

Avaya Solution & Interoperability Test Lab

Application Notes for configuring Avaya Aura® Communication Manager R7.0 with Kofax Communication Server from Kofax Ltd using a H323 Trunk - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Kofax Communication Server to interoperate with Avaya Aura® Communication Manager R7.0 using a H323 Trunk. This document provides configuration steps related to faxing capabilities of Kofax Communication Server.

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 DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the configuration used to enable Kofax Communication Server, from Kofax Ltd., to interoperate with Avaya Aura® Communication Manager R7.0. Kofax Communication Server offers a variety of telephony features. Kofax Communication Server fax features allow fax messages to be sent/received to/from both local and PSTN fax endpoints, and can subsequently be printed or archived. During compliance testing the fax feature and functionality was the sole focus.

2. General Test Approach and Test results

The general test approach was to simulate the configuration as implemented on a customer premises. Compliance testing was between the Kofax Communication Server (Kofax Server) and Avaya Aura® Communication Manager (Communication Manager), and was performed manually. The tests were all functional in nature, and no performance testing was done. The test method employed can be described as follows, Communication Manager was configured to support various local IP (H.323) telephones and an analogue Fax Machine, as well as a H323 connection to the Kofax Communication Server.

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.

2.1. Interoperability Compliance Testing

The following tests were performed as part of the compliance testing:

- Basic fax sending in T.38 ECM mode and pass-through connection with G.711A and G.711MU codecs
- Basic fax receiving in T.38 ECM mode and pass-through connection with G.711A and G.711MU codecs
- Forwarding of a fax from a local Fax Machine to the Kofax Server via a local extension
- Forwarding of a fax from the Kofax Server to a local Fax Machine via a local extension
- Supervised and Blind transfer of a fax from a local Fax Machine to the Kofax Server via a local extension (pass-through mode only)
- Supervised and Blind transfer of a fax from the Kofax Server to a local Fax Machine via a local extension (pass-through mode only)
- Verification of correct status and Caller ID for sent and received fax messages
- Successful recovery from network or power failure

2.2. Test Results

Tests were performed to insure full interoperability of a Kofax Communication Server when configured with Communication Manager. The tests were all functional in nature and performance testing was not included. All the test cases passed successfully.

2.3. Support

Support for Kofax Ltd. is available at: http://www.kofax.com/support/

3. Reference Configuration

Figure 1 illustrates the network configuration used during compliance testing. A H323 trunk was configured between the Kofax Communication Server and Communication Manager. An analogue Fax Machine was connected to an MM714 Analog card on the G430 Media Gateway. An Avaya 9620 (H323) telephone was also configured on Communication Manager so as to test faxes sent to phone extensions which had Call Forward enabled and also to transfer faxes to alternative Fax Machines, including to the Kofax Communication Server.

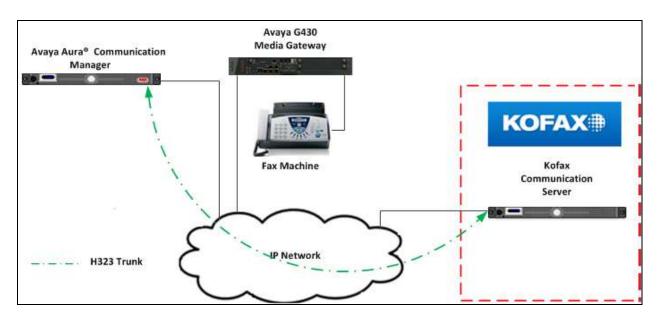


Figure 1: Avaya and Kofax Reference Configuration

4. Equipment and Software Validated

The hardware and associated software used in the compliance testing is listed below.

