



Avaya Solution & Interoperability Test Lab

Application Notes for configuring Avaya IP Office IP500 R7.0 with 2Ring NetFAX R3.0 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for 2Ring NetFAX to successfully interoperate with Avaya IP Office IP500. The 2Ring NetFAX product provides users with an interface to manage faxes using traditional office procedures and communicates with Avaya IP Office over a SIP trunk.

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 2Ring NetFAX to successfully interoperate with Avaya IP Office IP500. The 2Ring NetFAX product provides users with an interface to manage faxes using traditional office procedures and communicates with Avaya IP Office over a SIP trunk. 2Ring NetFAX allows users to send a fax through a virtual printer on a PC, through an e-mail sent to the server, and through the website of the 2Ring NetFAX server. 2Ring NetFAX server then converts the fax message to the appropriate format and sends it via SIP trunk by using the T.38 codec over UDP through Avaya IP Office, and on to the specified recipient. 2Ring NetFAX server also listens for incoming faxes from Avaya IP Office via SIP trunk and T.38 protocol. The received fax is then stored on the server and processed by the rules set e.g. sent via email to recipient, printed on the printer, etc.

2. General Test Approach and Test Results

The interoperability compliance test included both feature functionality and serviceability testing. The feature functionality testing focused on sending and receiving of the faxes. The serviceability testing focused on verifying the ability of the NetFAX server to recover from disconnection and reconnection to the Avaya solution.

2.1. Interoperability Compliance Testing

Single and multi-page faxes were sent and received using the NetFAX server. Recovery from the disconnection and reconnection of the SIP trunk was also tested, including verification of relevant failure messages.

2.2. Test Results

All tests were completed successfully.

2.3. Support

Technical Support can be obtained for the 2Ring NetFAX product as follows:

- Email: support@2ring.com
- Phone: +421 2 58224097

3. Reference Configuration

Figure 1 illustrates the network topology used during compliance testing. The Avaya solution consists of an IP Office IP500 running version 7.0 (12) firmware. The Netfax 3.0 application was hosted on a server running CentOS 5.6 (Final). PSTN Connectivity was provided over PRI to the IP Office. SIP trunking was configured between IP Office and the NetFAX server over the LAN.

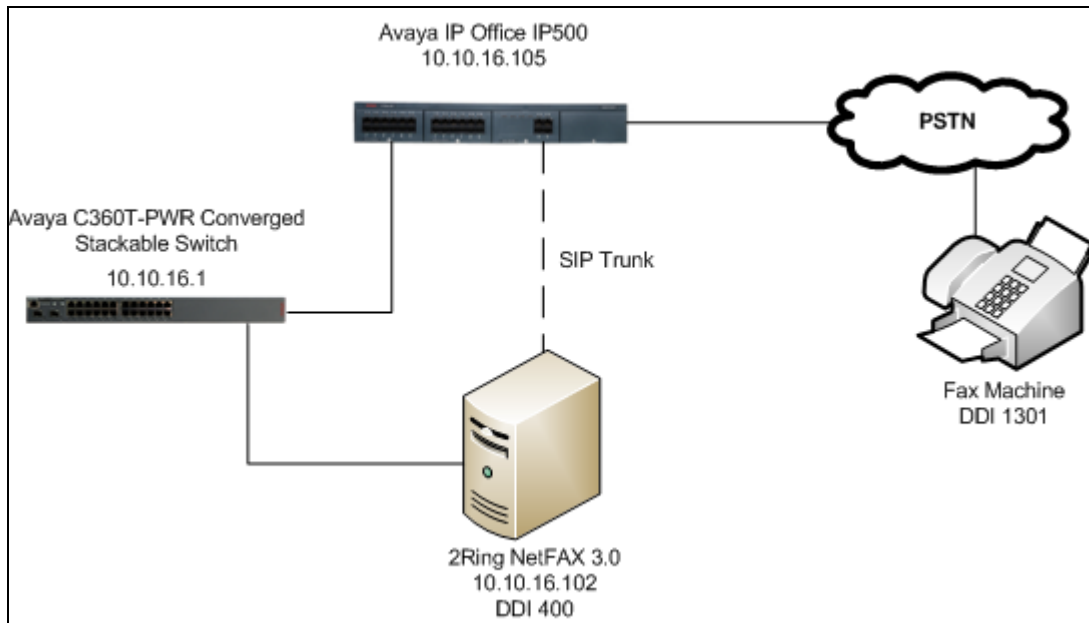


Figure 1: Avaya IP Office 500 with 2Ring NetFAX configuration

4. Equipment and Software Validated

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

Equipment	Software
Avaya IP Office IP500	Avaya IP Office 7.0 (12)
Generic Desktop PC	Avaya IP Office Manager 9.0 (12)
Generic Server	2Ring NetFAX: <ul style="list-style-type: none"> • Database 3.0 • Code 3.0.6pl2-28 • Communications Protocol 3.1.0

5. Configure Avaya IP Office IP500

The configuration and verification operations illustrated in this section were all performed using the IP Office Manager application. For all other provisioning information such as initial installation and configuration, please refer to the product documentation as referenced in **Section 9**. The application note assumes an IP address has been assigned to the IP500 and a PRI circuit to the PSTN configured. The configuration operations described in this section can be summarized as follows

- Verify IP Office Licensing
- Configure SIP Trunk
- Configure Incoming Call Route
- Configure ARS
- Configure Shortcodes

5.1. Verify Avaya IP Office Licensing

In order to create a SIP trunk, verify there is a **SIP Trunk Channels** license installed on the IP Office. Double click on the **License** in the left panel and check that there is a **SIP Trunk Channels** Entry. If not, consult with your Avaya Account Manager or Business Partner to acquire the proper license for your solution.

The screenshot displays the Avaya IP Office software interface. The left pane shows a tree view of the system configuration, with the 'Licence' folder expanded to show a list of licenses. The 'SIP Trunk Channels' license is highlighted. The right pane shows the configuration details for this license, including the Licence Key, Licence Type, Licence Status, Instances, and Expiry Date. An 'Error' message is visible at the bottom right of the interface.

Configuration	Item	Record	Description

5.2. Configure SIP Trunk

Create the SIP trunk for routing calls to NetFAX. Right click on **Line** in the left panel and select **New → SIP Line** [not shown]. Enter the SIP Domain Name of the IP Office in the **ITSP Domain Name** field, and set **Send Caller ID** field to **Remote Party ID**.

