

#### **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: <u>support@ir.com</u>

## 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	11.1.3.1.0 Build 34
Linux Server	
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 -	12.3
Prognosis running on Windows 2019	

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  $\rightarrow$  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.

Z						IPOPRI*				
System	LAN1	LAN2	DNS	Voicemail	Telephony	Directory Services	System Events	SMTP	SMDR	Vol
LAN Se	ttings	VoIP	Network	Topology						
Minir	num	-	40750	Maxir	mum 50	0750				
Er RTCP (	able RT collecto alives —	CP Moni r IP addr	toring on l ess for pho	Port 5005 ones		10 . 1 . 10	. 125			
Scop	e	Dis	abled	∨ P	eriodic timeo	ut 0				
DiffSe	keepal	ives Dis	abled	~						
B8 -	DSC	P(Hex)	B8 🌻 V	ideo DSCP(H	lex) FC 📮	DSCP Mask (Hex)	88 🌲 SIG DS	CP (Hex)		
46	DSC	P	46 🌲 V	ideo DSCP	63 🌲	DSCP Mask	34 🌻 SIG DS	CP		
DHC	Setting	gs								
Prima	ry Site S	pecific C	ption Nur	nber (4600/50	500) 17	6				
Secon	dary Sit	e Specifi	c Option N	lumber (1600	/9600) 24	2				
VLAN					N	ot Present 🗸 🗸				
1100 \	/oice VL	AN Site	Specific Op	otion Numbe	r (SSON) 23	2				
1100 \	/oice VL	AN IDs								

Avaya DevConnect Application Notes ©2024 Avaya LLC. All Rights Reserved. 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**  $\rightarrow$  **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.

<b>₽</b>		<b>IPOPRI*</b>				<b>-</b>	╳   ✔   <   >
System LAN1 LAN2 DNS Voir Telephony Park & Page Tones & Mu Park Timeout (secs) 30 Ring Delay (secs) 5 Call Priority Promotion Time (secs) Di Default Currency H Default Name Priority Fa Media Connection Preservation Er Phone Failback A	icemail Telephony usic Ring Tones SM U T isabled T IKD ~ avour Trunk ~ nabled ~ utomatic ~	IPOPRI* Directory Services MS Teams DS G G G G G G G G G G G G G G G G G G	System Events Call Log TUI SS Status uto Hold ial By Name now Account Cod hibit Off-Switch P estrict Network In	SMTP S	MDR VoIP	Contact Center	Avaya Cloud Serv • •
Login Code Complexity Enforcement Minimum length 4 Complexity		Dr Vi Hi Di	Include location rop External Only sually Differentiat igh Quality Confe irectory Overrides	n specific in Impromptu e External C erencing Barring	formation I Conference Call		
RTCP Collector Configuration         ✓ Send RTCP to an RTCP Collector         Server Address       10         UDP Port Number       5005         RTCP reporting interval (secs)       5	1 . 10 . 125	Ac	dvertise Callee Sta ternal Ring on Tra	ite To Intern	al Callers		~
						ОК	Cancel Help

#### 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  $\rightarrow$  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.

₹ 1	IPOPRI*							
Telephony Directory Service	; System Events	SMTP	SMDR	VoIP	Contact Center	Avaya Clo		
Configuration Alarms								
SNMP Agent Configuration								
SNMP Enabled								
Community (Read-only)	•••••							
SNMP Port	161							
Device ID	1							
Contact	DevConnectLab							
Location	Singapore							
QOS Parameters								
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**  $\rightarrow$  **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 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**  $\rightarrow$  **Save Configuration** or **Ctr** + **S**) and choose the option to reboot the physical box immediately.

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System	LAN1	LAN2	DNS	Voicemail	Telephony	Directory Services	System Events	SMTP	SMDR	VoIP	Contact Center	Avaya Cloud Sen 🔹 🕨
Config	uration	Alarms										
Desti	nation					Events						Add
Syste	og drocsi 17	7001 0		Protocoli TCD	Formati Ent	orprico Pasic Audit	Extended Audit	t Involid	Dick From	Canacita	Ganaria Licona	Remove
IP Address: 127.00.1, Port: 514, Protocol: UDP, Format: Enterprise Basic Addit, Extended Addit, Invalid Disk, Pree Capacity, Generic, Licence									Edit			
												Lutin
New	Alarm —											ОК
Desti	nation:											Consol
● Tr	ар			<ul> <li>Syslog</li> </ul>		O Email						Cancel
Serve	r Addres	ss: 10.1.1	0.125									
Port:		162										
Com	munity:	••••	••									
Form	at	IP Of	fice		~							
Minii	mum Se	verity Leve	el:	Warnings		~						
- Even	ts											
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#### 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**  $\rightarrow$  **All Programs**  $\rightarrow$  **Prognosis**  $\rightarrow$  **Administration** and log in with the appropriate password.

