



## Avaya Solution & Interoperability Test Lab

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# Application Notes for Configuring Biscom FAXCOM with Avaya Aura® Communication Manager – Issue 1.0

### Abstract

These Application Notes contain interoperability instructions for configuring Biscom FAXCOM with Avaya Aura® Communication Manager. Compliance testing was conducted to verify the interoperability.

During compliance testing, Biscom FAXCOM was configured to receive and send faxes over an H.323 trunk connected to Avaya Aura® Communication Manager.

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

Biscom has developed expertise and solutions for enterprise fax, secure file transfer, synchronization, file translation, and mobile devices for small, medium, and large corporations. Biscom FAXCOM is configured to communicate with Avaya Aura® Communication Manager over H.323. T.38 and G.711 protocols were used to send and receive fax calls.

## 2. General Test Approach and Test Results

This section details the general approach used to verify the interoperability between Biscom FAXCOM and Avaya Aura® Communication Manager, and the test results.

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 for 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

General test approach was to test fax calls in both an inter-site and intra-site environment. As displayed in the referenced configuration in **Figure 1**, Biscom FAXCOM was connected to Site 1, main enterprise site, and Site 2, served as a simulated PSTN or a remote enterprise site. Inter-site calls were made over an ISDN-PRI trunk between Communication Managers. Faxes were sent with various page lengths and resolution, and at various fax data speeds. Error Correction Mode (ECM) was also tested, but please note that ECM is supported for Avaya G430 and G450 only.

### 2.2. Test Results

All executed test cases were passed.

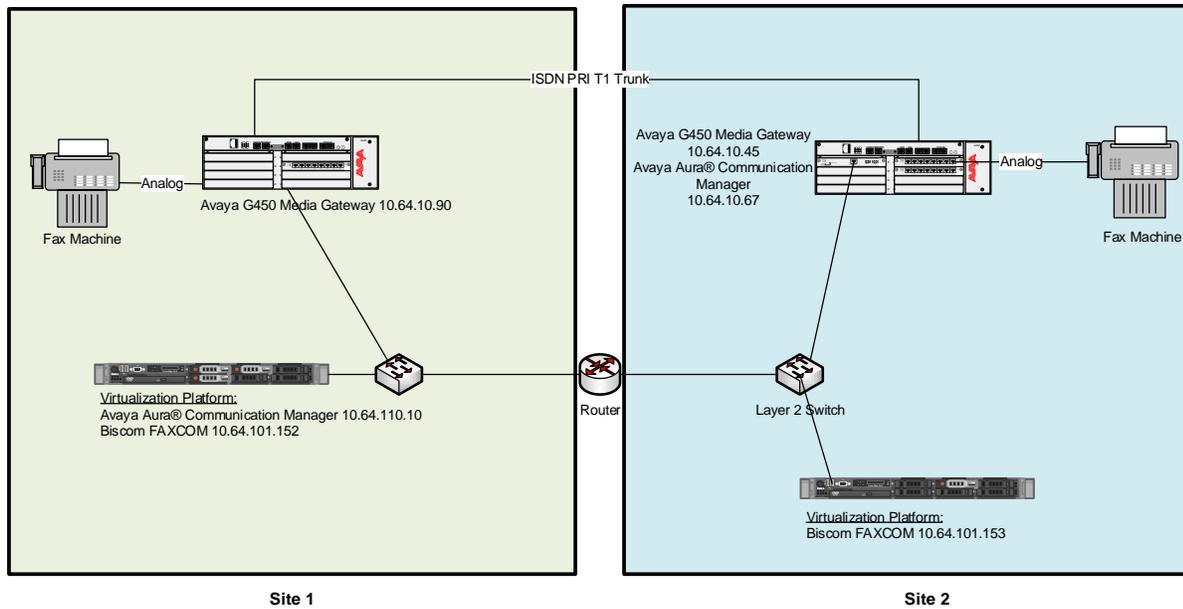
### 2.3. Support

Biscom support is available Mon-Fri, 8:30AM-7:00PM Eastern time. Extended support hours are available via a support plan upgrade. Biscom support may be contacted by phone at (978) 250-8355, or by email at [support@biscom.com](mailto:support@biscom.com).

