



Avaya Solution & Interoperability Test Lab

Application Notes for Multi-Tech FaxFinder® IP with Avaya IP Office – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Multi-Tech FaxFinder® IP to interoperate with Avaya IP Office. The Multi-Tech FaxFinder IP is a fax server application that uses the SIP trunk interface with T.38 fax from Avaya IP Office to send and receive fax.

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 steps required for Multi-Tech FaxFinder IP to interoperate with Avaya IP Office. The Multi-Tech FaxFinder IP is a fax server application that uses the SIP trunk interface with T.38 fax from Avaya IP Office to send and receive fax.

For each user on Avaya IP Office desired to use fax, a fax extension is assigned and configured on Multi-Tech FaxFinder IP. Incoming fax calls to the fax extensions are routed to Multi-Tech FaxFinder IP via an available SIP channel. The received incoming fax can be sent to the fax recipient's email address, printed automatically, or stored in a shared folder, depending on the provisioning in Multi-Tech FaxFinder IP. In the compliance testing, the shared folder method was used to store incoming faxes.

Outgoing faxes can be sent from the Multi-Tech FaxFinder client application, from any PC application that supports print, from any email client using the T.37 interface, or from the Multi-Tech FaxFinder web interface. In the compliance testing, the web interface method was used to send outgoing faxes.

2. General Test Approach and Test Results

The feature test cases were performed manually. Internal and external fax calls to and from Multi-Tech FaxFinder IP were made. The fax calls were sent and received using the Multi-Tech FaxFinder IP web interface and the analog fax destination at the PSTN.

The serviceability test cases were performed manually by disconnecting/reconnecting the Ethernet cable to Multi-Tech FaxFinder IP, and by rebooting the Multi-Tech FaxFinder IP server.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing focused on verifying the following on Multi-Tech FaxFinder IP:

- Proper handling of faxes via the SIP trunk including send/receive, internal fax, external fax over ISDN (PRI), simultaneous with bi-directional faxes, and miscellaneous failure scenarios.
- Proper handling of faxes with different pages, complexity, format, and data rates.
- No adverse impact on the internal and external calls during faxes.

The serviceability testing focused on verifying the ability of Multi-Tech FaxFinder IP to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet cable to Multi-Tech FaxFinder IP.

2.2. Test Results

All test cases were executed and passed.

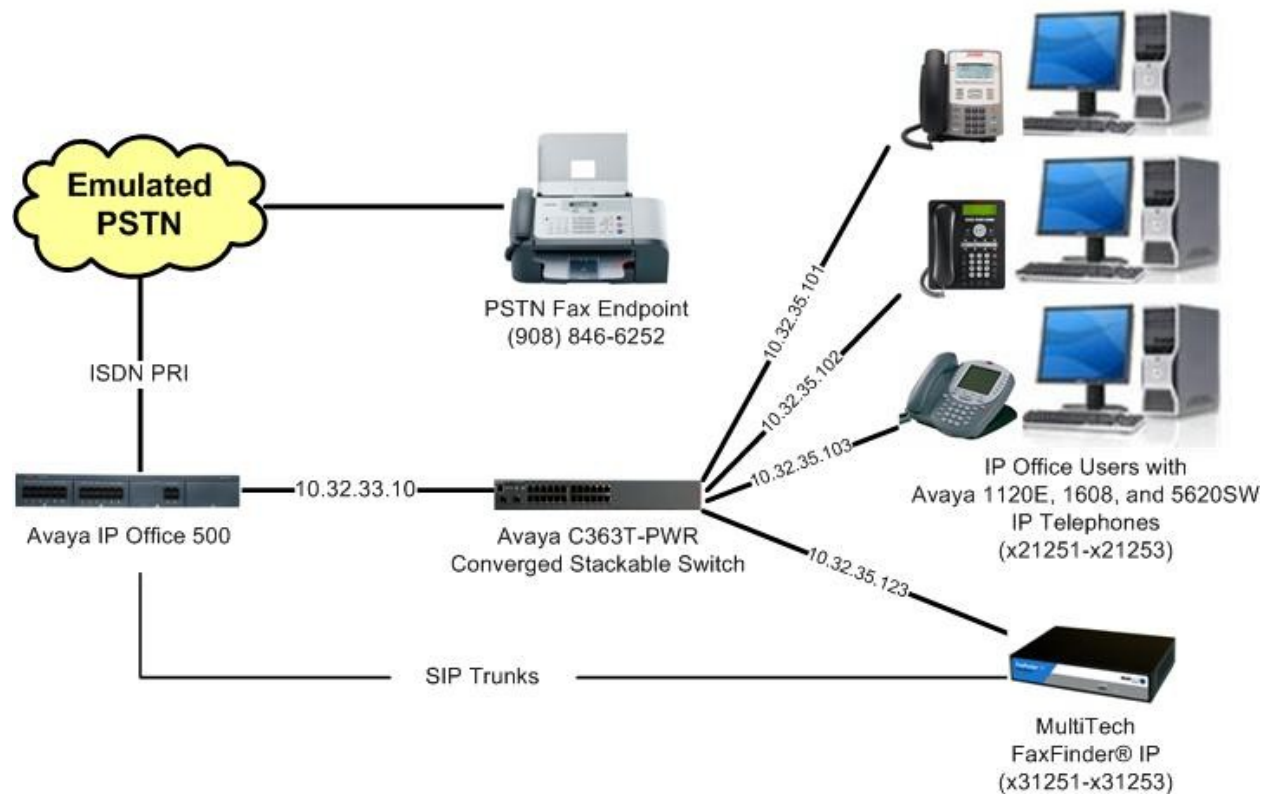
2.3. Support

Technical support on Multi-Tech FaxFinder IP can be obtained through the following:

- **Phone:** (763) 717-5863
- **Web:** <https://support.multitech.com>

3. Reference Configuration

In the compliance testing, the Avaya IP Office users have telephone extensions in the range of 212xx, and fax extensions in the range of 312xx as shown below.



4. Equipment and Software Validated

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

Equipment	Software
Avaya IP Office 500	7.0 (5)
Avaya 1120E IP Deskphone (SIP)	04.01.13.00
Avaya 1608 IP Telephone (H.323)	1.3
Avaya 5620SW IP Telephone (H.323)	2.9010
Multi-Tech FaxFinder IP	1.0.14

