



Avaya Solution & Interoperability Test Lab

Application Notes for configuring Avaya Aura® Communication Manager R6.2 with Kofax Communication Server using an H.323 Trunk – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Kofax Communication Server to interoperate with Avaya Aura® Communication Manager R6.2. Kofax Communication Server communicates with Avaya Aura® Communication Manager via an H.323 trunk. Kofax Communication Server provides fax server functionality

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 to interoperate with Avaya Aura® Communication Manager. Kofax Communication Server offers a variety of telephony features, during the Compliance Testing the Fax feature and functionality was the sole focus.

Kofax Communication Server fax features allow fax messages to be sent/received to/from both local and PSTN fax endpoints, which can subsequently be printed or archived.

2. General Test Approach and Test Results

The compliance testing between Kofax Communication Server and Communication Manager was performed manually. The tests were all functional in nature, and no performance testing was done. .

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 via local and PSTN connection with G.711A and G.711MU codecs
- Basic fax receiving via local and PSTN connection with G.711A and G.711MU codecs
- Use of pass-through and T.38 fax transmission methods
- Forwarding of a fax from a local extension to the Kofax Communication Server
- Supervised and Blind transfer of a fax call from a local extension to the Kofax Communication Server
- Verification of correct status and Caller ID for sent and received fax messages
- Successful transmission and receiving of 30 page fax to PSTN
- Successful recovery from network or power failure

2.2. Test Results

All test cases were executed successfully with the following observations:

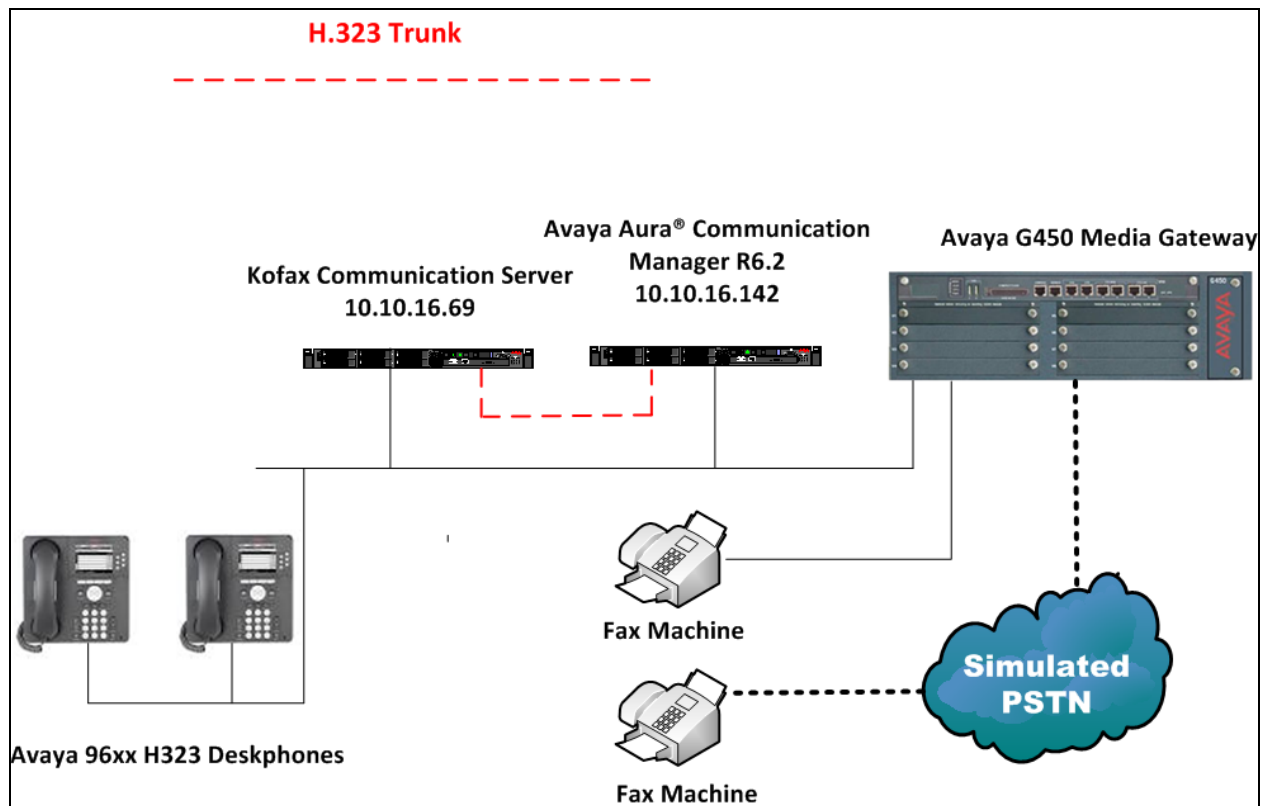
- Where Kofax was configured with pass-through and Kofax dialed a number which answered and subsequently performed a blind or supervised transfer to a fax machine the fax transmission failed. This issue is resolved in v3.17.0.
- Where Kofax was configured with pass-through and Kofax received a call which had been transferred to it using either blind or supervised transfer from a local extension the fax reception failed. This issue is resolved in v3.17.0.

