



Application Notes for Kofax Communication Server with Avaya Aura® Communication Manager R7.0.1 using a 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 R7.0.1 using a H.323 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 R7.0.1. 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 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.

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in this DevConnect Application Note 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 Kofax Communication Server did not include any specific encryption features as requested by Kofax.

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
- Blind transfer of a fax from a local Fax Machine to the Kofax Server via a local extension
- Blind transfer of a fax from the Kofax Server to a local Fax Machine via a local extension. 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 Communication Server is available at: <http://www.kofax.com/support/>

3. Reference Configuration

Figure 1 illustrates the network configuration used during compliance testing. A H.323 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 (H.323) 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.

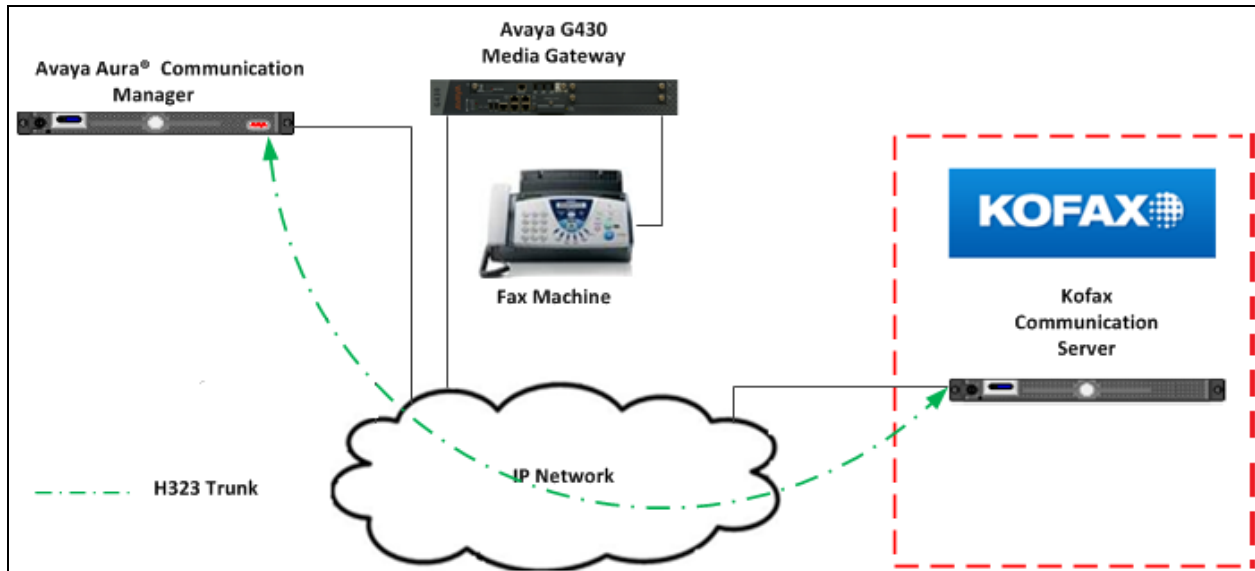


Figure 1: Avaya and Kofax Reference Configuration

4. Equipment and Software Validated

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

Avaya Equipment/Software	Release/Version
Avaya Aura® Communication Manager	R7.0.1.2 RTS 7.0.1.2.0.441.23523 Update: RHEL6.5-SSP0050
Avaya G430 Media Gateway Module MM714 (ANA)	Version 37.41.0/1 Version HW03 FW073
Kofax Equipment/Software	Release/Version
Kofax Communication Server	Version 10.1
KCS FoIP Application	Version 3.26.11

Table 1: Hardware and Software Version Numbers

5. Configure Avaya Aura® Communication Manager

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**. Configuration and verification operations on Communication Manager illustrated in this section were all performed using Avaya Site Administrator Emulation Mode.

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 **10.10.16.6** 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             10.10.16.78
Kofax              10.10.16.6
default             0.0.0.0
procr              10.10.16.211
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 7                               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: 7      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:
                                              Calls Share IP Signaling Connection? n
  LRQ Required? 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. **707**
- **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 Session Manger (during compliance testing 2 channels were used)

```
add trunk-group 7                                     Page 1 of 21
                                     TRUNK GROUP
Group Number: 7                                     Group Type: isdn          CDR Reports: y
  Group Name: H323 to Kofax                       COR: 1                   TN: 1           TAC: 707
  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: 7
                                               Number of Members: 2
```

This screen shot displays the configuration used on **Page 2**.

```
add trunk-group 7                                     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 **Format: to private** and **Send Calling Number** to **y**. When the configuration is complete press **F3** to save.

