



## **Avaya Solution & Interoperability Test Lab**

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# **Application Notes for Configuring Avaya Aura® Communication Manager R6.3 with Kofax Ltd. Communication Server 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 R6.3 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 to interoperate with Avaya Aura® Communication Manager. Kofax Communication Server offers a variety of telephony features. Kofax Communication Server fax features allow sending/receiving of fax messages 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

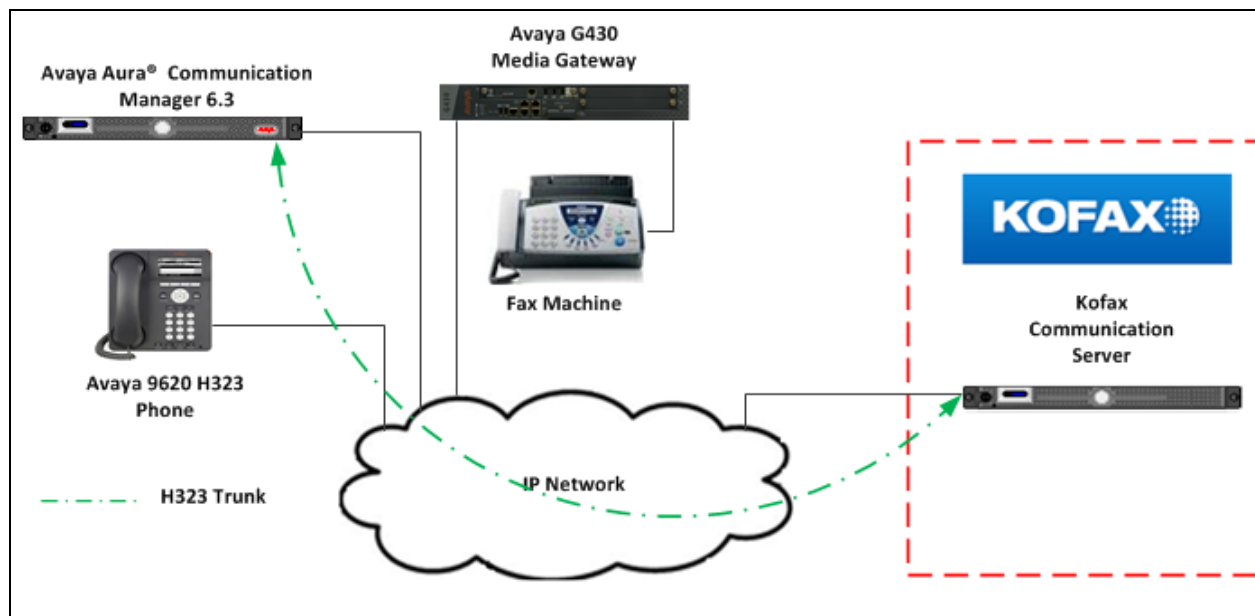
Tests were performed to insure full interoperability of a Kofax Communication Server when configured with Communication Manager. The tests were all functional in nature and performance testing was not included. All the test cases passed successfully.

## 2.3. Support

Support for Kofax Ltd. is available at [http:// services.kofax.com/support/](http://services.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 the 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.

<b>Avaya Equipment</b>	<b>Software Version</b>
Avaya Aura® Communication Manager	R6.3 Build R016x.03.0.124.0
Avaya G430 Media Gateway Module MM710 (DSP MP20) Module MM714 (ANA)	Version 36.7.0/1 Version HW04 FW021 Version HW03 FW073
<b>Kofax Equipment</b>	<b>Software Version</b>
Kofax Communication Server KCS FoIP Application	Version 10.0 Version 3.22.05

**Table 1: Hardware and Software Version Numbers**

## 5. Configure Avaya Aura® Communication Manager

Configuration and verification operations on the 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 the 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 Server Node

For the 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	
<b>Kofax</b>	<b>10.10.60.56</b>	
default	0.0.0.0	
<b>procr</b>	<b>10.10.16.211</b>	
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:

- **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. Press **F3** to save configuration.