2.3. Support

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

3. Reference Configuration

An Avaya S8800 Server running Communication Manager R6.2 serving H323 endpoints with an Avaya G450 Media Gateway was configured. Kofax Communication Server was configured on the same IP network and an H.323 trunk was configured between Kofax Communication Server and Communication Manager. Simulated connection to the PSTN was provided by an E1 QSIG trunk connected to the Avaya G450 Media Gateway.



Avaya Aura® Communication Manager with Kofax Communication Server Test Configuration

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® Communication Manager running on Avaya S8800 Server	R6.2 SP4 build R016x.02.0.823.0-20199
Avaya G450 Media Gateway <ul style="list-style-type: none">MM710AP	32.24.0 <ul style="list-style-type: none">HW05 FW022
Avaya 9630 IP Deskphone	H323 S3.105S
Kofax Communication Server	9.2
KCS FoIP Application	3.16.20

5. Configure Avaya Aura® Communication Manager

The configuration and verification operations illustrated in this section were all performed using the Communication Manager System Administration Terminal (SAT).

Only those configuration details concerning the interface to Kofax Communication Server are shown within this section and it is assumed a PSTN trunk has already been configured.

5.1. Administer Dialplan

The dialplan must be administered in order to specify the routing, string length and call type of dialed strings. Enter the command **change dialplan analysis** and configure accordingly, in this case a **Dialed String** beginning with **46** with a **Total Length** of **4** was assigned a **Call Type** of **udp** which would result in the dialed string being sent to the uniform-dialplan table.

change dialplan analysis			DIAL PLAN ANALYSIS TABLE						Page 1 of 12
			Location: all			Percent Full: 1			
Dialed String	Total Length	Call Type	Dialed String	Total Length	Call Type	Dialed String	Total Length	Call Type	
1	3	fac							
2	10	udp							
3	11	udp							
46	4	udp							
5	4	ext							
6	4	ext							
7	3	dac							
8	4	udp							
9	1	fac							
*	3	fac							

5.2. Administer Uniform Dialplan

In **Section 5.1** the 4 digit dialed string starting with 46 is assigned with a Call Type of udp. Enter the command **change uniform-dialplan 0** and administer the **Matching Pattern** of **46** with a **Len** of **4** to be assigned a **Net** value of **aar**. The dialed string will be sent to the aar table.

change uniform-dialplan 0						Page	1 of	2
UNIFORM DIAL PLAN TABLE						Percent Full: 0		
Matching Pattern	Len	Del	Insert Digits	Net	Conv	Node Num		
2	10	0		ars	n			
3	11	0		aar	n			
46	4	0		aar	n			
8	4	0		aar	n			

5.3. Configure Automatic Alternate Routing

In **Section 5.2** the 4 digit matching pattern starting with 46 is configured to be passed to the aar table. Enter the command **change aar analysis 0** and administer the **Dialed String** of **46** with a **Total Min** and **Max** length of **4** to be routed using **Route Pattern 4**. This will route the call to Communication Server over the H.323 trunk configured in the next section.

change aar analysis 0						Page	1 of	2
AAR DIGIT ANALYSIS TABLE						Percent Full: 0		
Location: all								
Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI Req'd		
2	4	4	1	unku		n		
3	11	11	1	unku		n		
46	4	4	4	aar		n		
402	4	4	4	aar		n		
5	4	4	1	aar		n		