5. Configure Avaya IP Office

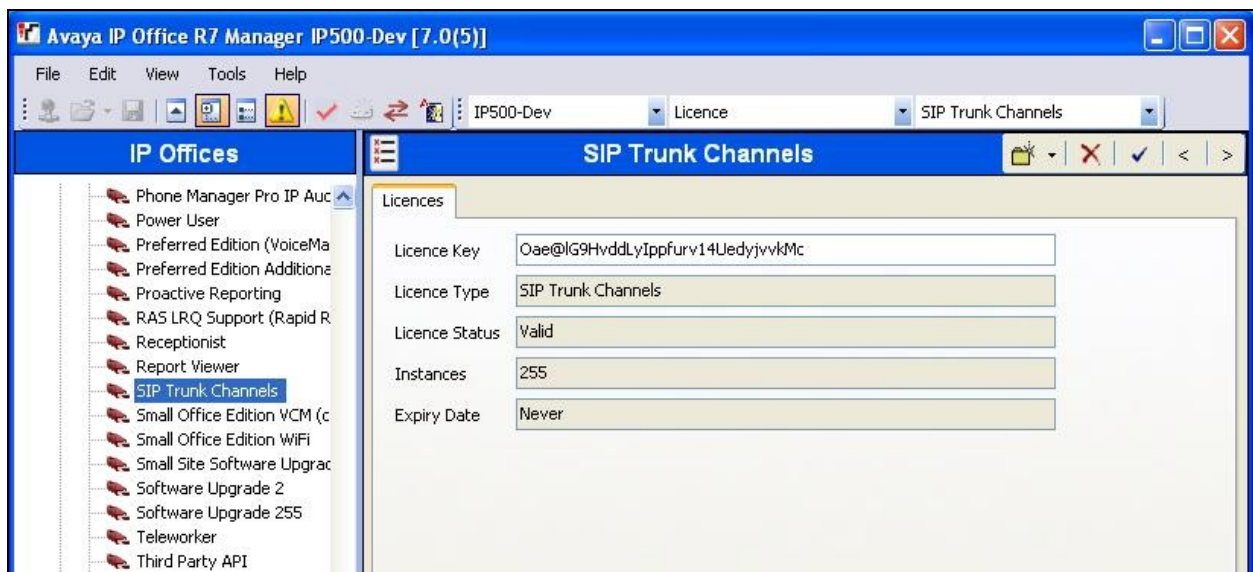
This section provides the procedures for configuring Avaya IP Office. The procedures include the following areas:

- Verify IP Office license
- Obtain LAN IP address
- Enable SIP trunks
- Administer SIP line
- Administer incoming call route
- Administer short code

5.1. Verify IP Office License

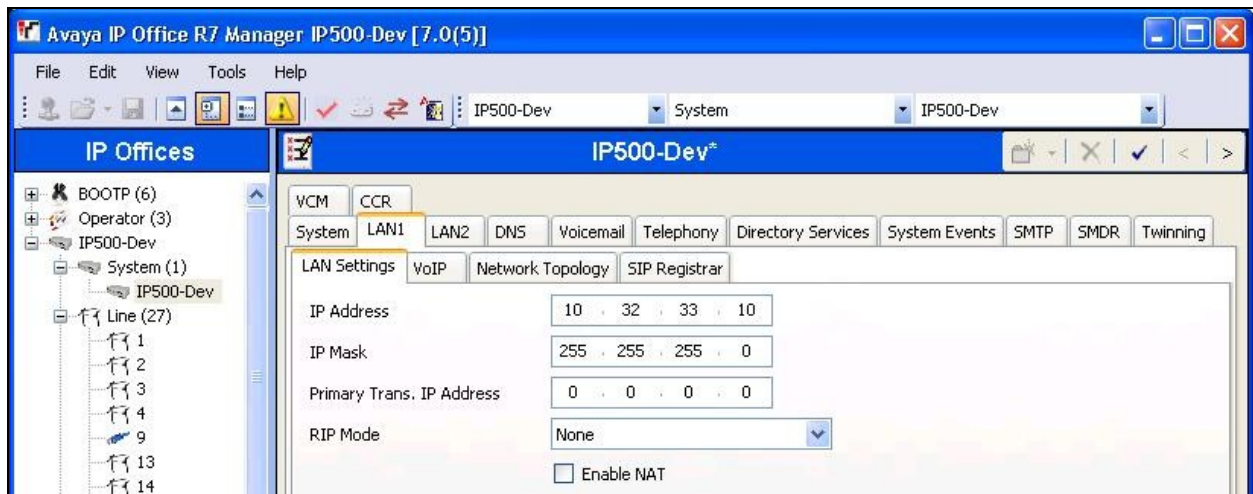
From a PC running the Avaya IP Office Manager application, select **Start > Programs > IP Office > Manager** to launch the Manager application. Select the proper IP Office system, and log in with the appropriate credentials.

The **Avaya IP Office R7 Manager** screen is displayed. From the configuration tree in the left pane, select **Licence > SIP Trunk Channels** to display the **SIP Trunk Channels** screen in the right pane. Verify that the **Licence Status** is “Valid”, and that the **Instances** value is sufficient for the desired maximum number of simultaneous faxes.



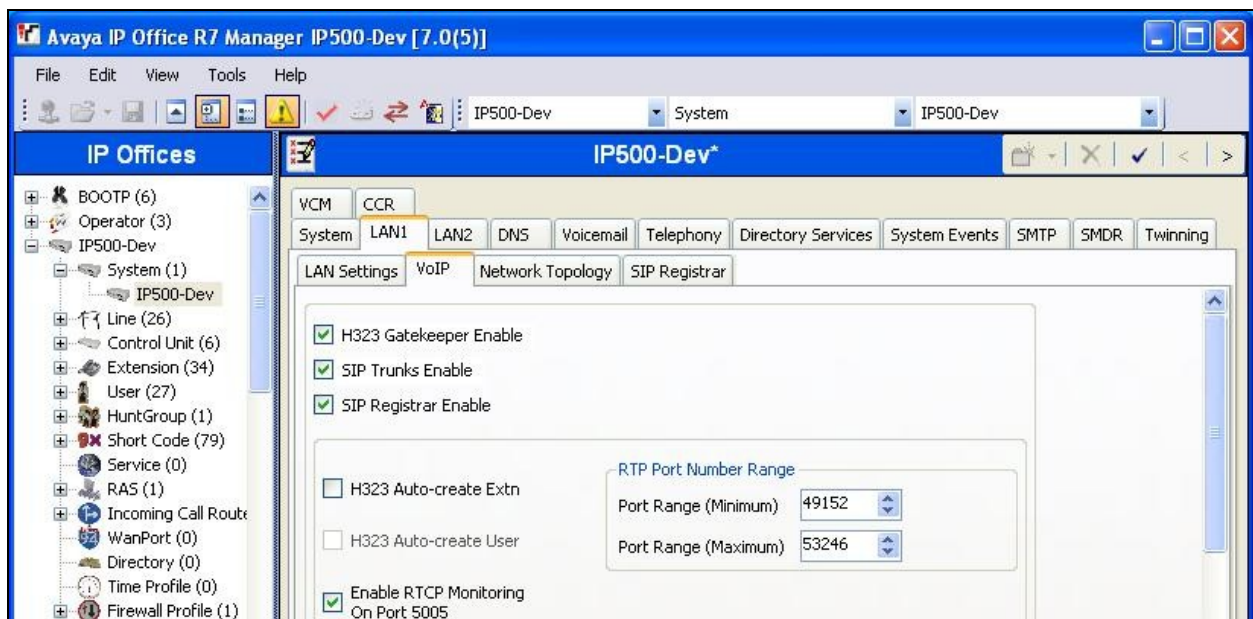
5.2. Obtain LAN IP Address

From the configuration tree in the left pane, select **System** to display the **IP500-Dev** screen in the right pane. Select the **LAN1** tab, followed by the **LAN Settings** sub-tab in the right pane. Make a note of the **IP Address**, which will be used later to configure FaxFinder IP. Note that IP Office can support SIP trunks on the LAN1 and/or LAN2 interfaces, and the compliance testing used the LAN1 interface.



