



## **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 contains interoperability instructions for configuring Biscom FAXCOM with Avaya Aura® Communication Manager. Compliance testing was conducted to verify the interoperability.

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 around enterprise fax, secure file transfer, synchronization, file translation, and mobile devices for small, medium and large corporation. Biscom FAXCOM is configured to communicate with Avaya Aura® Communication Manager using H.323. T.38 Protocol was 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 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 an inter-site and intra-site environment. As displayed in the reference configuration, Biscom FAXCOM was connected to Site 1, main enterprise site, and site 2 servers as a simulated PSTN or a remote enterprise site. Inter-site calls were made over an ISDN-PRI trunk and H.323 trunk between Communication Managers. Faxes were sent with various page lengths, resolution and at various fax data speeds. Error Correction Mode (ECM) was also tested, but please note that ECM is only supported for Avaya G430 and G450.

### 2.2. Test Results

All executed test cases were passed.

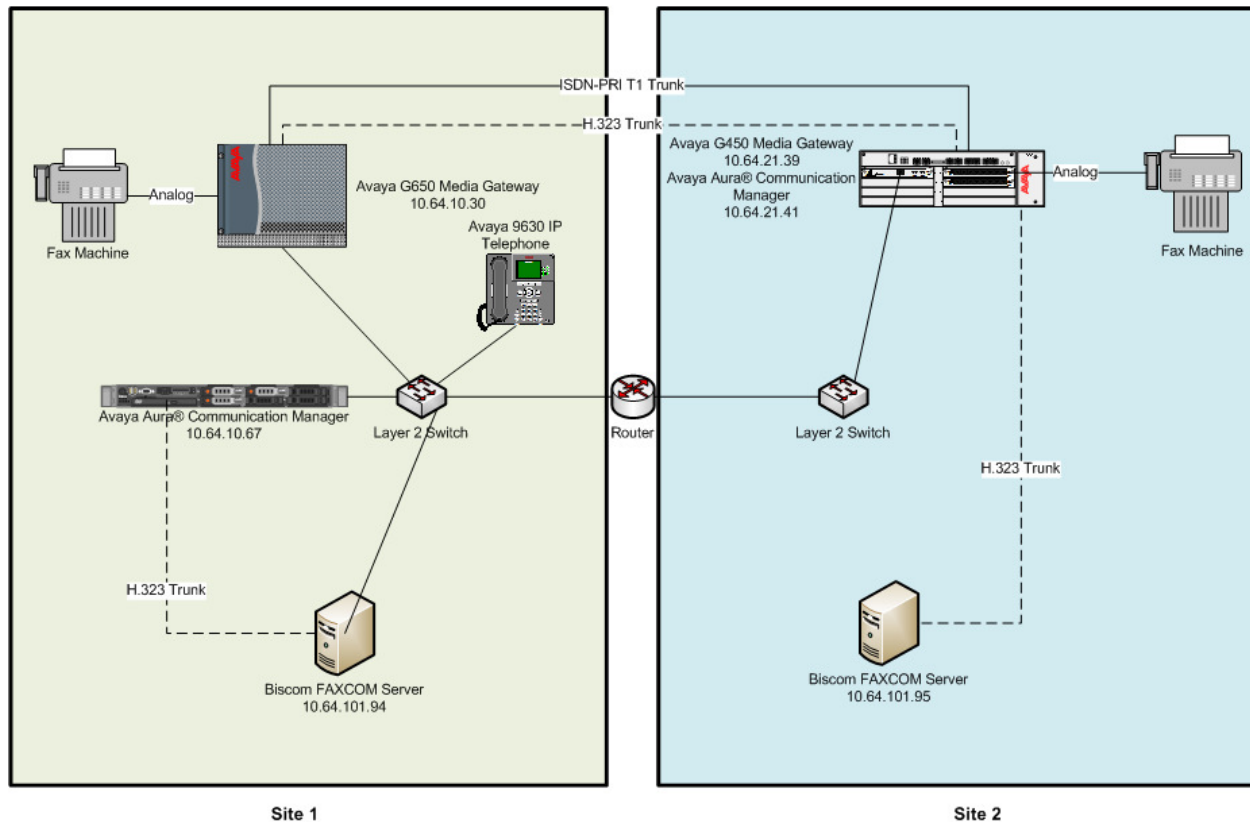
### 2.3. Support

Biscom support is available Mon-Fri, 8:30AM-7:00PM Eastern time zone. 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 following:

- Avaya G430 Media Gateway with Avaya 8300D Media Server running Avaya Aura® Communication Manager
- Avaya G650 Media Gateway
- Analog Fax Machines
- Biscom FAXCOM Server running on a Windows 2008 R2 server (Virtual Machine)



**Figure:** 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 running on Avaya S8300D Server	R016x.03.0.124.0
Avaya G450 Media Gateway	33.13.0
Biscom FAXCOM Server	6.5.5.0
Dialogic Brooktrout SR140	Brooktrout SDK 6.6.1

## 5. Configure Avaya Aura® Communication Manager

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

### 5.1. Verify Avaya Aura® Communication Manager License

Use the **display system-parameters customer-options** command to verify options.

On **Page 4**, verify **ISDN/PRI** field is set to **y**.

```
display system-parameters customer-options                               Page 4 of 11
                                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
```

### 5.2. 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**
- Set **Intra-region IP-IP Direct Audio** to **no**
- Set **Inter-region IP-IP Direct Audio** to **no**
- Enter and **Authoritative Domain**, e.g., avaya.com

**Note:** Media shuffling is not supported by Brooktrout SR-140.

```

change ip-network-region 1                                     Page 1 of 20

                                IP NETWORK REGION

Region: 1
Location: 1           Authoritative Domain: avaya.com
Name:
MEDIA PARAMETERS                               Intra-region IP-IP Direct Audio: no
Codec Set: 1                               Inter-region IP-IP Direct Audio: no
UDP Port Min: 2048                               IP Audio Hairpinning? n
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           AUDIO RESOURCE RESERVATION PARAMETERS
H.323 IP ENDPOINTS                               RSVP Enabled? n
H.323 Link Bounce Recovery? y
Idle Traffic Interval (sec): 20
Keep-Alive Interval (sec): 5

```

### 5.3. 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? y
                                Maximum Call Rate for Direct-IP Multimedia: 2048:Kbits
                                Maximum Call Rate for Priority Direct-IP Multimedia: 2048:Kbits

                                Mode                               Redundancy
FAX                               t.38-standard                0                               ECM: y
Modem                               off                            0
TDD/TTY                             US                             3

```

## 5.4. Administer IP Node Names

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

```

change node-names ip                                     Page 2 of 2

                                IP NODE NAMES

                                Name                               IP Address
Faxcom-1                          10.64.101.94

```

## 5.5. 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 5.4**, i.e., faxcom-1
- Set **Far-end Network region** to the configured region in **Section 5.2**, i.e., 1
- Set **Direct IP-IP Audio Connections** to **No**

```

add signaling-group 21                                     Page 1 of 6
                SIGNALING GROUP

Group Number: 21          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: 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: faxcom-1
Near-end Listen Port: 1720        Far-end Listen Port: 1720
                                  Far-end Network Region: 1
                                  Calls Share IP Signaling Connection? n
                                  Bypass If IP Threshold Exceeded? n
                                  H.235 Annex H Required? n
                                  Direct IP-IP Audio Connections? n
                                  IP Audio Hairpinning? n
                                  Interworking Message: PROGRESS
                                  DCP/Analog Bearer Capability: 3.1kHz

LRQ Required? n
RRQ Required? n

DTMF over IP: out-of-band
Link Loss Delay Timer(sec): 90
Enable Layer 3 Test? n

```

**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.

## 5.6. 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., Faxcom Server
- Enter a valid **TAC**, e.g.. \*021
- Set **Service Type** to **tie**
- Enter **Signaling Group** value to the signaling group configured in **Section 5.5**, i.e., 21
- Enter a desired number in **Number of Member** field

```

add trunk-group 21                                       Page 1 of 21
                TRUNK GROUP

Group Number: 21          Group Type: isdn          CDR Reports: y
  Group Name: Faxcom Server  COR: 1          TN: 1          TAC: *021
  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: 21
                              Number of Members: 10

```

On **Page 3**:

- Set **Number Format** to private