```

add trunk-group 7                                     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                                  Format: private      Send EMU Visitor CPN? n
  Suppress # Outpulsing? n
                                                    UI 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 UI 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 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.

```

add station 8270501                                   Page 1 of 4
                                                    STATION
Extension: 8270501                                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

```



```

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

```

```

add station 8270501                                     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

```

add station 8270501

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)

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

```
change ip-codec-set 1                                     Page 1 of 2
                                                         IP CODEC SET
Codec Set: 1
Audio Codec      Silence Suppression  Frames Per Pkt  Packet Size (ms)
1: G.711MU       n                    2              20
2: G.711A       n                    2              20
3:
4:
5:
6:
7:
Media Encryption  Encrypted SRTP: enforce-unenc-srtp
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. 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

	Mode	Redundancy	ECM: y	Packet Size (ms)
FAX	t.38-standard	0		
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**.

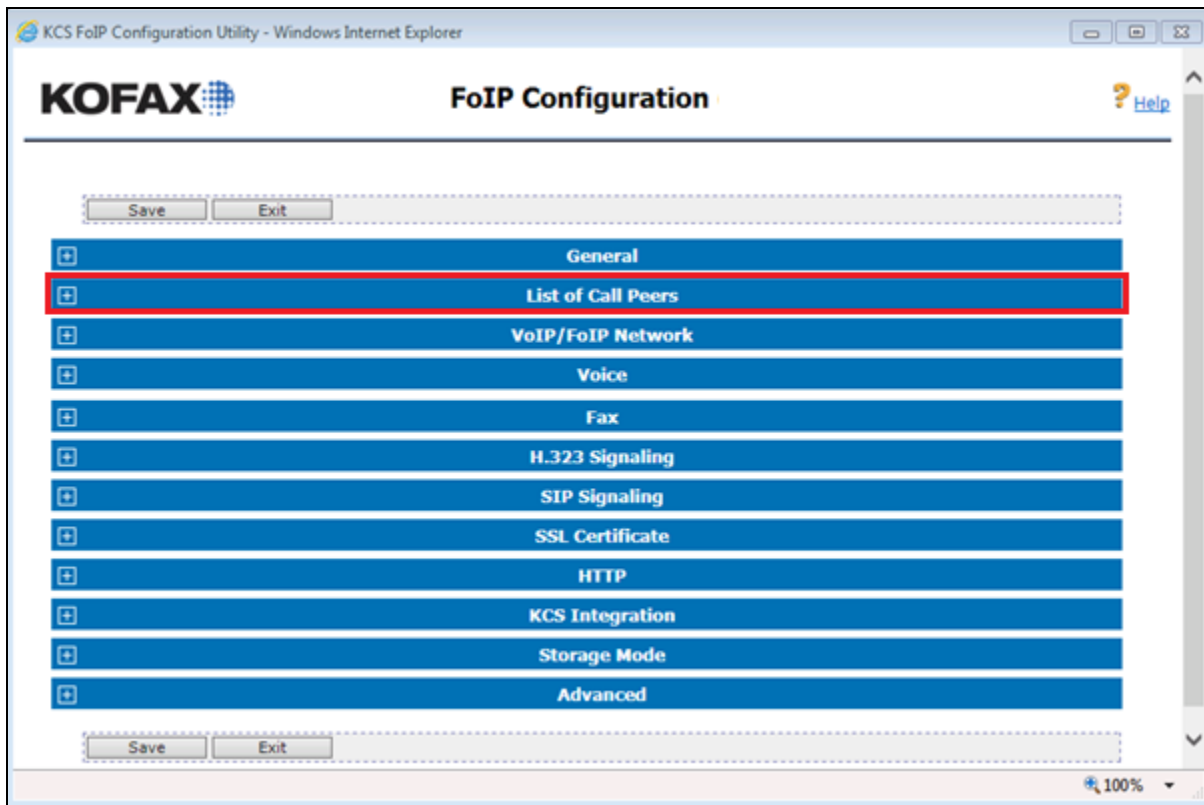
6. Configure Kofax Communication Server

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.



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**)

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) tco

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					

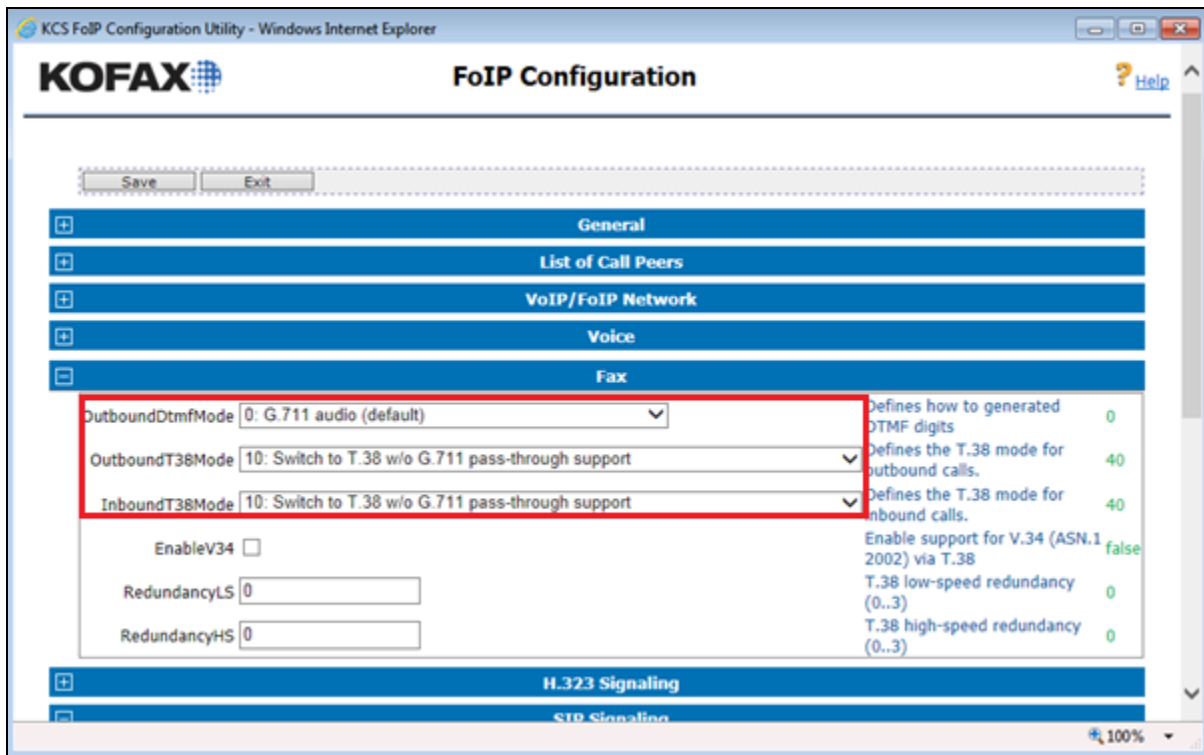
6.2. Configure Fax

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:

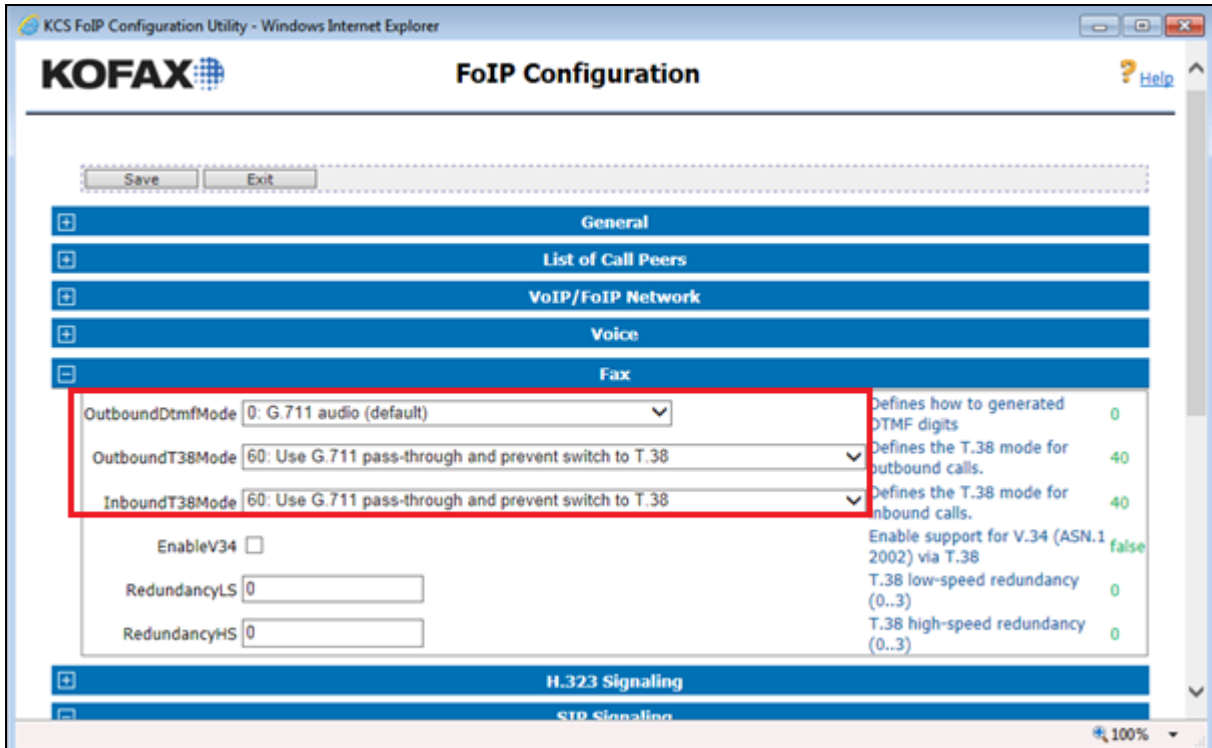
- **OutboundDtmfMode** Select **0: G.711 audio (default)** from the dropdown box
- **OutboundT38Mode** Select **10: Switch to T.38 w/o G.711 pass-through support** from the dropdown box
- **InboundT38Mode** Select **10: Switch to T.38 w/o G.711 pass-through support** from the dropdown box



6.2.2. G.711 Pass-through

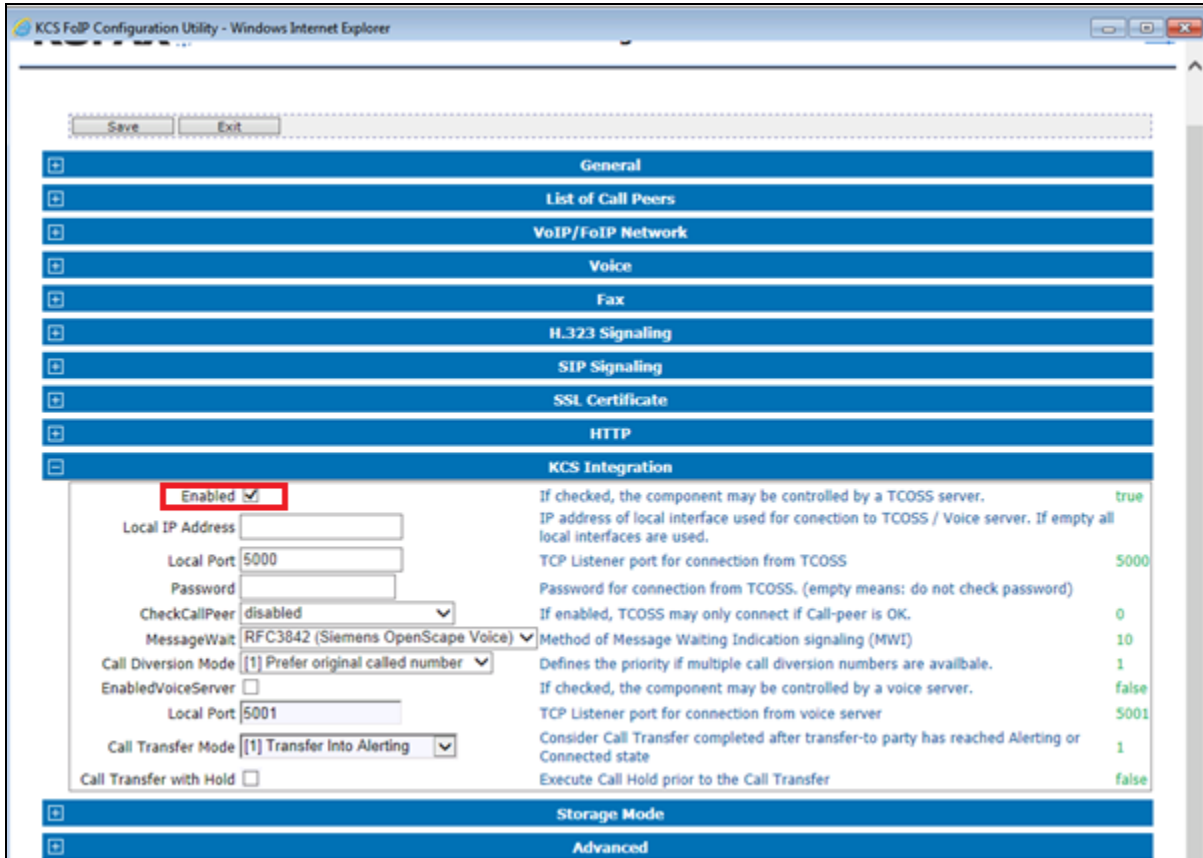
If only G.711 pass-through support is required, complete the following:

- **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



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.



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



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**.

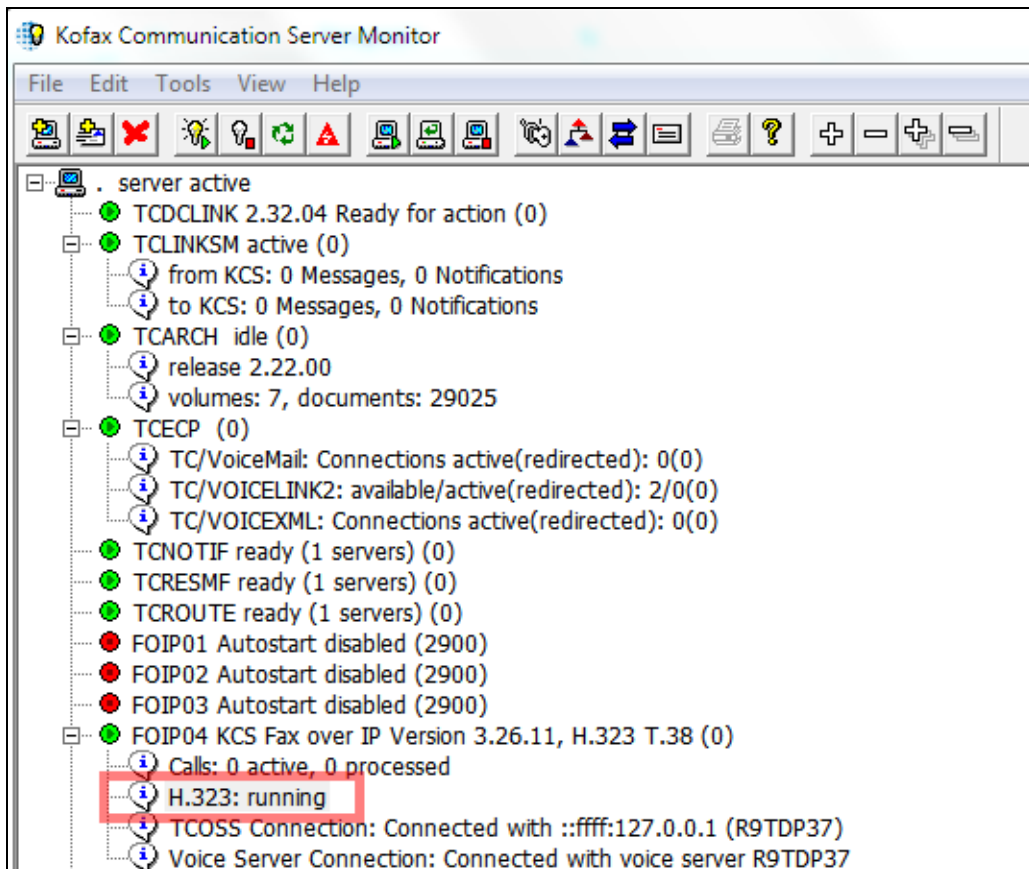
```
status signaling-group 7
                        STATUS SIGNALING GROUP

Group ID: 1
Group Type: h.323

Group State: in-service
```

7.2. Verify Kofax Communication Server H.323 Status

Start the Kofax Communication Server monitor and verify that **H.323** 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 7.0.1 using H.323 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 7.0.1, 2017.

[2] *Administering Avaya Aura® Session Manager*, Release 7.0.1, 2017.

[3] *Administering Avaya Aura® System Manager*, Release 7.0.1, 2017.

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

Appendix A

Pass-through Fax configuration.

```
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                                Encrypted SRTP: enforce-unenc-srtp
1: none
2:
3:
```

```
change ip-codec-set 1                                     Page 2 of 2

                                IP CODEC SET

                                Allow Direct-IP Multimedia? n

Mode          Redundancy      Packet
              Redundancy      Size (ms)
FAX          pass-through      0
Modem         off                0
TDD/TTY       US                3
H.323 Clear-channel n                0
SIP 64K Data  n                0                20
```

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