5.3. Enable SIP Trunks

Select the **VoIP** sub-tab. Make certain that **SIP Trunks Enable** is checked, as shown below.



5.4. Administer SIP Line

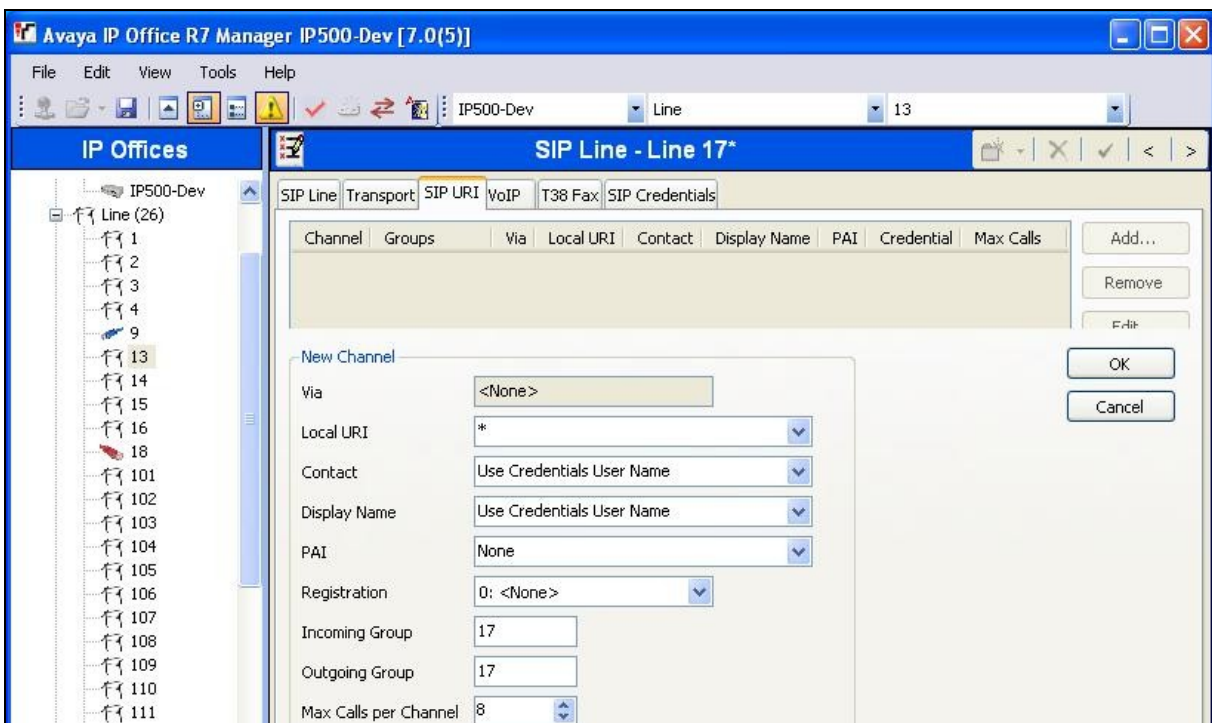
From the configuration tree in the left pane, right-click on **Line**, and select **New > SIP Line** from the pop-up list to add a new SIP line.

Select the **Transport** tab in the right pane. For **ITSP Proxy Address**, enter the IP address of FaxFinder IP. Retain the default values for the remaining fields.

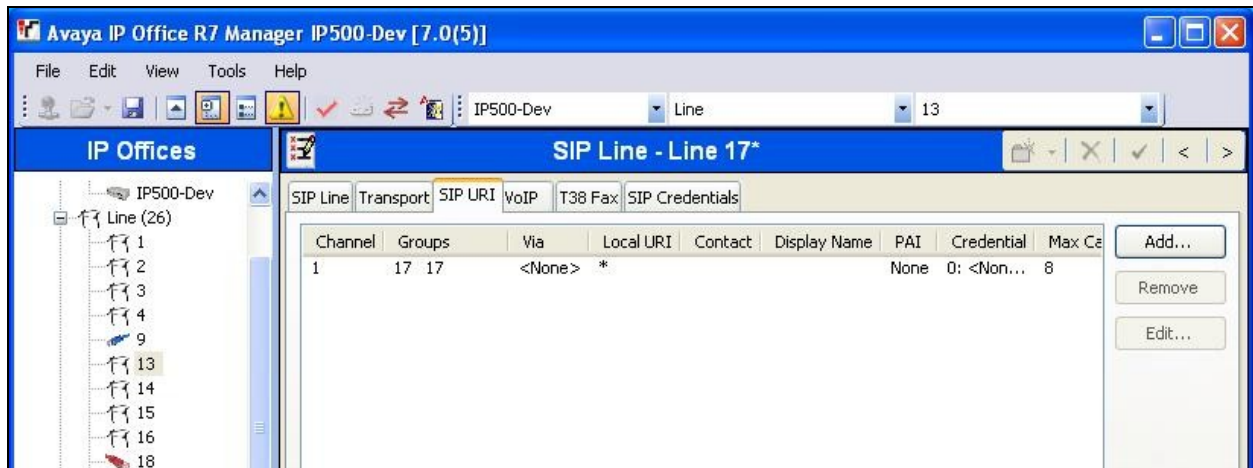


Select the **SIP URI** tab, and click **Add** to display the **New Channel** section.

Enter the wildcard character “*” for **Local URI**. Enter unused group numbers for **Incoming Group** and **Outgoing Group**. Set **Max Calls per Channel** to the desired maximum number of simultaneous faxes allowed by the FaxFinder IP license, in this case “8”. Retain the default values in the remaining fields.

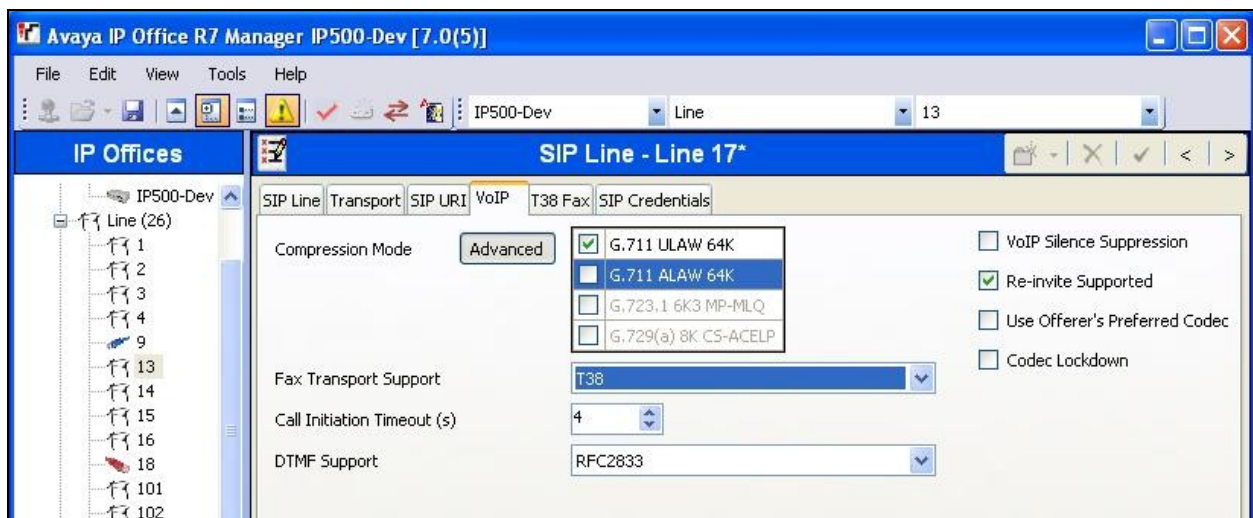


The screen is updated, as shown below.