```

add trunk-group 21
TRUNK FEATURES
  ACA Assignment? n          Measured: none
                              Maintenance Tests? y

                              Numbering Format: private
                              UII Treatment: service-provider
                              Replace Restricted Numbers? n
                              Replace Unavailable Numbers? n

```

## 5.7. Administer Route Pattern

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

Configure this route pattern as follows:

- Type a name in **Pattern Name** field
- For line 1, set **Grp No** to the trunk group configured in **Section 5.6**, i.e., 21
- For line 1, set **FRL** to 0

```

change route-pattern 21
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
1: 21    0
2:

```

## 5.8. 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 5.6**

**Note:** For compliance testing, 10-digit extensions beginning with 552 routed over trunk groups 21 resulted in a 10-digit calling party number.

```

change private-numbering 1
NUMBERING - PRIVATE FORMAT

```

Ext Len	Ext Code	Trk Grp(s)	Private Prefix	Total Len	
10	552	21		10	

```

Total Administered: 1
Maximum Entries: 540

```

## 5.9. Administer AAR Analysis

Use the **change aar analysis *n*** command to configure routing for extensions starting with *n*. For compliance testing, extensions starting with 552 were used for routing calls to FAXCOM

- Set **Dialed String** to starting digits of extensions that will be used, e.g. 552
- Set **Min** and **Max** to 10 for 10 digit extensions
- Set **Route Pattern** to pattern configured in **Section 5.7**, i.e., 21
- Set **Call Type** to **aar**

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

