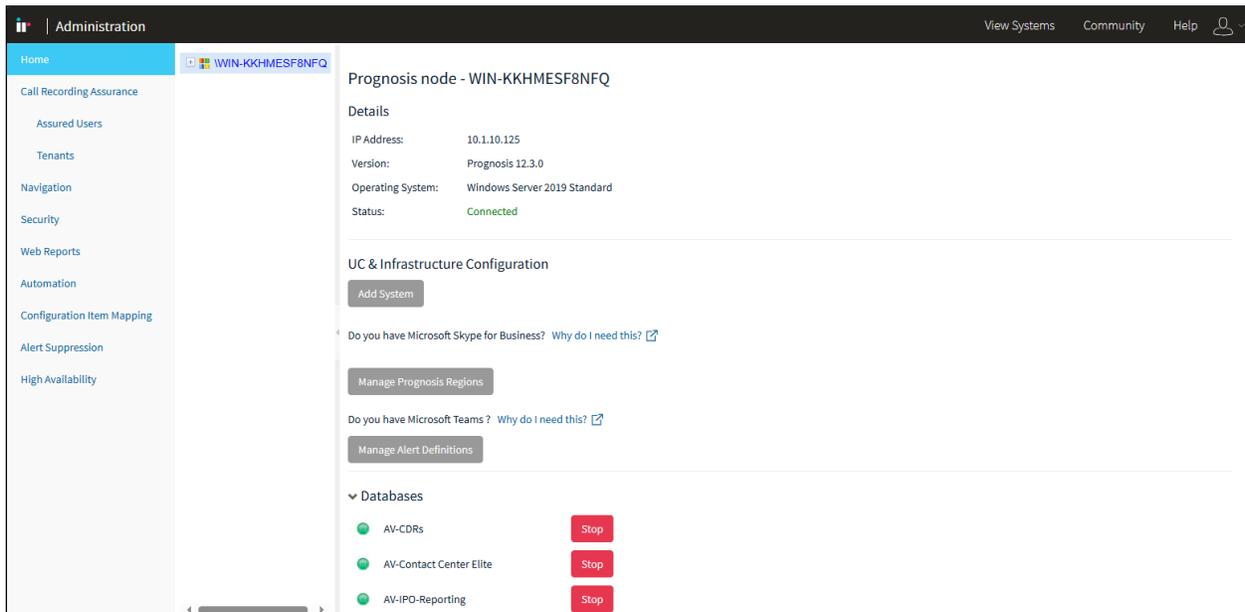
Buttons for 'Add...', 'Remove', 'Edit...', 'OK', and 'Cancel' are visible on the right side of the dialog.

5.3. Configure Prognosis

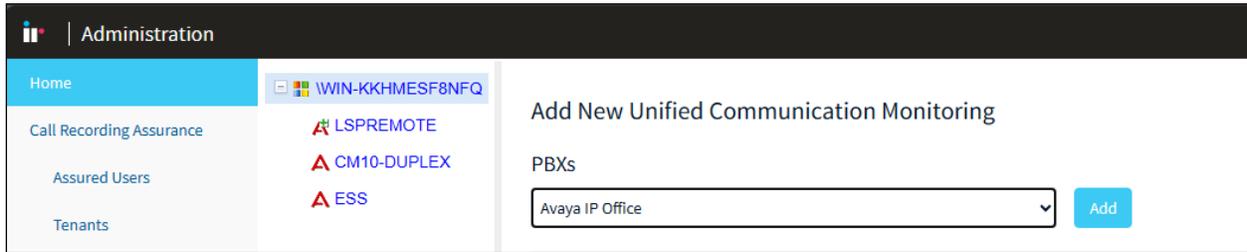
This section describes the configuration of Prognosis required to interoperate with IP Office. Log into Prognosis with administrative privileges. Launch the Prognosis Administration by clicking **Start → All Programs → Prognosis → Administration** and log in with the appropriate password.



The **Prognosis Administration** homepage is displayed as shown below.



Click **Add System** button under **UC & Infrastructure Configuration**, in the resulting page select **Avaya IP Office** from the **PBXs** drop down list and click on **Add** button.