### 3. Reference Configuration

Test configuration used during compliance testing consisted of the following:

- Avaya G450 Media Gateway with Avaya 8300D Media Server running Avaya Aura® Communication Manager
- Analog fax machines
- Biscom FAXCOM Server running on a Windows 2008 R2 server (Virtual Machine)



**Figure 1: Reference Configuration**

## 4. Equipment and Software Validated

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

<b>Equipment/Software</b>	<b>Release/Version</b>
Avaya Aura® Communication Manager	7.0 SP1
Avaya G450 Media Gateway	39.18.0
Biscom FAXCOM Server	6.5.5.11
Dialogic Brooktrout SR140	6.7.2

## 5. Configure Avaya Aura® Communication Manager

This section lists the steps for configuring Communication Manager. All configuration for Communication Manager is done through System Access Terminal (SAT).

### 5.1. Administer IP Network Region

Use the **change ip-network-region *n*** command to configure a network region, where *n* is an existing network region.

Configure this network region as follows:

- Set **Location** to **1**.
- Set **Codec Set** to **1**.
- Specify an **Authoritative Domain**, e.g., avaya.com.

```
change ip-network-region 1                                     Page 1 of 20
                                                           IP NETWORK REGION
Region: 1
Location: 1          Authoritative Domain: avaya.com
  Name: Main          Stub Network Region: n
MEDIA PARAMETERS      Intra-region IP-IP Direct Audio: yes
  Codec Set: 1        Inter-region IP-IP Direct Audio: yes
  UDP Port Min: 2048   IP Audio Hairpinning? y
  UDP Port Max: 3329
DIFFSERV/TOS PARAMETERS
  Call Control PHB Value: 46
  Audio PHB Value: 46
  Video PHB Value: 26
802.1P/Q PARAMETERS
  Call Control 802.1p Priority: 6
  Audio 802.1p Priority: 6
  Video 802.1p Priority: 5
H.323 IP ENDPOINTS      AUDIO RESOURCE RESERVATION PARAMETERS
  H.323 Link Bounce Recovery? y          RSVP Enabled? n
  Idle Traffic Interval (sec): 20
  Keep-Alive Interval (sec): 5
```

### 5.2. Administer IP Codec Set

Use the **change ip-codec-set *n*** command to configure IP codec set, where *n* is an existing codec set number.

Configure this codec set as follows on **Page 1**:

- Set **Audio Codec 1** to **G.711MU**.

```

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:
3:
4:
5:
6:
7:

```

**On Page 2:**

- Set Fax Mode to **t.38-standard** and ECM to **y**.

```

change ip-codec-set 1
Page 2 of 2

IP CODEC SET

Allow Direct-IP Multimedia? n

FAX      Mode      Redundancy      Packet
Modem    t.38-standard  0                Size (ms)
TDD/TTY  off        0                ECM: y
H.323 Clear-channel  n            0
SIP 64K Data  n          0                20

```

**5.3. Administer IP Node Names**

Use the **change node-names ip** command to add entry for FAXCOM server.

```

change node-names ip
IP NODE NAMES

Name      IP Address
acms      10.64.110.18
aes       10.64.110.15
ams       10.64.110.16
asm       10.64.110.13
biscom   10.64.101.152
default   0.0.0.0
procr     10.64.110.10

```

## 5.4. Administer H.323 Signaling Group

Use the **add signaling-group *n*** command to add a new signaling group, where *n* is an available signaling group number.