The screenshot shows the 'SIP Line - Line 18' configuration window. The window has a title bar with standard OS controls and a menu bar with options: SIP Line, Transport, SIP URI, VoIP, T38 Fax, and SIP Credentials. The main area contains the following fields and controls:

- Line Number: 18 (dropdown)
- ITSP Domain Name: avaya.com (text field)
- In Service:
- Use Tel URI:
- Check OOS:
- Call Routing Method: Request URI (dropdown)
- Originator number for forwarded and twinning calls: (text field)
- Prefix: (text field)
- National Prefix: 0 (text field)
- Country Code: (text field)
- International Prefix: 00 (text field)
- Send Caller ID: Remote Party ID (dropdown)
- Association Method: By Source IP address (dropdown)
- REFER Support:
- Incoming: Auto (dropdown)
- Outgoing: Auto (dropdown)

At the bottom right, there are buttons for OK, Cancel, and Help.

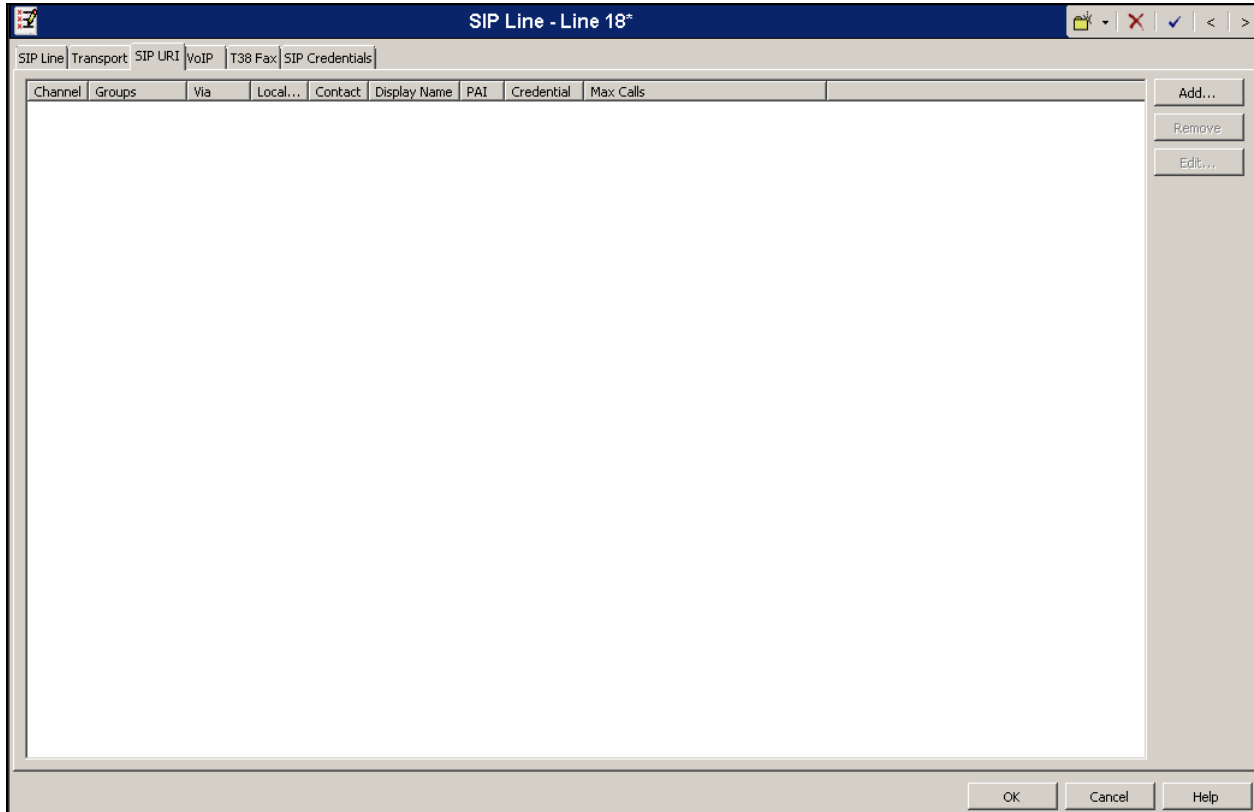
Click on the **Transport** tab. Set the **ITSP Proxy Address** to the IP address of the NetFAX server, in this case **10.10.16.102**, un-tick the **Calls Route via Registrar** box.

The screenshot shows a configuration window titled "SIP Line - Line 18" with a dark blue header bar. Below the header is a tabbed interface with tabs for "SIP Line", "Transport", "SIP URI", "VoIP", "T38 Fax", and "SIP Credentials". The "Transport" tab is selected. The main area contains the following fields and controls:

- ITSP Proxy Address:** A text input field containing "10.10.16.102".
- Network Configuration:** A group box containing:
 - Layer 4 Protocol:** A dropdown menu set to "UDP".
 - Send Port:** A spin box set to "5060".
 - Use Network Topology Info:** A dropdown menu set to "None".
 - Listen Port:** A spin box set to "5060".
- Explicit DNS Server(s):** Two dotted IP address input fields, both containing "0 . 0 . 0 . 0".
- Calls Route via Registrar:** An unchecked checkbox.
- Separate Registrar:** An empty text input field.

At the bottom right of the window are three buttons: "OK", "Cancel", and "Help".

In order to route inbound calls to this trunk, two SIP URI must be created, for both known and unknown incoming numbers. Click on the **SIP URI** tab and click on **Add**.



Configure the **Incoming Group** and **Outgoing Group** with a unique number, in this case **18**. Set the **Local URI**, **Contact** and **Display Name** to ***** and click **OK**.

The screenshot shows the 'SIP Line - Line 18*' configuration window. The window has tabs for 'SIP Line', 'Transport', 'SIP URI', 'VoIP', 'T38 Fax', and 'SIP Credentials'. The main area contains a table with columns: Channel, Groups, Via, Local..., Contact, Display Name, PAI, Credential, and Max Calls. The table is currently empty. To the right of the table are buttons for 'Add...', 'Remove', and 'Edit...'. Below the table is a 'New Channel' dialog box with the following fields:

- Via: <None>
- Local URI: *
- Contact: *
- Display Name: *
- PAI: None
- Registration: 0: <None>
- Incoming Group: 18
- Outgoing Group: 18
- Max Calls per Channel: 10

Buttons for 'OK' and 'Cancel' are located at the bottom right of the dialog box. At the bottom of the main window are buttons for 'OK', 'Cancel', and 'Help'.

Click **Add** again, configure the **Incoming Group** and **Outgoing Group** with a unique, in this case **19**, set the **Local URI**, **Contact** and **Display Name** to **123456**. This will replace all unknown inbound numbers with a URI of 123456.

The screenshot shows a software window titled "SIP Line - Line 18". At the top, there are tabs for "SIP Line", "Transport", "SIP URI", "VoIP", "T38 Fax", and "SIP Credentials". Below the tabs is a table with the following data:

Channel	Groups	Via	Local...	Contact	Display Name	PAI	Credential	Max Calls
1	18 18	<None>	*	*	*	None	0: <None>	10

Below the table is a "New Channel" dialog box with the following fields:

- Via: <None>
- Local URI: 123456
- Contact: 123456
- Display Name: 123456
- PAI: None
- Registration: 0: <None>
- Incoming Group: 19
- Outgoing Group: 19
- Max Calls per Channel: 10

Buttons for "Add...", "Remove", "Edit...", "OK", and "Cancel" are visible on the right side of the window. At the bottom right, there are "OK", "Cancel", and "Help" buttons.

