Application Notes for configuring Avaya Aura® Communication Manager R7.0 and Avaya Aura® Session Manager R7.0 with Kofax Communication Server from Kofax Ltd. using a Transport Layer Security enabled SIP 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 and Avaya Aura® Session Manager R7.0. Kofax Communication Server communicates with Avaya Aura® Session Manager via a Transport Layer Security enabled SIP 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 and Avaya Aura® Session Manager R7.0 using Transport Layer Security (TLS) on the SIP trunk connection. 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® Session Manager (Session 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 SIP connection to Session Manager. Session Manager was configured to connect to both Communication Manager and Kofax Communication Server via SIP trunks using Transport Layer Security (TLS).

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 using pass-through connection with G.711A and G.711MU codecs
- Basic fax receiving using pass-through connection with G.711A and G.711MU
- 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
- Verification that Message Waiting Indication is sent to the correct phone extensions when faxes are received and subsequently turned off when the fax is accessed
- 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 TLS (using Session 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 SIP trunk was configured between the Kofax Communication Server (using TLS) and the Session Manager SIP Signaling interface. A SIP trunk was also configured between Communication Manager and Session Manager (using TLS). An analogue Fax Machine was connected to an MM714 Analog card on the G430 Media Gateway. An Avaya 9641G (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. An Avaya Aura® System Manager was used to manage the Session Manager.

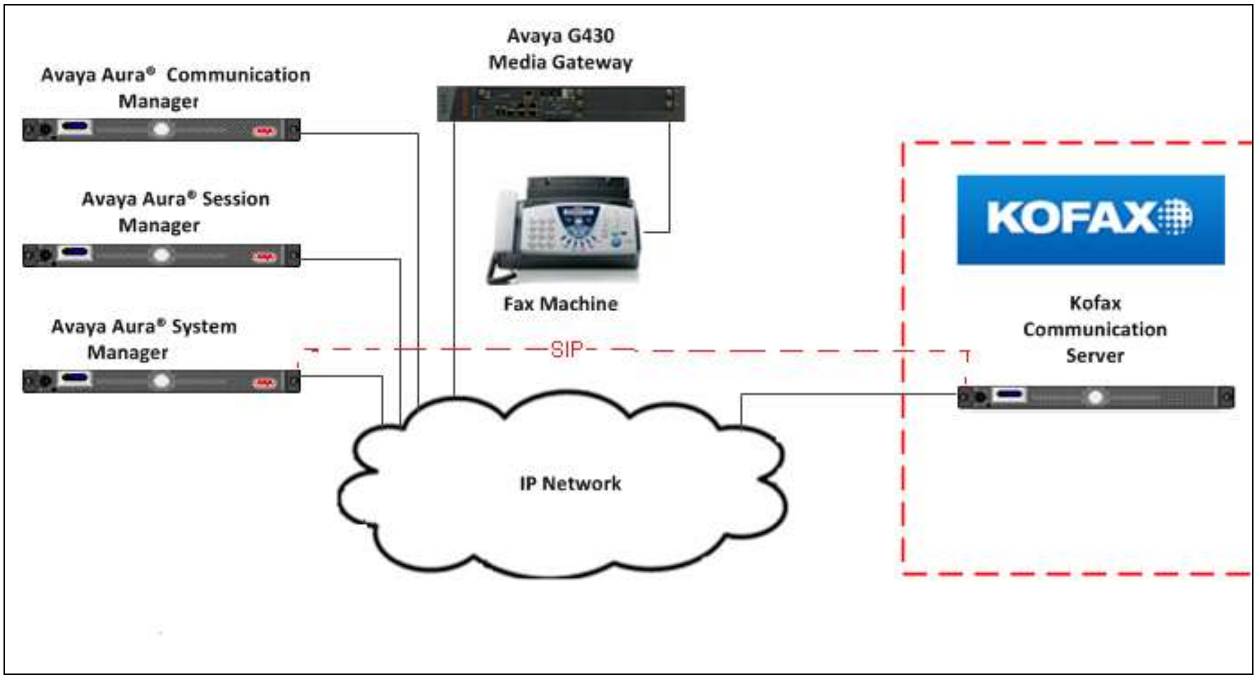

Avaya Aura® Communication Manager
Avaya G430 Media Gateway
Avaya Aura® Session Manager
Fax Machine
KOFAX
Avaya Aura® System Manager
SIP
Kofax Communication Server
IP Network

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 Aura® Session Manager	R7.0.0.1.700102
Avaya Aura® System Manager	R7.0.0.1 Build 7.0.0.0.16266-7.0.9.7001011 Update 7.0.0.1.4212
Avaya G430 Media Gateway Module MM714 (ANA)	Version 37.20.0 Version HW03 FW073
Kofax Equipment	**Software Version**
Kofax Communication Server KCS FoIP Application	Version 10.0.1 Version 3.24.22

Table 1: Hardware and Software Version Numbers

5. Configure Avaya Aura® Communication Manager

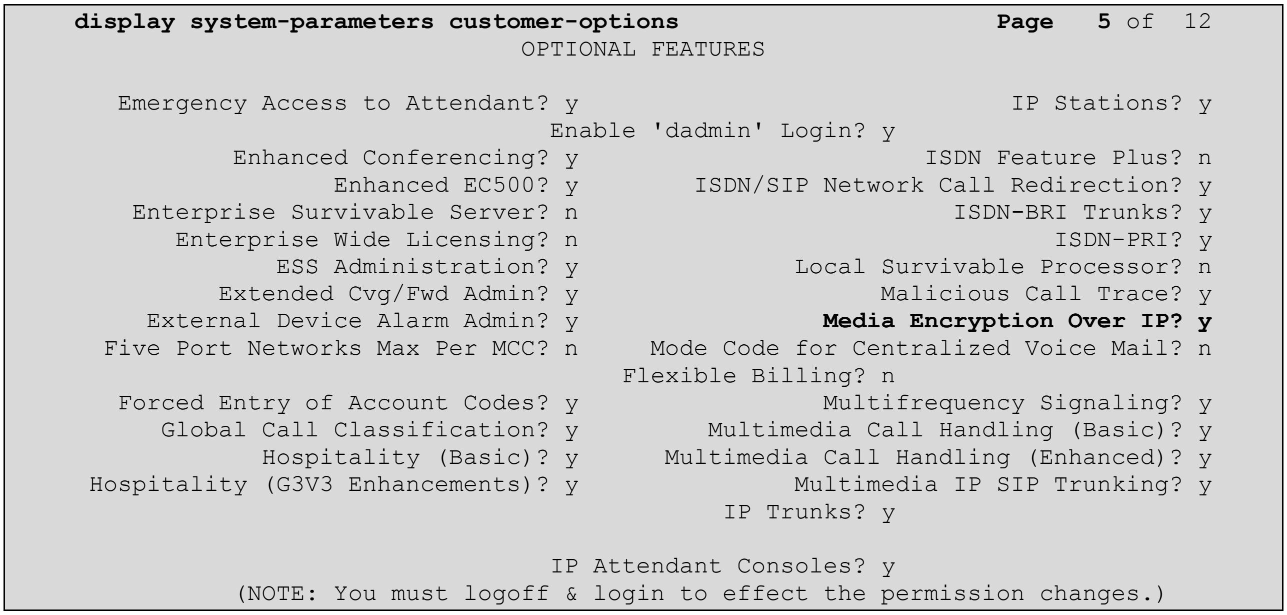
Configuration and verification operations on Communication Manager illustrated in this section were all performed using Avaya Site Administrator Emulation Mode. The information provided in this section describes the configuration of Communication Manager for this solution. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 10**.

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).

- Check Media Encryption license
- Configure Session Manager Node
- Configure Signaling-Group (for information only)
- Configure Trunk Group (for information only)
- Configure Fax Station
- Configure Codecs

5.1. Check Media Encryption license

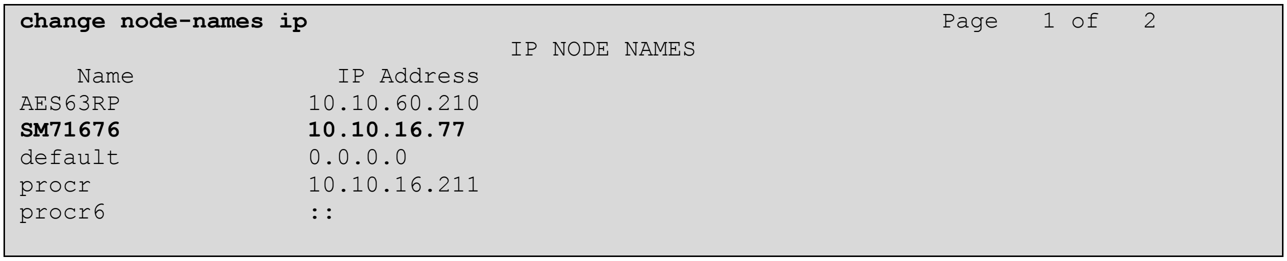
When using TLS to encrypt the signalling the Media will be encrypted using Secure RTP. On **Page 5** of the **system-parameters customer-options** screens check that **Media Encryption Over IP?** is set to **y**.



```
    display system-parameters customer-options                      Page    5 of  12
                                   OPTIONAL FEATURES

       Emergency Access to Attendant? y                              IP Stations? y
                                     Enable 'dadmin' Login? y
               Enhanced Conferencing? y                        ISDN Feature Plus? n
                      Enhanced EC500? y        ISDN/SIP Network Call Redirection? y
        Enterprise Survivable Server? n                          ISDN-BRI Trunks? y
           Enterprise Wide Licensing? n                                 ISDN-PRI? y
                  ESS Administration? y               Local Survivable Processor? n
              Extended Cvg/Fwd Admin? y                     Malicious Call Trace? y
         External Device Alarm Admin? y                 Media Encryption Over IP? y
      Five Port Networks Max Per MCC? n     Mode Code for Centralized Voice Mail? n
                                          Flexible Billing? n
       Forced Entry of Account Codes? y                 Multifrequency Signaling? y
          Global Call Classification? y         Multimedia Call Handling (Basic)? y
                 Hospitality (Basic)? y      Multimedia Call Handling (Enhanced)? y
     Hospitality (G3V3 Enhancements)? y               Multimedia IP SIP Trunking? y
                                                 IP Trunks? y

                                     IP Attendant Consoles? y
               (NOTE: You must logoff & login to effect the permission changes.)
```

5.2. Configure Session Manager Node

For Communication Manager to communicate with Session Manager a node must be configured. The screen shot below shows **SM71676** with IP address **10.10.16.77** was used.
Note: 10.10.16.77 IP address of the Session Manager SIP Signaling interface.



```
change node-names ip                                            Page    1 of    2
                                  IP NODE NAMES
    Name              IP Address
AES63RP             10.10.60.210
SM71676             10.10.16.77
default             0.0.0.0
procr               10.10.16.211
procr6              ::
```

5.3. 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 **SIP**
- **Transport Method** Enter **tls**
- **Enforce SIPS URI for SRTP?** Enter **y**
- **Near-end Node Name:** Enter **procr**
- **Far-end Node Name:** Enter **SM71676** (Session Manager Node as configured in **Section 5.1**)
- **Far-end Network Region:** Enter the appropriate Network Region (i.e. 1)
- **Far End Domain:** Enter the appropriate Domain

When the configuration is complete, press **F3** to save.