```
change aar analysis 552                                     Page 1 of 2
```

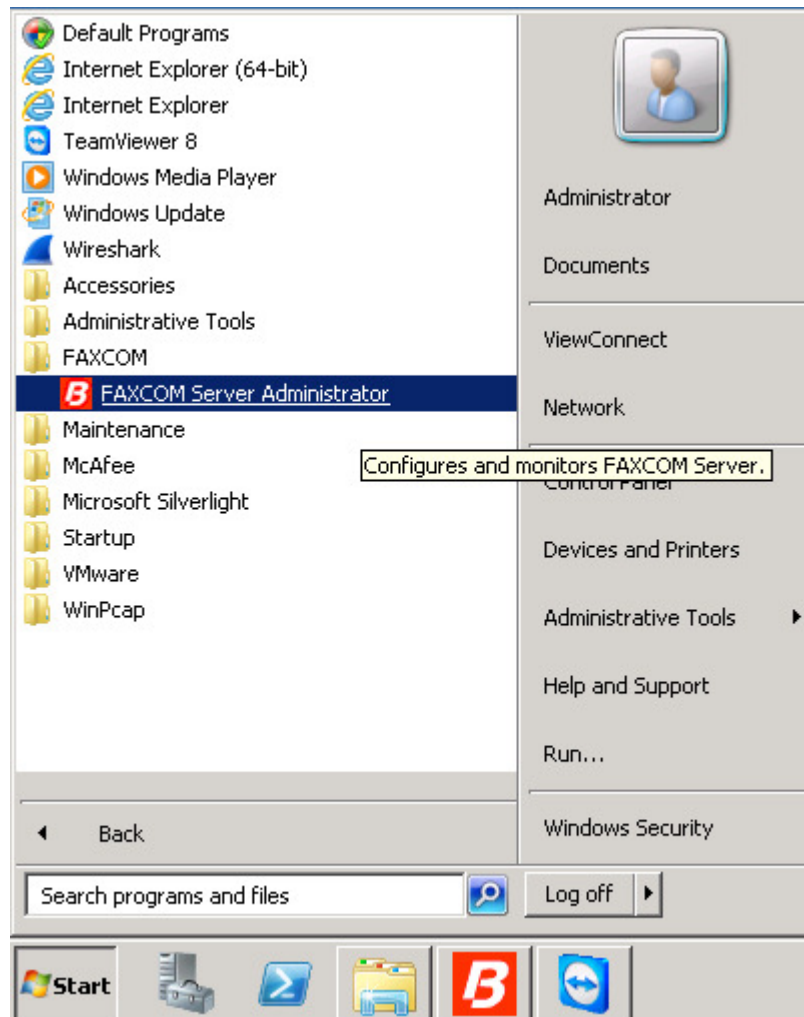
AAR DIGIT ANALYSIS TABLE							
Location: all							
Percent Full: 1							
Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI	Reqd
<b>552</b>	<b>10</b>	<b>10</b>	<b>21</b>	<b>aar</b>		<b>n</b>	
588	5	5	10	aar		n	
60	4	4	30	aar		n	
602	4	4	10	aar		n	
605	4	4	30	aar		n	
61	4	4	30	aar		n	
610	5	5	10	aar		n	
611	5	5	10	aar		n	

## 5.10. Administer Stations

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

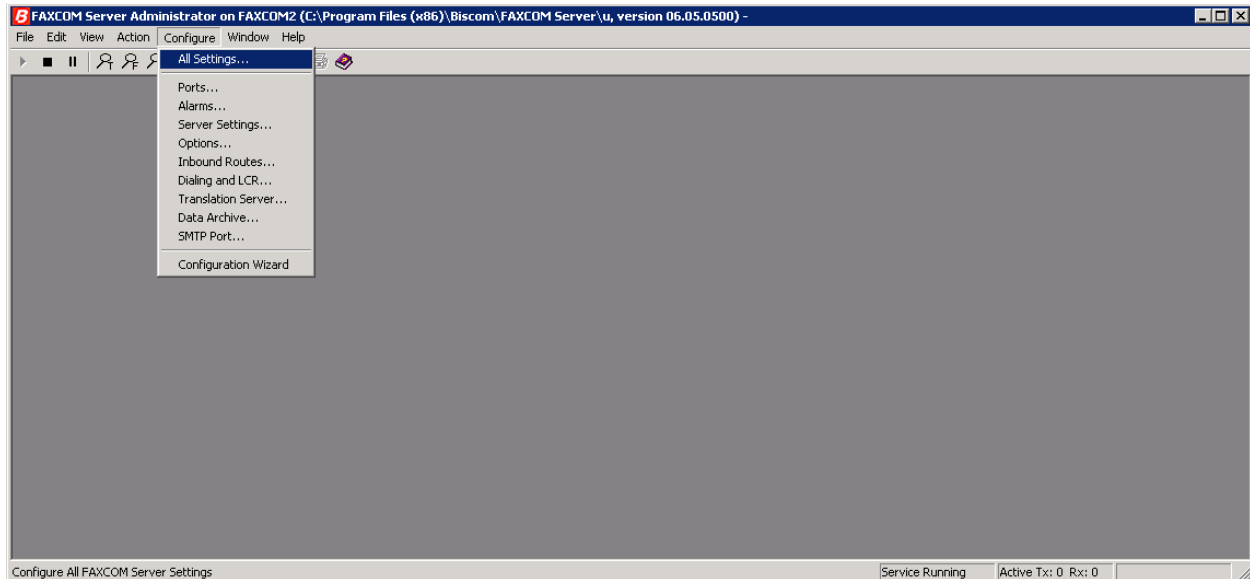
## 6. Configure Biscom FAXCOM

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



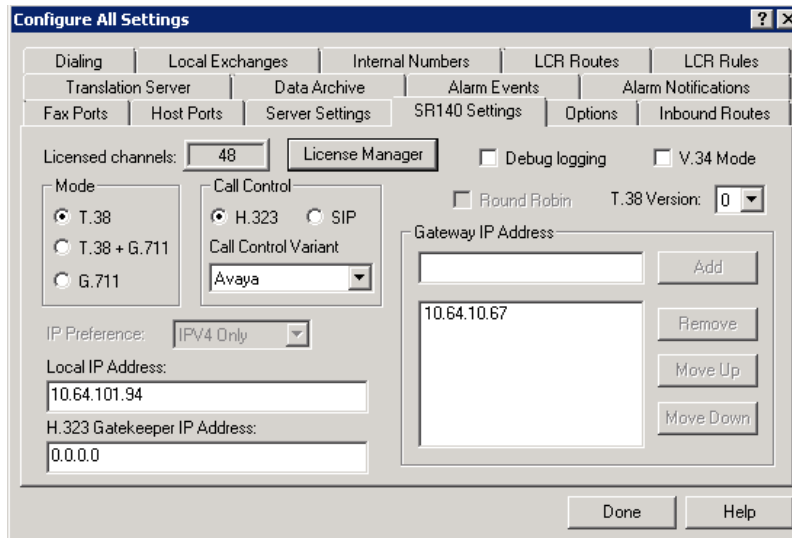
From the menu choices at the top, click **Configure**. From the drop down menu select **All Settings**.

**Note:** Alternatively, wrench icon from the icon bar below the menu choices can also be clicked to bring up the **Configure All Settings** window.



On the **Configure All Settings** window, click the **SR140 Settings** tab. This configures the Dialogic SR140 fax over IP software license, which is the actual direct interface to the Avaya. In the **SR140 Settings** tab, configure the following:

- 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, type 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, type the IP address of Communication Manager; then click the **Add** button.
- Once all these values are configured, click **Done**, and you will be prompted to restart the FAXCOM service in order for the values to take effect. Restart the service when ready.



## 7. Verification Steps

### 7.1. Avaya Aura® Communication Manager

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