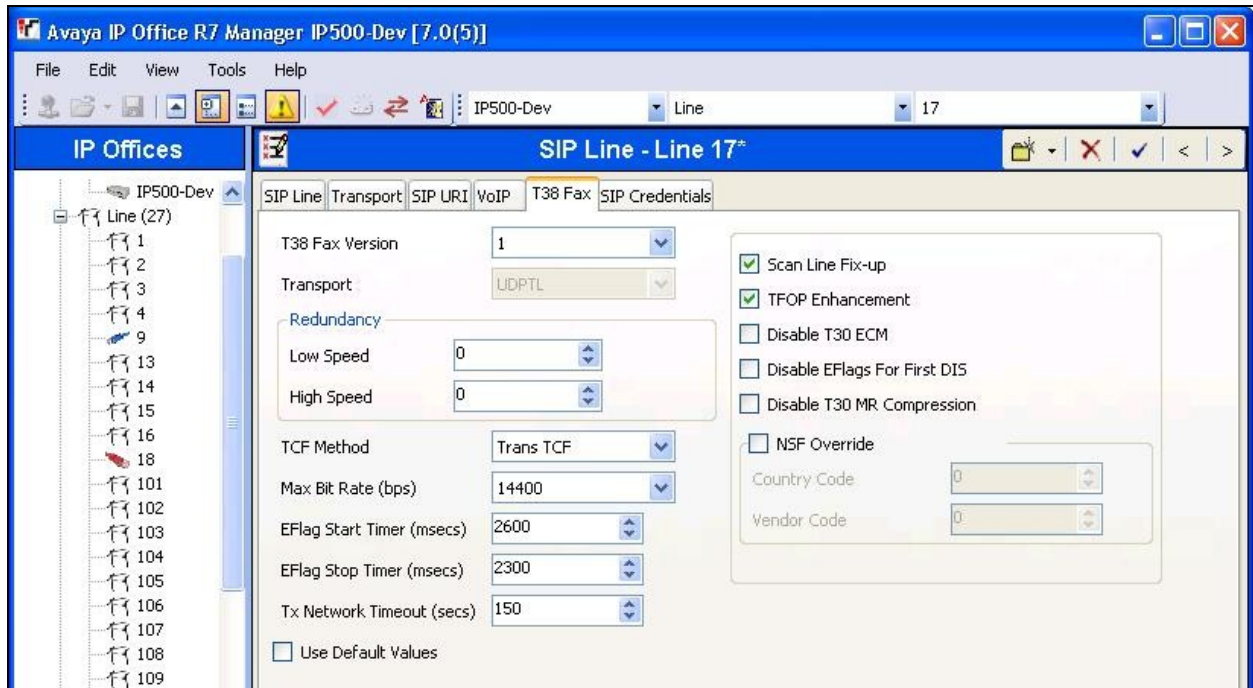
Select the **VoIP** tab. For **Compression Mode**, click **Advanced** and retain only the applicable G.711 codec variant in the expanded list. Note that FaxFinder IP only supports the G.711 variants.

For **Fax Transport Support**, select “T38” from the drop-down list. Check **Re-invite Supported**, and retain the default values in the remaining fields.



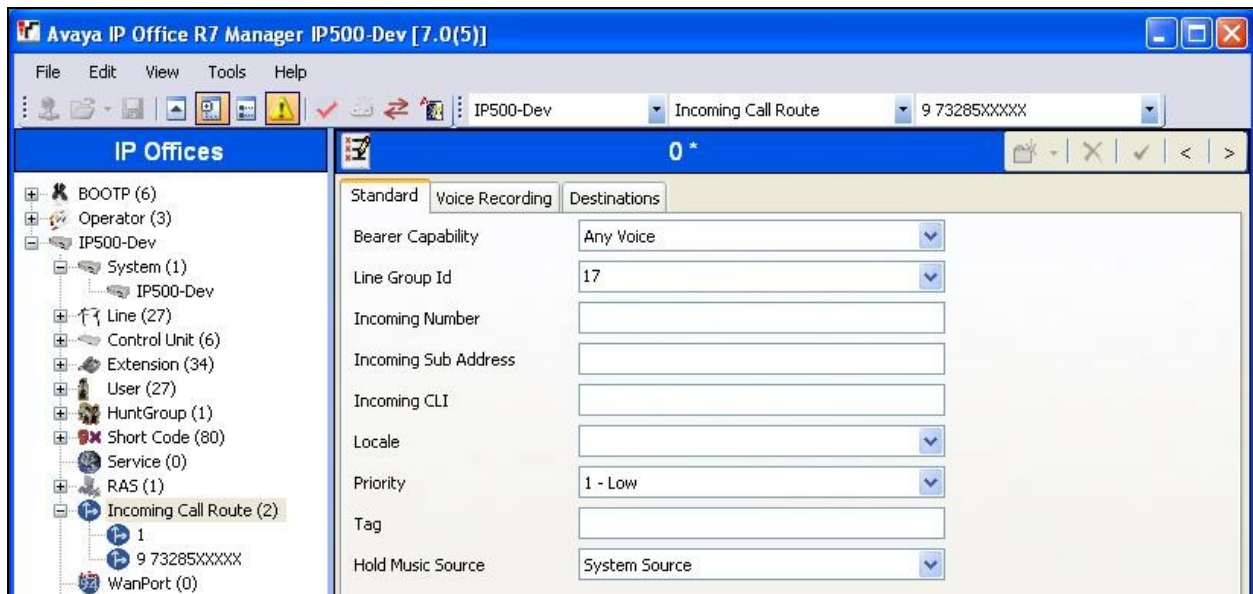
Select the **T38 Fax** tab. Uncheck **Use Default Values** toward the bottom of the screen to access all fields.

For **T38 Fax Version**, select “1”. Retain the default values for the remaining fields.