<b>i</b> .
Username
Password
Login
Community

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

Administration			View Systems	Community	Help 🖉	~
Home Call Recording Assurance	E 🔡 WIN-KKHMESF8NFQ	Prognosis node - WIN-KKHMESF8NFQ				
Assured Users Tenants Navigation Security		DetailS       IP Address:     10.1.10.125       Version:     Prognosis 12.3.0       Operating System:     Windows Server 2019 Standard       Status:     Connected				
Web Reports Automation Configuration Item Mapping Alert Suppression High Availability		UC & Infrastructure Configuration Add System Do you have Microsoft Skype for Business? Why do I need this? ? Manage Prognosis Regions Do you have Microsoft Teams ? Why do I need this? ? Manage Alert Definitions				
	<					

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.

• Administration			
Home	🗉 🚼 \WIN-KKHMESF8NFQ		
Call Recording Assurance		Add New Unified Communication Monitoring	
Assured Users	CM10-DUPLEX	PBXs	
	<b>A</b> ESS	Avaya IP Office	✓ Add
Tenants		L	

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.

I Administration		
	E 🚼 \WIN-KKHMESF8NFQ	
Call Recording Assurance		Add Avaya IP Office
Assured Users	CM10-DUPLEX	Basic Details
Tenants	A ESS	Display Name: * IPOPrimary
		IP Address: * 10.1.10.121
Navigation		Customer Name: DevConnectLab
Security		Site Name: Singapore
Web Reports		Platform: Server Edition
Automation		
Configuration Item Mapping		IP Office Cloud Details
Alert Suppression		Enable IP Office Cloud:
High Availability		SNMP Connection Details
mennitability		
		Use SNMP Version 1
		O 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**  $\rightarrow$  **All Programs**  $\rightarrow$  **Prognosis**  $\rightarrow$  **Prognosis View Systems** to open the Prognosis web user interface, enter appropriate login credentials to log in (not shown).

	<b>.</b>
Username	
Password	
View Systems	~
	Login
	Community

Browse to **PBXs**  $\rightarrow$  **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.

ir	Home	Reports	Aler	ts								9	Admin
				<				Avaya	IP Office	Over	view		Print(
🖃 🧾 Pro	ognosis Serve	er Status	4	All Avaya IP Offices	WIN-KKHMESF8NFQ								
20 2	High Availat Customers	ility	1	▲ \IPOEXPANSION ▲ \IPOPRIMARY	Avaya IP Office Systems								
3	) Sites				Name	Customer	Site	Cont	This Hour	Today	IP Address		
*	Nodes				\IPOEXPANSION	DevConnectLab	Singapore	Yes	0.00	0.00	10.1.10.110		
🖃 🎦 Co	ollaborate				\IPOPRIMARY	DevConnectLab	Singapore	Yes	0.00	0.00	10.1.10.121		
±	Cloud Colla	orations											
-	PBXs												
	🛕 Avaya Au	ra CMs											
	🔥 Avaya IP	Offices											
	🛕 Avaya CS	1000s											
	😲 Cisco Un	ified CMs											
	Microsof	t Skype for Busir	ness										

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

<			IF	Office S	ystem Ov	verview - \IPO	PRIMARY	Print(	Excel Export 🕒	Add to Mashup 🥳
All Avaya IP Offices	System			IP Addresses	5		Routing Tat	ole		
<ul> <li>A System</li> <li>A Phones</li> <li>A Inventory</li> <li>A Voice Quality</li> <li>A ViPOPRIMARY</li> <li>A System</li> <li>A Phones</li> <li>A Inventory</li> <li>A Voice Quality</li> </ul>	Name IPOPRI	Description S-Edition Primary Select 11	Up Time 1. 3-00:28:59	Interface	IP Address 10.1.10.121 192.168.43.1	Network Mask 255, 255, 255, 0 255, 255, 255, 0	Interface 0	Destination 0.0.0.0	Network Mask	Metric O
	ARP Table Interface Interfaces Index 1 lo 2 et	IP Address Description 4 h0 up	MAC Address Admin Status	Oper Status		Total Packets Per Inter 1,000 900 800 700 600 500 400 300 200 200	val			
	3 et	ni up	uţ	2		0 3:22:50 PM 3	:23:00 PM Errors In Error	3:23:10 PM s Out Pack	3:23:20 PM ets in Packets O	3:23:30 PM

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.