5.4. Administer IP Node Names

Communication Manager must be configured with the IP address of Communication Server. Enter the command **change node-names ip** and enter and identifying **Name** and the **IP Address** assigned to Communication Server as shown below. Note the IP Address of the **procr** interface which will be used when in **Section 6**.

change node-names ip		Page 1 of 2
IP NODE NAMES		
Name	IP Address	
KOFAX	10.10.16.69	
procr	10.10.16.142	

5.5. Administer H.323 Signaling Group

A signaling group must be administered, enter the command **add sig x** where **x** is a valid signaling group number and configure the following:

- **Group Type** – set to **h.323**
- **Trunk Group for Channel Selection** – set to the trunk group number configured in the next Section.
- **Near-end Node Name** – set this to **procr**
- **Far-end Node Name** – set this as the Node Name configured in the previous Section
- **Far-end List Port** – configure as **1720**

Leave all other settings as default.

add signaling-group 4		Page 1 of 6
SIGNALING GROUP		
Group Number: 4	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: 4		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	
	Far-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	
H.323 Station Outgoing Direct Media? n	DCP/Analog Bearer Capability: 3.1kHz	

5.6. Administer H.323 Trunk

Enter the command **add trunk x** where **x** is a valid trunk group number, on **Page 1** configure the following:

- **Group Type** – set to **isdn**
- **Group Name** – assign an identifying name
- **TAC** – assign a TAC appropriate to the dialplan
- **Carrier Medium** – set to **H.323**
- **Service Type** – set to **tie**
- **Member Assignment Method** – configure as **auto**
- **Signaling Group** – enter the signaling group configured in the previous Section
- **Number of Member** – enter the appropriate number of H.323 channels

add trunk-group 4		Page 1 of 21	
TRUNK GROUP			
Group Number: 4	Group Type: isdn	CDR Reports: y	
Group Name: H323 To Kofax	COR: 1	TN: 1	TAC: 704
Direction: two-way	Outgoing Display? n	Carrier Medium: H.323	
Dial Access? n	Busy Threshold: 255	Night Service:	
Queue Length: 0			
Service Type: tie	Auth Code? n		
		Member Assignment Method: auto	
		Signaling Group: 4	
		Number of Members: 2	

On **Page 3** set **Send Calling Number** as **y** in order that the caller ID of an incoming call is presented to Communication Server.

add trunk-group 4		Page 3 of 21	
TRUNK FEATURES			
ACA Assignment? n	Measured: none		
	Internal Alert? n	Maintenance Tests? y	
	Data Restriction? n	NCA-TSC Trunk Member:	
	Send Name: n	Send Calling Number: y	
Used for DCS? n		Send EMU Visitor CPN? n	
Suppress # Outpulsing? n	Format: natl-pub		
	UII IE Treatment: service-provider		
		Replace Restricted Numbers? n	
		Replace Unavailable Numbers? n	
		Send Connected Number: n	
Network Call Redirection: none		Hold/Unhold Notifications? n	
Send UII IE? y	Modify Tandem Calling Number: no		
Send UCID? n			
Send Codeset 6/7 LAI IE? y			
Show ANSWERED BY on Display? Y			

5.7. Administer Route-Pattern

A route pattern must be configured to route the dialed digits over the corresponding H.323 trunk to Communication Server. Enter the command **change route-pattern x** where **x** is an available route pattern and corresponds to the route pattern configured in **Section 5.3** and configure as follows:

- **Pattern Name** – enter an identifying name
- **Grp No** – enter the Trunk Group number configured in the previous **Section**
- **FRL** – set as appropriate, in this case **0**

change route-pattern 4										Page	1 of	3	
Pattern Number: 4										Pattern Name: To Kofax			
SCCAN? n										Secure SIP? n			
Grp	FRL	NPA	Pfx	Hop	Toll	No.	Inserted			DCS/	IXC		
No			Mrk	Lmt	List	Del	Digits			QSIG			
										Intw			
1:	4	0									n	user	
2:											n	user	
3:											n	user	
4:											n	user	
5:											n	user	
6:											n	user	
BCC	VALUE		TSC	CA-TSC		ITC	BCIE	Service/Feature	PARM	No.	Numbering	LAR	
0	1	2	M	4	W	Request				Dgts	Format		
										Subaddress			
1:	y	y	y	y	y	n	n	rest				none	
2:	y	y	y	y	y	n	n	rest				none	
3:	y	y	y	y	y	n	n	rest				none	
4:	y	y	y	y	y	n	n	rest				none	
5:	y	y	y	y	y	n	n	rest				none	
6:	y	y	y	y	y	n	n	rest				none	