Page 1

Add signaling-group 13		Page 1 of 6
SIGNALING GROUP		
Group Number: 13	<b>Group Type: h.323</b>	
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:
<b>Trunk Group for Channel Selection: 13</b>		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):		
<b>Near-end Node Name: procr</b>	<b>Far-end Node Name: Kofax</b>	
Near-end Listen Port: 1720	<b>Far-end Listen Port: 1720</b>	
	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	

### 5.3. 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:

- **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 Medium** Enter **H.323**
- **Service Type:** Enter **tie**
- **Member Assignment Method:** Enter **auto**
- **Signaling Group:** Enter the Signaling Group number as configured in **Section 5.2**
- **Number of Members:** Enter the number of channels require to connect to the Kofax Server (during compliance testing 2 channels were used)

Page 1

add trunk-group 13		Page 1 of 21	
TRUNK GROUP			
Group Number: 13	Group Type: isdn	CDR Reports: y	
Group Name: H323 to Kofax	COR: 1	TN: 1	TAC: 713
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: 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 Display: 6	Codeset to Send National IEs: 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			
XOIP Treatment: auto		CONNECT Reliable When Call Leaves ISDN? n	
		Delay Call Setup When Accessed Via IGAR? n	

On Page 3, set **Send Calling Number** to **y**. Press **F3** to save configuration.

```
add trunk-group 13                                     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
```

## 5.4. Configure Fax Station

The Fax Machine is configured as an Analog station **Type 2500** on the Communication Manager and the **Extension** number used was **1026**. 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. Press **F3** to save configuration.

### Page 1

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

    Survivable COR: internal
    Survivable Trunk Dest? y

    Remote Office Phone? n

    Passive Signalling Station? n
```

## Page 2

add station 1026	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-needed	
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

add station 1026	Page 3 of 4
STATION	
Bridged Appearance Origination Restriction? n	
ENHANCED CALL FORWARDING	
Forwarded Destination	Active
Unconditional For 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	



## Page 4

add station 1026		Page 4 of 4
STATION		
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:

- **Audio Codec (line 1):** Enter **G.711MU**
- **Silence Suppression:** Enter **n**
- **Frames Per Pkt:** Enter **2**
- **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)

**Notes:** The max baud rate is 9600 bits per second.

### Page 1

```
change ip-codec-set 1                                     Page 1 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
3:
4:
5:
6:
7:

Media Encryption
1: none
2:
3:
```

On Page 2 configure the following:

- **Fax:** Enter **t.38-standard**
- **ECM:** Enter **y**

All other inputs may be left at default. Press **F3** to save configuration.

## Page 2

change ip-codec-set 1		Page 2 of 2	
IP CODEC SET			
Allow Direct-IP Multimedia? n			
	Mode	Redundancy	Packet Size (ms)
<b>FAX</b>	<b>t.38-standard</b>	0	<b>ECM: y</b>
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

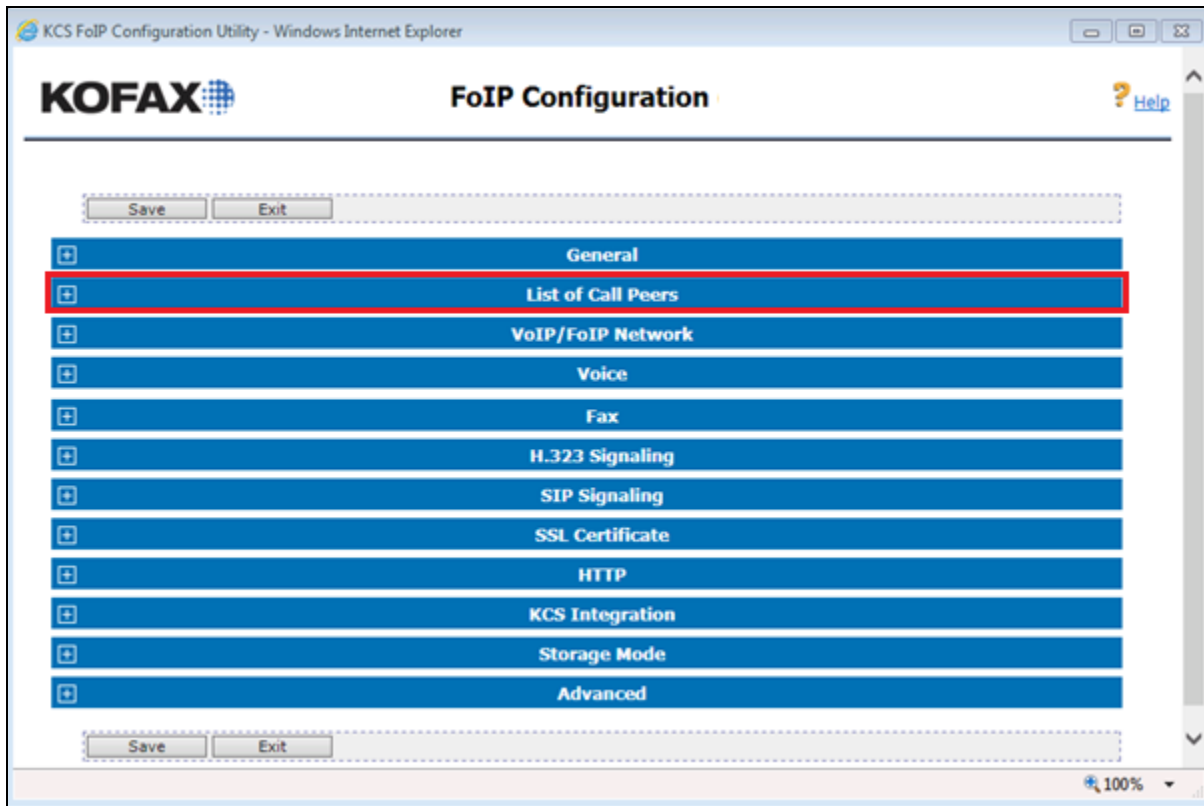
The Kofax Server is provided, installed and implemented by Kofax. Only those configuration details concerning the interface to Avaya are shown within this section. The Web-based Kofax Server FoIP configuration utility was used to configure the interface to Communication Manager.

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.



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

- **Enabled:** Click on the Check box
- **Protocol:** Select **H.323** from the dropdown box
- **Host:** Enter the IP address of the PROCR of the communication Manager(see **Section 5.1**)

KCS FoIP Configuration Utility - Windows Internet Explorer

**KOFAX** **FoIP Configuration**

Save Exit

**General**

Description: H.323 Optional description (shown in status and KCS Monitor)  
 Reception Mode: TCOSS Defines the target of inbound documents tcoss

**List of Call Peers**

Nr	Enabled	Protocol	Remote Address		Authorization		Reg. Numbers
			Host	Port	User ID	Password	
1	<input checked="" type="checkbox"/>	H.323	10.10.16.211				
2	<input type="checkbox"/>	SIP					
3	<input type="checkbox"/>	SIP					
4	<input type="checkbox"/>	SIP					
5	<input type="checkbox"/>	SIP					
6	<input type="checkbox"/>	SIP					
7	<input type="checkbox"/>	SIP					
8	<input type="checkbox"/>	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 only T.38 Fax support is required, complete the following:

- **OutboundT38Mode:** Select **10: Switch to T.38 w/o G.711 pass-through support** from the dropdown box
- **InboundT38Mode:** Select **10: Switch to T.38 w/o G.711 pass-through support** from the dropdown box

The screenshot shows the 'KOFAX FoIP Configuration' window. The 'Fax' tab is selected, and a red box highlights the 'OutboundDtmfMode', 'OutboundT38Mode', and 'InboundT38Mode' settings. The 'OutboundDtmfMode' is set to '0: G.711 audio (default)'. The 'OutboundT38Mode' and 'InboundT38Mode' are both set to '10: Switch to T.38 w/o G.711 pass-through support'. Below these, there are checkboxes for 'EnableV34' (unchecked), and input fields for 'RedundancyLS' and 'RedundancyHS', both set to '0'. To the right of these fields, there are descriptions and values for each setting.

Setting	Description	Value
OutboundDtmfMode	Defines how to generated DTMF digits	0
OutboundT38Mode	Defines the T.38 mode for outbound calls.	40
InboundT38Mode	Defines the T.38 mode for inbound calls.	40
EnableV34	Enable support for V.34 (ASN.1 2002) via T.38	false
RedundancyLS	T.38 low-speed redundancy (0..3)	0
RedundancyHS	T.38 high-speed redundancy (0..3)	0

### 6.2.2. G.711 Pass-through

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