Configure this signaling group as follows:

- Set **Group Type** to **h.323**.
- Set **Near-end Node Name** to **procr**.
- Set **Far-end Node Name** to the configured FAXCOM Server in **Section 5.3**, i.e., **biscom**.
- Set **Far-end Network region** to the configured region in **Section 5.1**, i.e., **1**.

```
add signaling-group 13                               Page 1 of 6
                                                    SIGNALING GROUP
Group Number: 13                               Group Type: h.323
  SBS? n                                         Remote Office? n           Max number of NCA TSC: 0
  Q-SIP? n                                       Max number of CA TSC: 0
  IP Video? n                                     Trunk Group for NCA TSC:
  Trunk Group for Channel Selection: 13         X-Mobility/Wireless Type: NONE
  TSC Supplementary Service Protocol: a       Network Call Transfer? n
                                              T303 Timer(sec): 10
H.245 DTMF Signal Tone Duration(msec):
Near-end Node Name: procr                       Far-end Node Name: biscom
Near-end Listen Port: 1720                     Far-end Listen Port: 1720
Far-end Network Region: 1
LRQ Required? n                               Calls Share IP Signaling Connection? n
RRQ Required? n                               H245 Control Addr On FACility? 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 Capa
```

**Note:** Signaling Group, Trunk Group, and Route Pattern for simulated PSTN calls for inter-site calls over ISDN/PRI and H.323 were pre-configured and are not shown in this document.

## 5.5. Administer H.323 Trunk Group

Use the **add trunk-group *n*** command to add a trunk group, where *n* is an available trunk group number.

Configure this trunk group as follows on **Page 1**:

- Set **Group Type** to **isdn**.
- Enter a **Group Name**, e.g., biscom.
- Enter a valid **TAC**, e.g., 113.
- Set **Carrier Medium** to **H.323**.
- Set **Service Type** to **tie**.
- Set **Member Assignment Method** to **auto**.
- Enter **Signaling Group** value to the signaling group configured in **Section 5.4**, i.e., 13.
- Enter the appropriate number in **Number of Member** field.

```
add trunk-group 13                                     Page 1 of 21
                                                    TRUNK GROUP
Group Number: 13                                     Group Type: isdn          CDR Reports: y
Group Name: biscom                                   COR: 1                   TN: 1           TAC: 113
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: 10
```

On **Page 3**:

- Set **Send Name** and **Send Calling Number** to **y**.
- Set **Format** to **private**.

```
add change 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: y                                          Send Calling Number: y
Send EMU Visitor CPN? n
Used for DCS? n
Suppress # Outpulsing? n                             Format: private
                                                    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
```

## 5.6. Administer Route Pattern

Use the **change route-pattern *n*** command to configure a route pattern, where *n* is an available route pattern.

Configure this route pattern as follows:

- Specify a name in the **Pattern Name** field.
- For line 1, set **Grp No** to the trunk group configured in **Section 5.5**, i.e., **13**.
- For line 1, set **FRL** to **0**.

```
change route-pattern 13                                     Page 1 of 3
      Pattern Number: 1   Pattern Name: Voice and Fax
      SCCAN? n           Secure SIP? n
  Grp FRL NPA Pfx Hop Toll No.  Inserted          DCS/ IXC
  No   Mrk Lmt List Del  Digits          QSIG
      Dgts                               Intw
1: 13  0                               n  user
2:                                       n  user
```

## 5.7. Administer Private Numbering

Use the **change private-numbering 1** command to define the calling party number to send to Session Manager.

Configure private numbering as follows:

- Add entries for trunk group configured in **Section 5.5**.

**Note:** For compliance testing, 5-digit extensions beginning with 1 routed over trunk groups 13 resulted in a 5-digit calling party number.

```
change private-numbering 1                                 Page 1 of 2
      NUMBERING - PRIVATE FORMAT
Ext  Ext      Trk      Private      Total
Len  Code     Grp(s)    Prefix     Len
  5   1       13
      Total Administered: 1
      Maximum Entries: 540
```

## 5.8. Administer AAR Analysis

Use the **change aar analysis *n*** command to configure routing for extensions starting with *n*. For compliance testing, extension 11112 was used for routing calls to FAXCOM.

- Set **Dialed String** to starting digits of extensions that will be used, e.g., 11112.
- Set **Min** and **Max** to 5 for 5-digit extensions.
- Set **Route Pattern** to pattern configured in **Section 5.6**, i.e., 13.
- Set **Call Type** to **aar**.