5.8. Administer IP-Codec Set

An IP-codec set must be administered in order to define the voice codec and fax transmission standard. Enter the command **change ip-codec set x** where **x** is an appropriate IP codec set. Administer the required **Audio Codec** as shown below, in this case **G.711MU** and **G.711A** are administered with the other settings remaining at their default values.

change ip-codec-set 1

Page1 of 2

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

On **Page 2** administer the supported **Fax Mode**. Where Communication Server uses T.38, the **Mode** is set to **t.38-standard**.

change ip-codec-set 1			Page 2 of 2
IP Codec Set			
Allow Direct-IP Multimedia? n			
	Mode	Redundancy	
FAX	t.38-standard	0	
Modem	off	0	
TDD/TTY	US	3	
Clear-channel	n	0	

In the case where Communication Server uses pass-through, the **Mode** is set to **Off**.

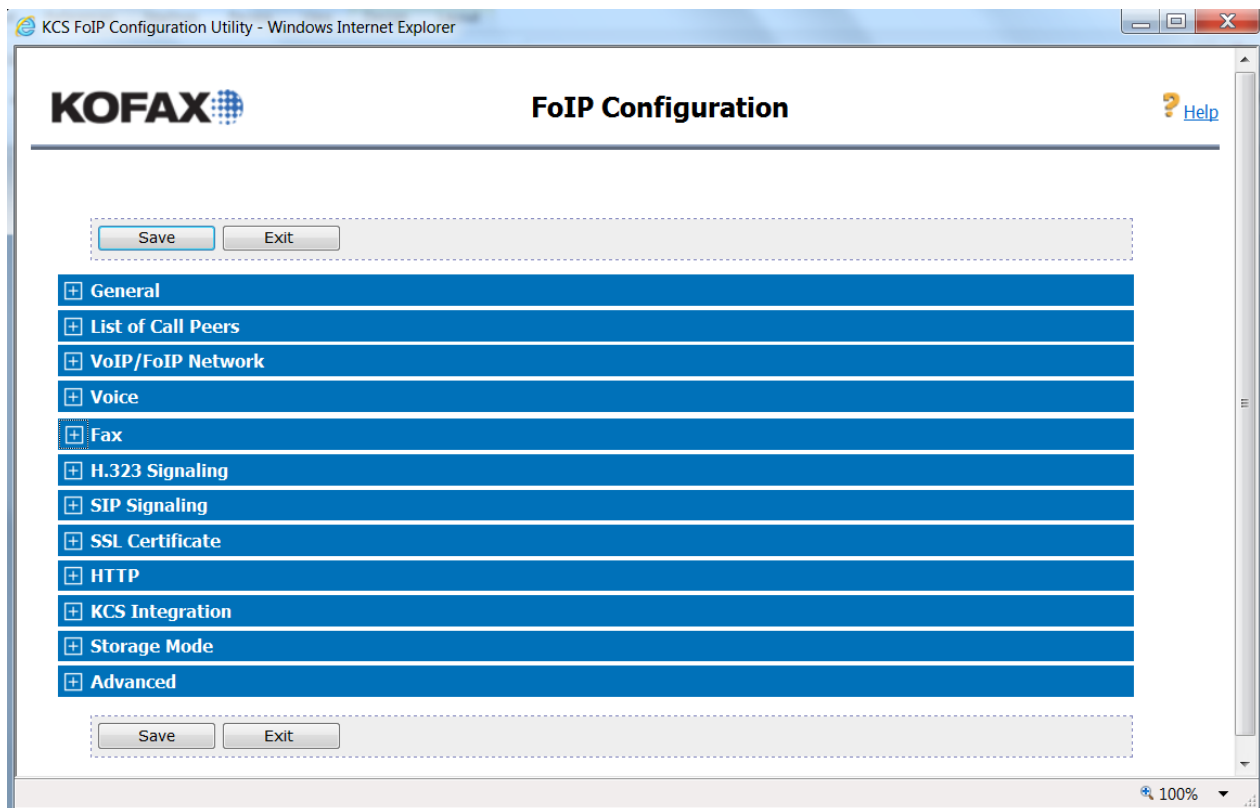
change ip-codec-set 1			Page 2 of 2
IP Codec Set			
Allow Direct-IP Multimedia? n			
	Mode	Redundancy	
FAX	off	0	
Modem	off	0	
TDD/TTY	US	3	
Clear-channel	n	0	

6. Configure Kofax Communication Server

Communication 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 Communication Server FoIP configuration utility was used to configure the interface to Communication Manager.