Avaya Equipment	Software Version
Avaya Aura® Communication Manager	R7.0
	Build R017x.00.0.441.0
	Update: 00.0.441.0-22856
Avaya G430 Media Gateway	Version 37.20.0
Module MM714 (ANA)	Version HW03 FW073
Kofax Equipment	Software Version
Kofax Communication Server	Version 10.0.1
KCS FoIP Application	Version 3.24.22

Table 1: Hardware and Software Version Numbers

5. Configure Avaya Aura® Communication Manager

Configuration and verification operations on Communication Manager illustrated in this section were all performed using Avaya Site Administrator Emulation Mode. The information provided in this section describes the configuration of Communication Manager for this solution. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 9**.

It is implied a working system is already in place. The configuration operations described in this section can be summarized as follows: (**Note**: during Compliance Testing all inputs not highlighted in bold were left as default).

- Configure Kofax Server Node
- Configure Signaling-Group
- Configure Trunk Group
- Configure Fax Station
- Configure Codecs

5.1. Configure Kofax Node

For Communication Manager to communicate with the Kofax Server a node must be configured. The screen shot below shows **Kofax** with IP address **10.10.60.56** was used. **Note**: The **procr** IP address will be required in **Section 6.1**.

```
change node-names ip
                                                              Page 1 of
                                                                           2
                                IP NODE NAMES
   Name
                     IP Address
AES63RP
                   10.10.60.210
Kofax
                   10.10.60.56
default
                   0.0.0.0
                   10.10.16.211
procr
procr6
                   ::
```

5.2. Configure Signaling Group

A signaling group is required before a trunk-group can be configured. Use the **add signaling-group** command followed by next available signaling-group number to configure the following on **Page 1**:

• Group Type:	Enter h.323
Trunk Group for Channel Selection	Enter the Trunk Group number configured
_	in Section 5.3
Near-end Node Name:	Enter procr
Far-end Node Name:	Enter kofax (Kofax Server Node as
	configured in Section 5.1)
Far-end Network Region:	Enter the appropriate Network region (i.e. 1)
Far-end Listen Port:	Enter 1720

Configure the remaining inputs as per the screen shots below. When the configuration is complete, press F3 to save.

add signaling-group 13	Page 1 of 6
SIGNALING	GROUP
Group Number: 13 Group Type:	h.323
SBS? n Remote Office?	n Max number of NCA TSC: 0
Q-SIP? n	Max number of CA TSC: 0
IP Video? n	Trunk Group for NCA TSC:
Trunk Group for Channel Selection:	13 X-Mobility/Wireless Type: NONE
TSC Supplementary Service Protocol:	a Network Call Transfer? n
	T303 Timer(sec): 10
H.245 DTMF Signal Tone Duration(msec):	
Near-end Node Name: procr	Far-end Node Name: Kofax
Near-end Listen Port: 1720	Far-end Listen Port: 1720
F	ar-end Network Region:
LRQ Required? n	Calls Share IP Signaling Connection? n
RRQ Required? n	
Media Encryption? n	Bypass If IP Threshold Exceeded? n
	H.235 Annex H Required? n
DTMF over IP: out-of-band	Direct IP-IP Audio Connections? y
Link Loss Delay Timer(sec): 90	IP Audio Hairpinning? n
Enable Layer 3 Test? n	Interworking Message: PROGress
-	DCP/Analog Bearer Capability: 3.1kHz
1.525 Station outgoing Direct Media: In	Der/Analog Dealer Capability. J.IKnz

5.3. Configure Trunk Group

This section describes the Trunk Group configuration used during compliance testing. Use the **add trunk-group** command followed by next available Group number and configure the following:

e		
• Group Type:		Enter isdn
Group Name	↓● ✓●	Enter an informative name for the trunk (i.e. H323
-		To Kofax)
• TAC		Enter a TAC number i.e. 713
Carrier Med	ium	Enter H.323
• Service Type	:	Enter tie
Member Ass	ignment Method	Enter auto
Signaling Gr	oup:	Enter the Signaling Group number as configured in
	-	Section 5.2
• Number of N	Iembers:	Enter the number of channels require to connect to
		the Session Manger (during compliance testing 2

channels were used)

add trunk-group 13Page 1 of 21TRUNK GROUPGroup Number: 13Group Type: isdnCDR Reports: yGroup Name: H323 to KofaxCOR: 1TN: 1TAC: 713Direction: two-wayOutgoing Display? nCarrier Medium: H.323Dial Access? nBusy Threshold: 255Night Service:Queue Length: 0Auth Code? nService Type: tieAuth Code? nImage: Comparison of Members: 2Signaling Group: 13
Number of Members: 2