Click on the **VoIP** tab. Place a tick in the **Re-invite Supported** box, and select **T38** from the **Fax Transport Support** drop-down box.

The screenshot shows a configuration window titled "SIP Line - Line 18". The window has a tabbed interface with the following tabs: SIP Line, Transport, SIP URI, VoIP, T38 Fax, and SIP Credentials. The "VoIP" tab is currently selected. The configuration is organized into two columns. The left column contains: "Compression Mode" with a sub-tab "Advanced" and a dropdown menu set to "Automatic Select"; "Fax Transport Support" with a dropdown menu set to "T38"; "Call Initiation Timeout (s)" with a numeric spinner set to "4"; and "DTMF Support" with a dropdown menu set to "RFC2833". The right column contains three checkboxes: "VoIP Silence Suppression" (unchecked), "Re-invite Supported" (checked), and "Use Offerer's Preferred Codec" (unchecked). Below these checkboxes is another unchecked checkbox labeled "Codec Lockdown". At the bottom right of the window are three buttons: "OK", "Cancel", and "Help".

Click on the **T38 Fax** tab. Untick the **Use Default Values** box and set the **T38 Fax Version** to **0**. Click **OK** when done.

The screenshot shows the 'SIP Line - Line 18' configuration window with the 'T38 Fax' tab selected. The window contains several configuration fields and checkboxes. The 'T38 Fax Version' is set to '0'. The 'Transport' is set to 'LIDPTL'. The 'Redundancy' section has 'Low Speed' and 'High Speed' both set to '0'. The 'TCF Method' is 'Trans TCF', 'Max Bit Rate (bps)' is '14400', 'EFlag Start Timer (msecs)' is '2600', 'EFlag Stop Timer (msecs)' is '2300', and 'Tx Network Timeout (secs)' is '150'. The 'Use Default Values' checkbox is unchecked. A sub-panel on the right contains several checkboxes: 'Scan Line Fix-up' (checked), 'TFOP Enhancement' (checked), 'Disable T30 ECM' (unchecked), 'Disable EFlags For First DIS' (unchecked), 'Disable T30 MR Compression' (unchecked), and 'NSF Override' (unchecked). Below these are 'Country Code' and 'Vendor Code' fields, both set to '0'. The window has standard 'OK', 'Cancel', and 'Help' buttons at the bottom right.

Field	Value
T38 Fax Version	0
Transport	LIDPTL
Low Speed (Redundancy)	0
High Speed (Redundancy)	0
TCF Method	Trans TCF
Max Bit Rate (bps)	14400
EFlag Start Timer (msecs)	2600
EFlag Stop Timer (msecs)	2300
Tx Network Timeout (secs)	150
Use Default Values	Unchecked
Scan Line Fix-up	Checked
TFOP Enhancement	Checked
Disable T30 ECM	Unchecked
Disable EFlags For First DIS	Unchecked
Disable T30 MR Compression	Unchecked
NSF Override	Unchecked
Country Code	0
Vendor Code	0

5.3. Configure Incoming Call Route

Create an Incoming Call Route for the SIP calls. Right click **Incoming Call Route** in the left panel and click **New** [not shown]. Select the **Incoming Group** from the drop-down list created for receiving SIP calls for any destination in the **Line Group Id** field, in this case **18**.

Field	Value
Bearer Capability	Any
Line Group Id	18
Incoming Number	
Incoming Sub Address	
Incoming CLI	
Locale	
Priority	1 - Low
Tag	
Hold Music Source	System Source

Click on the **Destinations** tab. Enter '.' in the **Destination** field, this will route all calls into the trunk to ARS with no changes. Click **OK**.

The screenshot shows a software window with a title bar containing the number '18' and standard window controls. The window has three tabs: 'Standard', 'Voice Recording', and 'Destinations', with 'Destinations' being the active tab. Below the tabs is a table with three columns: 'TimeProfile', 'Destination', and 'Fallback Extension'. The first row of the table has 'Default Value' in the 'TimeProfile' column, a period '.' in the 'Destination' column, and an empty dropdown menu in the 'Fallback Extension' column. The main area of the window is a large, empty, light-colored rectangle. At the bottom right of the window are three buttons: 'OK', 'Cancel', and 'Help'.

TimeProfile	Destination	Fallback Extension
Default Value	.	

5.4. Configure ARS

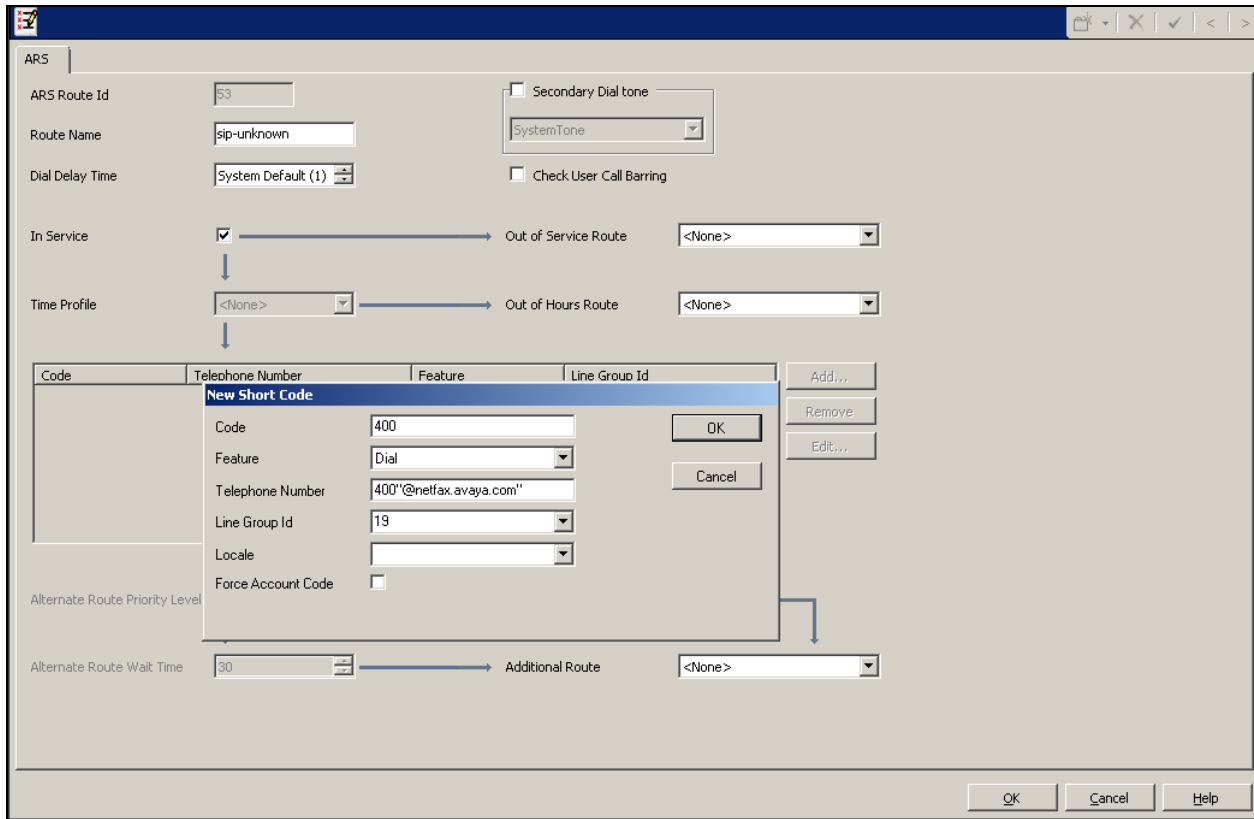
In order for inbound calls to reach the NetFAX server, ARS needs to be configured for both known and unknown incoming numbers. Right click **ARS** in the left hand pane and select **New** (not shown). Enter a unique identifier for the route in the **Route Name** field, in this case **sip-unknown**.