In the **Add Avaya IP Office** page enter the following details:

- **Display name:** Enter any descriptive name.
- **IP Address:** Enter IP Office IP address, e.g., 10.1.10.121.
- **Customer Name:** Enter appropriate name.
- **Site Name:** Enter appropriate name.
- **Platform:** Select **Server Edition** from the drop-down list.
- **SNMP Connection Details:** Check **Use SNMP version 2c** option.
- **Community String:** Enter string configured, e.g., **public**.

Check the Start standard databases and thresholds and press **Add** at the bottom to add Avaya IP Office.

Administration

Home | WIN-KKHMESF8NFQ

Call Recording Assurance

Assured Users

Tenants

Navigation

Security

Web Reports

Automation

Configuration Item Mapping

Alert Suppression

High Availability

LSPREMOTE

CM10-DUPLEX

ESS

Add Avaya IP Office

Basic Details

Display Name: * IPOPrimary

IP Address: * 10.1.10.121

Customer Name: DevConnectLab

Site Name: Singapore

Platform: Server Edition

IP Office Cloud Details

Enable IP Office Cloud:

SNMP Connection Details

Use SNMP Version 1

Use SNMP Version 2c

Use SNMP Version 3

Community String: [.....]

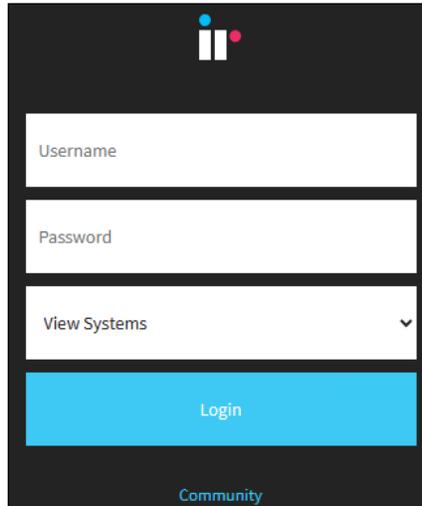
Databases and Thresholds

Start standard databases and thresholds

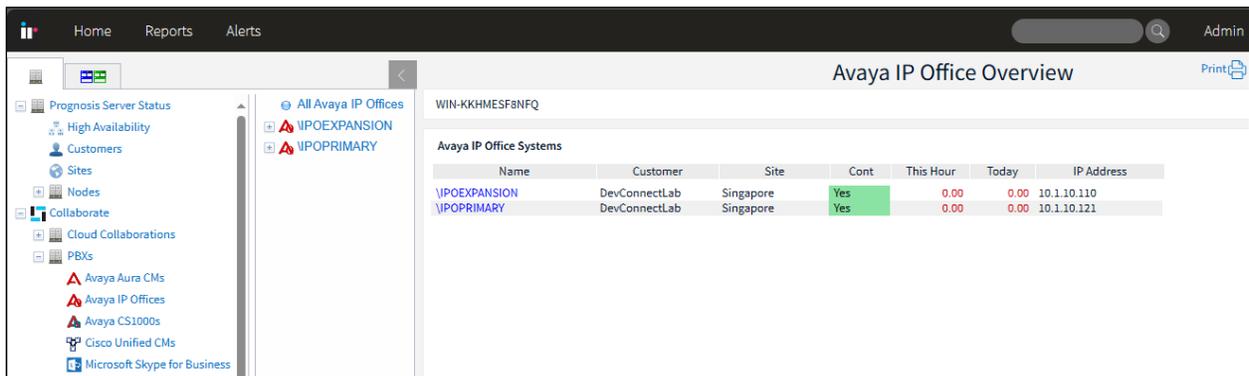
Add Cancel

6. Verification Steps

This section provides the tests that can be performed to verify proper configuration of IP Office and Prognosis. Launch Prognosis View System by clicking **Start → All Programs → Prognosis → Prognosis View Systems** to open the Prognosis web user interface, enter appropriate login credentials to log in (not shown).