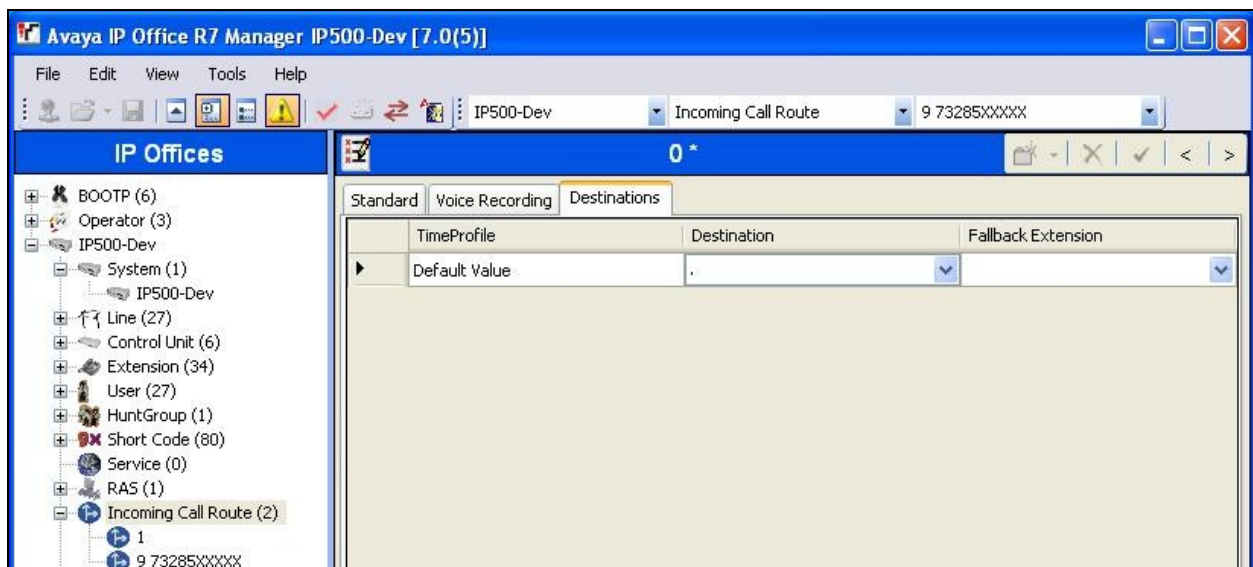


5.5. Administer Incoming Call Route

From the configuration tree in the left pane, right-click on **Incoming Call Route**, and select **New** from the pop-up list to add a new route. For **Line Group Id**, select the incoming group number from **Section 5.4**, in this case “17”.



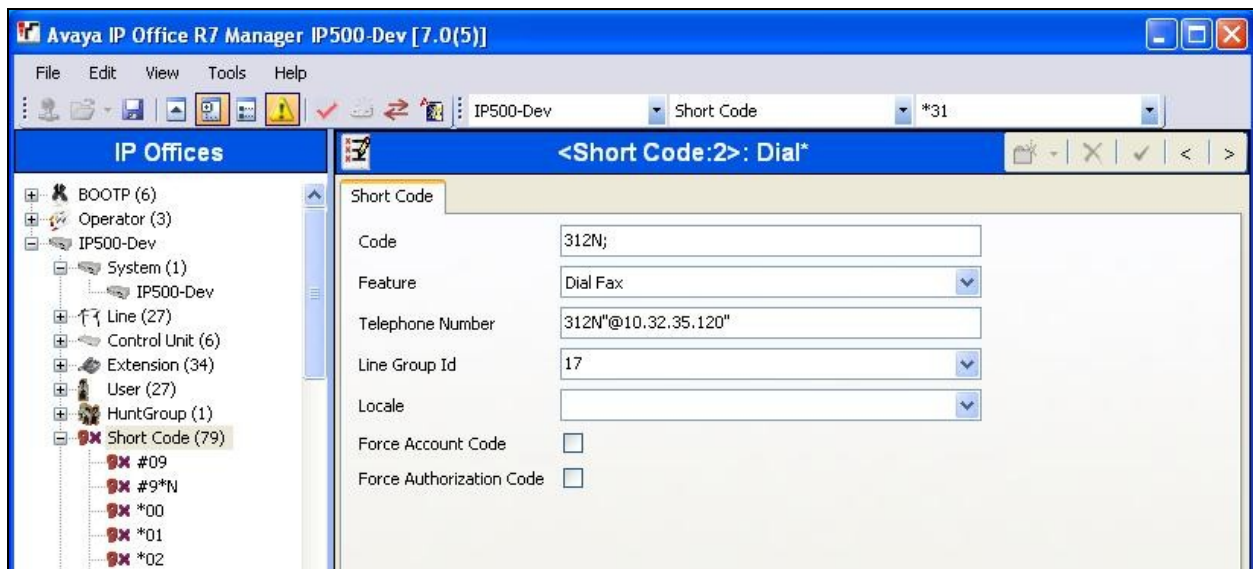
Select the **Destinations** tab. For **Destination**, enter “.” to match any dialed number from FaxFinder IP.



5.6. Administer Short Code

From the configuration tree in the left pane, right-click on **Short Code** and select **New** from the pop-up list to add a new short code for fax calls to FaxFinder IP. In the compliance testing, users on IP Office are designated with fax numbers 312xx, and the fax calls are routed over the SIP trunk to FaxFinder IP.

For **Code**, enter “312N”. For **Feature**, select “Dial Fax” from the drop-down list. For **Telephone Number**, enter the value shown below where “312N” is the short code and “10.32.35.120” is the IP address of FaxFinder IP. For **Line Group Id**, enter the outgoing group number from **Section 5.4**.



6. Configure Multi-Tech FaxFinder IP

This section provides the procedures for configuring Multi-Tech FaxFinder IP. The procedures include the following areas:

- Launch FaxFinder Web Management
- Administer network
- Administer shares
- Administer SIP and T.38
- Administer inbound routing
- Administer users

6.1. Launch FaxFinder Web Management

Launch the FaxFinder Web Management interface by using the URL “http://ip-address” in an Internet browser window, where “ip-address” is the IP address of FaxFinder IP. The **Login** screen below is displayed. Log in using the appropriate credentials.

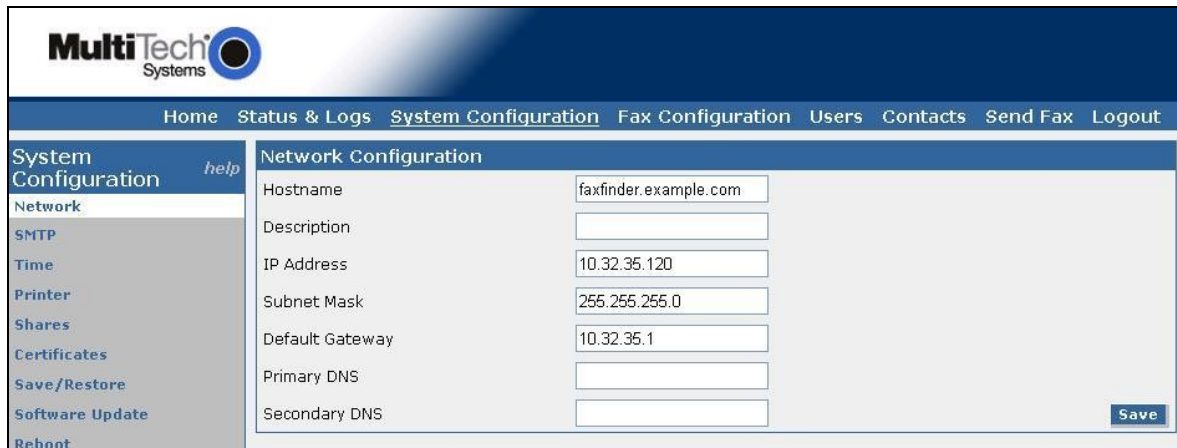


The screen below is displayed next.