```

status trunk 21

                                TRUNK GROUP STATUS

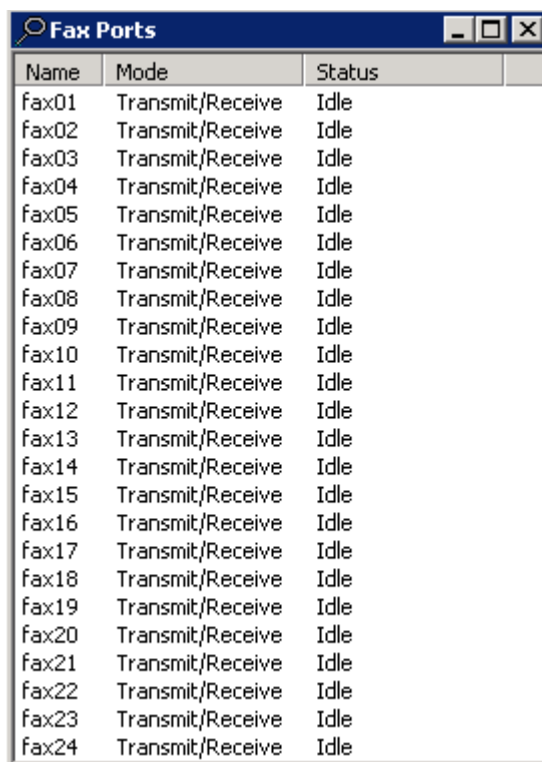
Member   Port      Service State      Mtce Connected Ports
                               Busy