This screen shot displays the configuration used on Page 2

add trunk-group 13 Page **2** of 21 Group Type: isdn TRUNK PARAMETERS Codeset to Send National IEs: 6 Codeset to Send Display: 6 Charge Advice: none Supplementary Service Protocol: a Digit Handling (in/out): enbloc/enbloc Digital Loss Group: 18 Incoming Calling Number - Delete: Insert: Format: Disconnect Supervision - In? y Out? n Answer Supervision Timeout: 0 CONNECT Reliable When Call Leaves ISDN? n XOIP Treatment: auto Delay Call Setup When Accessed Via IGAR? n On **Page 3** set **Format:** to **private** and **Send Calling Number** to **y**. When the configuration is complete press F3 to save.

```
add trunk-group 13

TRUNK FEATURES

ACA Assignment? n

Measured: none

Internal Alert? n

Used for DCS? n

Suppress # Outpulsing? n

Network Call Redirection: none

Send UUI IE? y

Send Calling Number: y

Send EMU Visitor CPN? n

Format: private

UUI IE Treatment: service-provider

Replace Restricted Numbers? n

Send Connected Number: n

Hold/Unhold Notifications? n

Send UCID? n

Send Codeset 6/7 LAI IE? y

Show ANSWERED BY on Display? y
```

5.4. Configure Fax Station

The Fax Machine is configured as an analog station **Type 2500** on Communication Manager and the **Extension** number used was **8270501**. The port used was an available port on a MM714 card on the G430 Media Gateway. Use the **add station** command to add the Fax Machine. The screen shots below show the configuration used during compliance testing. When the configuration is complete, press **F3** to save.

Page 1

```
add station 8270501
                                                                       Page 1 of 4
                                           STATION
                                          Lock Messages? n
Security Code: 1026
Coverage Path 1:
Coverage Path 2:
Hunt-to Station:
Extension: 8270501
                                                                                  BCC: 0
     Type: 2500
                                                                                    TN: 1
                                                                                 COR: 1
COS: 1
     Port: 002V301
     Name: Fax Machine 1026
                                           Hunt-to Station:
                                                                                Tests? v
STATION OPTIONS
     XOIP Endpoint type: autoTime of Day Lock Table:Loss Group: 1Message Waiting Indicator: none
                                              Time of Day Lock Table:
    Off Premises Station? n
           Survivable COR: internal
   Survivable Trunk Dest? y
                                                     Remote Office Phone? n
Passive Signalling Station? n
```

Page 2

add station 8270501	Page 2 of 4
	STATION
FEATURE OPTIONS	
LWC Reception: spe	
LWC Activation? y	Coverage Msg Retrieval? y
LWC Log External Calls? n	Auto Answer: none
CDR Privacy? n	Data Restriction? n
Redirect Notification? y	Call Waiting Indication: y
Per Button Ring Control? n	Att. Call Waiting Indication: y
Bridged Call Alerting? n	Distinctive Audible Alert? y
Switchhook Flash? y	Adjunct Supervision? y
Ignore Rotary Digits? n	
H.320 Conversion? n	Per Station CPN - Send Calling Number?
Service Link Mode: as-nee	
Multimedia Mode: basic	Audible Message Waiting? n
MWI Served User Type:	
AUDIX Name:	
	Coverage After Forwarding? s
	Multimedia Early Answer? n
	Direct IP-IP Audio Connections? Y
Emergency Location Ext: 1026	IP Audio Hairpinning? n