**Note:** An entry must be added to the dial plan for the extension range used in this step.

change aar analysis 11112

Page 1 of 2

AAR DIGIT ANALYSIS TABLE

Location: all

Percent Full: 0

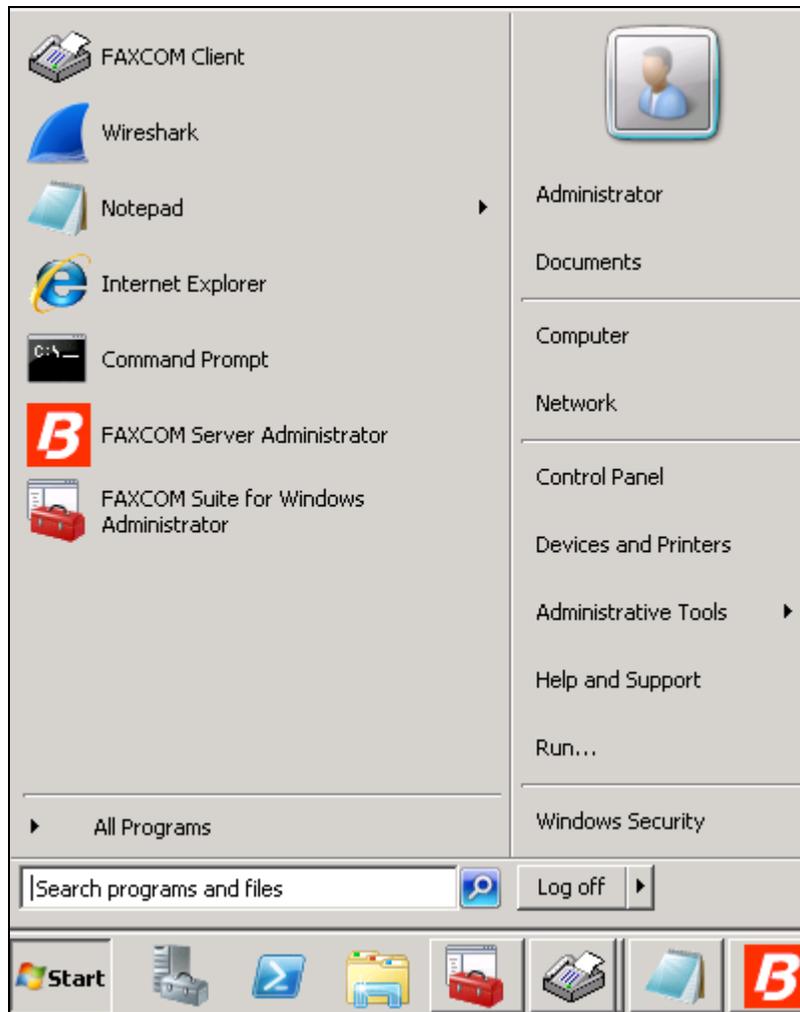
Dialed String	Total Min Max	Route Pattern	Call Type	Node Num	ANI Reqd
<b>11112</b>	<b>5 5</b>	<b>13</b>	<b>aar</b>		<b>n</b>

## 5.9. Administer Stations

Administration of Avaya Stations/Extensions in Communication Manager and Session Manager is not shown in this document. Please refer to [1] in References section.