6.2. Administer Network

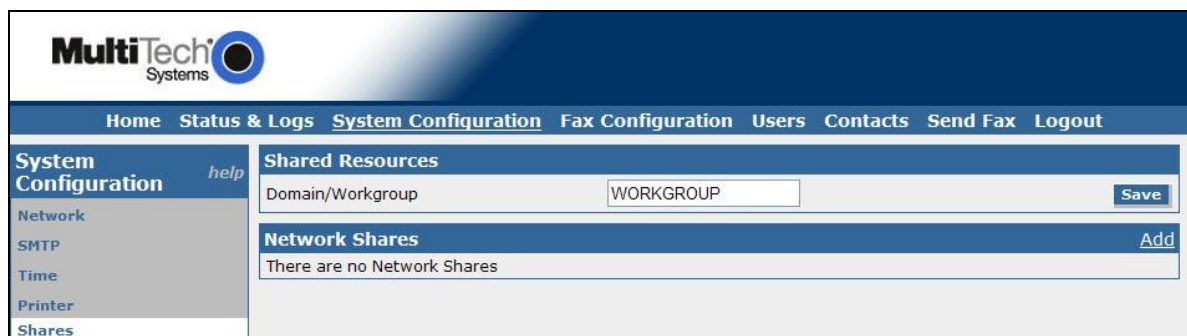
Select **System Configuration** from the top menu. The **Network Configuration** screen is displayed. Modify **IP Address**, **Subnet Mask**, and **Default Gateway** to match the network configuration.



The screenshot shows the MultiTech Systems web interface. The top navigation bar includes links for Home, Status & Logs, System Configuration (selected), Fax Configuration, Users, Contacts, Send Fax, and Logout. On the left, the System Configuration menu is expanded, showing options like Network, SMTP, Time, Printer, Shares, Certificates, Save/Restore, Software Update, and Reboot. The main content area is titled 'Network Configuration' and contains several input fields: Hostname (filled with 'faxfinder.example.com'), Description (empty), IP Address (filled with '10.32.35.120'), Subnet Mask (filled with '255.255.255.0'), Default Gateway (filled with '10.32.35.1'), Primary DNS (empty), and Secondary DNS (empty). A 'Save' button is located at the bottom right of the form.

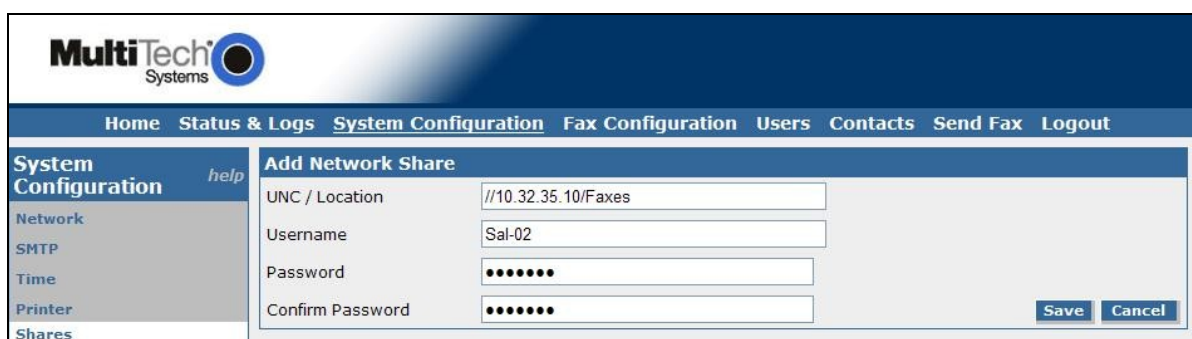
6.3. Administer Shares

Select **Shares** from the left pane. The screen below is displayed. Select **Add** to add a network share. Note that the configuration in this section is only necessary for the shared folder method of storing incoming faxes.



The screenshot shows the MultiTech Systems web interface with the 'Shares' option selected in the left pane. The main content area is titled 'Shared Resources' and contains a 'Domain/Workgroup' input field filled with 'WORKGROUP' and a 'Save' button. Below this, there is a section titled 'Network Shares' with an 'Add' button. The text 'There are no Network Shares' is displayed below the 'Add' button.

The **Add Network Share** screen is displayed. For **UNC / Location**, enter the path to the shared location. Enter appropriate credentials for **Username**, **Password**, and **Confirm Password**.



The screenshot shows the MultiTech Systems web interface with the 'Add Network Share' screen displayed. The main content area contains several input fields: 'UNC / Location' (filled with '//10.32.35.10/Faxes'), 'Username' (filled with 'Sal-02'), 'Password' (filled with '*****'), and 'Confirm Password' (filled with '*****'). 'Save' and 'Cancel' buttons are located at the bottom right of the form.

6.4. Administer SIP and T.38

Select **Fax Configuration** from the top menu. The **SIP / T.38 Configuration** screen is displayed.

In the **SIP** section, enter the IP address of IP Office in **SIP Proxy/Gateway**. Retain the default values in the remaining fields.

In the **T.38** section, select “T.38 Direct” for **Fax Method**. Retain the default values in the remaining fields.

The screenshot shows the MultiTech Systems web interface for SIP / T.38 Configuration. The top navigation bar includes links for Home, Status & Logs, System Configuration, Fax Configuration (selected), Users, Contacts, Send Fax, and Logout. A left sidebar lists configuration options: Fax Configuration (selected), SIP / T.38, Inbound Routing, Outbound, Outbound Approval, Cover Pages, Store & Forward Fax (T.37), and Fax Log. The main content area is titled 'SIP / T.38 Configuration' and has a 'Defaults' link. It is divided into two sections: SIP and T.38.

SIP			
Transport Protocol	UDP	Local Port	5060
SIP Proxy/Gateway	10.32.33.10	SIP Proxy Port	5060
SIP Domain			
Authorization Required	<input type="checkbox"/>	Use Registrar	<input type="checkbox"/>
Username		Registrar	
Password		Registrar Port	5060
Confirm Password		Expires	3600 (secs)

T.38			
Fax ID	FF240-IP	Max Rate	14400
Fax Method	T.38 Direct	Error Correction	<input checked="" type="radio"/> on <input type="radio"/> off
Fax Codec	<input type="checkbox"/> G7.11 Alaw <input type="checkbox"/> G7.11 ulaw	Dial Prefix	
Redundancy Level	3	Jitter Buffer Delay	300 (msecs)
Max Buffer	4000	Max Datagram	948
Extension Source	SIP To Header		
Extension Digits	Use All	Extension Length	0
Channel Reservation	<input type="checkbox"/> Inbound Only <input type="checkbox"/> Outbound Only		

Save

6.5. Administer Inbound Routing

Select **Inbound Routing** from the left pane. The screen below is displayed. In the **Recipients** section, select **Add** to add a new recipient.

The screenshot shows the MultiTech Systems web interface. The top navigation bar includes links for Home, Status & Logs, System Configuration, Fax Configuration (selected), Users, Contacts, Send Fax, and Logout. The left sidebar shows the Fax Configuration menu with options: SIP / T.38, Inbound Routing (selected), Outbound, Outbound Approval, Cover Pages, Store & Forward Fax (T.37), and Fax Log. The main content area is divided into three sections: General Setup, Global Routing, and Default Routing. The Recipients section is at the bottom, showing a table with no data and an 'Add' link circled in red.

