Avaya Solution & Interoperability Test Lab

Application Notes for Configuring the Multi-Tech FaxFinder V.34 Fax Server with Avaya Communication Manager - Issue 1.0

Abstract

These Application Notes describe the procedures for configuring the Multi-Tech FaxFinder V.34 Fax Server to interoperate with Avaya Communication Manager.

The Multi-Tech FaxFinder V.34 Fax Server is a turnkey solution that connects to one or more analog ports of a PBX capable of DID to DTMF conversion. The FaxFinder converts faxes to PDF or TIFF files allowing a user to receive faxes as e-mails and send faxes from any application that can print.

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 procedures for configuring the Multi-Tech FaxFinder V.34 Fax Server to interoperate with Avaya Communication Manager.

The Multi-Tech FaxFinder V.34 Fax Server is a turnkey solution that connects to one or more analog ports of a PBX capable of DID to DTMF conversion. The FaxFinder converts faxes to PDF or TIFF files allowing a user to receive faxes as e-mails and send faxes from any application that can print.

1.1. Configuration

Figure 1 illustrates the test configuration. The test configuration is comprised of Avaya Communication Manager running on an Avaya S8300 Server with an Avaya G700 Media Gateway. An ISDN-PRI trunk connects the Avaya G700 Media Gateway to a simulated PSTN environment with fax machines. In addition, the Avaya G700 Media Gateway is connected to the FaxFinder via one or more analog station (FXS) ports. The FaxFinder also has an Ethernet port which connects to the local LAN which is used to email recipients the contents of the incoming faxes. Lastly, the FaxFinder PC Client is installed on a PC on the local LAN in order to generate outbound faxes to the IP port of the FaxFinder server through the analog station connections to the Avaya G700 Media Gateway.

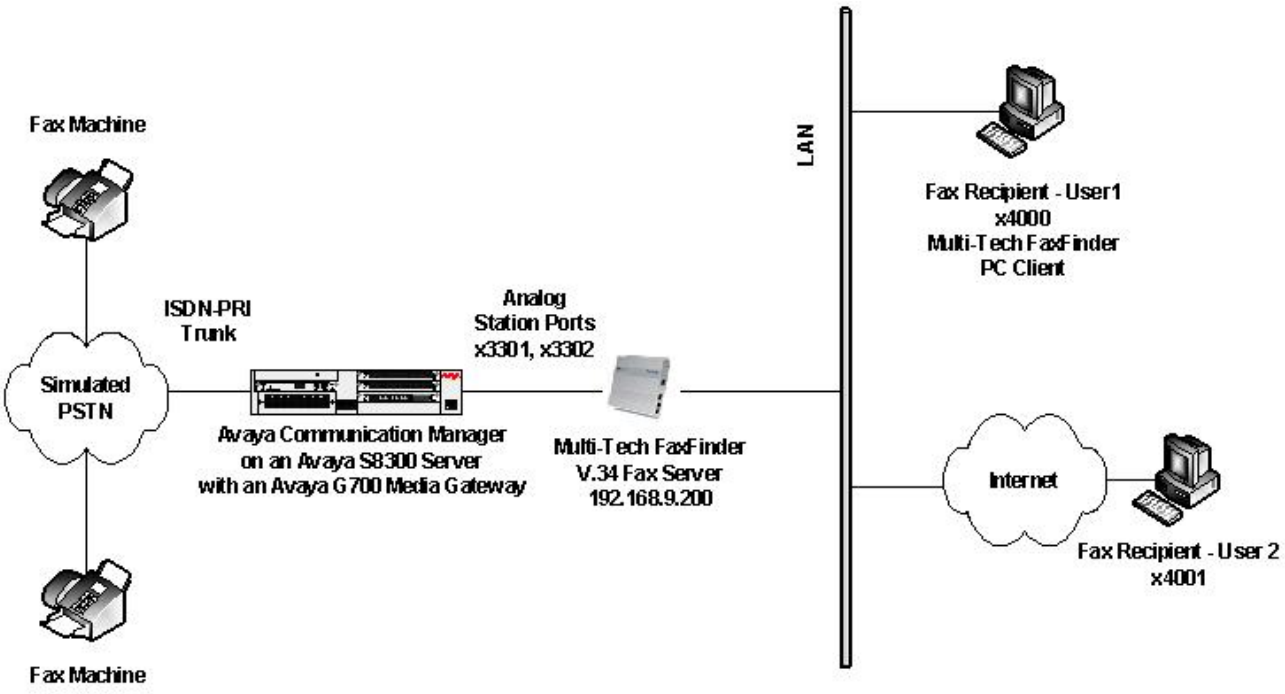


Figure 1: Test Configuration

Each fax recipient in **Figure 1** has an individual public fax number assigned to them. When an external PSTN caller dials this number, the PSTN routes the call across the ISDN-PRI trunk to Avaya Communication Manager. Avaya Communication Manager in turn maps this dialed number to a virtual station known as an Administered Without Hardware (AWOH) station. This station is

configured with coverage provided by a hunt group containing the analog station ports where the FaxFinder is connected. After a predetermined number of rings, the fax call will go to coverage and be redirected to the FaxFinder. The analog station ports connected to the FaxFinder are configured as Voicemail Interface (VMI) stations. These stations make use of analog mode codes (DTMF tones) that are sent from Avaya Communication Manager when the call is redirected. These tones inform the FaxFinder which extension was the intended recipient of the coverage call. The FaxFinder uses this extension to locate the provisioned email address of the intended fax recipient.

To send an outbound fax, a PC user on the local LAN must have the Multi-Tech FaxFinder PC Client installed. This application allows the PC user to send an electronic file and destination to the FaxFinder server for transmission as a fax to a recipient on the PSTN. The FaxFinder server will use one of the analog ports that connect it to Avaya Communication Manager to originate the fax call in the same manner as a fax machine.

2. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya S8300 Server with Avaya G700 Media Gateway	Avaya Communication Manager 5.0 (R015x.00.0.825.4)
Fax Machines	-
Windows PC	Windows XP Professional SP2
Multi-Tech FaxFinder V.34 Fax Server	1.04E
Multi-Tech FaxFinder PC Client	1.08.06

3. Configure Avaya Communication Manager

This section describes the Avaya Communication Manager configuration required to connect to the FaxFinder as shown in **Figure 1**.

The configuration of Avaya Communication Manager was performed using the System Access Terminal (SAT). After the completion of the configuration, perform a **save translation** command to make the changes permanent.

Step	Description
1.	**Enable Mode Codes** The FaxFinder requires the use of mode codes. Mode Codes are a series of DTMF tones that are sent to a station configured as a VMI station type. These tones are sent from Avaya Communication Manager to the station, after the call is answered but before the end-to-end talk path is established. These tones relay additional information about the type of call being received including the original called party of a redirected call. Use the **display system-parameters features** command to verify that the **Mode Code Interface** field is set to ***y***. If not, contact an authorized Avaya representative to make the necessary changes. display system-parameters features Page 6 of 17 FEATURE-RELATED SYSTEM PARAMETERS Public Network Trunks on Conference Call: 5 Auto Start? n Conference Parties with Public Network Trunks: 6 Auto Hold? n Conference Parties without Public Network Trunks: 6 Attendant Tone? y Night Service Disconnect Timer (seconds): 180 Bridging Tone? n Short Interdigit Timer (seconds): 3 Conference Tone? n Unanswered DID Call Timer (seconds): Intrusion Tone? n Line Intercept Tone Timer (seconds): 30 **Mode Code Interface? y** Long Hold Recall Timer (seconds): 0 Reset Shift Timer (seconds): 0 Station Call Transfer Recall Timer (seconds): 0 Recall from VDN? n DID Busy Treatment: tone Allow AAR/ARS Access from DID/DIOD? n Allow ANI Restriction on AAR/ARS? n Use Trunk COR for Outgoing Trunk Disconnect? n 7405ND Numeric Terminal Display? n 7434ND? n DISTINCTIVE AUDIBLE ALERTING Internal: 1 External: 2 Priority: 3 Attendant Originated Calls: external

Step	Description

2.	**Mode Code Values**
	The FaxFinder uses the default values for each of the individual mode codes. These values can be viewed/changed using the **change system-parameters mode-code** command. For optimum performance, the timing parameters of **DTMF Duration – On** and **Sending Delay** should be changed from the default value of ***100*** msec to ***400*** msec as shown below.
	
	`change system-parameters mode-code`
	`MODE CODE RELATED SYSTEM PARAMETERS`
	
	`MODE CODES (FROM SWITCH TO VMS)`
	`Direct Inside Access: #00`
	`Direct Dial Access - Trunk: #01`
	`Internal Coverage: #02`
	`External Coverage: #03`
	
	`Refresh MW Lamp: #06`
	
	`System In Day Service: #11`
	`System In Night Service: #12`
	
	`OTHER RELATED PARAMETERS`
	`DTMF Duration - On (msec): 400` `Off (msec): 100` **`Sending Delay (msec): 400`**
	
	`VMS Hunt Group Extension:`
	`Remote VMS Extensions - First: Second:`

3.	**FaxFinder VMI stations**
	Each analog station port that connects to the FaxFinder is configured as a VMI station type in order to receive mode codes with each call. The example below shows the configuration used for the compliance test. Station 3301 is created for the first FaxFinder port. The **Type** field is set to ***VMI***. The **Port** field is set to the analog station port that connects to the FaxFinder. The **Name** field can be set to any descriptive name. Default values are used for all other fields. This step is repeated for each port connected to the FaxFinder. For the compliance test, a second station 3302 was created.
	
	`add station 3301 Page 1 of 4`
	`STATION`
	
	`Extension: 3301 Lock Messages? n BCC: 0`
	`Type: VMI` `Security Code: TN: 1`
	`Port: 001V401` `COR: 1`
	`Name: Analog 1` `COS: 1`
	`Tests? y`
	`STATION OPTIONS`
	`Time of Day Lock Table:`
	`Loss Group: 1`
	`Off Premises Station? n`
	
	`Survivable COR: internal`
	`Survivable Trunk Dest? y`

Step	Description

4.	**Hunt Group of FaxFinder VMI Stations**
	The FaxFinder stations are placed in a hunt group. Thus, a call that has coverage to the hunt group can be answered by any available FaxFinder port. The example below shows the configuration used for the compliance test. Hunt group 2 was used. The **Group Name** can be any descriptive name. The **Group Extension** is set to any unused extension, in this case ***3999***. The **Group Type** was set to ***ucd-mia***. Default values were used for all other fields.
	
	`add hunt-group 2 Page 1 of 60`
	`HUNT GROUP`
	`Group Number: 2 ACD? n`
	`**Group Name: FaxFinder** Queue? n`
	`**Group Extension: 3999** Vector? n`
	`**Group Type: ucd-mia** Coverage Path:`
	`TN: 1 Night Service Destination:`
	`COR: 6 MM Early Answer? n`
	`Security Code: Local Agent Preference? n`
	`ISDN/SIP Caller Display:`

5.	**Hunt Group of FaxFinder VMI Stations – Continued**
	On **Page 3**, under GROUP MEMBER ASSIGNMENTS enter the station extensions created in **Step 3** in the **Ext** column. The **Name** column will be automatically filled in. Default values were used for all other fields.
	