The screenshot shows the ARS configuration window with the following settings:

- ARS Route Id: 53
- Route Name: sip-unknown
- Dial Delay Time: System Default (1)
- Secondary Dial tone: SystemTone
- Check User Call Barring:
- In Service: (connected to Out of Service Route: <None>)
- Time Profile: <None> (connected to Out of Hours Route: <None>)
- Table with columns: Code, Telephone Number, Feature, Line Group Id. Buttons: Add..., Remove, Edit...
- Alternate Route Priority Level: 3
- Alternate Route Wait Time: 30 (connected to Additional Route: <None>)

Buttons at the bottom: OK, Cancel, Help

Click **Add**, the **New Short Code** dialogue box will appear. In the **Code** field enter **400**, set the **Feature** as **Dial**, set the **Telephone Number** as **400"@netfax.avaya.com"** and set the **Line Group ID** as **19** as specified in **Section 5.2** for unknown numbers. Click **OK** when done.



The following screen will display, click **OK**

The screenshot shows a configuration window titled "sip-unknown". The window contains the following fields and options:

- ARS Route Id: 51
- Route Name: sip-unknown
- Dial Delay Time: System Default (1)
- Secondary Dial tone: SystemTone
- Check User Call Barring:
- In Service: (with a blue arrow pointing to "Out of Service Route")
- Out of Service Route: <None>
- Time Profile: <None> (with a blue arrow pointing to "Out of Hours Route")
- Out of Hours Route: <None>
- A table with the following data:

Code	Telephone Number	Feature	Line Group Id
400	400*@netfax.avaya.com*	Dial	19
- Buttons: Add..., Remove, Edit...
- Alternate Route Priority Level: 3 (with a blue arrow pointing to "Additional Route")
- Alternate Route Wait Time: 30 (with a blue arrow pointing to "Additional Route")
- Additional Route: <None>

At the bottom right, there are buttons for OK, Cancel, and Help.

Create another ARS entry. Enter a unique identifier for the route in the **Route Name** field, in this case **SIP-1**, click on the **Additional Route** drop down box and select the route setup earlier in this section, in this case **sip-unknown**.

ARS

ARS Route Id: 52

Route Name: SIP-1

Dial Delay Time: System Default (1)

In Service: Out of Service Route: <None>

Time Profile: <None> Out of Hours Route: <None>

Code	Telephone Number	Feature	Line Group Id
------	------------------	---------	---------------

Alternate Route Priority Level: 3

Alternate Route Wait Time: Off Additional Route: 51: sip-unknown

Buttons: Add..., Remove, Edit..., OK, Cancel, Help

Click **Add**, the **New Short Code** dialogue box will appear. In the **Code** field enter **400**, set the **Feature** as **Dial**, set the **Telephone Number** as **400"@netfax.avaya.com"** set the **Line Group Id** as **18** as specified in **Section 5.2** for known numbers. Click **OK** when done.

The screenshot displays the 'SIP-1*' configuration window. The 'ARS' tab is active. The 'ARS Route Id' is set to 52, and the 'Route Name' is SIP-1. The 'Dial Delay Time' is set to 'System Default (1)'. The 'Secondary Dial tone' is set to 'SystemTone'. The 'Check User Call Barring' checkbox is unchecked. The 'In Service' checkbox is checked, and the 'Out of Service Route' is set to '<None>'. The 'Time Profile' is set to '<None>', and the 'Out of Hours Route' is set to '<None>'. A table with columns 'Code', 'Telephone Number', 'Feature', and 'Line Group Id' is visible. The 'New Short Code' dialog box is open, showing the following fields: 'Code' (400), 'Feature' (Dial), 'Telephone Number' (400"@netfax.avaya.com), 'Line Group Id' (18), 'Locale' (empty), and 'Force Account Code' (unchecked). The 'Additional Route' is set to '51: sip-unknown'. The 'Alternate Route Wait Time' is set to 'Off'. The 'OK', 'Cancel', and 'Help' buttons are at the bottom right.

The following screen will display once this is complete, click **OK**.

ARS

ARS Route Id: 52

Route Name: SIP-1

Dial Delay Time: System Default (1)

Secondary Dial tone: SystemTone

Check User Call Barring

In Service: → Out of Service Route: <None>

Time Profile: <None> → Out of Hours Route: <None>

Code	Telephone Number	Feature	Line Group Id
400	400@netfax.avaya.com*	Dial	18

Buttons: Add..., Remove, Edit...

Alternate Route Priority Level: 3

Alternate Route Wait Time: Off → Additional Route: 51: sip-unknown

Buttons: OK, Cancel, Help

5.5. Configure Short Codes

Create a short code to route calls to NetFAX. Right click **Short Code** in the left panel and select **New** [not shown]. Enter a unique code in the **Code** field, in this case **400**, select **Dial** as the **Feature** from the drop-down list, set the **Telephone Number** as **.**, set the **Line Group Id** to the primary route specified in ARS, in this case **52: SIP-1**, and click **OK**. This will route inbound digits 400 to ARS.

400: Dial

Short Code

Code: 400

Feature: Dial

Telephone Number: .