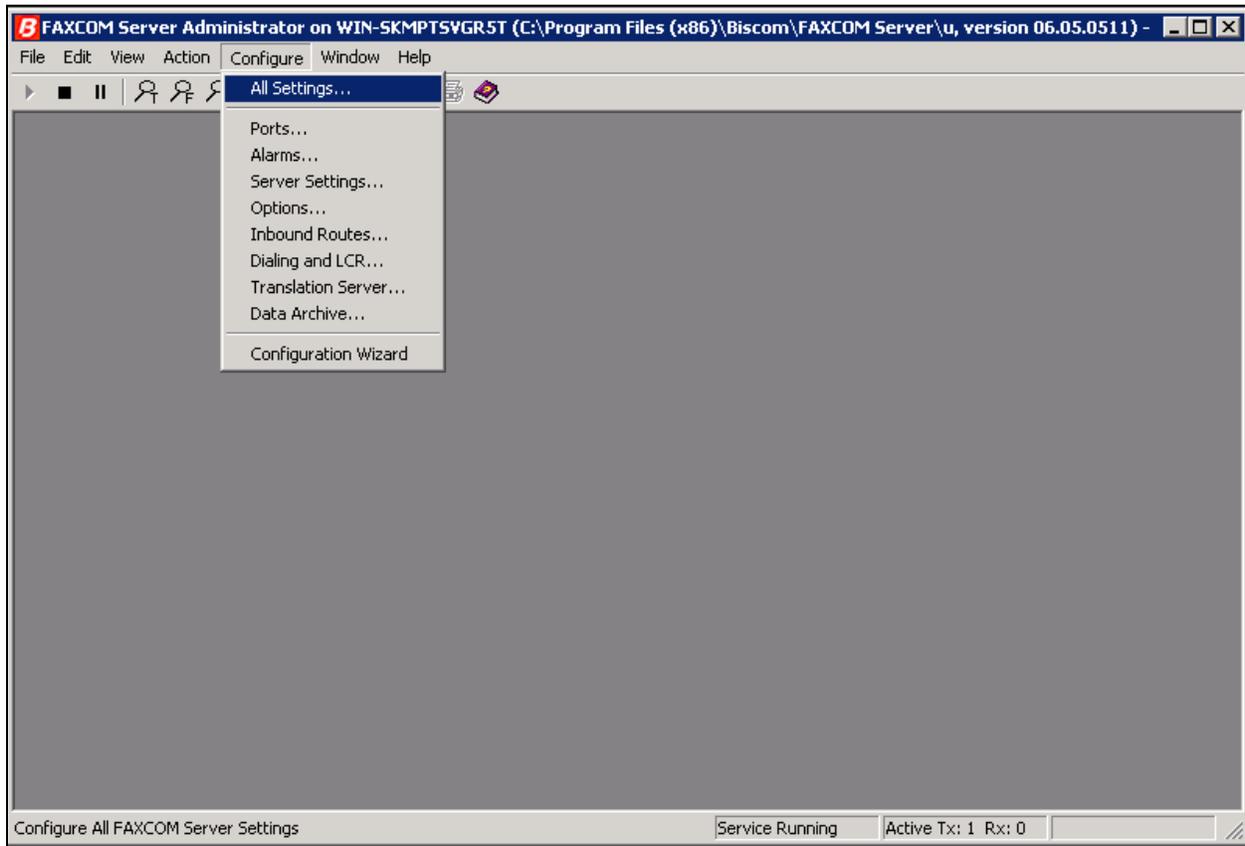
## 6. Configure Biscom FAXCOM

From the Biscom fax server, launch the **FAXCOM Server Administrator** application.



Select **Configure... All Settings**.