All PB/A       by PBX       by Address       Conferences       Network       Finished         UPDEPMANSOIL       Degraded (0)       Latency (0)       Packet Loss (0)       Jitter (0)         UPDEPMANSOIL       Series       Duration MOS       Latency P1 Loss is       Mere         UPDEPMANSOIL       Gatency - IP Phone       602       15       4.37       43       0.000       4       Details - Hops         UPDEPMANSOIL       Gatency - IP Phone       602       15       4.37       43       0.000       4       Details - Hops         UPDEPMANSOIL       Gatency - IP Phone       602       13       4.39       1       0.000       4       Details - Hops         UPDEPMANSOIL       Gatency - IP Phone       602       13       4.39       1       0.000       4       Details - Hops         10       Table       Table <t< th=""><th></th><th></th><th></th><th></th><th></th><th>A۱</th><th>/aya Vo</th><th>ice Stre</th><th>ams</th><th></th><th></th><th>Print(</th><th>Excel Export 🕒</th><th>Add to Mashup</th></t<>						A۱	/aya Vo	ice Stre	ams			Print(	Excel Export 🕒	Add to Mashup
View         View <th< td=""><td>All PBXs</td><td>by PBX</td><td>by Address</td><td></td><td></td><td></td><td></td><td>Conferences</td><td></td><td>Network</td><td>Finished</td><td></td><td></td><td></td></th<>	All PBXs	by PBX	by Address					Conferences		Network	Finished			
VipOEXPANSION - No Filter           VipOEXPANSION         Greewy + IP Phone         0.02         1.0         4.39         1.0000         0.00000         0.0000         0.000	No Filter (2)	Degraded (0)	Latency (0)	Packet Loss (0)	Jitter (0)									
Voice Streams on \IPOEXPANSION           2           1.8           1.6           1.4           1.2           1           0.5           0.6           0.6           0.7           0.8           0.6           0.7           0.8           0.7           0.8           0.7           0.8           0.7           0.8           0.7           0.8           0.7           0.8           0.7           0.8           0.7           0.8           0.7           0.8           0.7           0.8           0.9           0.1           0.2	UPOEXPANSION - Remote UPOEXPANSION UPOEXPANSION	No Filter Gateway : Gateway :	Type 602 IP Phone 602 IP Phone 601	Local	Duration 15 19	MOS Latency 4.37 43 4.39 1	Pkt Loss 9 0. 0.	6 Jitter 00 0 00 4	View Details + Ho Details + Ho	ps ps				
	Voice Streams on 2 18 16 14 12 1 08 06 04 02 0	(IPOEXPANSION											6 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	ood (2.00) air (0.00) per (0.00) nacceptable (0.00)

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

	Avaya IP O	ffice - \IPOPRIMARY	Print 🕒 Excel Export 🕒 Add to Mash
Contactable	\IPOPRIMARY	System	
Alarms (Last 24 Hours) Severity Count Major 1 Minor 1 Warning 3	SNMP Availability Now This Hour Today 100.00 100.00 100.00	Voice Streams Streams 0 0.11 0.088 0.066	Poor Unacceptable
ID         Time         Severity           500,033         1/16/24 2:45:00 PM         Error	Description \IPOPRIMARY - Major Snmp Trap raised	0.044 0.022 0 2:40:30 PM 2:42:30 PM 5air (0.00) 5air (0.00)	1 2:44:30 PM
		Network Hops	
PBX Status Type Up Inventory Phones 2	Down Total 4 2 8 10	0.11 0.099 0.088 0.077 0.066	

All	Critical	Major Minor	Warning	Cleared							
Alarn	ns										
	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] <u>Prognosis for Unified Communication with Avaya IP Office PROGNOSIS 12.3</u>.

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