Page **1**

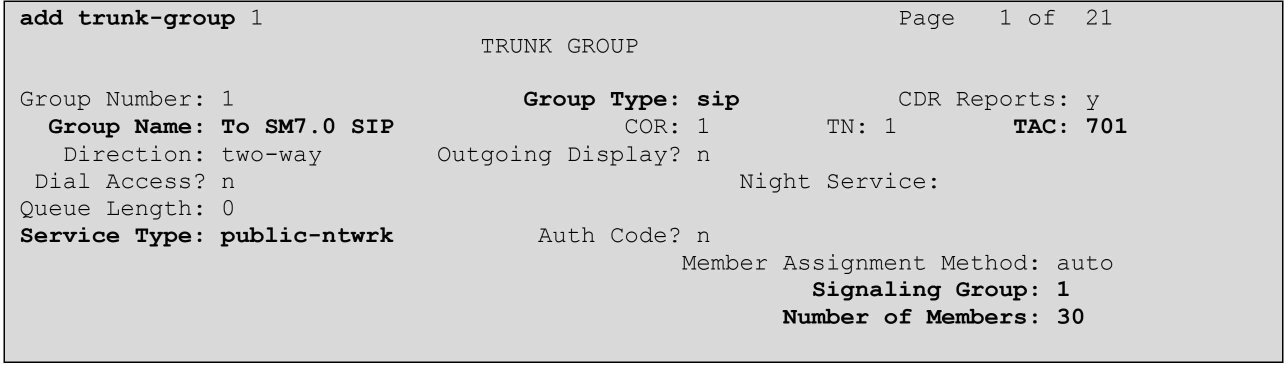
```
add signaling-group 1                                       Page   1 of   2
                                SIGNALING GROUP

 Group Number: 1              Group Type: sip
  IMS Enabled? n        Transport Method: tls
        Q-SIP? n
     IP Video? n                                   Enforce SIPS URI for SRTP? y
  Peer Detection Enabled? y  Peer Server: SM
 Prepend '+' to Outgoing Calling/Alerting/Diverting/Connected Public Numbers? y
Remove '+' from Incoming Called/Calling/Alerting/Diverting/Connected Numbers? n
Alert Incoming SIP Crisis Calls? n
   Near-end Node Name: procr                 Far-end Node Name: SM71676
 Near-end Listen Port: 5061                Far-end Listen Port: 5061
                                        Far-end Network Region: 1

Far-end Domain: devconnect.local
                                             Bypass If IP Threshold Exceeded? n
Incoming Dialog Loopbacks: eliminate                  RFC 3389 Comfort Noise? n
         DTMF over IP: rtp-payload             Direct IP-IP Audio Connections? y
Session Establishment Timer(min): 3                     IP Audio Hairpinning? n
         Enable Layer 3 Test? y                    Initial IP-IP Direct Media? n
H.323 Station Outgoing Direct Media? n             Alternate Route Timer(sec): 6
```

5.4. 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 **sip**
- **Group Name:** Enter an informative name for the trunk (i.e. **To SM7.0 SIP)**
- **TAC** Enter a TAC number (i.e. **701)**
- **Service Type:** Enter **public-ntwrk**
- **Signaling Group:** Enter the Signaling Group number as configured in **Section 5.2**
- **Number of Members:** Enter the number of channels required to connect to the Session Manger (during compliance testing 30 channels were used)

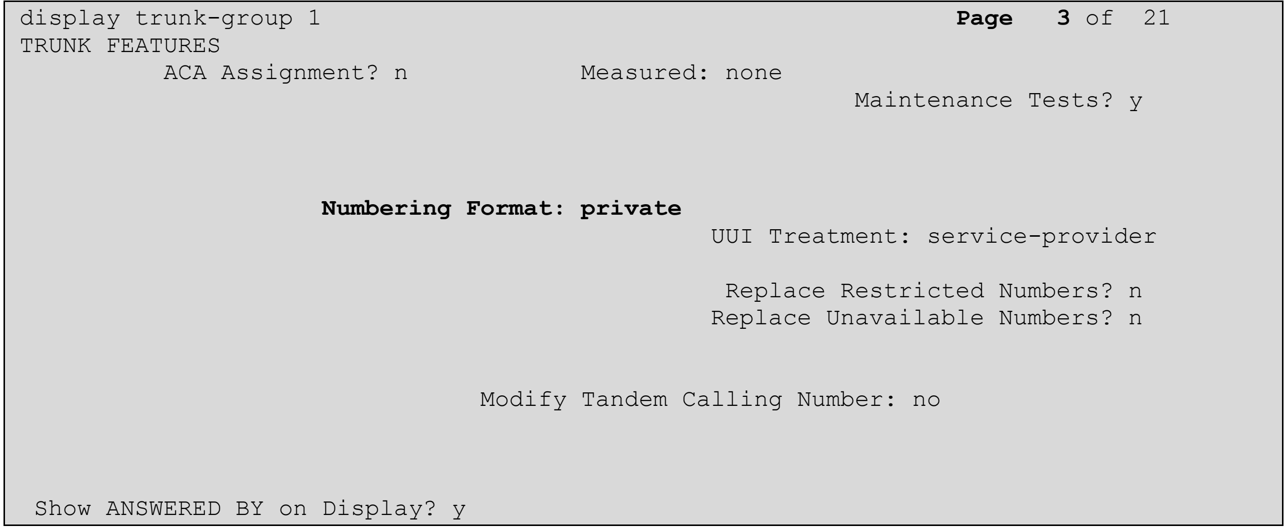
Page **1**



```
add trunk-group 1                                                   Page   1 of  21
                                TRUNK GROUP

Group Number: 1                    Group Type: sip           CDR Reports: y
  Group Name: To SM7.0 SIP                COR: 1        TN: 1        TAC: 701
   Direction: two-way       Outgoing Display? n
 Dial Access? n                                 Night Service:
Queue Length: 0
Service Type: public-ntwrk          Auth Code? n
                                              Member Assignment Method: auto
                                                       Signaling Group: 1
                                                     Number of Members: 30
```

Go to **Page 3** and enter **private** for **Numbering format**. When the configuration is complete, press **F3** to save.

Page **3**



```
display trunk-group 1                                                   Page   3 of  21
TRUNK FEATURES
          ACA Assignment? n            Measured: none
                                                          Maintenance Tests? y




                     Numbering Format: private
                                                UUI Treatment: service-provider

                                                 Replace Restricted Numbers? n
                                                Replace Unavailable Numbers? n



                                Modify Tandem Calling Number: no




 Show ANSWERED BY on Display? y
```

5.5. 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.

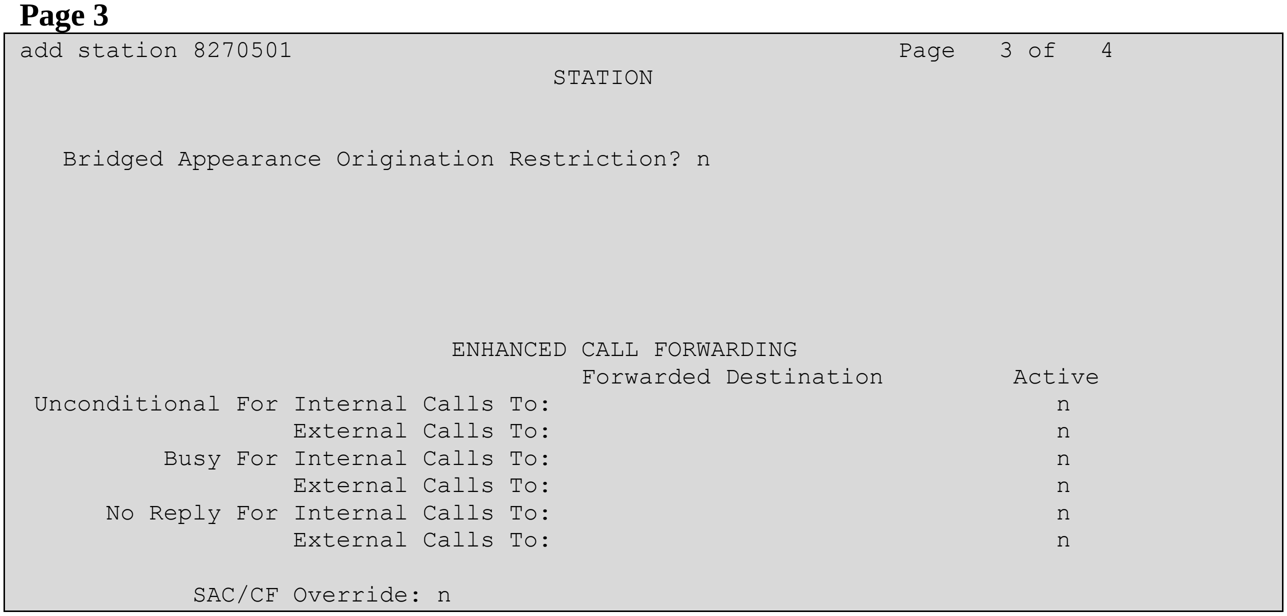
Page 1

```
add station 8270501                                          Page   1 of   4
                                     STATION

Extension: 8270501                       Lock Messages? n               BCC: 0
     Type: 2500                          Security Code: 1026             TN: 1
     Port: 002V301                     Coverage Path 1:                 COR: 1
     Name: Fax Machine 8270501         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

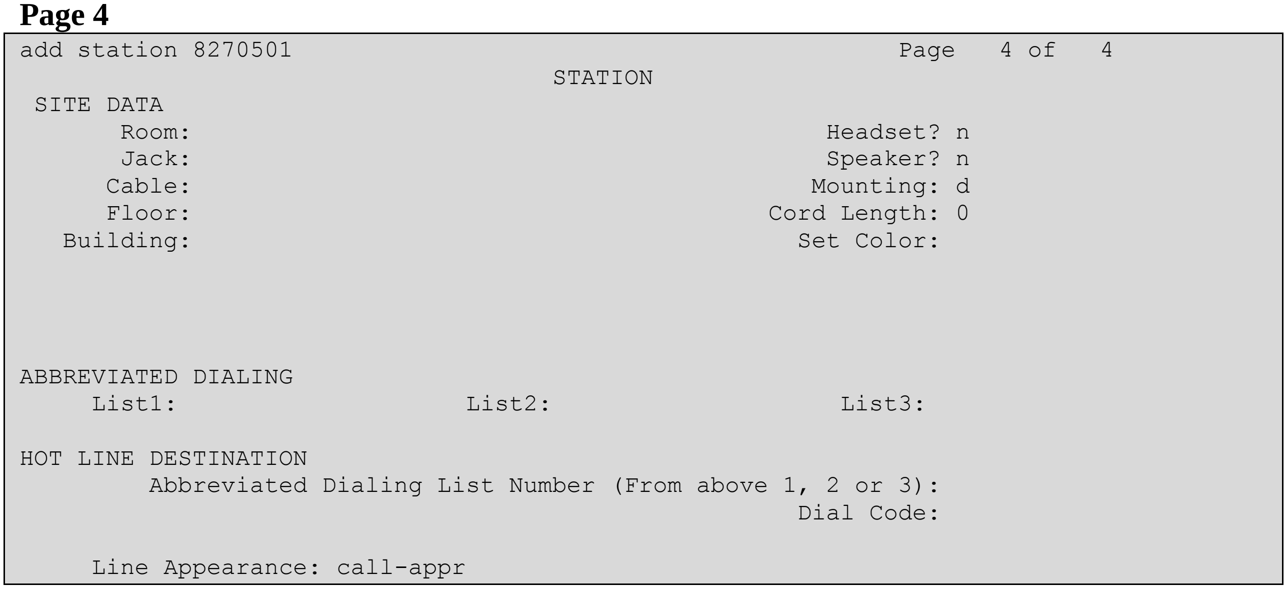
```
add station 8270501                                          Page   2 of   4
                                     STATION
FEATURE OPTIONS
           LWC Reception: spe
          LWC Activation? y                         Coverage Msg Retrieval? y
  LWC Log External Calls? n                                    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-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 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
```

Page 4



```
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
```

5.6. Configure Codecs

During compliance testing T.38 Fax was used. If using Pass-through Fax configuration see **Appendix A**. 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 **`2-srtp-aescm128-hmac32`** and **`1-srtp-aescm128-hmac80`**

Note: 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                  Encrypted SRTCP: enforce-unenc-srtcp
 1: 2-srtp-aescm128-hmac32
 2: 1-srtp-aescm128-hmac80
 3:
```

On Page 2 configure the following:

Set **Fax Mode** to **off** 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               off                      0
    Modem             off                      0
    TDD/TTY           US                       3
```

6. Configuring Avaya Aura® Session Manager

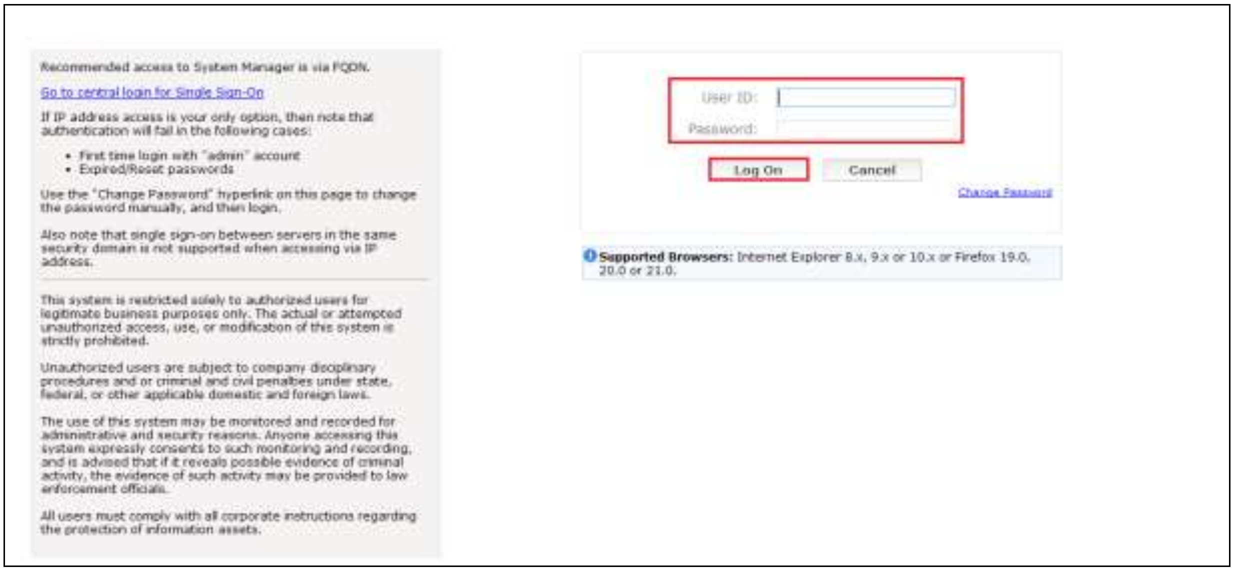
A number of configurations are required to enable the Session Manager to route faxes between Communication Manager and the Kofax Communication Server. All configurations of Session Manager are performed using System Manager. The configuration operations described in this section can be summarized as follows:

- Logging on to Avaya Aura® System Manager
- Administer SIP Domain
- Administer Locations
- Create Kofax Communication Server as a SIP Entity
- Create an Entity Link for Kofax Communication Server
- Create a Routing Policy Kofax Communication Server
- Create a Dial Pattern for Kofax Communication Server

Note: See **Appendix B** for a screen shot of the Entity Link used between Session Manager and Communication Manager.

6.1. Logging on to Avaya Aura® System Manager

Log on by accessing the browser-based GUI of System Manager, using the URL “http://<fqdn>/SMGR” or “http://<ip-address>/SMGR”, where:
“<fqdn> is the fully qualified domain name of the Avaya Aura® System Manager or the“<ipaddress>” is the IP address of Avaya Aura® System Manager.
Once the System Manager web page opens log in with the appropriate credentials and click on the **Log on** button.



Recommended access to System Manager is via FQDN.

Go to central login for Single Sign-On

If IP address access is your only option, then note that authentication will fail in the following cases:

- First time login with "admin" account
- Expired/Reset passwords

Use the "Change Password" hyperlink on this page to change the password manually, and then login.

Also note that single sign-on between servers in the same security domain is not supported when accessing via IP address.

This system is restricted solely to authorized users for legitimate business purposes only. The actual or attempted unauthorized access, use, or modification of this system is strictly prohibited.

Unauthorized users are subject to company disciplinary procedures and or criminal and civil penalties under state, federal, or other applicable domestic and foreign laws.

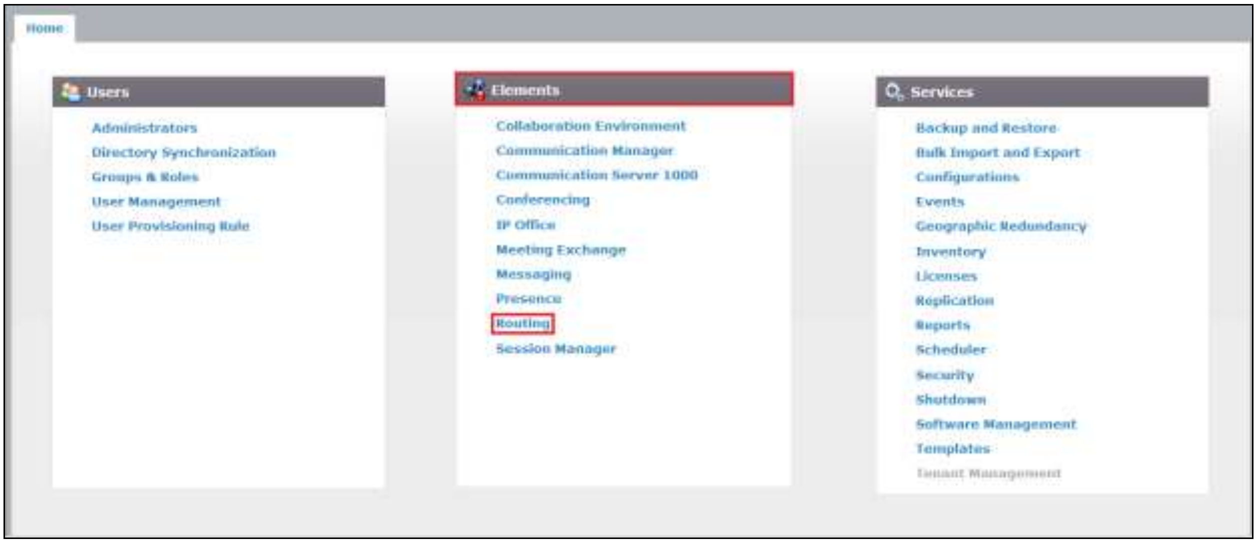
The use of this system may be monitored and recorded for administrative and security reasons. Anyone accessing this system expressly consents to such monitoring and recording, and is advised that if it reveals possible evidence of criminal activity, the evidence of such activity may be provided to law enforcement officials.

All users must comply with all corporate instructions regarding the protection of information assets.

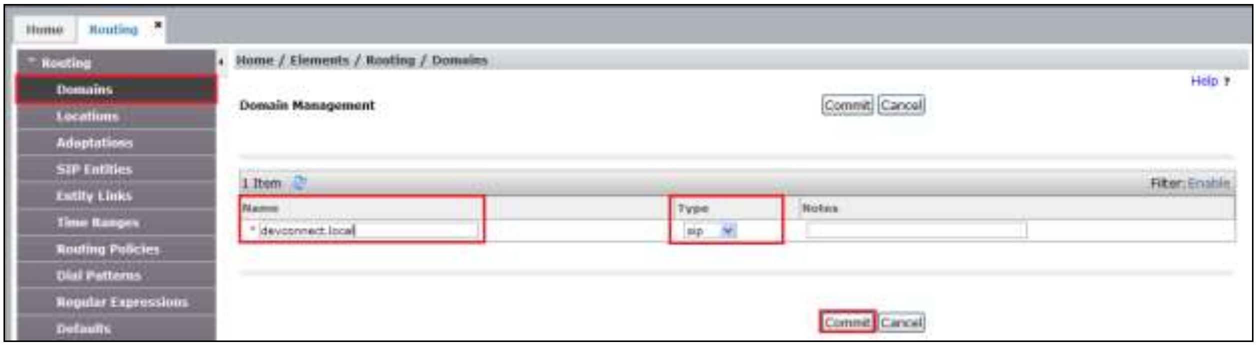
Supported Browsers: Internet Explorer 8.x, 9.x or 10.x or Firefox 19.0, 20.0 or 21.0.

6.2. Administer SIP Domain

Once logged in, select **Routing** from under the **Elements** column.



Select **Domains** on the left panel menu and then click on the **New** button (not shown). In the **Name** field enter the domain of the enterprise (i.e. **devconnect.local**) and select **sip** from the dropdown box. Click **Commit** to save changes.



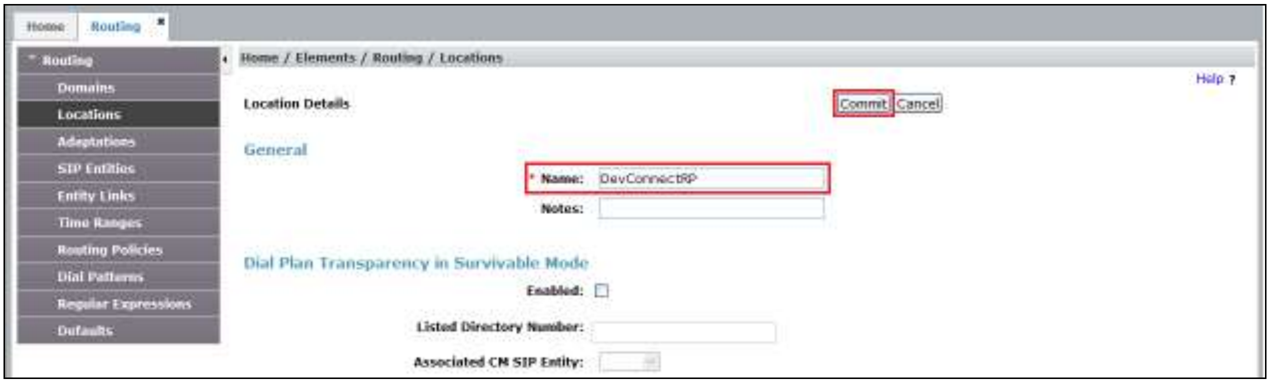
Home / Elements / Routing / Domains

Domain Management

Name	Type	Notes
* devconnect.local	sip	

6.3. Administer Locations

Locations can be used to identify logical and/or physical locations where SIP Entities reside for the purposes of bandwidth management. One location is added to the sample configuration for all of the enterprise SIP entities. Select **Locations** on the left panel menu and then click on the **New** button (not shown). In the **Name** field enter an informative name for the location (i.e. **DevConnectRP**). During compliance testing, all other fields were left at default values.



Home / Elements / Routing / Locations

Location Details

General

* Name: DevConnectRP

Notes:

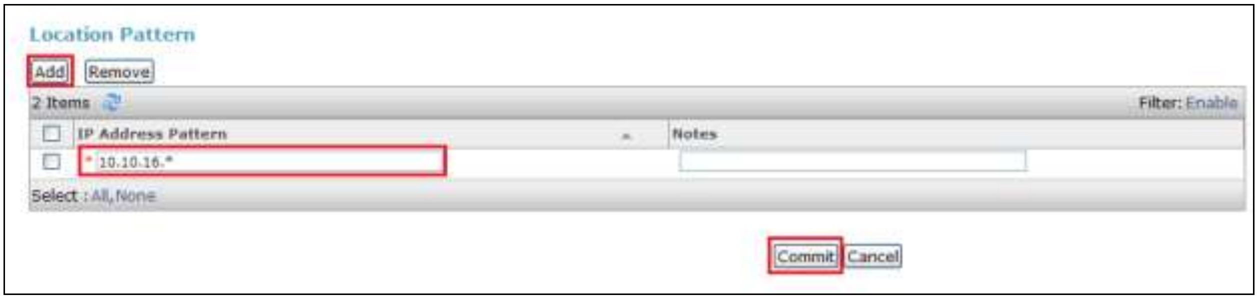
Dial Plan Transparency in Survivable Mode

Enabled: □

Listed Directory Number:

Associated CM SIP Entity:

Scroll to the bottom of the page and under **Location Pattern**, click **Add**, then enter an **IP Address Pattern** in the resulting new row, * is used to specify any number of allowed characters at the end of the string. Below is the location configuration used during compliance testing.



Location Pattern

2 Items

□	IP Address Pattern	Notes
□	* 10.10.16.*	

6.4. Create Kofax Communication Server as a SIP Entity

A SIP Entity must be added for the Kofax Server. To add a SIP Entity, select **SIP Entities** on the left panel menu and then click on the **New** button (not shown).

Note: A SIP Entity was already configured for the Communication Manager and was called **CM63**.

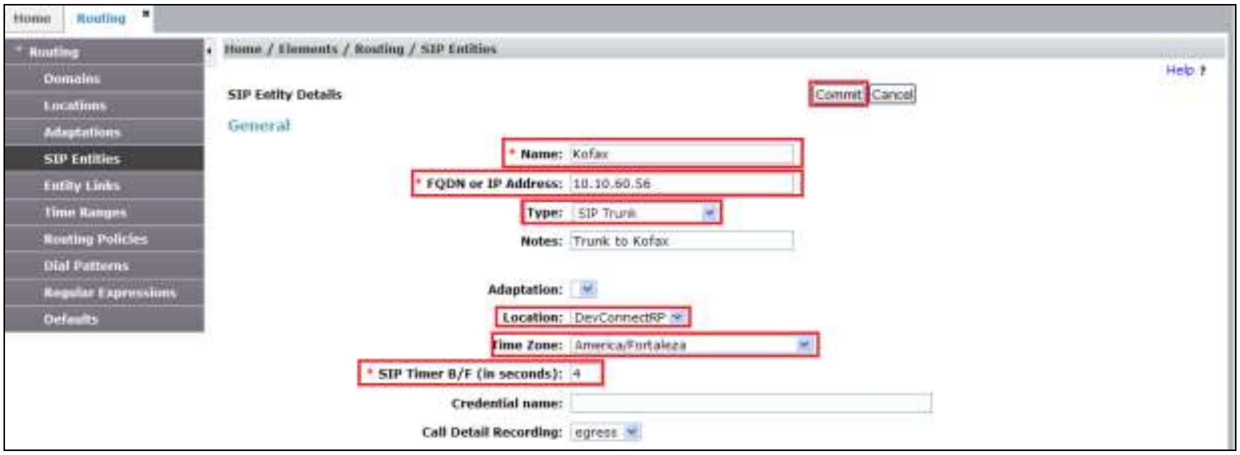
Enter the following for the ApplianX SIP Entity:

Under **General** enter the following:

• **Name**	Enter an informative name (e.g., **Kofax**)
• **FQDN or IP Address**	Enter the IP address of the of the Kofax Server
• **Type**	Select **SIP Trunk** from the dropdown box
• **Location**	Select the location from the dropdown box that was configured in **Section 6.3**
• **Time Zone**	Select Time zone for this location from the dropdown box
• **SIP Timer**	Enter **4**

Once the correct information is entered click the **Commit** button.

Note: During compliance testing **Adaptation** was left blank.



Home / Elements / Routing / SIP Entities

SIP Entity Details

General

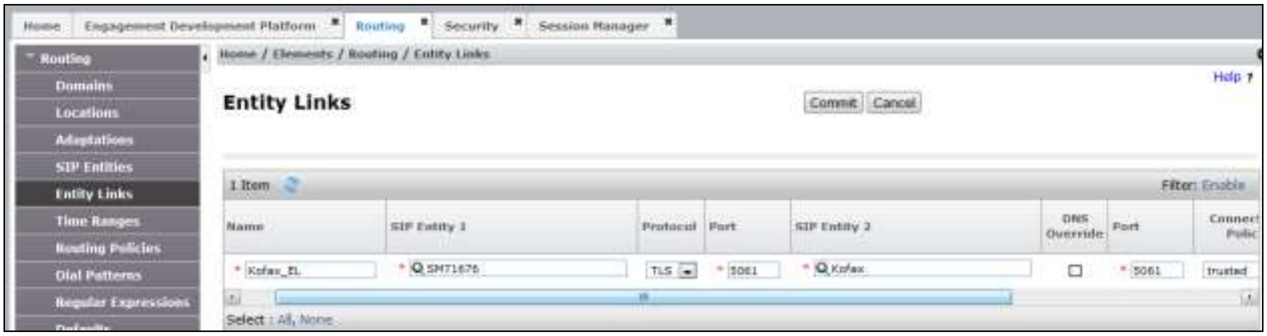
* Name: Kofax
* FQDN or IP Address: 10.10.60.56
Type: SIP Trunk
Notes: Trunk to Kofax
Adaptation:
Location: DevConnectRP
Time Zone: America/Fortaleza
* SIP Timer B/F (in seconds): 4
Credential name:
Call Detail Recording: egress

6.5. Create an Entity Link for Kofax Communication Server

The SIP trunk between Session Manager and the Kofax Server requires an Entity Link.
To add an Entity Link, select **Entity Links** on the left panel menu and click on the **New** button (not shown) Enter the following:

- **Name** An informative name, (e.g. **Kofax Link**)
- **SIP Entity 1** Select **SM71676** from the **SIP Entity 1** dropdown box
- **Protocol** Select **TLS** from the Protocol drop down box
- **Port** Enter **5061**
- **SIP Entity 2** Select **Kofax** from the **SIP Entity 2** dropdown box (configured in **Section 6.4)**
- **Port** Enter **5061** as the Port
- **Connection Policy** Select **trusted** from the dropdown box

Click **Commit** to save changes. The following screen shows the Entity Links used.



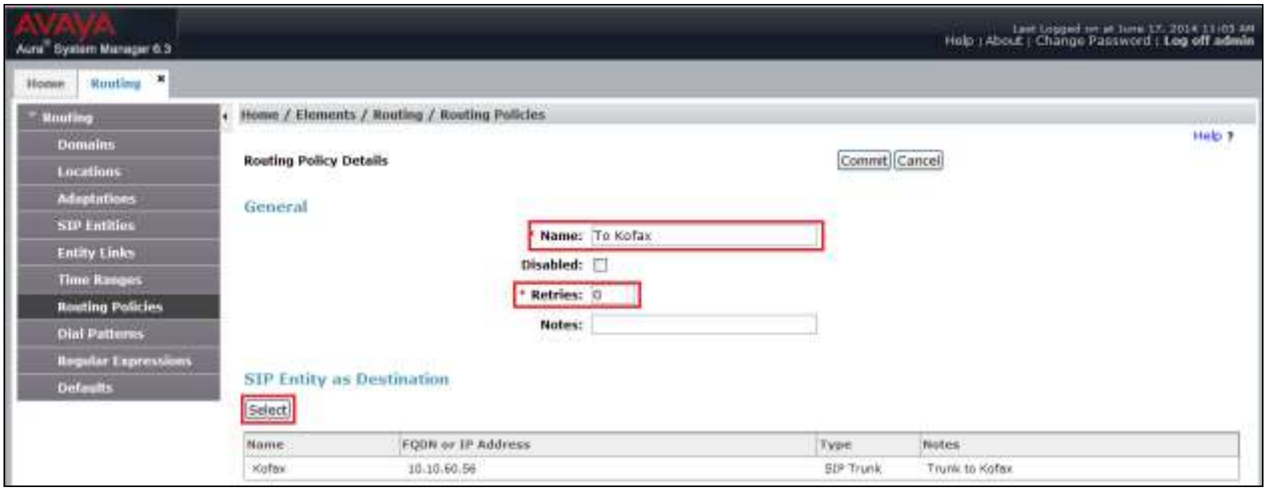
Entity Links

1 Item

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	DNS Override	Port	Connect Polic
* Kofax_EL	* SM71676	TLS	* 5061	* Kofax	☐	* 5061	trusted

6.6. Create a Routing Policy for Kofax Communication Server

Create routing policies to direct calls to the Kofax Server via Session Manager. To add a routing policy, select **Routing Policies** on the left panel menu and then click on the **New** button (not shown). In **Routing Policy Details** enter an informative name in the **Name** field (example, **To Kofax**) and enter **0** in the **Retries** field**.** At **SIP Entity as Destination**, click the **Select** button. A Routing Policy was also configured to direct calls to Communication Manager, but is outside the scope of these Application Notes.



Routing Policy Details

General

Name: To Kofax

Disabled: □

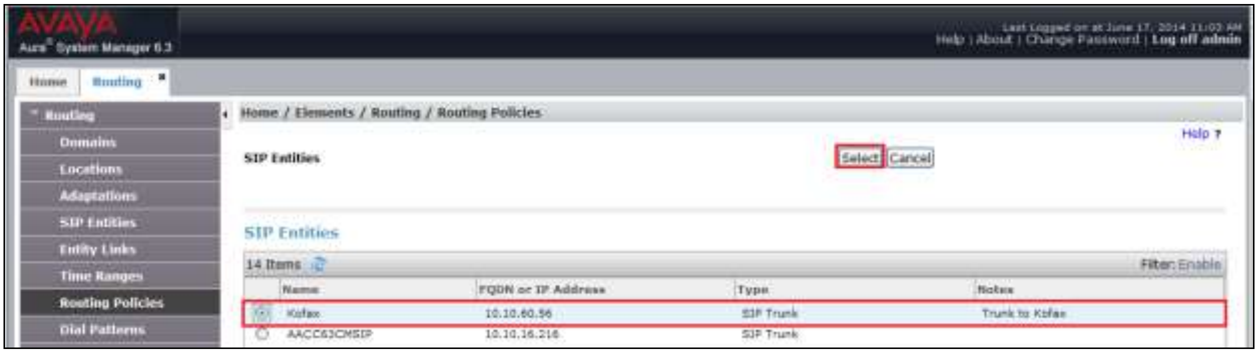
* Retries: 0

Notes:

SIP Entity as Destination

Name	FQDN or IP Address	Type	Notes
Kofax	10.10.60.56	SIP Trunk	Trunk to Kofax

Once the **SIP Entity** List screen opens, check the **Kofax** radio button. Click on the **Select** button to confirm the chosen options and then return to the **Routing Policies Details** screen and select the **Commit** button (not shown) to save.



SIP Entities

SIP Entities

14 Items

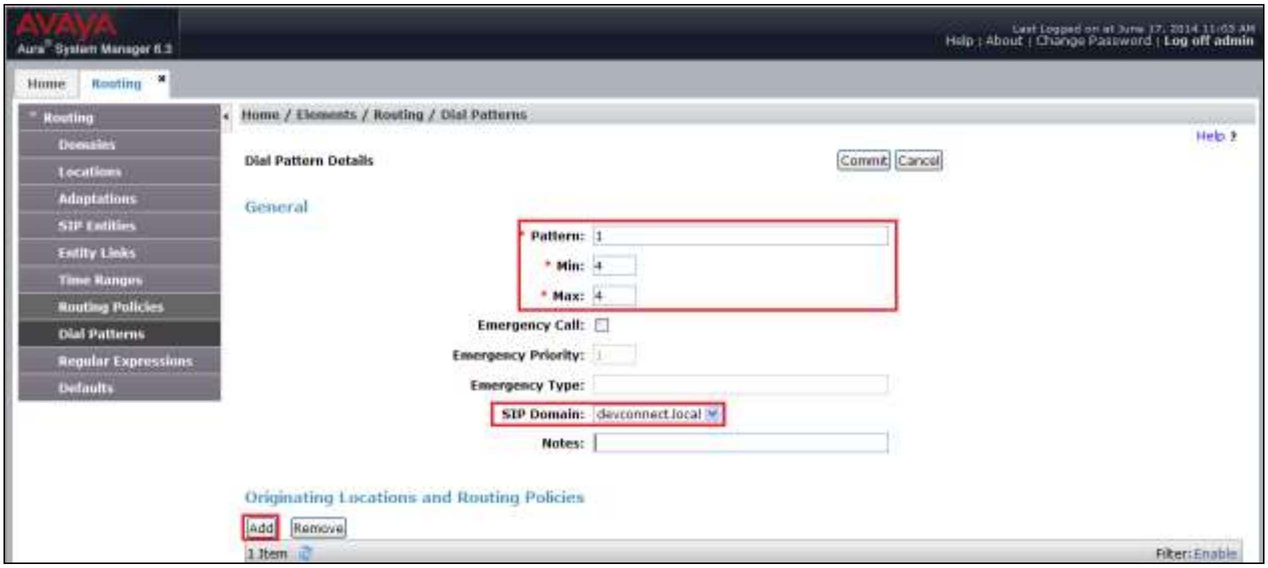
	Name	FQDN or IP Address	Type	Notes
●	Kofax	10.10.60.56	SIP Trunk	Trunk to Kofax
○	AACC63CMSIP	10.10.16.216	SIP Trunk	

6.7. Create a Dial Pattern for Kofax Communication Server

A dial pattern must be created on Session Manager to route calls to and from the Kofax Server. During compliance testing a number of dial patterns were used. The example below shows 1. To configure the Dial Pattern to route calls to the Kofax Server, select **Dial Patterns** on the left panel menu and then click on the **New** button (not shown). A Dial Pattern was also configured to route calls to Communication Manager, but is outside the scope of these Application Notes. Under **General** enter out the following:

- **Pattern** Enter **1**
- **Min** Enter **4** as the minimum length of dialed number
- **Max** Enter **4** as the maximum length of dialed number
- **SIP Domain** Select **All** from the drop down box

Click the **Add** button in **Originating Locations and Routing Policies**.



Dial Pattern Details

General

* Pattern: 1

* Min: 4

* Max: 4

Emergency Call: □

Emergency Priority: 1

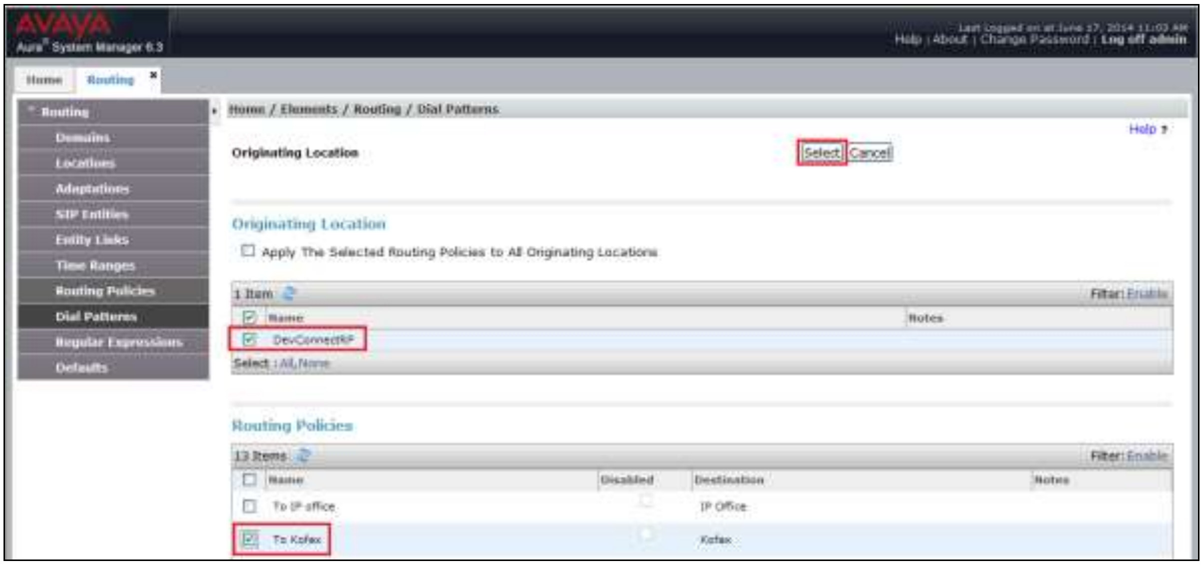
Emergency Type:

SIP Domain: devconnect.local

Notes:

Originating Locations and Routing Policies

In **Originating Location** check the **DevConnectRP** check box. Under **Routing Policies** check the **To Kofax** check box. Click on the **Select** button to confirm the chosen options and then be returned to the Dial Pattern screen (shown previously), select **Commit** button to save not shown.



☐ Apply The Selected Routing Policies to All Originating Locations

1 Item

☑	Name	Notes
☑	DevConnectRP	

Select : All, None

13 Items

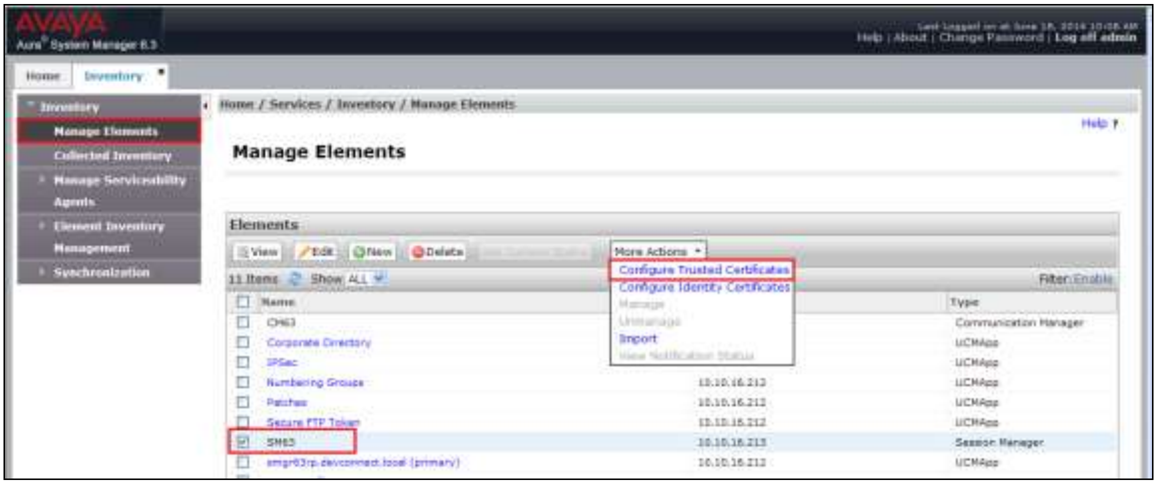
☐	Name	Disabled	Destination	Notes
☐	To IP office	☐	IP Office	
☑	To Kofax	☐	Kofax	

6.8. Manage Certificates

In order for Session Manager and the Kofax Server to successfully negotiate a TLS connection certificates must be exchanged and authenticated during the TLS handshake. For two-way authentication both Session Manager and the Kofax Server need to import each other’s certificate. See **Appendix B** for information relating to exporting the Session Manager trusted certificates.

6.8.1. Adding Kofax Server trusted certificate

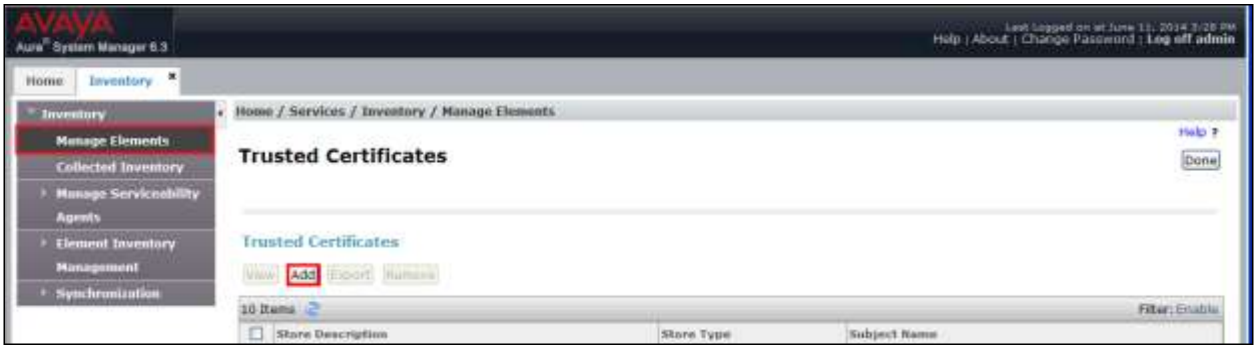
Before adding the trusted certificate it must first be placed in a location accessible by System Manager. To add the certificate select **Inventory** from the **Home** Screen under **Services** (not shown). Select **Managed Elements** and select the Session Manager you are using for the TLS SIP Trunk. From the More Actions drop down select **Configure Trusted Certificates**.


AVAYA
Aura® System Manager 6.3
Last Logged on at June 18, 2014 10:08 AM
Help | About | Change Password | Log off admin
Home
Inventory
Inventory
Manage Elements
Collected Inventory
Manage Serviceability Agents
Element Inventory Management
Synchronization
Home / Services / Inventory / Manage Elements
Help ?
Manage Elements
Elements
View
Edit
New
Delete
More Actions
Configure Trusted Certificates
Configure Identity Certificates
Manage
Unmanage
Import
View Notification Status
Filter: Enable

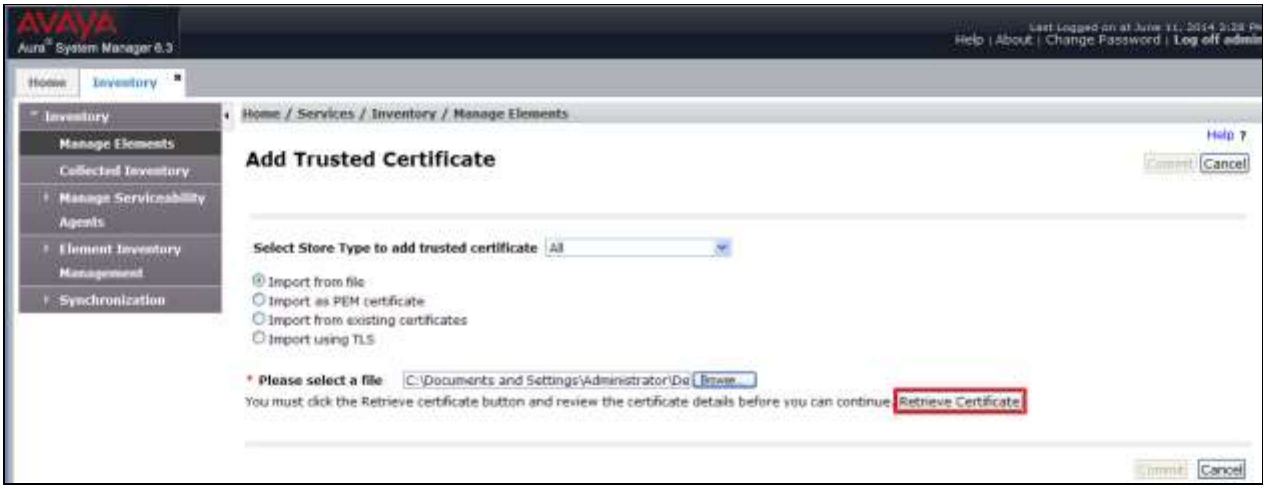
11 Items Show ALL

☐	Name		Type
☐	CM63		Communication Manager
☐	Corporate Directory		UCMApp
☐	IPSec		UCMApp
☐	Numbering Groups	10.10.16.212	UCMApp
☐	Patches	10.10.16.212	UCMApp
☐	Secure FTP Token	10.10.16.212	UCMApp
☑	SM63	10.10.16.213	Session Manager
☐	smgr63rp.devconnect.local (primary)	10.10.16.212	UCMApp

Once the **Trusted Certificate** screen opens click on the **Add** button.



Once the **Add Trusted Certificate** screen opens select **All** from the **Select Store Type to add trusted certificate** dropdown. Select **Import from file** and **Browse** to the location of the certificate file supplied by Kofax beside **Please select a file**. Click on **Retrieve Certificate**.


AVAYA
Aura® System Manager 6.3
Last Logged on at June 11, 2014 3:28 PM
Help | About | Change Password | Log off admin
Home
Inventory
Inventory
Manage Elements
Collected Inventory
Manage Serviceability Agents
Element Inventory Management
Synchronization
Home / Services / Inventory / Manage Elements
Help ?
Add Trusted Certificate
Commit
Cancel
Browse...
Retrieve Certificate
Commit
Cancel

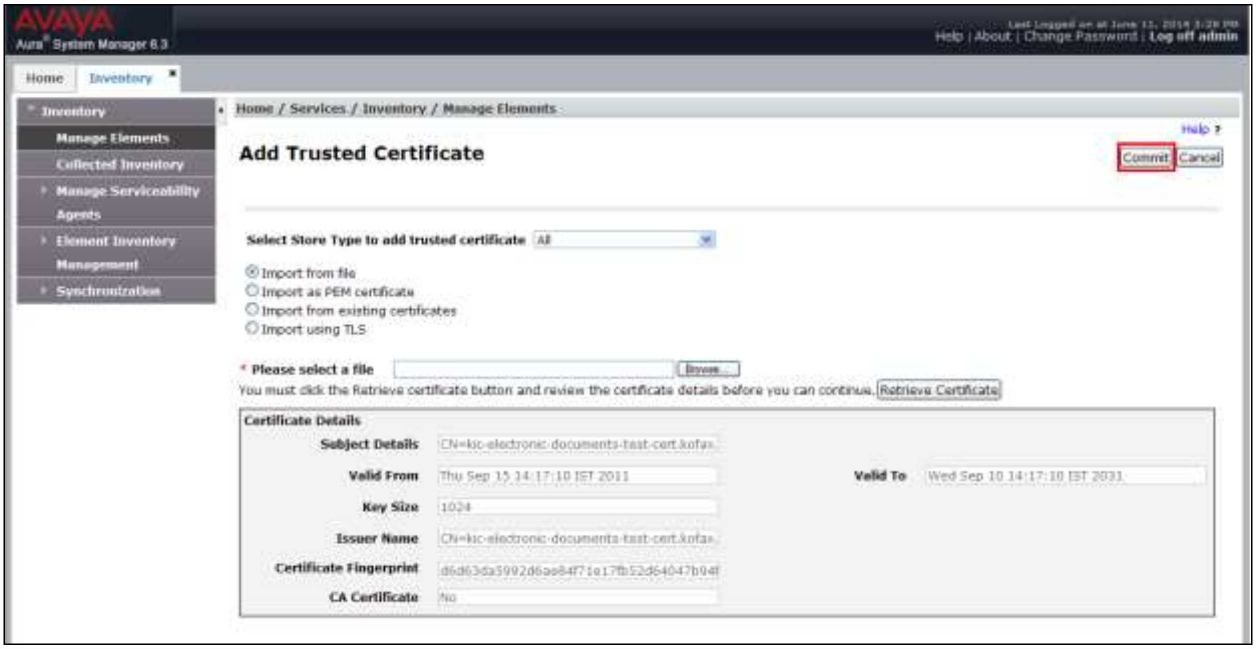
Select Store Type to add trusted certificate: All

● Import from file
○ Import as PEM certificate
○ Import from existing certificates
○ Import using TLS

* Please select a file: C:\Documents and Settings\Administrator\De

You must click the Retrieve certificate button and review the certificate details before you can continue

Verify the certificate information and then click on **Commit** to store the certificate.


AVAYA
Aura® System Manager 6.3
Help | About | Change Password | Log off admin
Home
Inventory
Inventory
Manage Elements
Collected Inventory
Manage Serviceability Agents
Element Inventory Management
Synchronization