**Note:** Alternatively, click the **Configure** toolbar button  to display the **Configure All Settings** dialog.

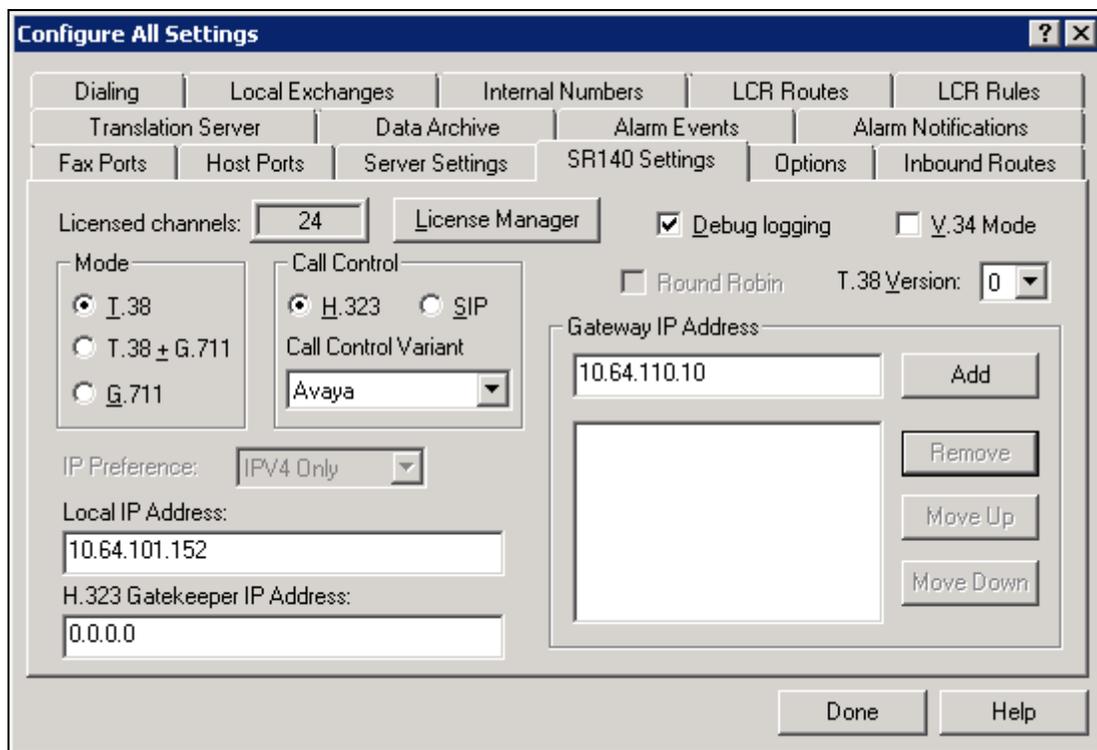


Select the **SR140 Settings** tab to configure the Dialogic SR140 fax over IP software license (which is the actual direct interface to the Avaya), as follows:

- Uncheck **Debug logging** and **V.34 Mode** check boxes.
- Set **T.38 Version** to **0** from the drop down menu.
- Set **Mode** to **T.38**.
- Set **Call Control** to **H.323**.
  - Set **Call Control Variant** to **Avaya** from the drop down menu.
- In the **Local IP Address** field, specify the IP address of the fax server.
- In the **H.323 Gatekeeper IP Address** field, leave the value at all zeroes.
- In the **Gateway IP Address** field, specify the IP address of Communication Manager; then click the **Add** button.

Once the values are configured, click **Done**. When prompted to restart the FAXCOM service in order for the values to take effect, click restart now or later (not shown).

Note that the screen capture below shows **Debug Logging** checked, but in a production environment, uncheck the box.



## 7. Verification Steps

### 7.1. Avaya Aura® Communication Manager

From the SAT terminal, issue the status **trunk-group *n*** command, where *n* is the number of the trunk group created for FAXCOM. Verify the **Service State** is **in-service/idle**.

```
status trunk 13

                                TRUNK GROUP STATUS

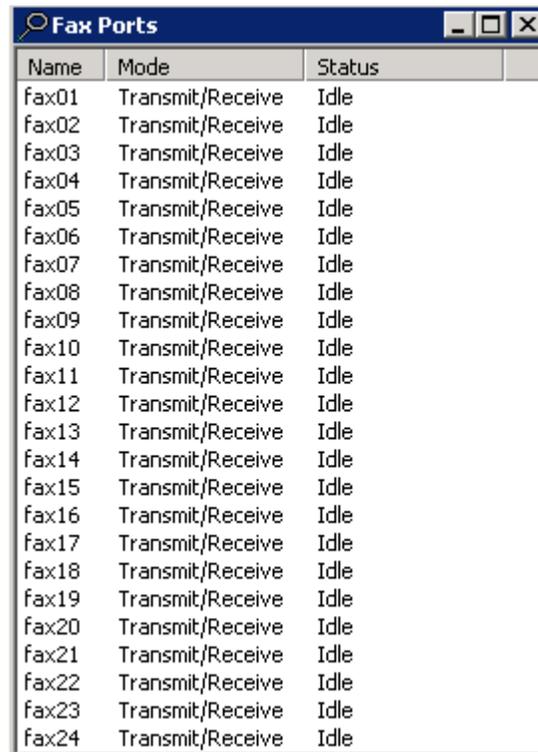
Member   Port      Service State   Mtce Connected Ports
                                Busy

0013/001 T00046   in-service/idle no
0013/002 T00047   in-service/idle no
0013/003 T00048   in-service/idle no
0013/004 T00049   in-service/idle no
0013/005 T00050   in-service/idle no
0013/006 T00051   in-service/idle no
0013/007 T00052   in-service/idle no
0013/008 T00053   in-service/idle no
0013/009 T00054   in-service/idle no
0013/010 T00055   in-service/idle no
```