	`add hunt-group 2 Page 3 of 60`
	`HUNT GROUP`
	`Group Number: 2 Group Extension: 3999 Group Type: ucd-mia`
	`Member Range Allowed: 1 - 1500 Administered Members (min/max): 1 /2`
	`Total Administered Members: 2`
	`GROUP MEMBER ASSIGNMENTS`
	`**Ext** Name(19 characters) Ext Name(19 characters)`
	`1: **3301** Analog 1 14:`
	`2: **3302** Analog 2 15:`
	`3: 16:`

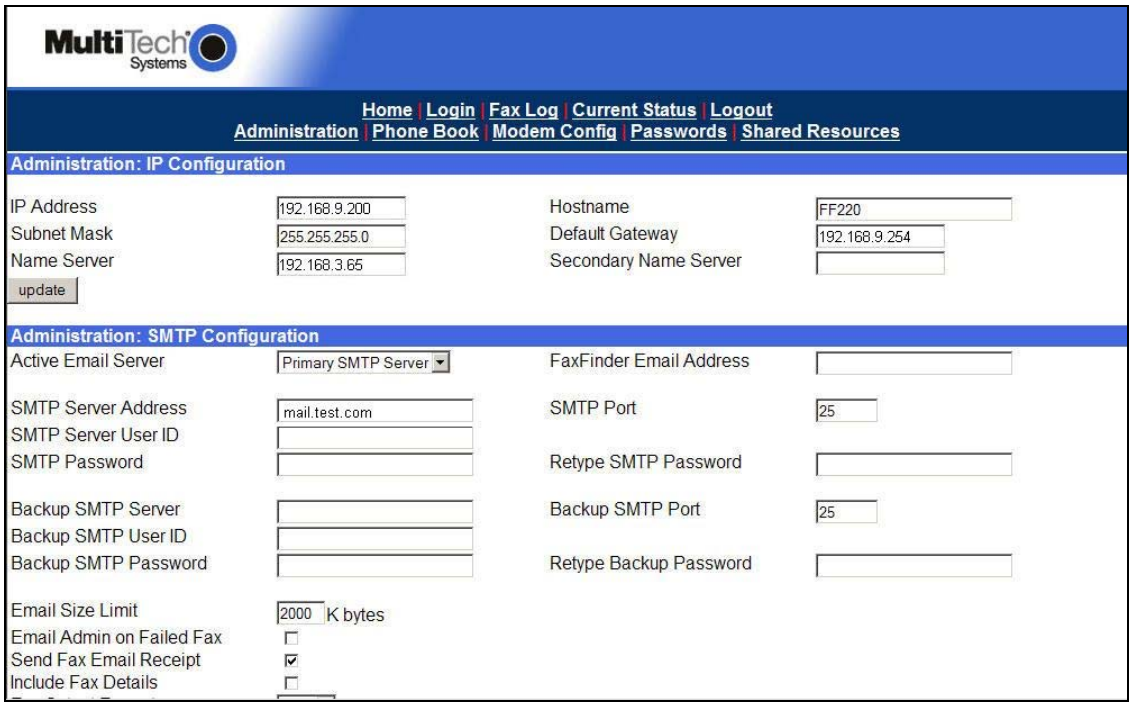
Step	Description
6.	**Virtual Stations for Fax Numbers** Each fax recipient in **Figure 1** has an individual public fax number assigned to them. When this number is received by Avaya Communication Manager, Avaya Communication Manager performs the predetermined call treatment on this number to map it to an internal virtual station. A virtual station is used since the call is not expected to be answered there but is expected to proceed to coverage to reach the FaxFinder. However, the FaxFinder will be notified via mode codes which station was the original called party. The FaxFinder will use this information to find the email address of the called party. The example below shows a virtual station created for one of the fax recipients in the compliance test. Station 4000 was created for this user. The **Type** field was set to ***6408D+*** which is a digital station type. The **Type** value used may vary since no real hardware is used. The **Port** field is set to ***X***, which indicates this station as an Administered Without Hardware (AWOH) station. The **Name** field can be any descriptive name. The **Coverage Path 1** field is set to the FaxFinder coverage path created in the next step. The default values were used for all other fields. A second station was also created with extension 4001. add station 4000 Page 1 of 5 STATION Extension: 4000 Lock Messages? n BCC: 0 **Type: 6408D+** Security Code: TN: 1 **Port: X** **Coverage Path 1: 26** COR: 1 **Name: Fax 4000** Coverage Path 2: COS: 1 Hunt-to Station: STATION OPTIONS Time of Day Lock Table: Loss Group: 2 Personalized Ringing Pattern: 1 Data Module? n Message Lamp Ext: 4000 Speakerphone: 2-way Mute Button Enabled? y Display Language: english Survivable COR: internal Media Complex Ext: Survivable Trunk Dest? y IP SoftPhone? n

Step	Description
7.	**Coverage Path to the FaxFinder** A coverage path is created that points to the FaxFinder hunt group created in **Steps 4 – 5**. It is this coverage path that allows the FaxFinder to answer the fax calls that are placed to the individual users. The example below shows the values used for the compliance test. Coverage Path 26 was used. Under COVERAGE POINTS, the **Point 1** field was set to ***h2***. This is hunt group 2 created in **Steps 4 – 5**. The **Number of Rings** was set to ***1*** so that calls would proceed to coverage as quickly as possible.