Home / Services / Inventory / Manage Elements
Help ?
Commit
Cancel
Browse...
Retrieve Certificate

Add Trusted Certificate

Select Store Type to add trusted certificate: All

● Import from file
○ Import as PEM certificate
○ Import from existing certificates
○ Import using TLS

* Please select a file

You must click the Retrieve certificate button and review the certificate details before you can continue.

Certificate Details

Subject Details	CN=kic-electronic-documents-test-cert.kofax.		
Valid From	Thu Sep 15 14:17:10 IST 2011	Valid To	Wed Sep 10 14:17:10 IST 2031
Key Size	1024		
Issuer Name	CN=kic-electronic-documents-test-cert.kofax.		
Certificate Fingerprint	d6d63da5992d6ae84f71e17fb52d64047b94f		
CA Certificate	No		

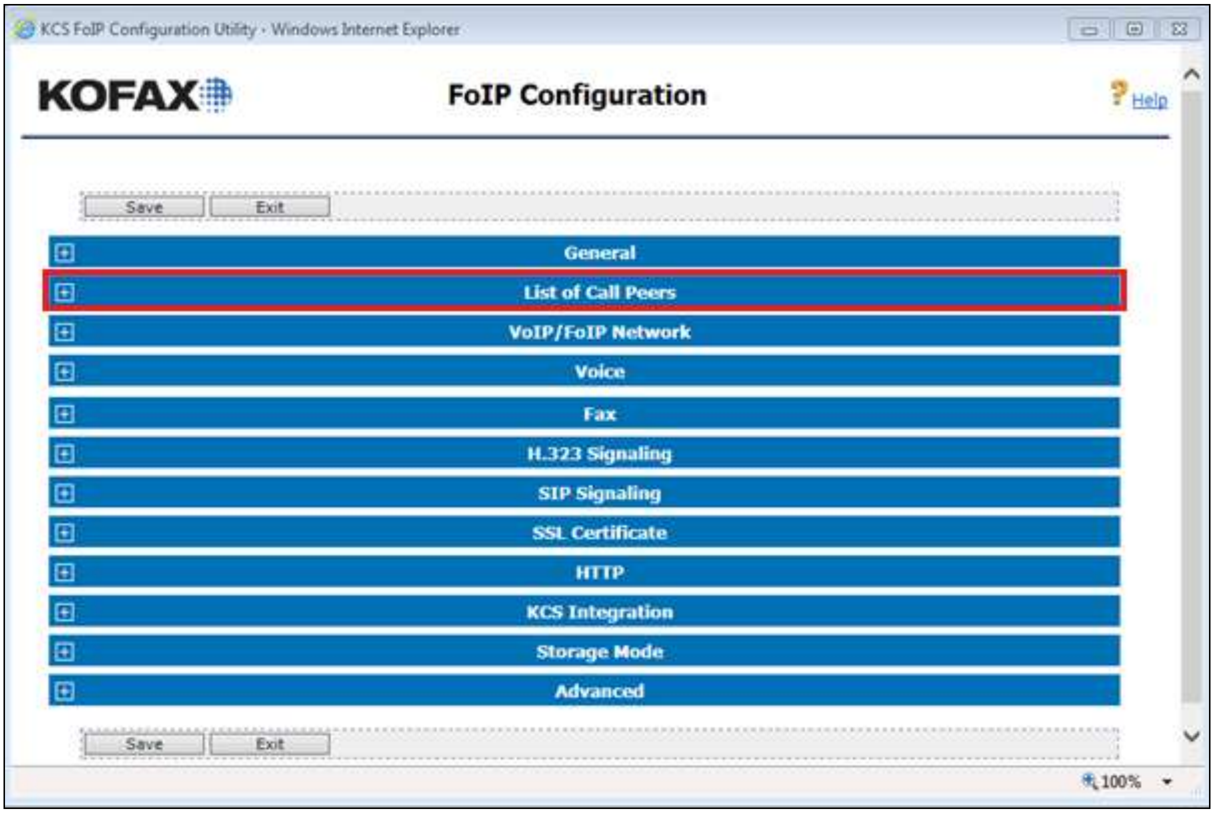
7. Configure Kofax Communication Server

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 SIP Signaling
- Configure KCS Integration

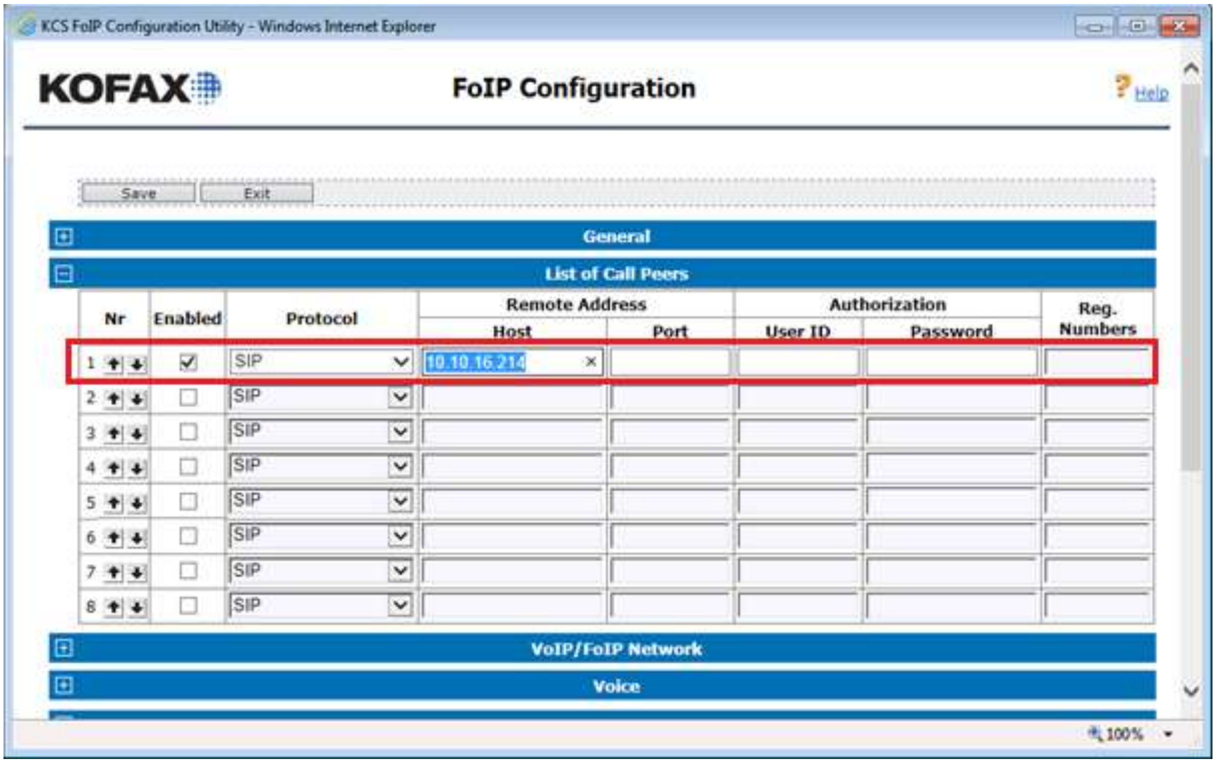
7.1. Configure List of Call Peers

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 **SIP** from the dropdown box
- **Host** Enter the IP address of the Session Manager SIP Signaling Interface (see **Section 5.1**)



Nr	Enabled	Protocol	Remote Address		Authorization		Reg. Numbers
			Host	Port	User ID	Password	
1	☑	SIP	10.10.16.214				
2	□	SIP					
3	□	SIP					
4	□	SIP					
5	□	SIP					
6	□	SIP					
7	□	SIP					
8	□	SIP					

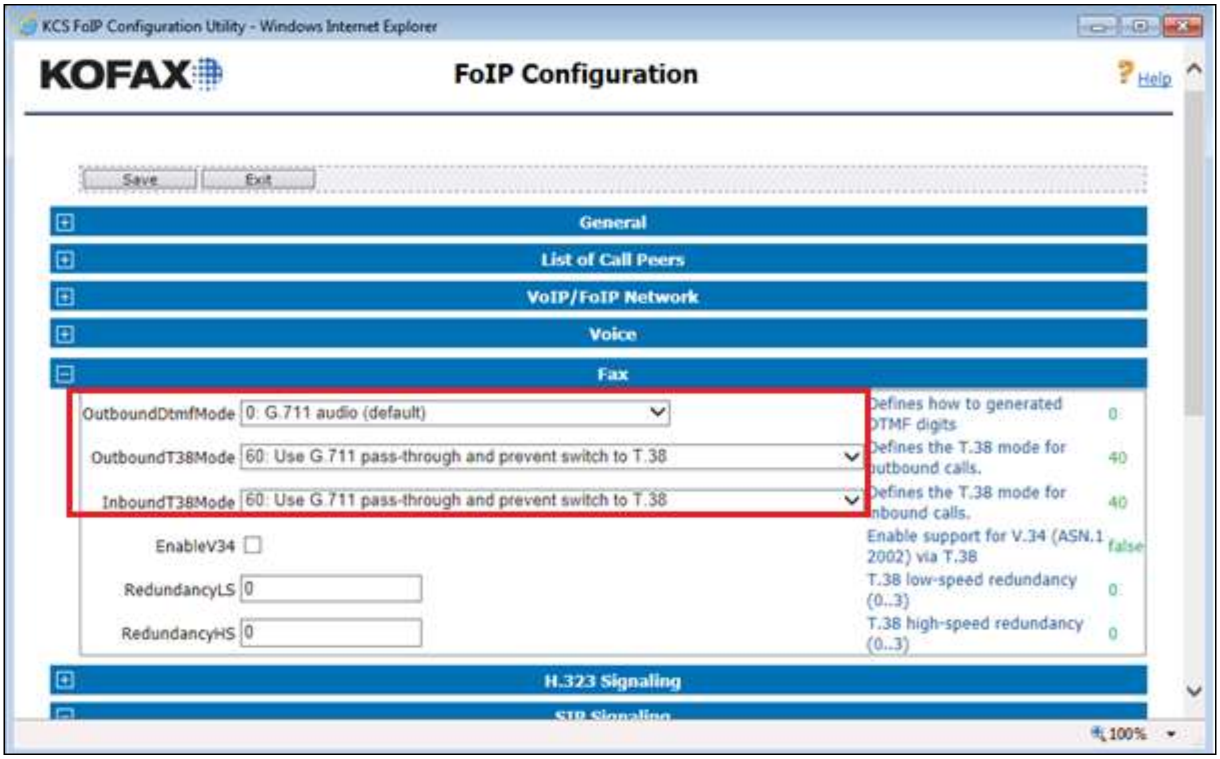
7.2. Configure Fax

Fax can be configured for **G.711 Pass-through**.

7.2.1. 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 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

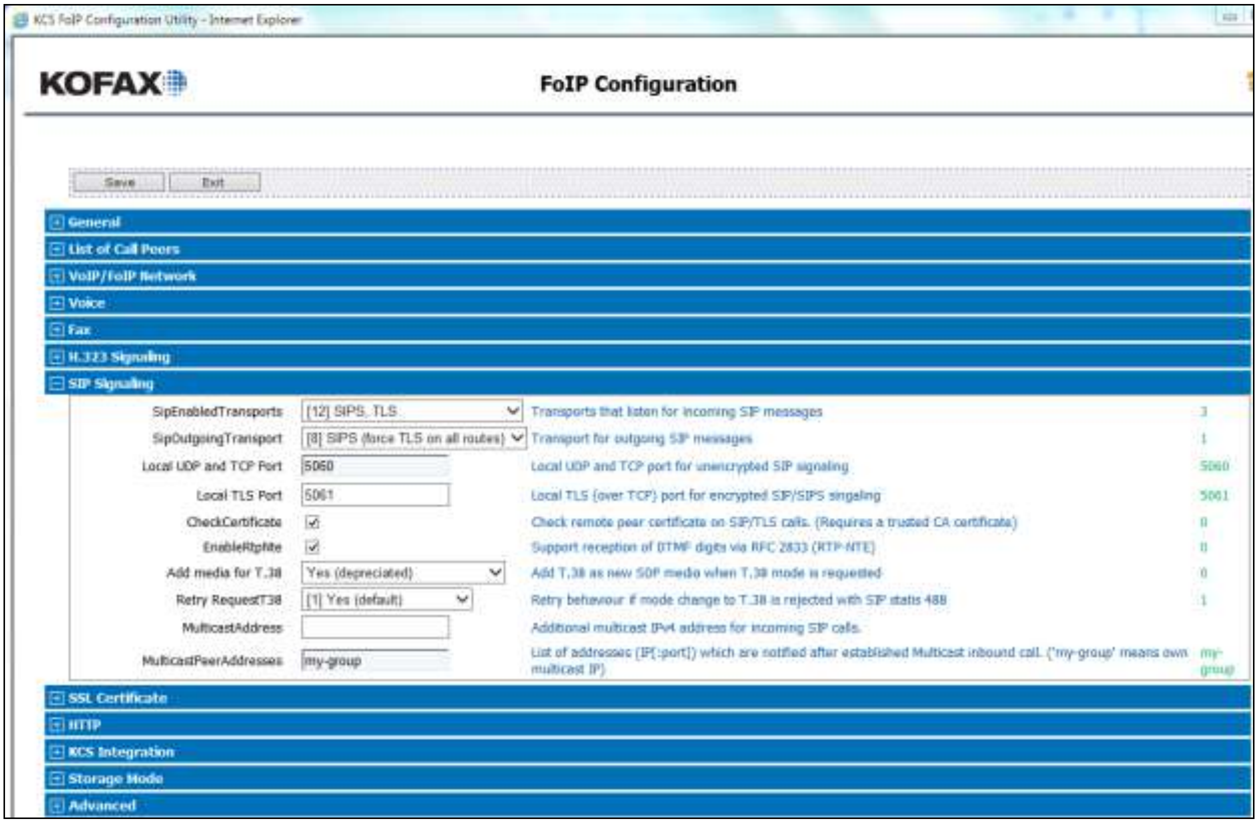


OutboundDtmfMode	0: G.711 audio (default)	Defines how to generated DTMF digits	0
OutboundT38Mode	60: Use G.711 pass-through and prevent switch to T.38	Defines the T.38 mode for outbound calls.	40
InboundT38Mode	60: Use G.711 pass-through and prevent switch to T.38	Defines the T.38 mode for inbound calls.	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

7.3. Configure SIP Signaling

Open the **SIP Signaling** menu item and complete the following:

- **SipEnabledTransport** Select **[12] SIPS, TLS** from the dropdown box
- **SipOutgoingTransport** Select **[8] SIPS (force TLS on all routes)** from the dropdown box
- **Local TLS Port** Enter **5061**

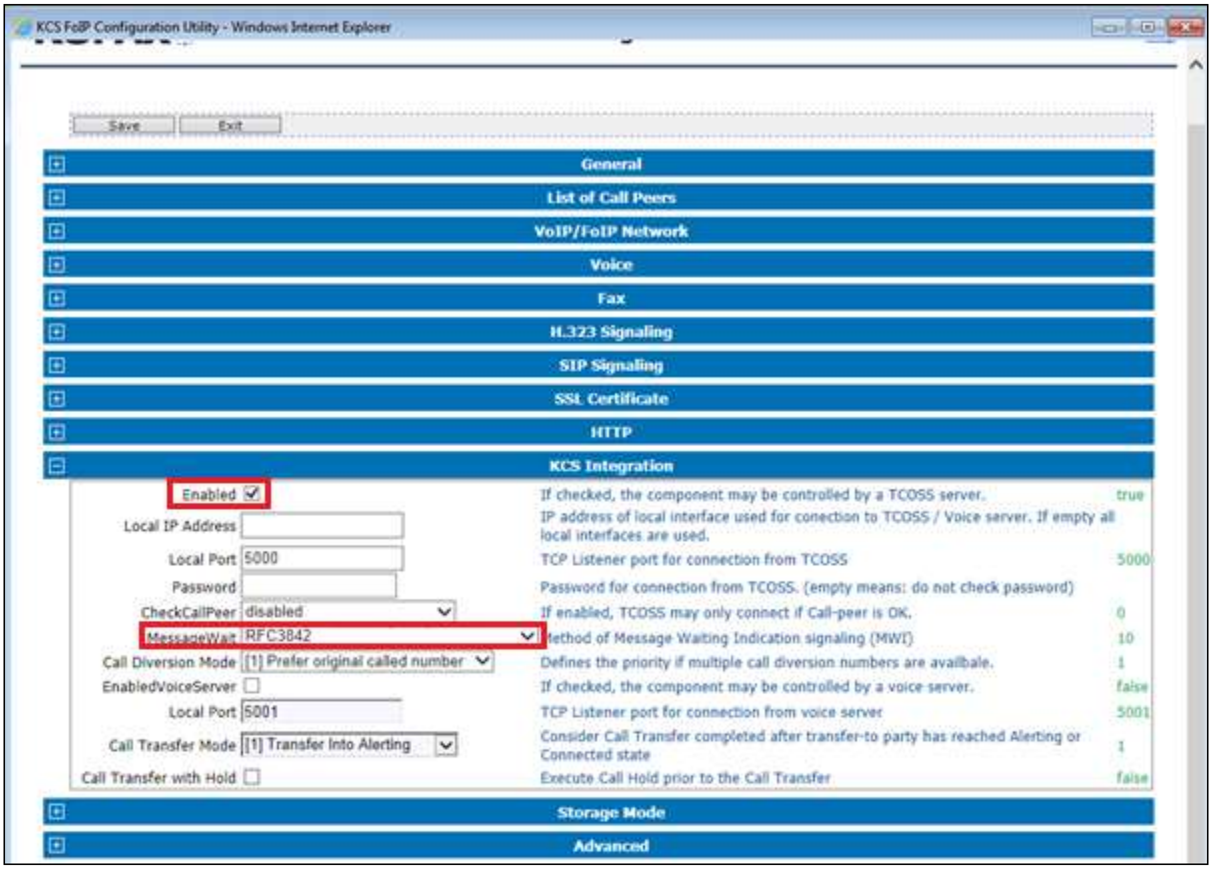


SipEnabledTransports	[12] SIPS, TLS	Transports that listen for incoming SIP messages	3
SipOutgoingTransport	[8] SIPS (force TLS on all routes)	Transport for outgoing SIP messages	1
Local UDP and TCP Port	5060	Local UDP and TCP port for unencrypted SIP signaling	5060
Local TLS Port	5061	Local TLS (over TCP) port for encrypted SIP/SIPS singaling	5061
CheckCertificate	☑	Check remote peer certificate on SIP/TLS calls. (Requires a trusted CA certificate)	0
EnableRtpNte	☑	Support reception of DTMF digits via RFC 2833 (RTP-NTE)	0
Add media for T.38	Yes (depreciated)	Add T.38 as new SDP media when T.38 mode is requested	0
Retry RequestT38	[1] Yes (default)	Retry behaviour if mode change to T.38 is rejected with SIP statis 488	1
MulticastAddress		Additional multicast IPv4 address for incoming SIP calls.	
MulticastPeerAddresses	my-group	List of addresses (IP[:port]) which are notified after established Multicast inbound call. ('my-group' means own multicast IP)	my-group

7.4. Configure KCS Integration

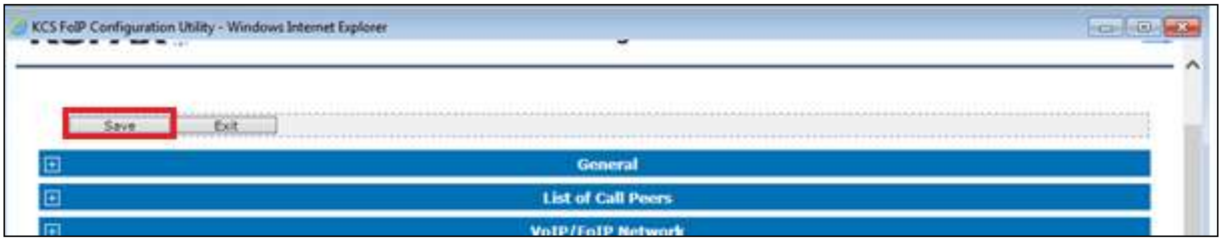
KCS Integration is configured if Message Waiting Indication is used to signal if a fax is in the fax recipient's in-box. Complete the following to configure KCS Integration:

- **Enabled** Check the check box
- **MessageWait** Select **RFC3842** from the dropdown box



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 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	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 availbale.	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	☐	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.



8. Verification Steps

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

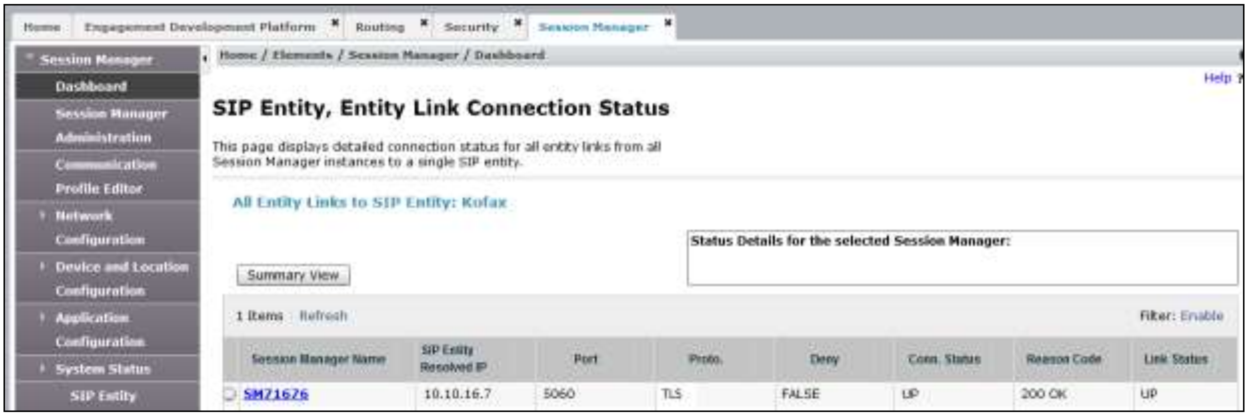
8.1. Verify the signaling group status

Using the SAT terminal, enter the **status signaling-group <n>** command, where **<n>** is the number of the SIP signaling group which connects to Session Manager. Verify that the **Group State** is **in-service**.