## 7.2. Biscom FAXCOM



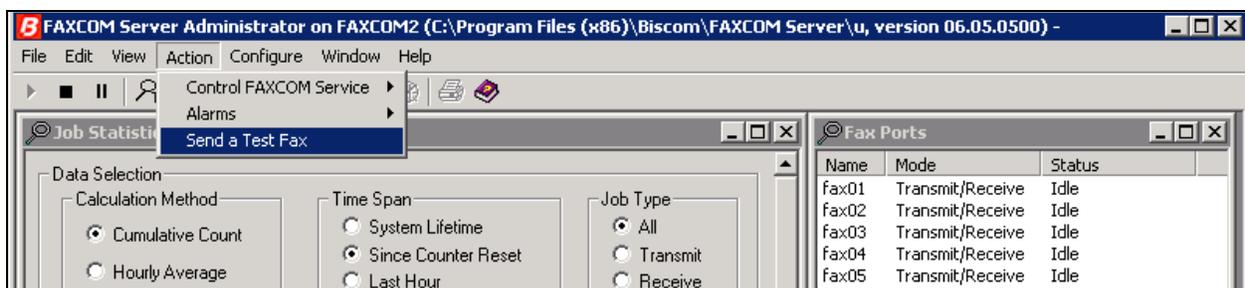
From the FAXCOM Server Administrator application, click  (or select **View...Fax Ports**) to display a list of all licensed fax ports, with each port's status. All ports should be in **idle** state.



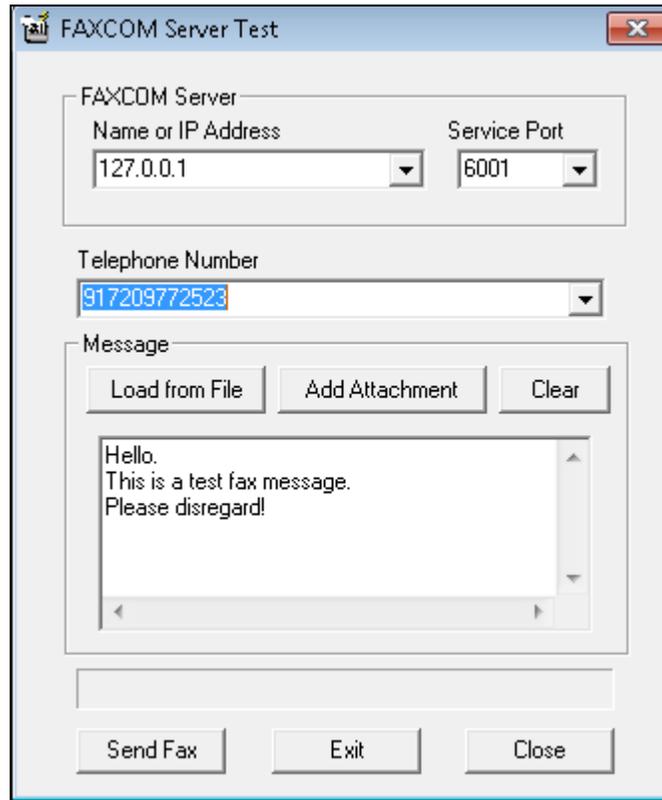
Name	Mode	Status
fax01	Transmit/Receive	Idle
fax02	Transmit/Receive	Idle
fax03	Transmit/Receive	Idle
fax04	Transmit/Receive	Idle
fax05	Transmit/Receive	Idle
fax06	Transmit/Receive	Idle
fax07	Transmit/Receive	Idle
fax08	Transmit/Receive	Idle
fax09	Transmit/Receive	Idle
fax10	Transmit/Receive	Idle
fax11	Transmit/Receive	Idle
fax12	Transmit/Receive	Idle
fax13	Transmit/Receive	Idle
fax14	Transmit/Receive	Idle
fax15	Transmit/Receive	Idle
fax16	Transmit/Receive	Idle
fax17	Transmit/Receive	Idle
fax18	Transmit/Receive	Idle
fax19	Transmit/Receive	Idle
fax20	Transmit/Receive	Idle
fax21	Transmit/Receive	Idle
fax22	Transmit/Receive	Idle
fax23	Transmit/Receive	Idle
fax24	Transmit/Receive	Idle