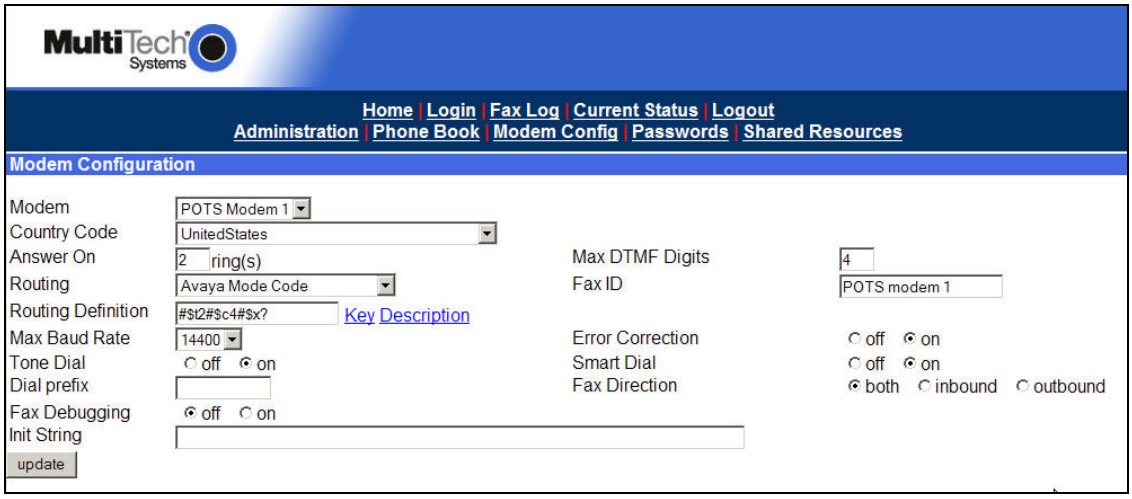
```
add coverage path 26
                                COVERAGE PATH

                  Coverage Path Number: 26
                                                    Hunt after Coverage? n
                      Next Path Number:             Linkage

COVERAGE CRITERIA

    Station/Group Status    Inside Call     Outside Call
              Active?             n               n
                Busy?             y               y
       Don't Answer?              y               y         Number of Rings: 1
                 All?             n               n
 DND/SAC/Goto Cover?              y               y
   Holiday Coverage?              n               n

COVERAGE POINTS
    Terminate to Coverage Pts. with Bridged Appearances? n
  Point1: h2              Rng:    Point2:
  Point3:                         Point4:
  Point5:                         Point6:
```

4. Configure the Multi-Tech FaxFinder V.34 Fax Server

This section describes the configuration of the FaxFinder.

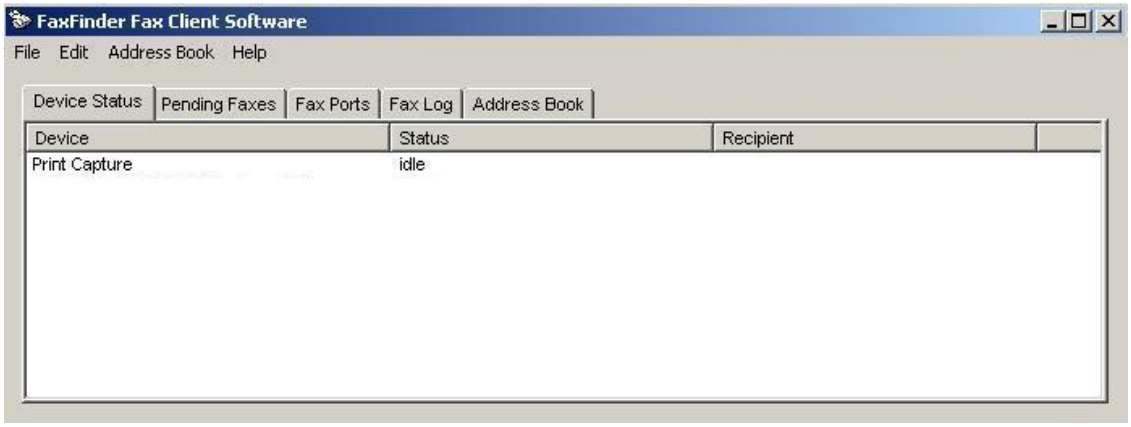
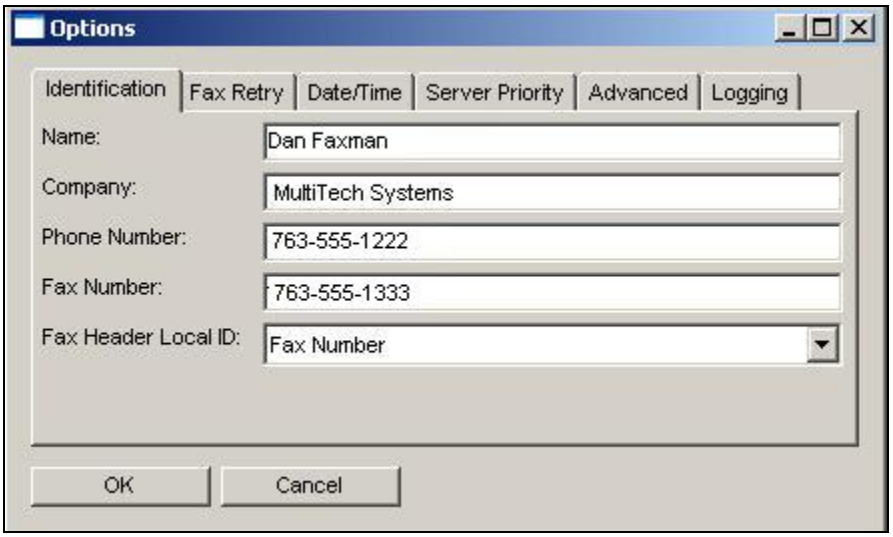
Step	Description
1.	**Connect to the FaxFinder** The FaxFinder is configured via a web-based graphical user interface (GUI). To access the GUI, use a web browser to access the IP address of the FaxFinder. At the login screen, enter the proper user name and password.
2.	**IP Network Parameters** Click the **Administration** link in the menu bar at the top of the page to display the IP network settings. Under **IP configuration**, all fields should be set to values appropriate for the local network. The **Hostname** can be any descriptive name. Under **SMTP Configuration**, the **SMTP Server Address** must be set to the fully qualified domain name of the outgoing mail server. Default values were used for all other fields. The example below shows values used in the compliance test. 

Step	Description
3.	**Phone Book** Each user with a fax number must be entered in the FaxFinder Phone Book to map a user extension on Avaya Communication Manager to an email address where the fax will be sent. Click the **Phone Book** link in the menu bar to display the Phone Book settings. For the compliance test, ***user1*** and ***user2*** were created in the Phone Book shown below. They were assigned extensions ***4000*** and ***4001*** respectively. These correspond to the virtual stations created on Avaya Communication Manager (**Section 3**, **Step 6**). Each of these users was also assigned an email address. In addition, each of these users is automatically assigned a password which defaults to the string used in the User ID field. To view or update this password, select the **Passwords** link in the menu bar. 