Open the KCS FoIP configuration utility from the shortcut on the Communication Server desktop.



Open the **List of Call Peers** menu item. For one of the elements which has a **Host** entry of **0.0.0.0**, set the **Protocol** as **H.323**, set the **Host** as the IP address of the Communication Manager procr and check the **Enabled** check box as shown below

List of Call Peers								
Nr	Enabled	Protocol	Remote Address		Authorization		Reg. Numbers	
			Host	Port	User ID	Password		
1	<input checked="" type="checkbox"/>	H.323	10.10.16.142					
2	<input checked="" type="checkbox"/>	SIP	10.10.16.148					
3	<input type="checkbox"/>	SIP	0.0.0.0					
4	<input type="checkbox"/>	SIP	0.0.0.0					
5	<input type="checkbox"/>	SIP	0.0.0.0					
6	<input type="checkbox"/>	SIP	0.0.0.0					
7	<input type="checkbox"/>	SIP	0.0.0.0					
8	<input type="checkbox"/>	SIP	0.0.0.0					

If T.38 Fax support is required, click the **Fax** menu item and select **10: Switch to T.38 w/o G.711 pass-through support (default)** from the drop down list for both **OutboundT38Mode** and **InboundT38Mode**.

Fax			
OutboundT38Mode	10: Switch to T.38 w/o G.711 pass-through support (default)	Defines the T.38 mode for outbound calls.	10
InboundT38Mode	10: Switch to T.38 w/o G.711 pass-through support (default)	Defines the T.38 mode for inbound calls.	10
EnableV34	<input type="checkbox"/>	Enable support for V.34 (ASN.1 2002) via T.38	false

If pass-through mode is required, select **60: Use G.711 pass-through and prevent switch to T.38** from the drop down list for both **OutboundT38Mode** and **InboundT38Mode**.

Fax			
OutboundT38Mode	60: Use G.711 pass-through and prevent switch to T.38	Defines the T.38 mode for outbound calls.	10
InboundT38Mode	60: Use G.711 pass-through and prevent switch to T.38	Defines the T.38 mode for inbound calls.	10
EnableV34	<input type="checkbox"/>	Enable support for V.34 (ASN.1 2002) via T.38	false