Page 3

Iuguv				
add station 8270501			Page	3 of 4
	S	TATION		
Bridged Appearar	nce Origination Rest	riction? n		
5 11	J.			
	ENHANCED	CALL FORWARDING		
		Forwarded Destination		Active
	Internal Calls To:			n
	External Calls To:			n
Busy For	Internal Calls To:			n
	External Calls To:			n
No Reply For	Internal Calls To:			n
	External Calls To:			n
SAC/CF	Override: n			
0110/01	0.011100. 11			

Page 4	
--------	--

add station 8270501		Page	4	of	4	
	STAT	FION				
SITE DATA						
Room:		Headset? n				
Jack:		Speaker? n				
Cable:		Mounting: d				
Floor:		Cord Length: 0				
Building:		Set Color:				
ABBREVIATED DIALING						
List1:	List2:	List3:				
HOT LINE DESTINATION						
Abbreviated	Dialing List Number	(From above 1, 2 or 3):				
		Dial Code:				
Line Appearance:	call-appr					

5.5. Configure Codecs

During compliance testing T.38 Fax was used. To configure T.38 Fax, use the **change ip-codec**-set **x** command where x is the ip-codec-set being used. Configure the following on page 1:

Enter 2

- Audio Codec (line 1) Enter G.711MU
- Silence Suppression Enter n
- Frames Per Pkt
- Audio Codec (line 2) Enter G.711A
- Silence Suppression Enter n
- Frames Per Pkt Enter 2
- Media Encryption Enter None (note: the Media Encryption option is only displayed if Media Encryption Over IP is enabled on the installed license)

Note: The max baud rate is 9600 bits per second.

D	1
Page	
	-

chai	nge ip-codec	-set 1			Page	1 of	2
		IP	CODEC SET				
	Codec Set:	1					
	Audio Codec G.711MU G.711A	Silence Suppression n n	Frames Per Pkt 2 2	Packet Size(ms) 20 20			
1.	Media Encr	yption					
2: 3:	none						

On **Page 2** configure the following:

- Fax Enter t.38-statdard
- ECM Enter y

All other inputs may be left at default. When the configuration is complete, press F3 to save.

Page 2

change ip-codec-set 1			Page	2 of 2
	IP CODEC SET			
	Allow Direct-	IP Multimedia? n		
				Packet
	Mode	Redundancy		Size(ms)
FAX	t.38-standard	0	ECM: y	
Modem	off	0		
TDD/TTY	US	3		
H.323 Clear-channel	n	0		
SIP 64K Data	n	0		20

Alternatively if using Pass-through Fax configuration see Appendix A.

6. Configure Kofax Communication Server

The Kofax Server is provided, installed and implemented by Kofax. Only those configuration details concerning the interface to Avaya are shown within this section. The web-based Kofax Server FoIP configuration utility was used to configure the interface to Session Manager. Open the KCS FoIP configuration utility from the shortcut on the Kofax Server desktop. The configuration operations described in this section can be summarized as follows:

- Configure List of Call Peers
- Configure Fax
- Configure KCS Integration

6.1. Configure List of Call Peers

Once the KCS FoIP configuration utility opens, expand List of Call Peers menu item.

KCS FoIP Configuration Utility - Windows		
KOFAX	FoIP Configuration	P Help
Save Exit		
Ð	General	
•	List of Call Peers	
Ð	VoIP/FoIP Network	
E	Voice	
•	Fax	
•	H.323 Signaling	
•	SIP Signaling	
0	SSL Certificate	
8	нттр	
0	KCS Integration	
	Storage Mode	
Đ	Advanced	
Save Exit		
		₹100% ·

Once the **List of Call Peers** menu item opens complete the following for a free **Host**:

- Enabled Click on the Check box
- **Protocol** Select **H323** from the dropdown box
- Host Enter the IP address of the PROCR of the communication
 - Manager(see Section 5.1)