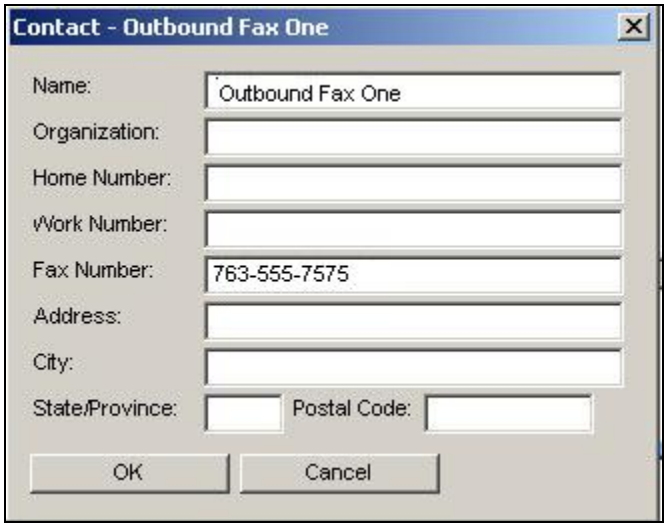
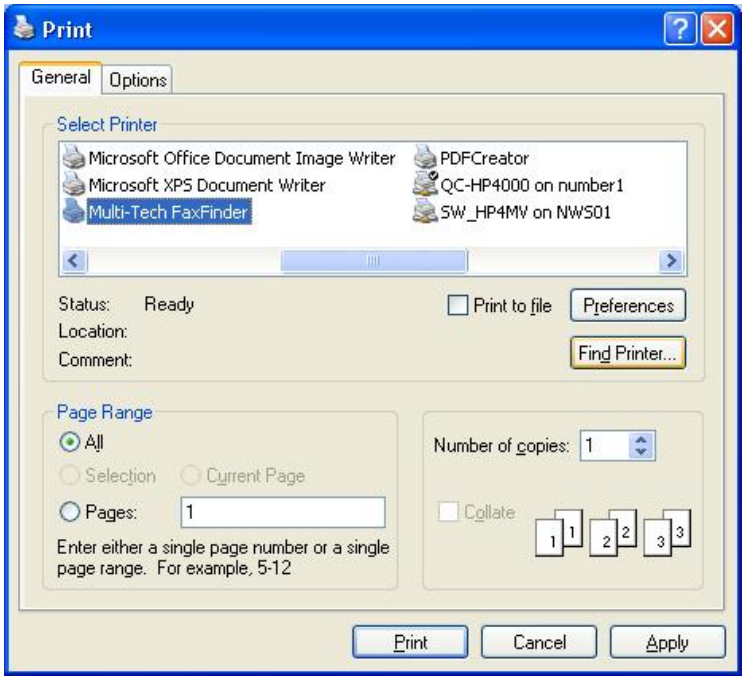
Step	Description
4.	**Modem** The modem for each analog port must be configured as shown below. Click the **Modem Config** link in the menu bar to display the modem configuration. Set the **Routing** field to ***Avaya Mode Code***. Set the **Max DTMF Digits** field to match the number of digits used for extension numbers on Avaya Communication Manager. For the compliance test, 4-digit extensions were used. Set the **Fax ID** to any descriptive name. 

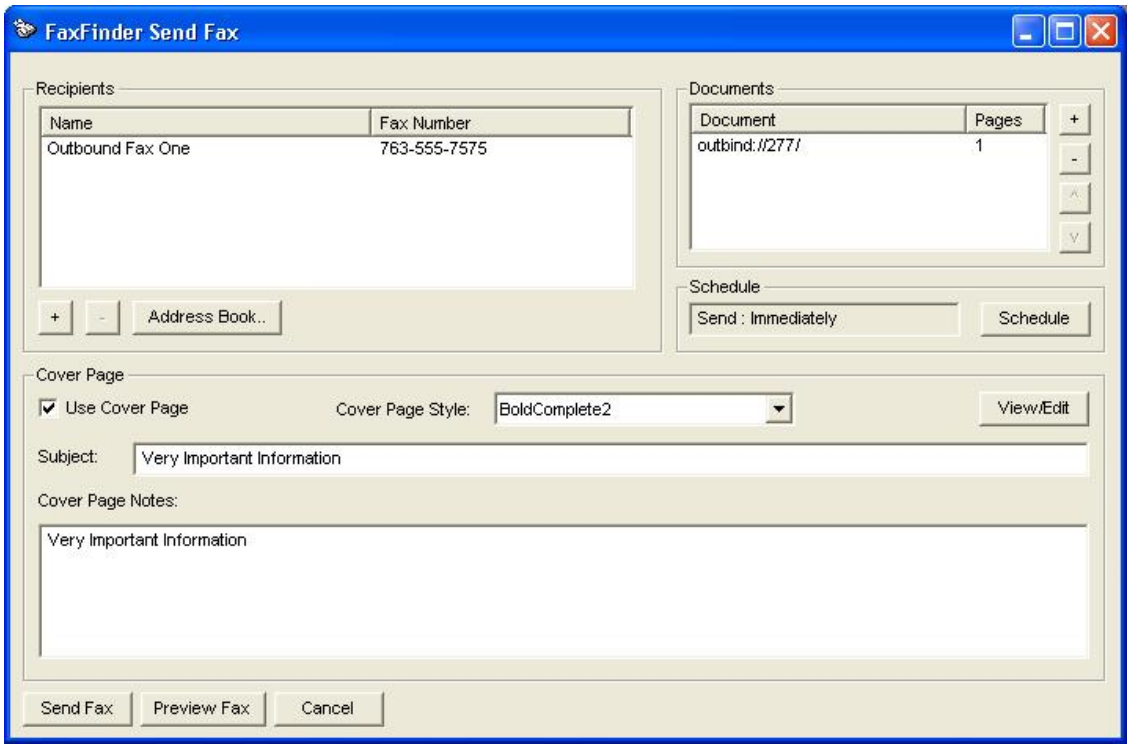
5. Configure the Multi-Tech FaxFinder PC Client