General Setup	
Email Size Limit	5000 K bytes
Fax Output Format	PDF
Email Fax Details	<input type="checkbox"/>
Save	

Global Routing	
Always route faxes here in addition to regular routing.	
Fax Destinations	Action
There are no global destinations.	
Edit	

Default Routing	
Route faxes here when the extension isn't found.	
Fax Destinations	Action
Email to User: admin	
Edit	

Recipients	
Route faxes by extension.	
There are no inbound recipients	
Add Import Export Delete All	

The **Add Recipient** screen is displayed next. For **Extension**, enter the first fax extension shown in **Section 3**. Enter a descriptive **Name**.

The screenshot shows the 'Add Recipient' screen. The top navigation bar and left sidebar are the same as the previous screenshot. The main content area has a title 'Add Recipient' and two input fields: 'Extension' with the value '31251' and 'Name' with the value 'FaxFinder 31251'. There are 'Save' and 'Cancel' buttons at the bottom right.

Add Recipient	
Extension	31251
Name	FaxFinder 31251
Save Cancel	

The screen is updated as shown below. Click **Add** to add a destination for incoming faxes.

The screenshot shows the 'Edit Recipient (Extension 31251)' screen. The top navigation bar and left sidebar are the same as the previous screenshots. The main content area has a title 'Edit Recipient (Extension 31251)' and two input fields: 'Extension' with the value '31251' and 'Name' with the value 'FaxFinder 31251'. There are 'Save' and 'Cancel' buttons at the bottom right. Below this is a section titled 'Destinations (Extension 31251)' with a table showing no data and an 'Add' link circled in red.

Edit Recipient (Extension 31251)	
Extension	31251
Name	FaxFinder 31251
Save Cancel	

Destinations (Extension 31251)	
There are no destinations	
Add	

The **Add Destination** screen is displayed. The default setting is to send incoming faxes to the recipient's email. In the compliance testing, the destination was configured to use the shared folder method to store incoming faxes. Select "Share" from the drop-down box, and enter the path to a shared folder in the next field.

Repeat this section to add an inbound routing recipient for each fax user from **Section 3**.

In the compliance testing, three inbound routing recipients were created to correspond to the three fax users from **Section 3**, as shown below.

Extension	Name	Fax Destinations	Action
31251	FaxFinder 31251	Share: //10.32.35.10/Faxes/Fax31251	Edit Delete
31252	FaxFinder 31252	Share: //10.32.35.10/Faxes/Fax31252	Edit Delete
31253	FaxFinder 31253	Share: //10.32.35.10/Faxes/Fax31253	Edit Delete

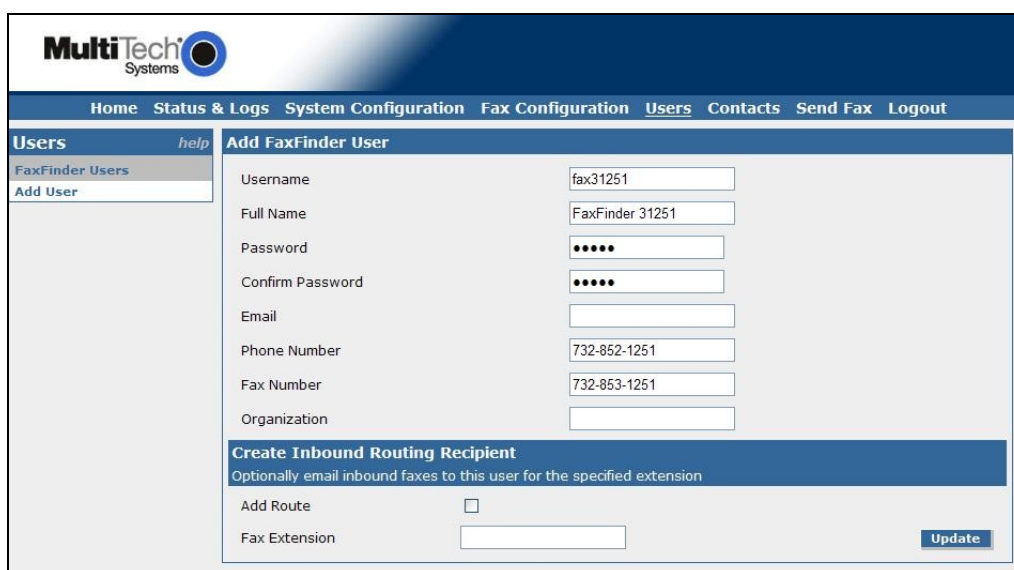
6.6. Administer Users

Select **Users** from top menu, to display the **FaxFinder Users** screen. Click **Add** to add a new user.



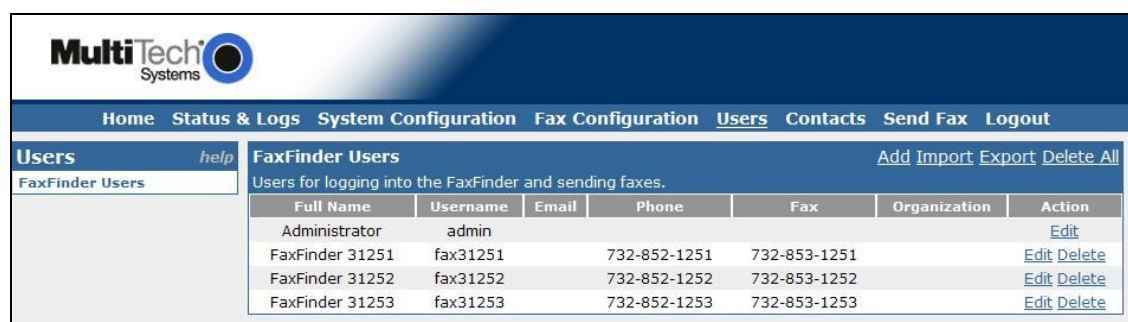
The screenshot shows the MultiTech Systems web interface. The top navigation bar includes links for Home, Status & Logs, System Configuration, Fax Configuration, Users, Contacts, Send Fax, and Logout. The 'Users' menu is selected, and the 'FaxFinder Users' sub-menu is active. On the right side of the 'FaxFinder Users' header, the 'Add' button is circled in red. Below the header, there is a table with columns: Full Name, Username, Email, Phone, Fax, Organization, and Action. The table contains one row for the 'Administrator' user with the username 'admin' and an 'Edit' link in the Action column.

The **Add FaxFinder User** screen is displayed next. Enter descriptive values for **Username** and **Full Name**. Enter a desired value for **Password** and **Confirm Password**. Enter the full telephone and fax numbers for the user in the **Phone Number** and **Fax Number** fields respectively.



The screenshot shows the 'Add FaxFinder User' form. It includes fields for Username, Full Name, Password, Confirm Password, Email, Phone Number, Fax Number, and Organization. Below these fields is a section titled 'Create Inbound Routing Recipient' with a checkbox for 'Add Route' and a text field for 'Fax Extension'. An 'Update' button is located at the bottom right of the form.