To check connectivity, do the following to send a test fax:.

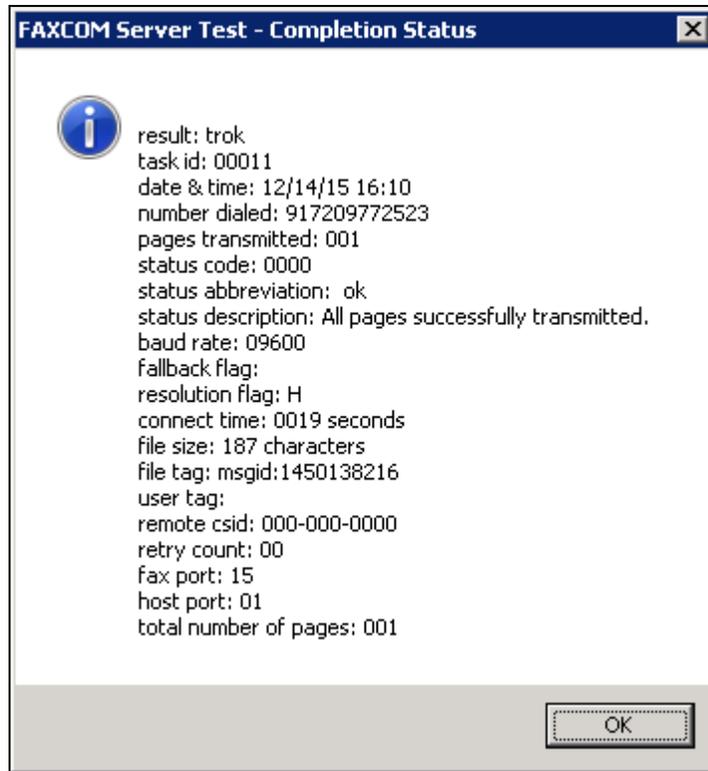
From the FAXCOM Server Administrator application, select **Action...Send a Test Fax**.



Configure the **FAXCOM Server Test** dialog as follows:



- Leave the **FAXCOM Server: Name or IP Address** field default of 127.0.0.1 unchanged. Specify **6001** in the **FAXCOM Server: Service Port** field.
- In the **Telephone Number** field, specify the phone number of a fax device (including the necessary prefix if sending to an external number).
- In the **Message** box, leave or replace the sample text.  
Click the **Send Fax** button to send a one-page test fax to Communication Manager. If successful, the Completion Status returned will display **result: trok**, as shown in the example on next page.



## 8. Conclusion

Compliance testing has verified the interoperability of Biscom FAXCOM with Avaya Aura® Communication Manager, and these Application Notes explain the procedures required to implement this interoperability (as depicted in **Figure 1**).

## 9. Additional References

Product documentation for Avaya products may be found at <http://support.avaya.com>.

[1] Administering Avaya Aura® Communication Manager, Release 7.0, Document 03-300509, August 2015

Product documentation related to Biscom products may be obtained directly from Biscom.

[2] FAXCOM Server Administrator's Guide, October 2015 Revised Edition

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