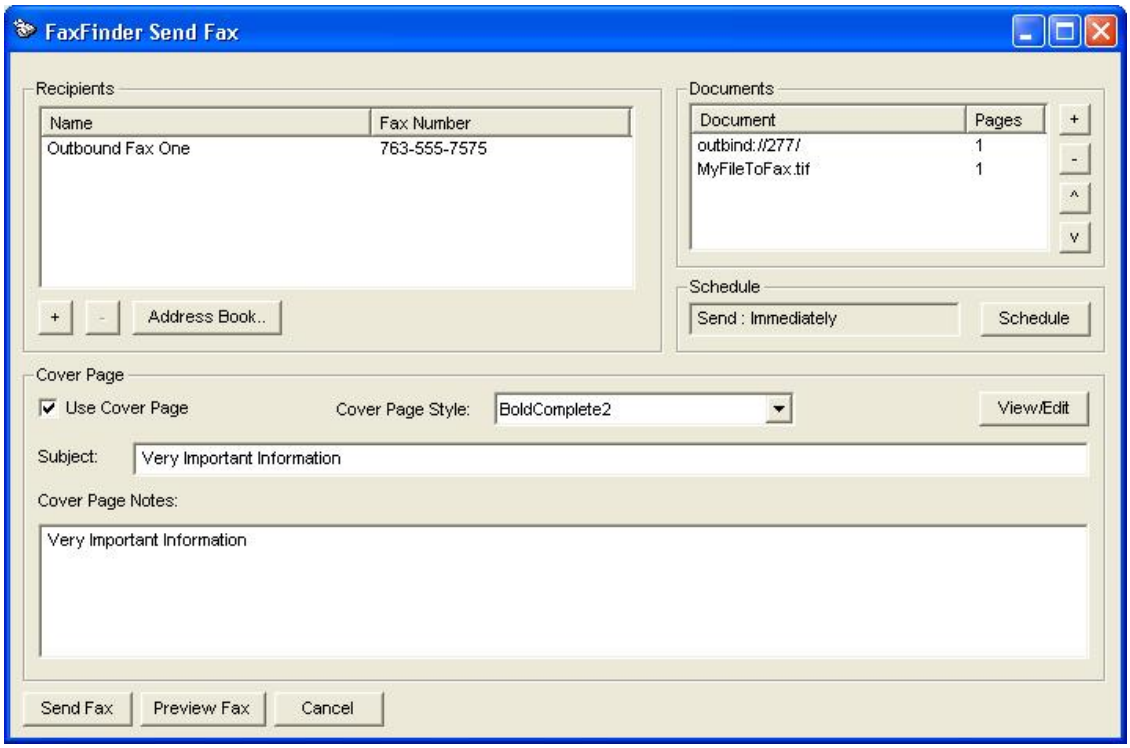
This section describes the configuration of the FaxFinder PC Client.

Step	Description
1.	**Launch the FaxFinder PC Client** From the Windows Start Menu, navigate to **Programs → FaxFinder Client Software → FaxFinder Client Software**. The main window will be displayed as shown below. 
2.	**Software Options** Configure the FaxFinder PC Client software options by navigating to **File → Options** from the application's main window. On the **Identification** tab, enter the **Name**, **Company**, **Phone Number**, and **Fax Number** for the fax originator using the FaxFinder PC Client. The **Fax Header Local ID** is set to ***Fax Number***. Default values can be used on all other tabs. The example below shows values used for the compliance test. 

Step	Description
3.	**Add Fax Server** Enter information for the FaxFinder that will service the fax requests of this FaxFinder PC Client by navigating to **Edit → Add Fax Server** from the application's main window. Select ***FaxFinder*** from the pull-down menu for the **Select Server** field. Enter the IP address of the FaxFinder in the **Enter Address** field. In the **Username** and **Password** fields, enter one of the user names and passwords created in the FaxFinder Phone Book (**Section 4**, **Step 3**). 

Step	Description
4.	**Create Address Book Contacts** Create Address Book contacts for prospective fax recipients by navigating to **Edit → Add Contact** from the application's main window. At a minimum, enter the name and fax number for the contact. 
5.	**Send Fax** A fax can be sent directly from any application that allows printing by selecting the document be printed to the FaxFinder printer. The FaxFinder printer is created when the FaxFinder PC Client is installed. The example below shows the FaxFinder printer as one of the available printer options. 

Step	Description
6.	**Send Fax – Continued** The FaxFinder printer will capture the document and convert it into a tiff file for faxing with the FaxFinder PC Client. Once the file is converted, the FaxFinder PC Client will detect the file and the **FaxFinder Send Fax** window will appear as shown below. The document to print will appear in the **Documents** section in the upper right-hand corner of the window. Click the **Address Book** button to select a fax recipient from the list of contacts. In the example below, the recipient is the contact that was entered in **Step 4**. Optionally, additional information may be added in the **Subject** and **Cover Page Notes** fields. Click the **Send Fax** button to start the fax transmission. The **FaxFinder Send Fax** window may also be accessed from the FaxFinder PC Client's main window by navigating to **File → Send Fax** (see **Step 1**). 

Step	Description
7.	**Send Fax – Continued** Tiff files may also be selected for faxing directly from the **FaxFinder Send Fax** window. To select a document for faxing, click the + button in the **Documents** section of the window. A pop-up window will appear that will allow the user to browse to the desired document and select it. The example below shows the adding of an additional document to the previous fax using this approach. 

6. Interoperability Compliance Testing

This section describes the compliance testing used to verify the interoperability of the Multi-Tech FaxFinder V.34 Fax Server with Avaya Communication Manager. This section covers the general test approach and the test results.