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

KCS FoIP Configuration Utility - Windows Internet Explorer

**KOFAX** FoIP Configuration

Save Exit

General

List of Call Peers

VoIP/FoIP Network

Voice

Fax

OutboundDtmfMode: 0: G.711 audio (default) Defines how to generated DTMF digits 0

OutboundT38Mode: 60: Use G.711 pass-through and prevent switch to T.38 Defines the T.38 mode for outbound calls. 40

InboundT38Mode: 60: Use G.711 pass-through and prevent switch to T.38 Defines the T.38 mode for inbound calls. 40

EnableV34 ☐ Enable support for V.34 (ASN.1 2002) via T.38 false

RedundancyLS: 0 T.38 low-speed redundancy (0..3) 0

RedundancyHS: 0 T.38 high-speed redundancy (0..3) 0

H.323 Signaling

SIP Signaling

100%

### 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:

The screenshot shows the 'KCS FoIP Configuration Utility' window. The 'KCS Integration' section is expanded, showing the following configuration:

Configuration Item	Value	Description	Status
Enabled	<input checked="" type="checkbox"/>	If checked, the component may be controlled by a TCOSS server.	true
Local IP Address		IP address of local interface used for connection to TCOSS / Voice server. If empty all local interfaces are used.	
Local Port	5000	TCP Listener port for connection from TCOSS	5000
Password		Password for connection from TCOSS. (empty means: do not check password)	
CheckCallPeer	disabled	If enabled, TCOSS may only connect if Call-peer is OK.	0
MessageWait	RFC3842 (Siemens OpenScape Voice)	Method of Message Waiting Indication signaling (MWI)	10
Call Diversion Mode	[1] Prefer original called number	Defines the priority if multiple call diversion numbers are available.	1
EnabledVoiceServer	<input type="checkbox"/>	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	<input type="checkbox"/>	Execute Call Hold prior to the Call Transfer	false

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

The screenshot shows the 'KCS FoIP Configuration Utility' window with the 'Save' button highlighted by a red rectangle. The 'KCS Integration' section is still expanded, showing the same configuration as the previous screenshot.



## 7. Verification Steps

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

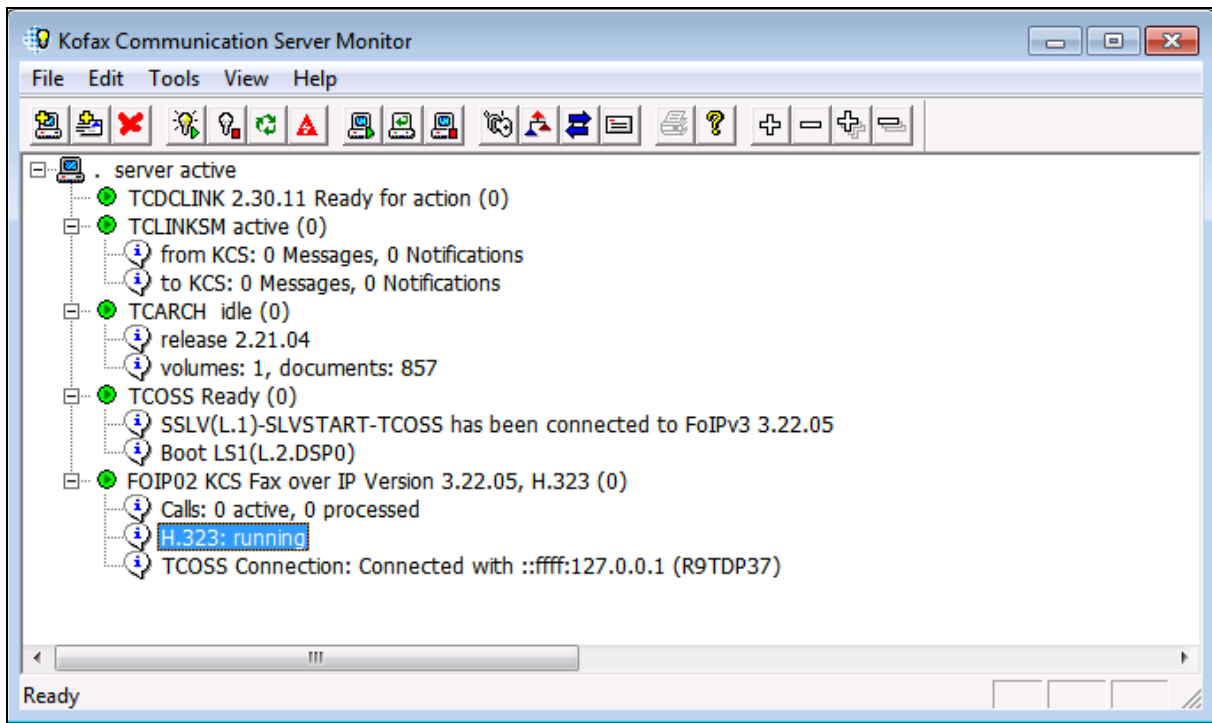
```
status signaling-group 13
                        STATUS SIGNALING GROUP

      Group ID: 1
      Group Type: h.323

      Group State: in-service
```

### 7.2. Verify Kofax Communication Server SIP Status

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



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 6.3 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 documentations, including the following, are available at <http://support.avaya.com>.

[1] *Administering Avaya Aura® Communication Manager, Release 6.3, Issue 8, May 2013*,

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

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
3:			
4:			
5:			
6:			
7:			

Media Encryption

1: none

2:

3:

## Page 2

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

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