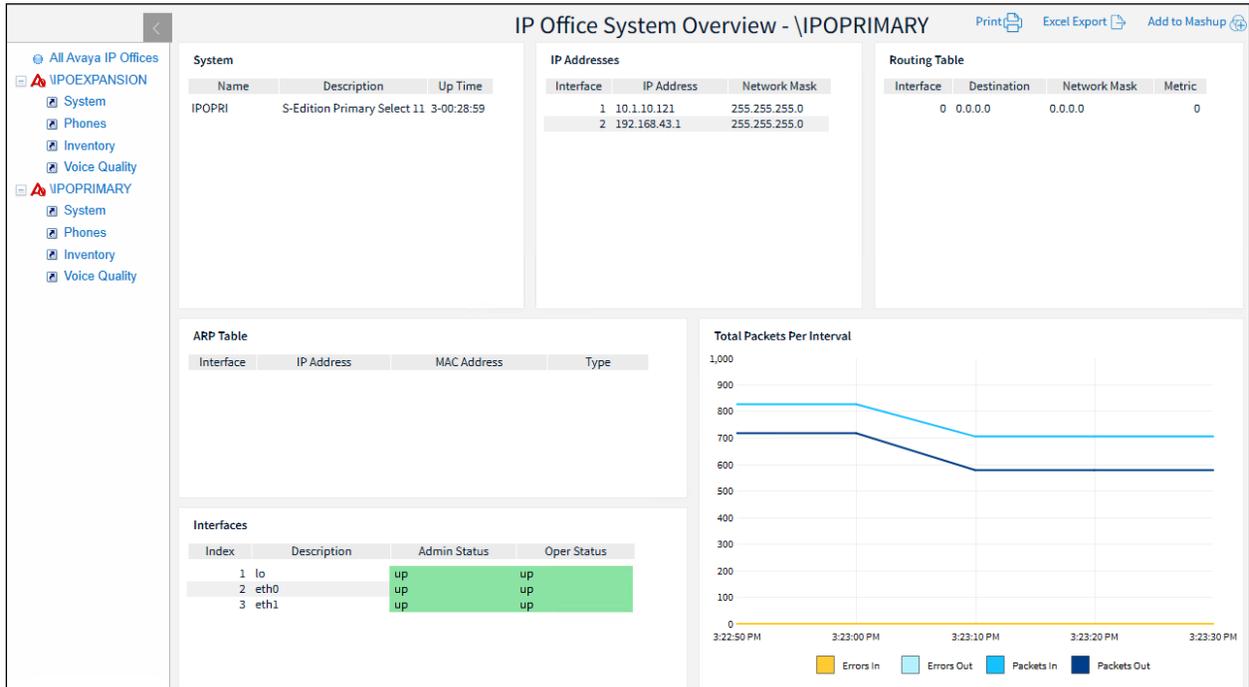


Browse to **PBXs → Avaya IP Offices** in the left navigation pane. The IP Office server instance is displayed in the middle column. In the **Avaya IPO Office Overview** on the right pane, it shows the general status of monitored IP Office such as **IPO Server name, IP Address, Cont,** etc.