Line Group Id: 52: SIP-1

Locale:

Force Account Code:

OK Cancel Help

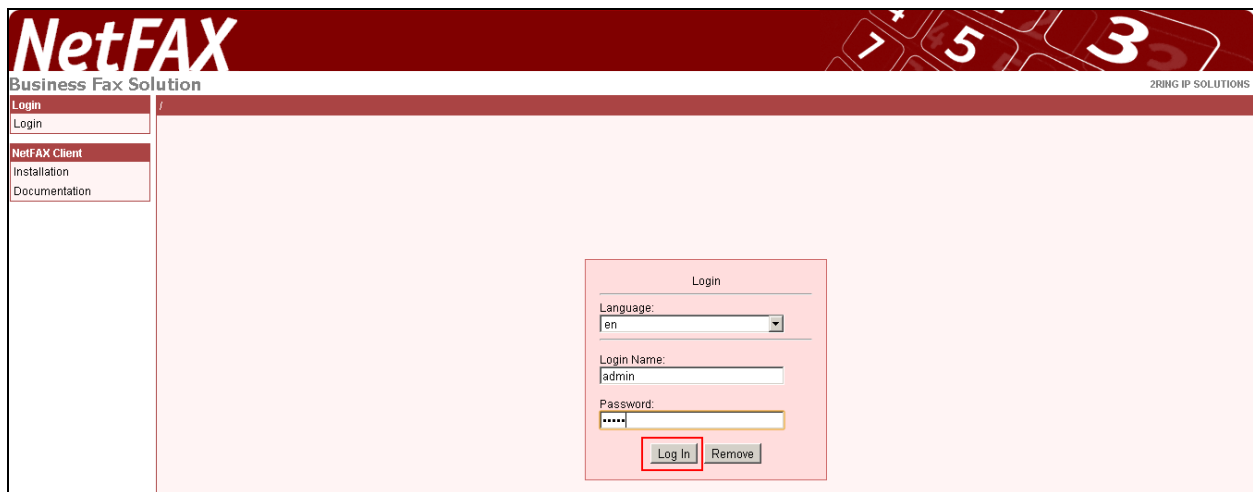
6. Configure 2RING NetFAX

As part of the compliance test, NetFAX was supplied by 2Ring preconfigured in accordance with the NetFAX – Pre-installation Questionnaire. Details specific to the test scenario configuration are as follows:

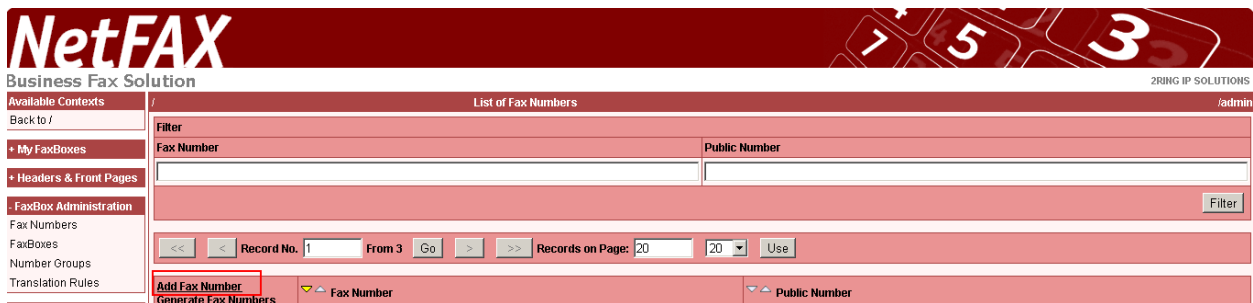
- Create Fax Box
- Create Modem
- Create Modem Group
- Create List
- Add Pattern

6.1. Create Fax Box

Access the Web Interface of NetFAX on <https://10.10.16.102/netfax>, enter the relevant credentials and click **Log In**.



NetFAX must be configured with at least one FaxBox to be used for sending and receiving faxes. Click **FaxBox Administration** → **Fax Numbers** → **Add Fax Number**.



Enter **400** as the **Fax Number**, tab to the **Public Number** box, which will be automatically populated. Click on **Submit**.

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Available Contexts / Add / Edit Fax Number

Back to /

* Fax Number: (Restrictions for the Current Location: 000-999)

* Public Number: (Used location's rule: not Set)

* Required Item

Translate

Help
Fax Number
 Fax number has to be from the location's interval, and it must only contain digits.
 The parameter "netfax.lengthOfPhoneNumber" determines number of digits.
Public Number
 Public number that can be used in header and/or on front page of the fax.

The screenshot below shows Fax Numbers **400**, **401** and **402** added.

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Available Contexts / List of Fax Numbers

Back to /

Filter

Fax Number	Public Number
<input type="text"/>	<input type="text"/>

Filter

<< < Record No. 1 From 3 Go > >> Records on Page: 20 20 Use

Add Fax Number	Fax Number	Public Number
Generate Fax Numbers		
Edit Dependencies	400	400
Edit Dependencies	401	401
Edit Dependencies	402	402

[Add Fax Number](#) [Generate Fax Numbers](#)

<< < > >>

Configure Fax Number 400 for incoming and outgoing use for the **admin** user. Click **FaxBox Administration** → **FaxBoxes** → **Add FaxBox**

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Available Contexts / FaxBox List

Back to /

Filter

User	Incoming Number	Outgoing Number	Copy Faxes to
<input type="text"/>	<input type="text"/>	<input type="text"/>	-- All --

Filter

<< < Record No. 1 From 3 Go > >> Records on Page: 20 20 Use

[Add FaxBox](#) [Import FaxBoxes](#) [Move Faxes](#)

▼ User ▼ Incoming Number ▼ Outgoing Number ▼ Copy Faxes to

Select Fax Number **400** as added in the previous step for **Incoming Number** and **Outgoing Number**, select the **User** as **admin**, and click on **Submit**.

The screenshot below shows FaxBoxes **400**, **401** and **402** added.

User	Incoming Number	Outgoing Number	Copy Faxes to
admin	400	400	
admin	401	401	
admin	402	402	

6.2. Create Modem

A modem must be created on NetFAX; this assumes the role of the SIP trunk from NetFAX to the IP Office. Click on **Routing** → **Modems** → **Add Modem**.

Name	Type	Translation Rule	State
Add Modem			

Enter a **Name** for the modem, in this case **modem T.38**, set the **Type** as **T38 modem**, and configure the **Number of Lines**, in this instance, **1**. Leave the remaining settings as default and click **Continue**.

NetFAX
Business Fax Solution

Available Contexts: Back to /

Navigation: + My FaxBoxes, + Headers & Front Pages, + FaxBox Administration, + User Administration, - Routing (Regions, Intervals, Translation Rules, Modems, Modem Groups, Lists, Patterns)

Add/Edit Modem

* Name:

* Type:

* Number of Lines:

* Translation Rule:

* Required Item

Buttons: << Back, Continue >>

Help

Name
Specify modem name to use

Type
Specify type of the modem

Number of Lines
Number of lines which are available for this configuration.