6.1. General Test Approach

The general test approach was to make inbound/outbound fax calls. In addition, serviceability was tested by ensuring that the FaxFinder recovers after a reboot or loss of IP connection.

6.2. Test Results

The FaxFinder passed compliance testing. The following features and functionality were verified.

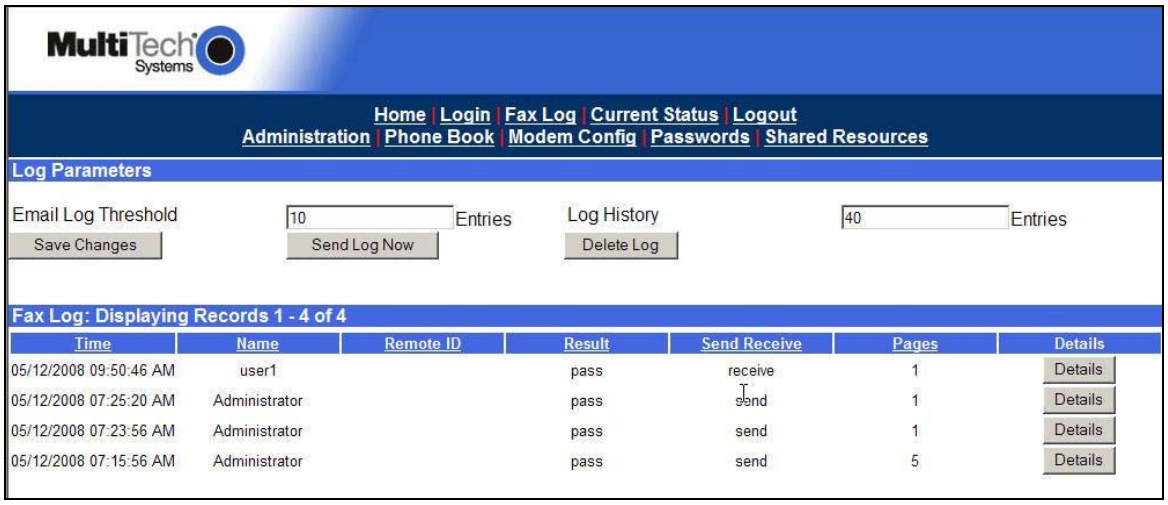
- Inbound fax calls from the simulated PSTN to the FaxFinder.
- Outbound fax calls from the FaxFinder PC Client to the simulated PSTN.
- Proper system recovery after a FaxFinder restart and loss of IP connection.

7. Verification Steps

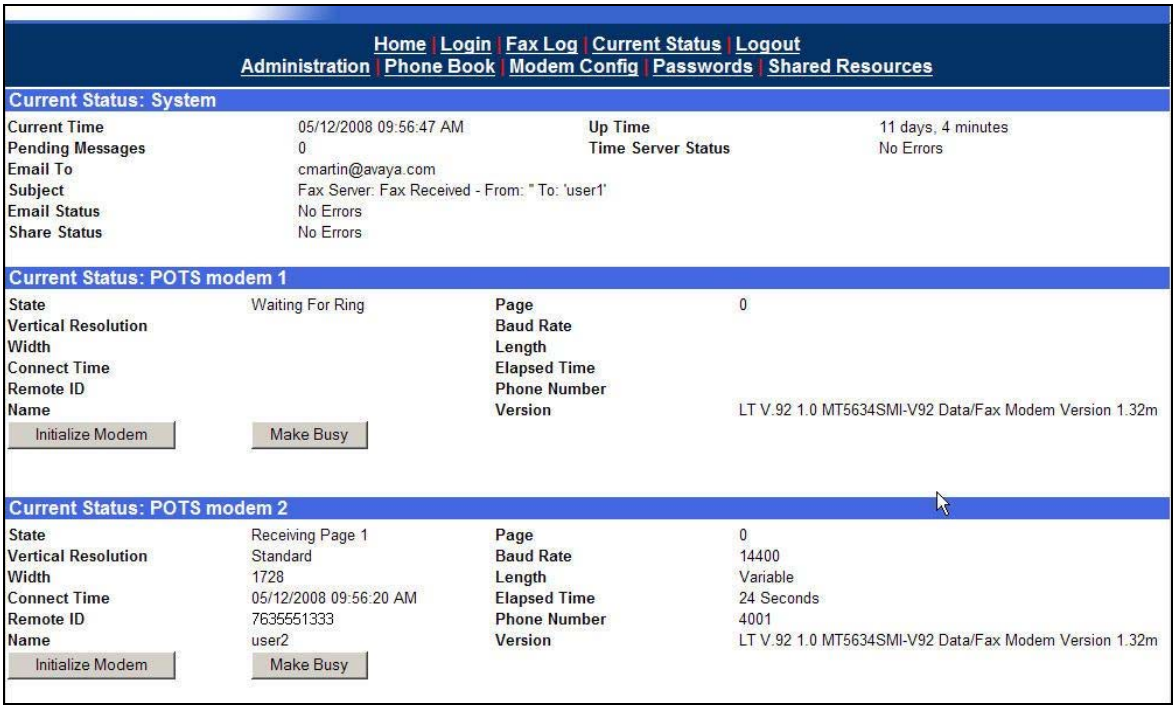
The following steps may be used to verify the configuration:

- From the Avaya Communication Manager SAT, use the **status station** command to verify that the analog station connections to the FaxFinder are in-service.
- Verify that fax calls can be placed between the simulated PSTN and the FaxFinder and/or the FaxFinder PC Client.
- Both the FaxFinder and the FaxFinder PC Client have a fax log and the ability to display the current status of the device or application.