0021/001 T00159   in-service/idle    no
0021/002 T00160   in-service/idle    no
0021/003 T00161   in-service/idle    no
0021/004 T00162   in-service/idle    no
0021/005 T00163   in-service/idle    no
0021/006 T00164   in-service/idle    no
0021/007 T00165   in-service/idle    no
0021/008 T00166   in-service/idle    no
0021/009 T00167   in-service/idle    no
0021/010 T00168   in-service/idle    no

```

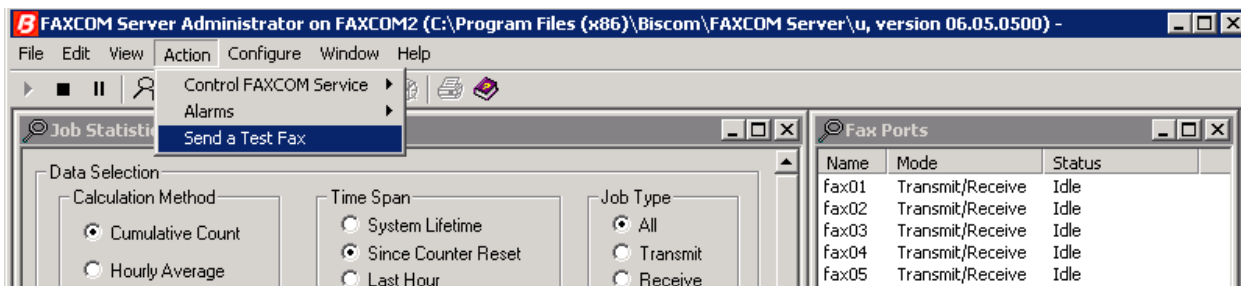
## 7.2. Biscom FAXCOM

From the Biscom FAXCOM Server Administrator application, bring up the **Fax Ports** window either by icon with the magnifying glass and the letter F, or by clicking **View** from the menu choices on top and selecting **Fax Ports**. This brings up a window showing all the licensed fax ports and each port's status. All ports should be in **idle** state.



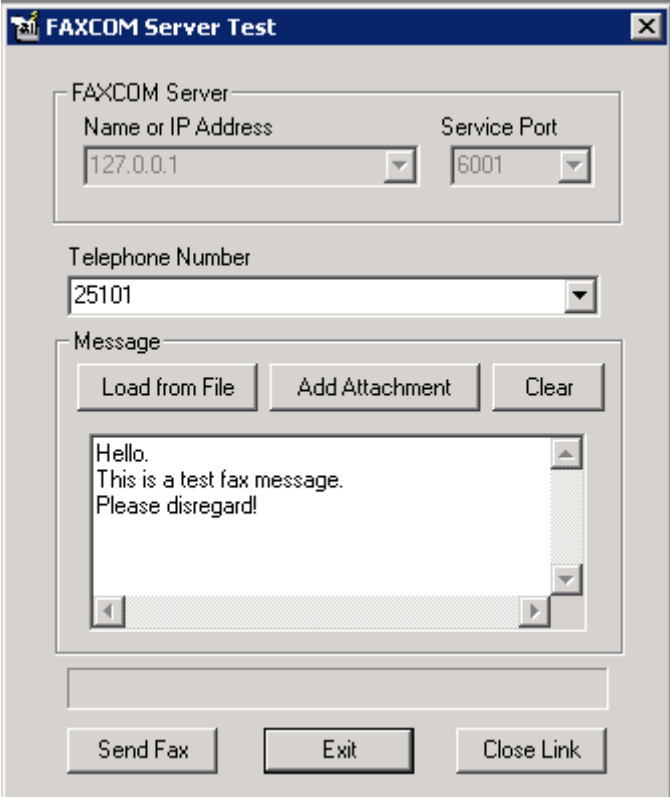
Name	Mode	Status
fax01	Transmit/Receive	Idle
fax02	Transmit/Receive	Idle
fax03	Transmit/Receive	Idle
fax04	Transmit/Receive	Idle
fax05	Transmit/Receive	Idle
fax06	Transmit/Receive	Idle
fax07	Transmit/Receive	Idle
fax08	Transmit/Receive	Idle
fax09	Transmit/Receive	Idle
fax10	Transmit/Receive	Idle
fax11	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, you can send a test fax using the **FAXCOM Server Administrator**. Click the **Action** menu choice; click **Send a Test Fax**.



On the **FAXCOM Server Test** Window:

- The **FAXCOM Server: Name or IP Address** field defaults to 127.0.0.1, leave it unchanged. In the **FAXCOM Server: Service Port** field, type **6001** if it doesn't display that value already.
- In the **Telephone Number** field, type the phone number of a fax device (e.g., if sending to an external number, dial the necessary prefix).
- In the **Message** box, type in a sample text, if desired.  
Click the **Send Fax** button. This will send a one-page test fax to Communication Manager. If successful, an OK report will be displayed.



The screenshot shows a window titled "FAXCOM Server Test". It contains several input fields and buttons:

- FAXCOM Server:**
  - Name or IP Address:** A dropdown menu with "127.0.0.1" selected.
  - Service Port:** A dropdown menu with "6001" selected.
- Telephone Number:** A text input field containing "25101".
- Message:** A text area containing the text: "Hello. This is a test fax message. Please disregard!". Above the text area are three buttons: "Load from File", "Add Attachment", and "Clear".
- Buttons:** At the bottom of the window are three buttons: "Send Fax", "Exit", and "Close Link".

Below is an example of a successful test fax:





## 8. Conclusion

Biscom FAXCOM passed compliance testing. These Application Notes describe the procedures required to configure Biscom FAXCOM to interoperate with Avaya Aura® Communication Manager to support the network shown 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 6.3, Document 03-300509, Issue 8, May 2013

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

- [1] FAXCOM Server Administrator's Guide, July 2013 Revised Edition, © Biscom, Inc., 1995-2013

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