Translation Rule
Translation rule that is used when a fax is received from a device (the device for T.37 is the gateway and for T.38 is the modem).

The screen below will now be shown. Set the **Gateway** to the SIP interface configured on the IP Office, in this case the IP address configured on the IP Office is **10.10.16.105**, and leave the remaining settings as default.

Add/Edit Modem - Parameters

* Debug:

* Gateway:

* Number of Licences:

FAX_OTF_T38RedDataFrameCount:

FAX_OTF_T38RedSignalFrameCount:

+ Parameters for Receiving

+ Parameters for Sending

Click on **Parameters for Receiving**, and set to the following values provided by 2Ring.

Parameters for Receiving	
OTF_T30BadLine:	FaxReceiver_OTF_T30BadLineRepeat
OTF_T30Encoding:	FaxReceiver_ECTF_MMR
OTF_T30OTFMode:	FaxReceiver_OTF_T30OTFModeAlways
ECTF_PageWidth:	1728
OTF_T30VersionSupported:	2
OTF_T30LineErrors:	5
OTF_T30MinRate:	2400
OTF_T38MaxRate:	14400
OTF_T30Timeout:	40
ECTF_Password:	
ECTF_SetPollkey :	
OTF_T30NSFLength:	0
OTF_T30NSF:	
ECTF_ECM:	<input type="checkbox"/> ECTF_Poll:
ECTF_V17:	<input checked="" type="checkbox"/> ECTF_V27ter:
ECTF_V29:	<input checked="" type="checkbox"/> OTF_V33:
OTF_V34:	<input type="checkbox"/> OTF_T38FillBitRemoval:
OTF_T38TranscodingMMR:	<input checked="" type="checkbox"/> OTF_T38TranscodingJBIG:
OTF_ExtendedModesBFT:	<input type="checkbox"/> OTF_ExtendedModesBTM:
OTF_ExtendedModesCharacterFile:	<input type="checkbox"/> OTF_ExtendedModesCharacterMode:
OTF_ExtendedModesDataFile:	<input type="checkbox"/> OTF_ExtendedModesDTM:
OTF_ExtendedModesELM:	<input type="checkbox"/> OTF_ExtendedModesEDIFACT:
OTF_ExtendedModesFDM:	<input type="checkbox"/> OTF_ExtendedModesFullDuplex:
OTF_ExtendedModesMixed:	<input type="checkbox"/> OTF_ExtendedModesProcessable26:
OTF_ExtendedModesUncompressed:	<input type="checkbox"/> OTF_ExtendedModes2400BPS:
OTF_ImagePageSizeA4:	<input checked="" type="checkbox"/> OTF_ImagePageSizeB4:
OTF_ImagePageSizeA3:	<input checked="" type="checkbox"/> OTF_ImagePageSizeLetter:
OTF_ImagePageSizeLegal:	<input checked="" type="checkbox"/> OTF_ImageResolution204x98:
OTF_ImageResolution204x196:	<input checked="" type="checkbox"/> OTF_ImageResolution204x391:
OTF_ImageResolution408x391:	<input checked="" type="checkbox"/> OTF_ImageResolution200x200:
OTF_ImageResolution300x300:	<input checked="" type="checkbox"/> OTF_ImageResolution400x400:
OTF_T30CEDEnabled:	<input checked="" type="checkbox"/> OTF_T30IDRRequired:
OTF_T30PasswordCapable:	<input type="checkbox"/> OTF_T30Polling:
OTF_T30PRIEnabled:	<input checked="" type="checkbox"/> OTF_T30SubaddressCapable:
offerAlaw:	<input type="checkbox"/> answerAlaw:
offerMulaw:	<input type="checkbox"/> answerMulaw:
offerT38UDPTL:	<input checked="" type="checkbox"/> answerT38UDPTL:

Click on **Parameters for Sending**, and set to the following settings provided by 2Ring. Click on **Submit** (not shown).

- Parameters for Sending			
OTF_T30Encoding:	FaxSender_ECTF_MMR		
OTF_T30OTFMode:	FaxSender_OTF_T30OTFModeAlways		
OTF_T30RetrainAction:	FaxSender_OTF_T30RetrainActionPrev		
OTF_T38VersionSupported:	2		
ECTF_FirstPageNum:	1		
ECTF_PageWidth:	1728		
ECTF_TransferSpeed:	14400		
OTF_T30MinRate:	2400		
OTF_T38MaxRate:	14400		
OTF_T30Timeout:	40		
OTF_T30TransmitLevel:	-135		
ECTF_SenderID:			
ECTF_Subaddress:			
ECTF_NoECM:	<input type="checkbox"/>	ECTF_PolledSend:	<input type="checkbox"/>
ECTF_V17:	<input checked="" type="checkbox"/>	ECTF_V27ter:	<input checked="" type="checkbox"/>
ECTF_V29:	<input checked="" type="checkbox"/>	OTF_V33:	<input checked="" type="checkbox"/>
OTF_V34:	<input type="checkbox"/>	OTF_T38FillBitRemoval:	<input type="checkbox"/>
OTF_T38TranscodingMMR:	<input checked="" type="checkbox"/>	OTF_T38TranscodingJBIG:	<input type="checkbox"/>
OTF_ExtendedModesBFT:	<input type="checkbox"/>	OTF_ExtendedModesBTM:	<input type="checkbox"/>
OTF_ExtendedModesCharacterFile:	<input type="checkbox"/>	OTF_ExtendedModesCharacterMode:	<input type="checkbox"/>
OTF_ExtendedModesDataFile:	<input type="checkbox"/>	OTF_ExtendedModesDigitalNetwork:	<input type="checkbox"/>
OTF_ExtendedModesDTM:	<input type="checkbox"/>	OTF_ExtendedModesELM:	<input type="checkbox"/>
OTF_ExtendedModesEDIFACT:	<input type="checkbox"/>	OTF_ExtendedModesFDM:	<input type="checkbox"/>
OTF_ExtendedModesFullDuplex:	<input type="checkbox"/>	OTF_ExtendedModesMixed:	<input type="checkbox"/>
OTF_ExtendedModesProcessable26:	<input type="checkbox"/>	OTF_ExtendedModesUncompressed:	<input type="checkbox"/>
OTF_ExtendedModes2400BPS:	<input type="checkbox"/>	OTF_T30CNG:	<input checked="" type="checkbox"/>
OTF_T30IDRequired:	<input type="checkbox"/>	OTF_T30PasswordCapable:	<input type="checkbox"/>
OTF_T30PRIEnabled:	<input type="checkbox"/>	OTF_T30SubaddressCapable:	<input type="checkbox"/>
offerAlaw:	<input type="checkbox"/>	answerAlaw:	<input checked="" type="checkbox"/>
offerMulaw:	<input type="checkbox"/>	answerMulaw:	<input checked="" type="checkbox"/>
offerT38UDPTL :	<input checked="" type="checkbox"/>	answerT38UDPTL:	<input checked="" type="checkbox"/>

The screen below will now be displayed, showing the modem added.