K	OFAX					FoIP Configuration						
	į,	54	ve [Exit								
								Gen	eral			
	[Des Receptio	cription n Mode	H 323 TCOSS				on (shown in t of inbound d	status and KCS Mo locuments	nitor)	tcoss
								List of C	all Peers			
	Nr		Enabled		Protocol	locoto		Remote Address		Authorization		Reg. Number
1	1	+ +		H.323	v	10 10 16	Host	×	Port	User ID	Password	
	2	+ +	Contractor Car	SIP	~							
	1	+ +		SIP	~					<u> </u>		- i
	4	+ +		SIP	~			r				
	5	+ +		SIP	~							
	6	+ +		SIP	Y			- r				
	7	+ +		SIP	~							
	8	+ +	1 []	SIP	~							

6.2. Configure Fax

Fax can be configured for either T.38 or G.711 Pass-through.

6.2.1. T.38 Fax

If onlyT.38 Fax support is required, complete the following:

- OutboundTDtmfMode Select 0: G711 audio (default) from the dropdown box
- OutboundT38Mode

• InboundT38Mode

Select 10: Switch to T.38 w/o G.711 pass-through support from the dropdown box Select 10: Switch to T.38 w/o G.711 pass-through support from the dropdown box

(OFAX	FoIP Configuration		? He
Save Exit			
⊕	General		
•	List of Call Peers		
0	VoIP/FoIP Network		
₽	Voice		
8	Fax		
DutboundDtmfMode 0: G.711 audi	o (default) 🗸 🗸	Defines how to generated DTMF digits	0
OutboundT38Mode 10: Switch to	T 38 w/o G 711 pass-through support	Defines the T.38 mode for outbound calls.	40
InboundT38Mode 10: Switch to	T 38 w/o G 711 pass-through support	Defines the T.38 mode for	40
EnableV34		E AL AND A LONG A LONG A LONG A	false
RedundancyLS 0		T.38 low-speed redundancy	0
RedundancyHS 0		(03) T.36 high-speed redundancy (03)	0
()	H.323 Signaling		

6.2.2. G.711 Pass-through

If only G.711 pass-through support is required, complete the following:

- **OutboundTDtmfMode** Select **0: G711 audio (default)** from the dropdown box
- OutboundT38Mode Select 60. User G.711 pass-through and prevent switch
- InboundT38Mode
 InboundT38Mode
 to T.38 from the dropdown box
 Select 60. User G.711 pass-through and prevent switch to T.38 from the dropdown box

(OFAX)	FoIP Configuration		? He
Save Ext			
8	General		
D	List of Call Peers		
8	VoIP/FoIP Network		
0	Voice		
	Fax		
OutboundDtmfMode 0: G.711 aud	io (default) 🗸	Defines how to generated DTMF digits	08
OutboundT38Mode 60: Use G.71	11 pass-through and prevent switch to T.38	Defines the T.38 mode for outbound calls.	40
InboundT38Mode 60: Use G.71	1 pass-through and prevent switch to 7.38	Defines the T.38 mode for	40
EnableV34		Enable support for V.34 (ASN.1 2002) via T.38	1 false
RedundancyLS 0		T.38 low-speed redundancy (03)	0:
RedundancyHS 0		(u3) T.38 high-speed redundancy (03)	0
0	H.323 Signaling		

6.3. Configure KCS Integration

KCS Integration is configured if Message Waiting Indication is used to signal if a fax is in the fax recipient's in-box. Check the **Enabled** check box to configure KCS Integration.