```
status signaling-group 1
                         STATUS SIGNALING GROUP

        Group ID: 1
      Group Type: sip

     Group State: in-service
```

8.2. Verify the SIP Entity Link status for the Kofax Communication server

From System Manager select **Session Manager** from under the **Elements** column, (not shown). When the **Session Manager** tab opens select **System Status** followed by **SIP Entity Monitoring**, then click on Kofax SIP Entity created in **Section 6.4,** ensure that the **Conn. Status** is **Up**, the **Reason Code** is **200OK** and the **Link Status** is **Up**.


Home
Engagement Development Platform
Routing
Security
Session Manager
Session Manager
Dashboard
Session Manager Administration
Communication Profile Editor
Network Configuration
Device and Location Configuration
Application Configuration
System Status
SIP Entity
Home / Elements / Session Manager / Dashboard
Help ?
Summary View
Refresh
Filter: Enable

SIP Entity, Entity Link Connection Status

This page displays detailed connection status for all entity links from all Session Manager instances to a single SIP entity.

All Entity Links to SIP Entity: Kofax

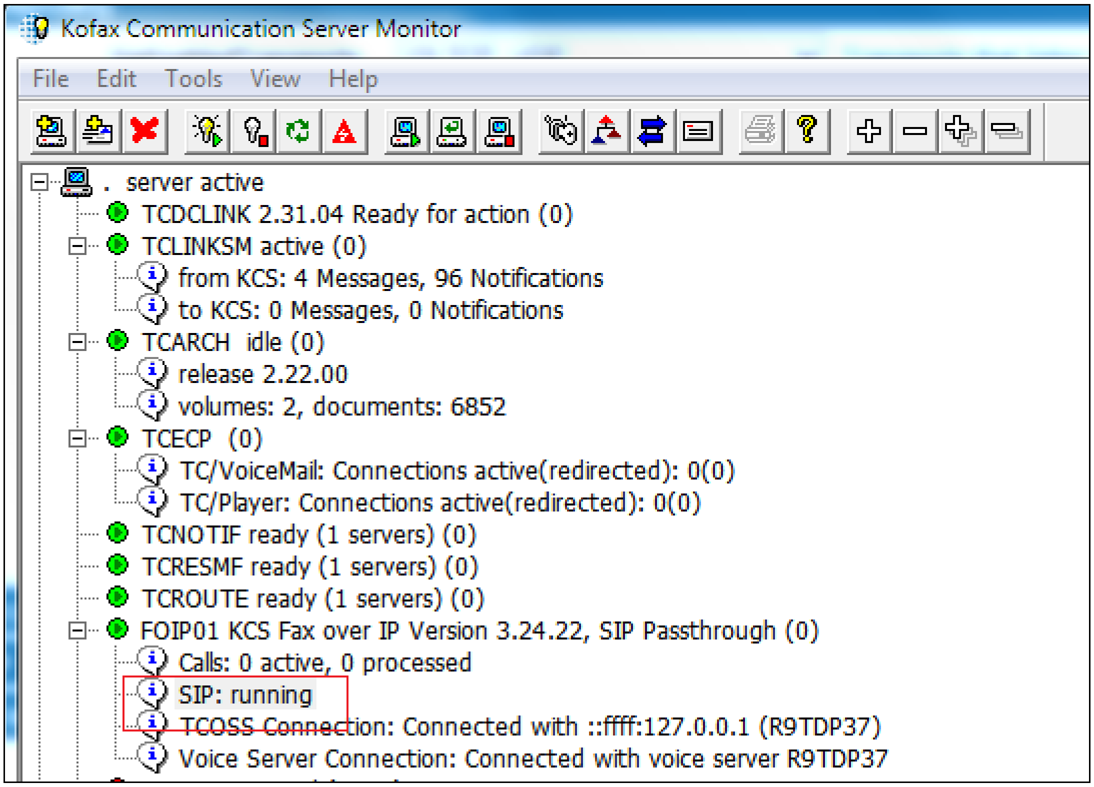
Status Details for the selected Session Manager:

1 Items

Session Manager Name	SIP Entity Resolved IP	Port	Proto.	Deny	Conn. Status	Reason Code	Link Status
SM71676	10.10.16.7	5060	TLS	FALSE	UP	200 OK	UP

8.3. Verify Kofax Communication Server SIP Status

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