NetFAX Business Fax Solution 2RING IP SOLUTIONS /admin

Available Contexts / Back to /

+ My FaxBoxes

+ Headers & Front Pages

+ FaxBox Administration

+ User Administration

- Routing

- Regions
- Intervals
- Translation Rules
- Modems
- Modem Groups
- Lists
- Patterns

+ Monitoring

+ System Administration

Logout

Logout

NetFAX Client

- Installation
- Documentation

Modems List

Filter

Name: Type: -- All --

<< < Record No. 1 From 1 Go To > >> Records on Page: 20 20 Use

Add Modem	Name	Type	Translation Rule	State
Test Disable Edit Copy Delete	modem T.38	T38 modem		line 1 - AVAILABLE

[Add Modem](#)

<< < > >>

6.3. Create Modem Group

A modem must be added to a Modem Group in order to define Lists and Routes, specified later in this section. Click **Routing → Modem Groups → Add Group** as shown below.

NetFAX Business Fax Solution 2RING IP SOLUTIONS /admin

Available Contexts / Back to /

+ My FaxBoxes

+ Headers & Front Pages

+ FaxBox Administration

+ User Administration

- Routing

- Regions
- Intervals

List of Groups

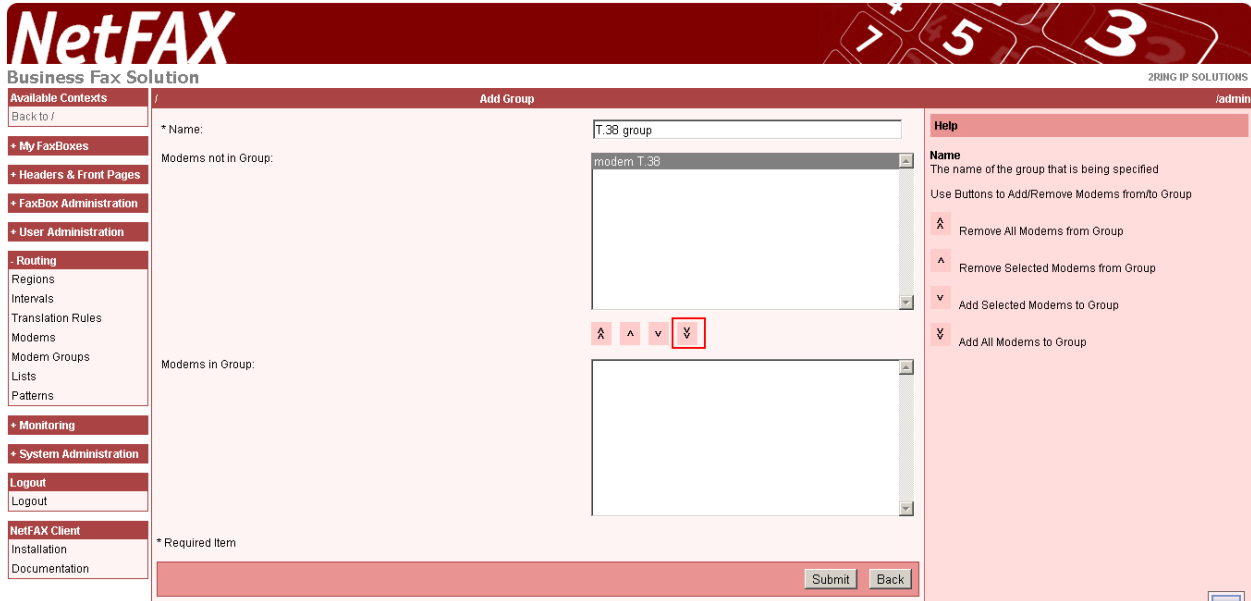
Filter

Name:

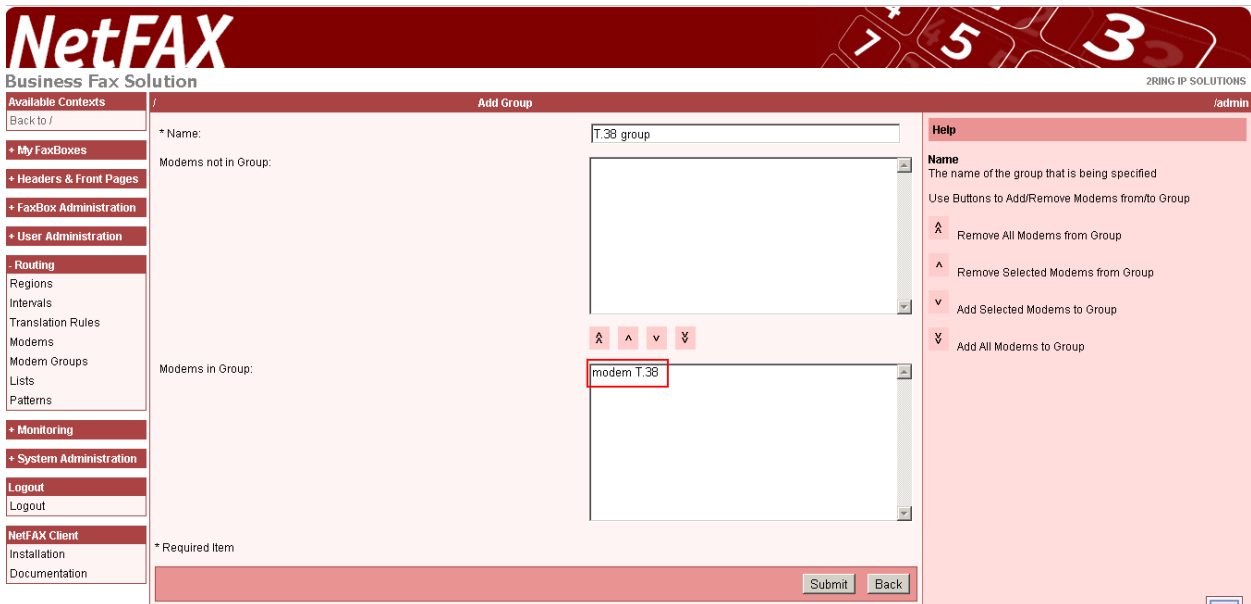
<< < Record No. 1 From 1 Go > >> Records on Page: 20 20 Use