FolP Configuration Utility - W				10-1-0
Save Ext				
Averal Information			General	
			List of Call Peers	
			VoIP/FoIP Network	
			•Voice	
			Fax	
			H.323 Signaling	
			SIP Signaling	
			SS4. Certificate	
			нттр	
			KCS Integration	
Enabled	× -		If checked, the component may be controlled by a TCOSS server.	true
Local IP Address			IP address of local interface used for conection to TCOSS / Voice server. If empty local interfaces are used.	all
Local Port	5000		TCP Listener port for connection from TCOSS	500
Password			Password for connection from TCOSS. (empty means: do not check password)	
CheckCaliPeer	disabled	×	If enabled, TCOSS may only connect if Call-peer is OK.	o
MessageWait	RFC3842 (Siemens Open	nScape Voice)	Method of Message Waiting Indication signaling (MWI)	10
Call Diversion Mode	[1] Prefer original called r	iumber 🗸	Defines the priority if multiple call diversion numbers are available.	1
EnabledVoiceServer			If checked, the component may be controlled by a voice server.	false
Local Port	5001		TCP Listener port for connection from voice server	5001
Call Transfer Mode	[1] Transfer Into Alerting	×	Consider Call Transfer completed after transfer-to party has reached Alerting or Connected state	1
Call Transfer with Hold	a		Execute Call Hold prior to the Call Transfer	faise
			Storage Mode	

Once the configuration is complete click on the **Save** button as shown in the screenshot below.

KCS FolP Configuration Utility - Windows Internet Ex	plorer	
	~	^
Save Exit		annan ann an ann ann ann ann ann ann an
	General	
	List of Call Peers	
	VelP/FelP Network	

7. Verification Steps

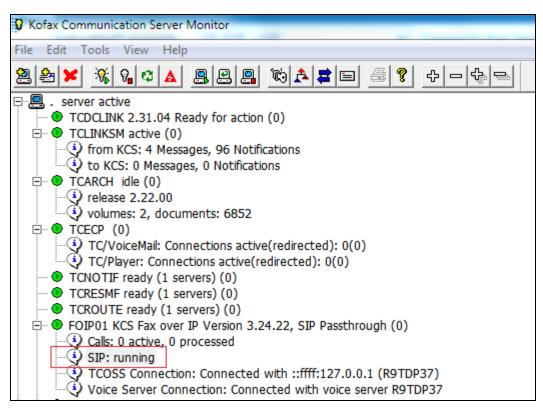
This section provides the tests that can be performed to verify correct configuration of the Avaya and Kofax Communication Server solution.

7.1. Verify the signaling group status

Using the SAT terminal, enter the **status signaling-group** <**n**> command, where <**n**> is the number of the H.323 signaling group. Verify that the **Group State** is **in-service**.

7.2. Verify Kofax Communication Server SIP Status

Start the Kofax Communication Server monitor and verify that SIP is in the running state.



7.3. Verify that faxes are sent and received from the Kofax Communication Server

Send and receive multipage faxes, ensure the faxes are successfully sent and received and are legible, confirm that the caller ID and fax details are correct.

8. Conclusion

These Application Notes describe the configuration steps required for Kofax Communication Server to interoperate with an Avaya Aura® Communication Manager 7.0 using H323 Trunk. All test cases have passed and met the objectives outlined in **Section 2.2**.

9. Additional References

This section references the Avaya and Kofax documentation that is relevant to these Application Notes. Avaya product documentation, including the following, is available at: http://support.avaya.com

- [1] Administering Avaya Aura® Communication Manager, Release 7.0, 2015,
- [2] Administering Avaya Aura® Session Manager, Release 7.0, 2015
- [3] Administering Avaya Aura® System Manager, Release 7.0, 2015

Product Documentation for Kofax can be at the following location: http://www.kofax.com/business-communication-software/

Appendix A

Pass-through Fax configuration.

Page 1

```
change ip-codec-set 1

IP CODEC SET

Codec Set: 1

Audio Silence Frames Packet

Codec Suppression Per Pkt Size(ms)

1: G.711MU n 2 20

2: G.711A n 2 20

3:

4:

5:

6:

7:

Media Encryption

1: none

2:

3:
```

Page 2

change ip-codec-set 1			Dago	2 of 2
change ip-codec-set i			Page	2 01 2
	IP CODEC SET			
	Allow Direc	ct-IP Multimedia? n		
				Packet
	Mode	Redundancy		Size(ms)
FAX	off	0		
Modem	off	0		
TDD/TTY	US	3		
H.323 Clear-channel	n	0		
SIP 64K Data	n	0		20

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