```
. server active
    TCDCLINK 2.31.04 Ready for action (0)
    TCLINKSM active (0)
        from KCS: 4 Messages, 96 Notifications
        to KCS: 0 Messages, 0 Notifications
    TCARCH  idle (0)
        release 2.22.00
        volumes: 2, documents: 6852
    TCECP  (0)
        TC/VoiceMail: Connections active(redirected): 0(0)
        TC/Player: Connections active(redirected): 0(0)
    TCNOTIF ready (1 servers) (0)
    TCRESMF ready (1 servers) (0)
    TCROUTE ready (1 servers) (0)
    FOIP01 KCS Fax over IP Version 3.24.22, SIP Passthrough (0)
        Calls: 0 active, 0 processed
        SIP: running
        TCOSS Connection: Connected with ::ffff:127.0.0.1 (R9TDP37)
        Voice Server Connection: Connected with voice server R9TDP37
```

8.4. 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.

9. Conclusion

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

10. Additional References

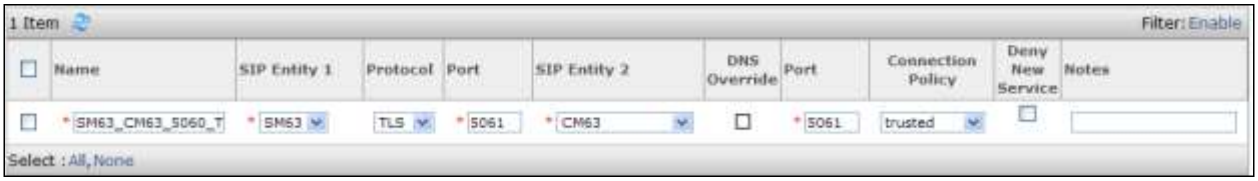
This section references the Avaya and Kofax documentation that is relevant to these Application Notes. Avaya product documentation, including the following, are available at: http://support.avaya.com

[1] *Administering Avaya Aura® Communication Manager, Release 7.0, August 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

Entity Link between Session Manager and Communication Manager.



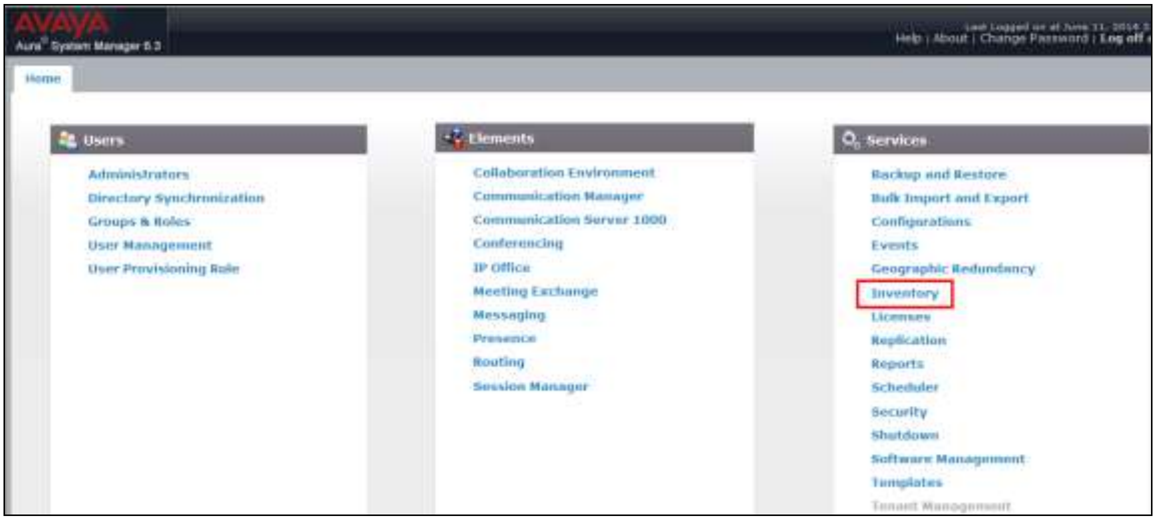
1 Item   Filter: Enable

□	Name	SIP Entity 1	Protocol	Port	SIP Entity 2	DNS Override	Port	Connection Policy	Deny New Service	Notes
□	* SM63_CM63_5060_T	* SM63	TLS	* 5061	* CM63	□	* 5061	trusted	□	

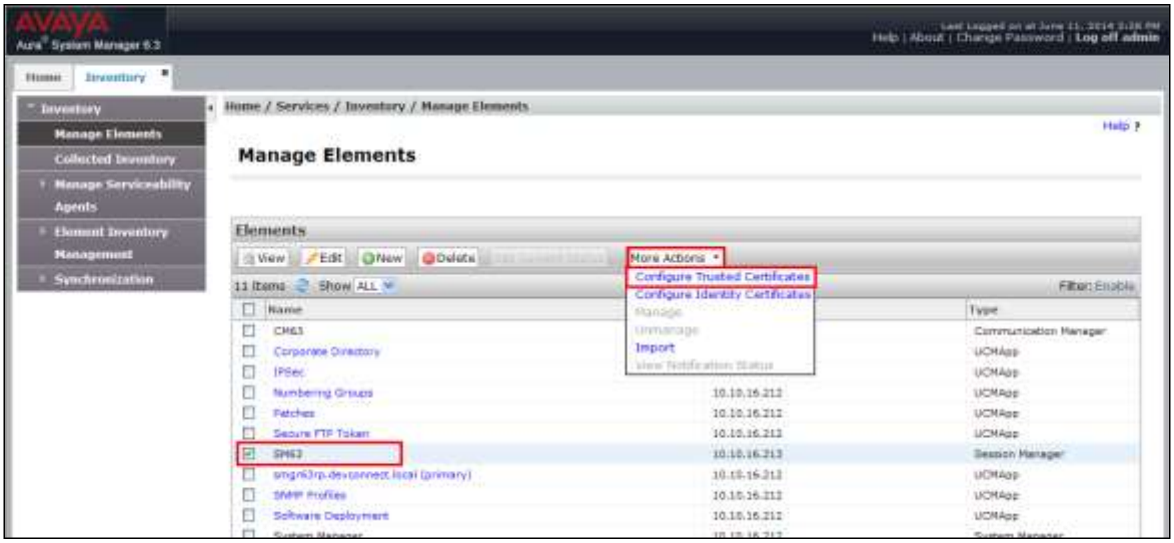
Select : All, None

Appendix B

To export the Session Manager trusted certificates follow the steps below.
After logging into System Manager go to **Home → Services → Inventory**.



Select **Manage Elements** and click on Session Manager Element (i.e. SM63). From the **More Actions** dropdown box select **Configure Trusted Certificates**.


AVAYA
Aura® System Manager 6.3
Help | About | Change Password | Log off admin
Home
Inventory
Inventory
Manage Elements
Collected Inventory
Manage Serviceability Agents
Element Inventory Management
Synchronization
Home / Services / Inventory / Manage Elements
Help ?
View
Edit
New
Delete
More Actions
Configure Trusted Certificates
Configure Identity Certificates
Manage
Unmanage
Import
View Notification Status
Filter: Enable

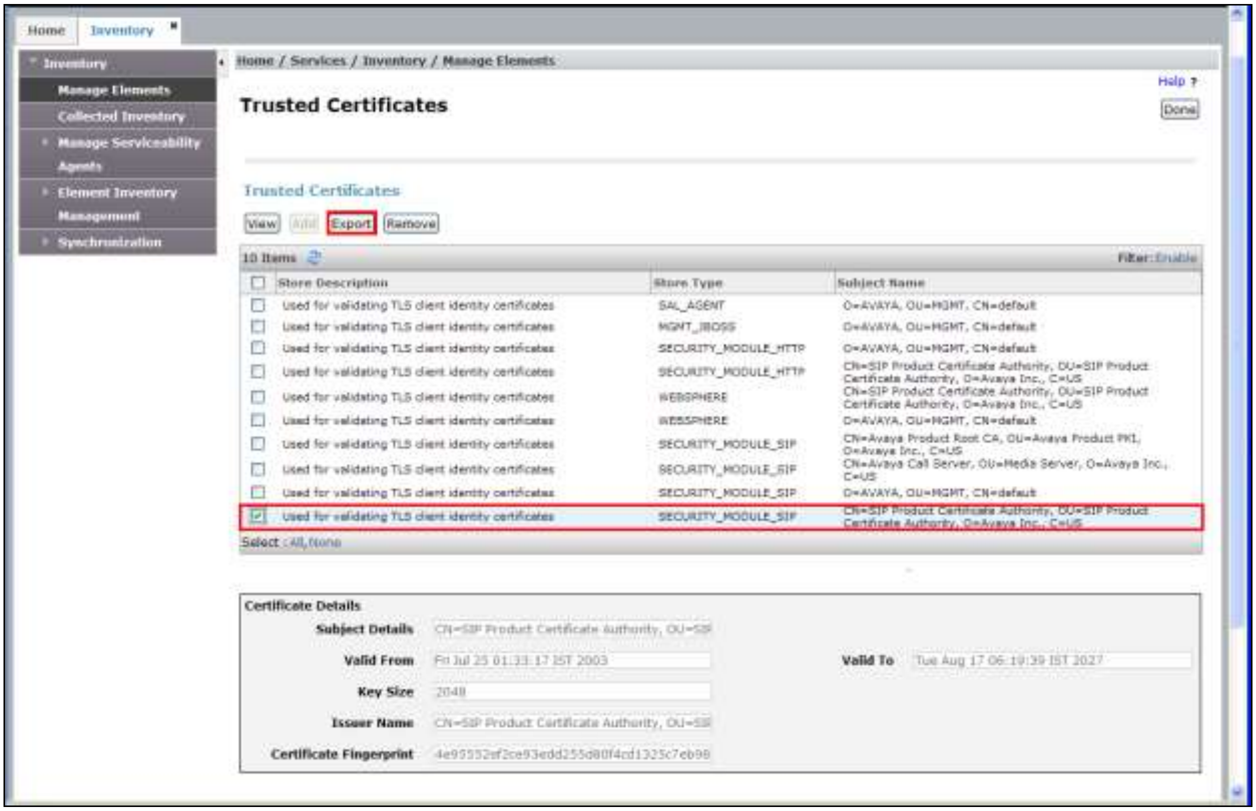
Manage Elements

Elements

11 Items Show ALL

□	Name		Type
□	CM63		Communication Manager
□	Corporate Directory		UCMApp
□	IPSec		UCMApp
□	Numbering Groups	10.10.16.212	UCMApp
□	Patches	10.10.16.212	UCMApp
□	Secure FTP Token	10.10.16.212	UCMApp
☑	SM63	10.10.16.213	Session Manager
□	smgr63rp.devconnect.local (primary)	10.10.16.212	UCMApp
□	SNMP Profiles	10.10.16.212	UCMApp
□	Software Deployment	10.10.16.212	UCMApp
□	System Manager	10.10.16.212	System Manager

Once the **Trusted Certificates** screen open check the **CN=SIP Product Certificate Authority, OU=SIP Product Certificate, O=Avaya Inc., C=US** check box. Click the **Export** button to export the certificate.



Trusted Certificates

Trusted Certificates

10 Items

□	Store Description	Store Type	Subject Name
□	Used for validating TLS client identity certificates	SAL_AGENT	O=AVAYA, OU=MGMT, CN=default
□	Used for validating TLS client identity certificates	MGMT_JBOSS	O=AVAYA, OU=MGMT, CN=default
□	Used for validating TLS client identity certificates	SECURITY_MODULE_HTTP	O=AVAYA, OU=MGMT, CN=default
□	Used for validating TLS client identity certificates	SECURITY_MODULE_HTTP	CN=SIP Product Certificate Authority, OU=SIP Product Certificate Authority, O=Avaya Inc., C=US
□	Used for validating TLS client identity certificates	WEBSPHERE	CN=SIP Product Certificate Authority, OU=SIP Product Certificate Authority, O=Avaya Inc., C=US
□	Used for validating TLS client identity certificates	WEBSPHERE	O=AVAYA, OU=MGMT, CN=default
□	Used for validating TLS client identity certificates	SECURITY_MODULE_SIP	CN=Avaya Product Root CA, OU=Avaya Product PKI, O=Avaya Inc., C=US
□	Used for validating TLS client identity certificates	SECURITY_MODULE_SIP	CN=Avaya Call Server, OU=Media Server, O=Avaya Inc., C=US
□	Used for validating TLS client identity certificates	SECURITY_MODULE_SIP	O=AVAYA, OU=MGMT, CN=default
☑	Used for validating TLS client identity certificates	SECURITY_MODULE_SIP	CN=SIP Product Certificate Authority, OU=SIP Product Certificate Authority, O=Avaya Inc., C=US

Certificate Details

Subject Details: CN=SIP Product Certificate Authority, OU=SIP

Valid From: Fri Jul 25 01:33:17 IST 2003

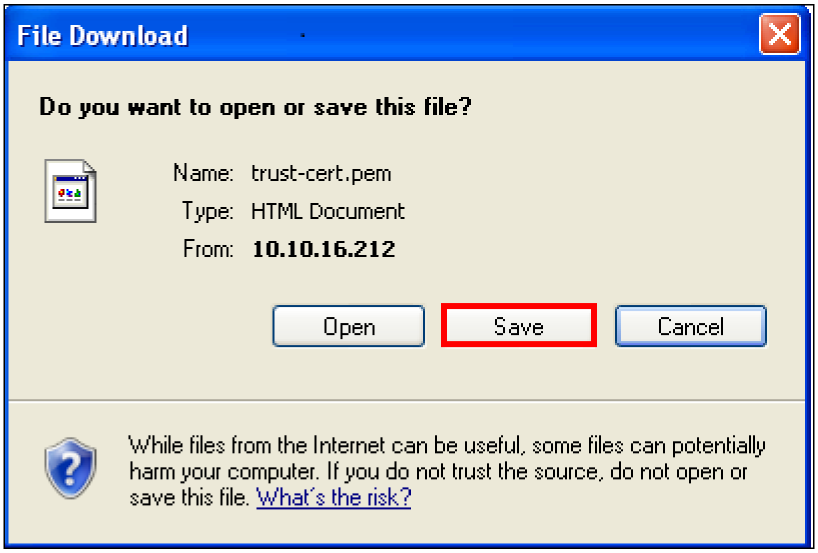
Valid To: Tue Aug 17 06:19:39 IST 2027

Key Size: 2048

Issuer Name: CN=SIP Product Certificate Authority, OU=SIP

Certificate Fingerprint: 4e95552ef2ce93edd255d80f4cd1325c7eb98

When the **File download** window opens click on the **save** button and chose a location to store the Certificate. The file stored will then be required to be installed on the Kofax Server.



Do you want to open or save this file?

Name: trust-cert.pem

Type: HTML Document

From: **10.10.16.212**

While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. What's the risk?

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at *devconnect@avaya.com*.