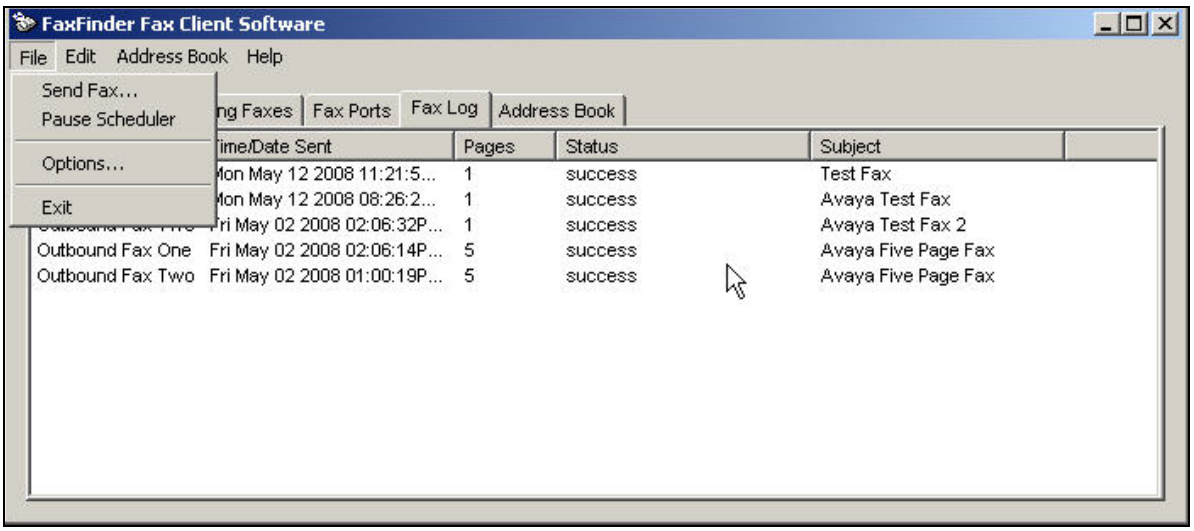
  To view the fax log on the FaxFinder, click on the **Fax Log** link in the menu bar at the top of the page. The example below shows that the most recent activity includes one incoming fax and three outgoing faxes.



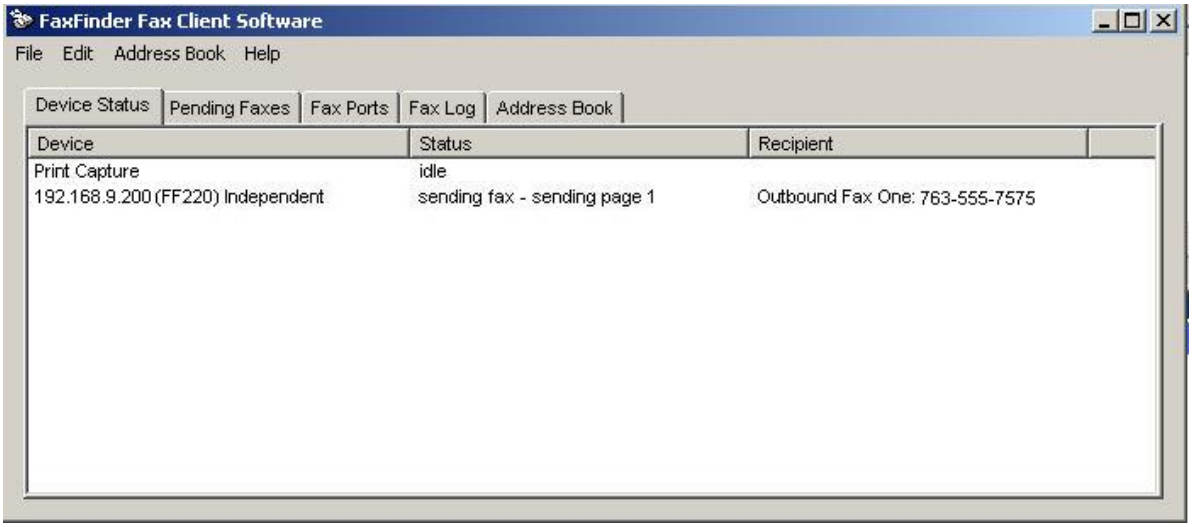
To view the current status of the FaxFinder, click the **Current Status** link in the menu bar. The example below shows under **Current Status: System** that the most recent completed operation was a received fax for user1. Under **Current Status: POTS modem 1**, the example shows that this modem (port) is in a ***Waiting for Ring*** state. Lastly, **Under Current Status: POTS modem 2**, the example shows that this modem (port) is in the process of receiving page one of a fax for user2.



To view the fax log on the FaxFinder PC Client, click on the **Fax Log** tab in the application's main window. The example below shows that the most recent activity includes five successful outgoing faxes – three single page faxes and two 5-page faxes.



To view the current status of the FaxFinder PC Client, click the **Device Status** tab in the application's main window. The example below shows an outbound fax in progress to device ***192.168.9.200*** (FaxFinder Server) with an intended recipient with contact name ***Outbound Fax One***.



8. Support

For technical support on the FaxFinder, contact Multi-Tech via the support link at www.multitech.com.

9. Conclusion

The Multi-Tech FaxFinder V.34 Fax Server passed compliance testing. These Application Notes describe the procedures required to configure the Multi-Tech FaxFinder V.34 Fax Server to interoperate with Avaya Communication Manager as shown in **Figure 1**.

10. Additional References

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

Product documentation for the FaxFinder may be found at http://www.multitech.com.

[1] *Feature Description and Implementation For Avaya Communication Manager*, Doc # 555-245-205, Issue 6.0, January 2008.

[2] *Administrator Guide for Avaya Communication Manager*, Doc # 03-300509, Issue 4, January 2008.

[3] *FaxFinder Administrator User Guide for Models FF120, FF220, FF420 & FF820*, PN: S0000405 Rev. D, November 20, 2007.

[4] *FaxFinder Client User Guide for Models FF120/220/420/820*, PN: S0000406 Rev. D, November 20, 2007.

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.