7. Verification Steps

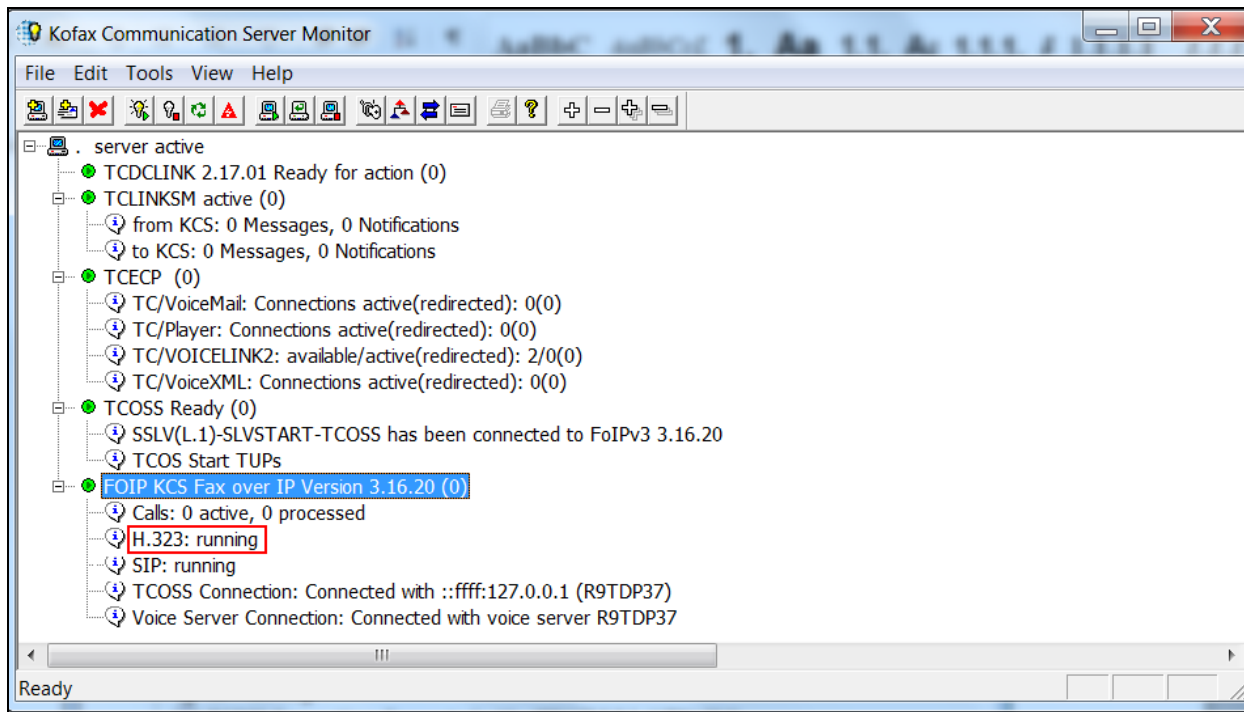
The correct installation and configuration of the Communication Server can be verified by performing the following steps shown below. Using the Communication Manager SAT terminal, enter the **status signaling-group <n>** command, where <n> is the number of the H.323 signaling group which connects to Communication Server. Verify that the signaling **Group State** is **in-service**.

```
status signaling-group 4
                        STATUS SIGNALING GROUP

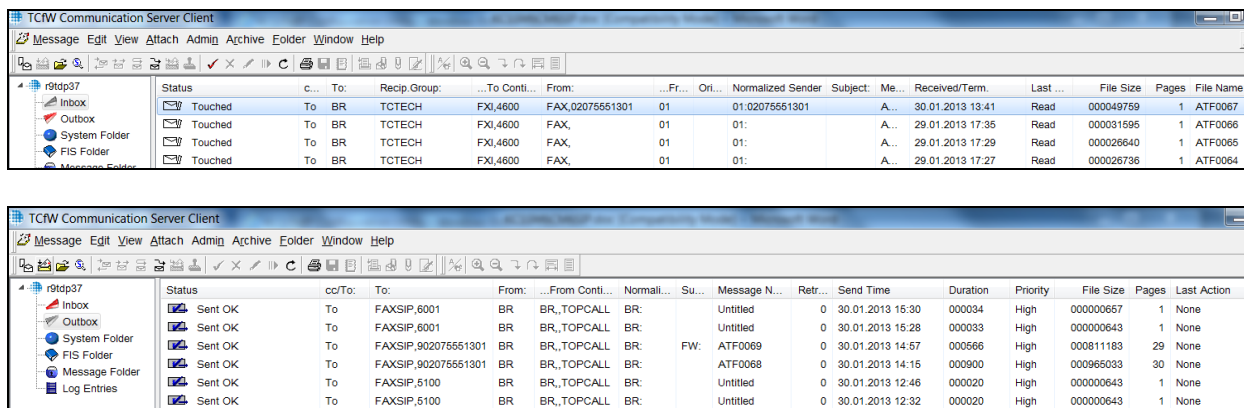
      Group ID: 4                      Active NCA-TSC Count: 0
      Group Type: h.323                Active CA-TSC Count: 0

Group State: in-service
```

Start the Kofax Communication Server Monitor and verify that the H.323 status is in the **running** state.



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



8. Conclusion

These Application Notes describe the compliance testing of Kofax Communication Server with Avaya Aura® Communication Manager using an H.323 trunk. All test cases were executed successfully with observations noted in **Section 2.2**.

9. Additional References

This section references documentation relevant to these Applications. Avaya product documentation, including the following, is available at <http://support.avaya.com>.

- *Administering Avaya Aura® Communication Manager, Release 6.2*, 03-300509, Issue 7.0
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Information regarding Kofax products is available at <http://www.kofax.com/business-communication-software/>.

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