Repeat this section to create all desired users. In the compliance testing, three fax users were created as shown below.



The screenshot shows the 'FaxFinder Users' screen with a list of users. The table has columns: Full Name, Username, Email, Phone, Fax, Organization, and Action. The table contains four rows: Administrator, FaxFinder 31251, FaxFinder 31252, and FaxFinder 31253. Each row has an 'Edit' and 'Delete' link in the Action column.

Full Name	Username	Email	Phone	Fax	Organization	Action
Administrator	admin					Edit
FaxFinder 31251	fax31251		732-852-1251	732-853-1251		Edit Delete
FaxFinder 31252	fax31252		732-852-1252	732-853-1252		Edit Delete
FaxFinder 31253	fax31253		732-852-1253	732-853-1253		Edit Delete

7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Multi-Tech FaxFinder IP and Avaya IP Office.

7.1. Verify Multi-Tech FaxFinder IP

Follow the procedures in **Section 6.1** to launch the FaxFinder Web Management interface, and log in using a fax user credentials from **Section 6.6**. Select **Send Fax** from the top menu, to display the **Send Fax** screen.

The **Sender Information** section is populated automatically.

In the **Recipient Information** section, enter the appropriate **Name** and **Fax Number** for the fax recipient, as shown below. Retain the default values in the remaining fields.

The screenshot displays the MultiTech Systems FaxFinder Web Management interface. The top navigation bar includes links for Home, Status & Logs, User, Contacts, Send Fax, and Logout. The main content area is titled 'Send Fax' and is divided into two sections: 'Sender Information' and 'Recipient Information'.

Sender Information:

- Name: FaxFinder 31251
- Organization: (empty field)
- Phone Number: 732-852-1251
- Fax Number: 732-853-1251
- Email Address: (empty field)

Recipient Information:

- Find Recipient: Enter Recipient Info (dropdown menu)
- Contact/Group: Select Contact/Group (dropdown menu)
- Name: PSTN 62001
- Organization/Description: (empty field)
- Fax Number: 9088462001
- Phone Number: (empty field)

An 'Add Recipient' button is located at the bottom right of the Recipient Information section.

Below the Recipient Information section is a table with the following columns: Name, Organization/Description, Fax, Phone, and Action.

At the bottom of the page is a section titled 'Cover Page Information'.

Scroll down the screen to the **Cover Page Information** section. Modify this section as desired. In the **Attachments** section, click **Browse** to select any desired attachment. In the **Options** section, make any desired changes, and click **Send Fax**.

Cover Page Information

Include cover page with this fax? ☒ Yes ☐ No
 Select Cover Page mts_template1.pdf
 Subject
 This is the subject line
 Comments
 Comment line 1 followed by
 comment line 2

Attachments

.txt, .tif, .tiff, .pdf or .ps files
 Attachment C:\Documents and Settings\Sai-02\My Documents\TLT Documents\ Browse...
 Add Another Attachment

Options

Max Attempts 3
 Priority Medium
 Retry Interval 300 seconds
 Send a receipt failure
 Fax Attachment with Receipt PDF
 Send Fax

Select **Status & Logs** from the top menu, followed by **Fax Status** in the left pane, to display the screen below. In the **Channel Status** section, verify that there is a channel with a **State** of “Sending”. In the **Outbound Fax Status** section, verify that there is an entry showing the active fax with a **State** of “sending”, and that the **Sender** and **Recipient** fields display proper information.

MultiTech Systems

Home Status & Logs User Contacts Send Fax Logout

Status & Logs help
 System Status
 Fax Status
 Inbound Fax Log
 Outbound Fax Log

Channel Status

Channel	State	Pages Sent/Recd	Baud Rate	Fax Number	ECM	Line Encoding	Resolution	Remote ID	Modulation	Scan Time
1	Waiting For Ring									
2	Waiting For Ring									
3	Sending		14400	9088462001	enabled	MH	Fine	9088466252	V17	
4	Waiting For Ring									
5	Waiting For Ring									
6	Waiting For Ring									
7	Waiting For Ring									
8	Waiting For Ring									

Inbound Fax Status

There is no Inbound Fax activity at this time

Outbound Fax Status

State	Created At	Scheduled For	Sender	Recipients				Fax Details	Action
				Name	Fax	Phone	Organization		
sending	05/04/2011 03:18:49 PM	05/04/2011 03:19:00 PM	fax31251 (FaxFinder 31251)	PSTN 62001	9088462001			This is the ... (3 pages)	Abort Details

7.2. Verify Avaya IP Office

From the **Avaya IP Office R7 Manager** screen shown in **Section 5.1**, select **File > Advanced > System Status** to launch the System Status application, and log in using the appropriate credentials.

The **IP Office System Status** screen is displayed. Expand **Trunks** in the left pane and select the SIP line from **Section 5.4**, in this case “17”.

Verify that the **SIP Trunk Summary** screen shows an active channel with **Current State** of “Connected”, and that the sender fax number from **Section 7.1** is displayed in the **Caller ID or Dialed Digits** field. Also verify that the **Other Party on Call** contains the proper information for the trunk to the PSTN, as shown below. In the compliance testing, line “9” is the PRI trunk to the PSTN.

The screenshot displays the Avaya IP Office System Status application. The left-hand navigation pane shows a tree structure with 'System' expanded, and 'Trunks (14)' selected. Under 'Trunks', 'Line: 17' is highlighted. The main content area is titled 'SIP Trunk Summary' and shows the following details:

- Peer Domain Name: 10.32.35.120
- Resolved Address: 10.32.35.120
- Line Number: 17
- Number of Administered Channels: 8
- Number of Channels in Use: 1
- Administered Compression: G711Mu
- Silence Suppression: Off
- SIP Trunk Channel Licences: Unlimited
- SIP Trunk Channel Licences in Use: 1
- SIP Device Features: 0%

Below these details is a table showing call activity for channels 1 through 8:

Channel Number	URI Group Ref	Call State	Time in State	Remote Code Address	Connection Type	Caller ID or Dialed Digits	Other Party on Call	Direction of Call	Round Trip Delay	Receive Jitter	Receive Loss	Transmit Jitter	Transmit Loss
1	1	4	Connected	00:00:34	T38 Fax	732-853-1251@10.32.35.120	Line: 9 Slot: 3 Port: 1	Incoming	0ms	0ms	0%		
2		Idle	01:37:24										
3		Idle	01:37:24										
4		Idle	01:37:24										
5		Idle	01:37:24										
6		Idle	01:37:24										
7		Idle	01:37:24										
8		Idle	01:37:24										

At the bottom of the application window, there are buttons for 'Trace', 'Trace All', 'Pause', 'Ping', 'Call Details', 'Print...', and 'Save As...'.

8. Conclusion

These Application Notes describe the configuration steps required for the Multi-Tech FaxFinder IP to successfully interoperate with Avaya IP Office. All feature and serviceability test cases were completed.

9. Additional References

This section references the product documentation relevant to these Application Notes.

1. *IP Office 7.0 Documentation CD*, March 2011, available at <http://support.avaya.com>.
2. *FaxFinder IP Administrator User Guide*, available at <https://support.multitech.com>.

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