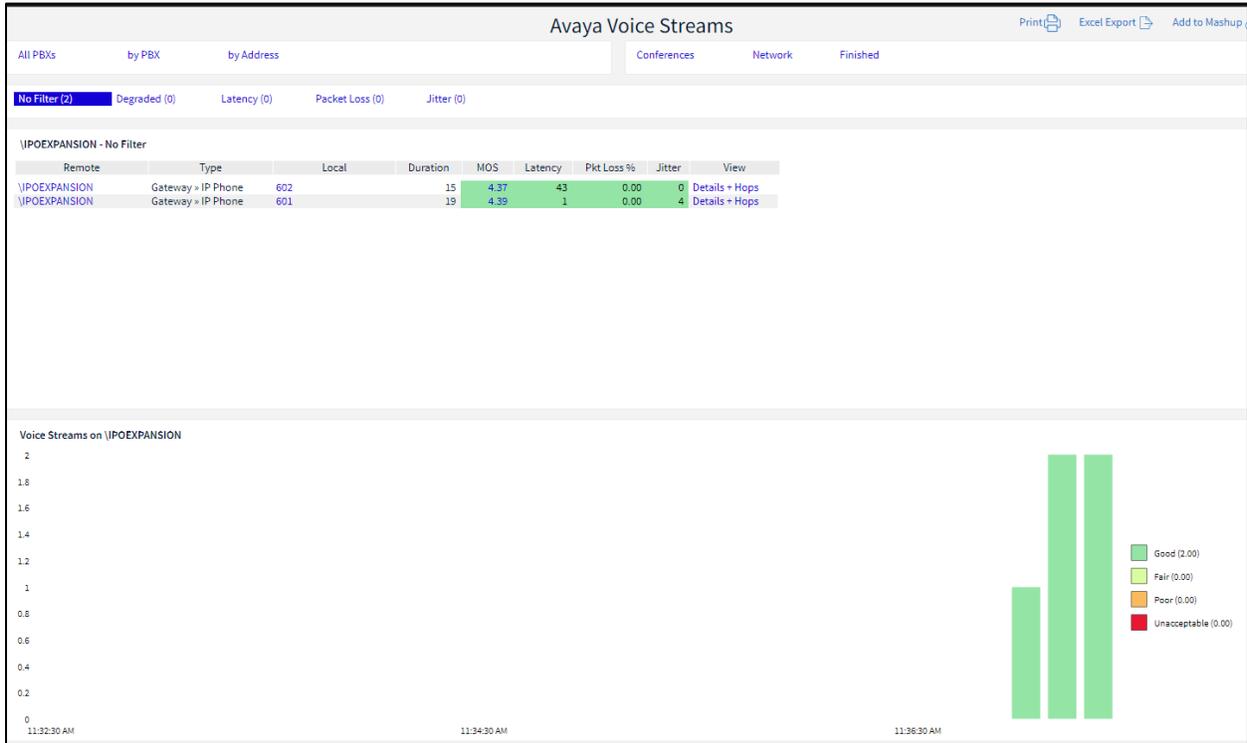


Name	Customer	Site	Cont	This Hour	Today	IP Address
IPOEXPANSION	DevConnectLab	Singapore	Yes	0.00	0.00	10.1.10.110
IPOPRIMARY	DevConnectLab	Singapore	Yes	0.00	0.00	10.1.10.121

Expand the **IPOPrimary** server to verify the **IP Addresses** for the two LANs and their status in the **Interfaces** section.



Make an IP to IP call, say within IP Office Expansion Server, to verify if traffic data is collected if you check the **Voice Quality** for each server.



Unregister an IP phone and verify a **Minor** alarm count increases. Double-click on **Minor** and verify the information.

Avaya IP Office - \IPOPIMARY Print Excel Export Add to Mashu

Contactable

Alarms (Last 24 Hours)

Severity	Count
Major	1
Minor	1
Warning	3

SNMP Availability

Now	This Hour	Today
100.00	100.00	100.00

System

Voice Streams

Streams	Good	Fair	Poor	Unacceptable
0				

Prognosis Raised Alerts

ID	Time	Severity	Description
500,033	1/16/24 2:45:00 PM	Error	\IPOPIMARY - Major Snmp Trap raised

PBX Status

Type	Up	Down	Total
Inventory			4
Phones	2	8	10

Avaya IP Office Alarms - \IPOPIMARY Print Excel Export Add to M

■ Critical
 ■ Major
 ■ Minor
 ■ Warning
 ■ Cleared

Alarms

Event Time	Trap Type	Severity	Description	Reason
1/16/24 2:13:07 PM	ipoGenEntityOperationalEvent	Minor	Phone unregistered	

7. Conclusion

These Application Notes describe the procedure for configuring Integrated Research Collaborate - Prognosis R12.3 to interoperate with Avaya IP Office Server Edition R11.1.3. During compliance testing, all test cases were completed successfully with observations noted in **Section 2.2**.

8. Additional References

The following Avaya documentations can be obtained on the <http://support.avaya.com>.

[1] *Administering Avaya IP Office using Manager*, Release 11.1.3 Issue 46, dated Sept 2023.

The following Prognosis documentations are provided by Integrated Research. Documents are also provided in the online help that comes with the software Package.

[2] [*Prognosis for Unified Communication with Avaya IP Office PROGNOSIS 12.3*](#).

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