Add Group	Name	Modems in Group
-----------	------	-----------------

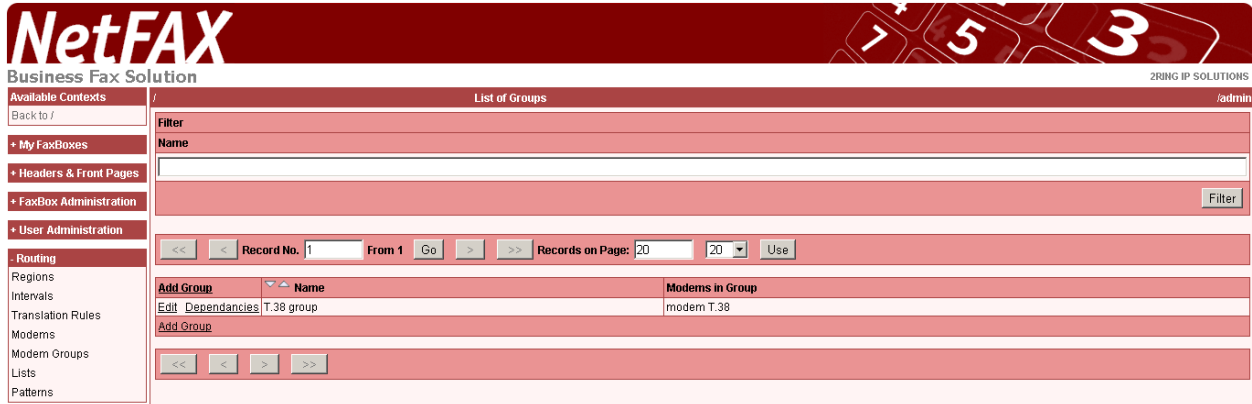
Enter a **Name** for the group, in this case **T.38 Group**, select the modem created in the previous **Section 6.2** and by clicking the highlighted arrow, move it from the **Modems not in Group** section, to the **Modems in Group** section.



The screen below shows the **modem T.38** in the **Modems in Group** section. Click **Submit** when done.

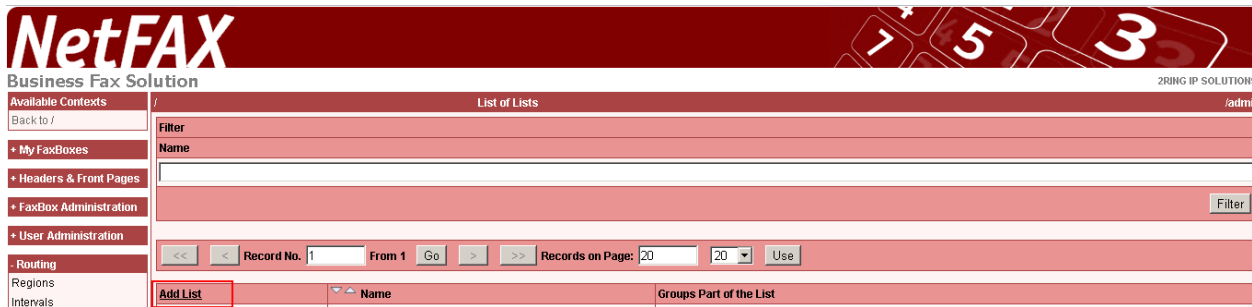


The following screenshot shows the Modem Group added, and the modem T.38 in the group.



6.4. Create List

A List must be created, as it is referenced in **Section 6.5** where Patterns are configured. The list ties together the modem group, and its corresponding modem, with the Pattern. Click on **Routing → Lists → Add List**.



Enter a Name for the list, in this case **T.38 List**, choose **T.38 group** in the **Modem Groups not Part of Route List** section, and click on the highlighted arrow to move it to the **Modem Groups Part of Route List** section.

Click on **T.38 group** and edit the **Number of Repetitions** from **1** to **0**, and click **Submit**.

The **T.38** group will now appear as a group forming part of the **T.38** list, as shown below.

6.5. Add Pattern

A routing pattern must be added in order for dialed digits to be correctly formatted, routed and to use the correct resources. Click on **Routing** → **Patterns** → **Add Pattern**.

Enter a **Description** to describe the route pattern, in this case **outgoing to IPO**, the **Calling Number** in this instance * is used to define any number, the **Called Number** in this case is prefixed with **9** where the called number is any number defined by *, **Route List Name** as **T.38 list**, and **Action** which for this pattern is **Send as Fax**, then click **Submit**. This page establishes that any dialed digits beginning with 9, will be sent to the IP Office.

In order to allow faxes to reach FaxBoxes on NetFAX, an incoming route pattern must also be configured as shown below.

NetFAX
Business Fax Solution

2RING IP SOLUTIONS /admin

Available Contexts / Edit Pattern

Back to /

- My FaxBoxes
- Headers & Front Pages
- FaxBox Administration
- User Administration
- Routing
 - Regions
 - Intervals
 - Translation Rules
 - Modems
 - Modern Groups
 - Lists
 - Patterns
- Monitoring
- System Administration
- Logout

Description:

* Calling Number:

* Called Number:

* Date Interval:

* Action:

Translation Rule:

Ignore Rule if the FaxBox Doesn't Exist:

* Required Item

Help

Description
Enter pattern description for purpose understanding

Calling Number
Pattern to which the sender's fax number is compared. It can consist of any characters. Symbol * is a proxy symbol and it represents any number of unknown characters.

Called Number
Pattern to which the receiver's fax number is compared. It can consist of any characters. Symbol * is a proxy symbol and it represents any number of unknown characters.

Date Interval
Interval during which the rule remains valid.

Action
Queue to which fax will be assigned after rule's application. Queue "Send to FaxBoxes" is only for faxes that are supposed to be placed into FaxBox(es) of the system. Queue "Send as fax" is for faxes that are supposed to be sent as faxes out of the system.

Route List Name
Route list to which faxes will be routed.

7. Verification Steps

This section provides the steps to take in order to verify correct configuration of IP Office and NetFAX.

7.1. Verify Routing of call through IP Office SIP Trunk

To verify the correct routing of a fax to NetFax, using the IP Office System Status Application, in the left hand pane, click **Trunks** → **Line 1** to select the inbound PRI trunk from the PSTN. During an incoming fax, the **Current State** of a channel will appear as highlighted below. Confirmation of the routing of this call by IP Office to the SIP trunk to NetFAX is confirmed by the **Other Party on Call** where the SIP Trunk Line ID is displayed, in this case **18**, as configured in **Section 5.2**. This screenshot verifies that an inbound fax to the IP Office from the PSTN is routed successfully to the SIP trunk on NetFAX.

The screenshot displays the AVAYA IP Office System Status application. The left-hand navigation pane shows the 'Trunks (4)' section expanded to 'Line: 1'. The main window shows the 'Digital Trunk Summary' for Line 1, Slot 1, Port 1. A table lists 14 channels, with channel 4 highlighted in red, indicating it is 'Connected'. The 'Other Party on Call' column for channel 4 shows 'Line: 18 SIP avaya.com Group' and the 'Direction of Call' is 'Incoming'. Below the table, a 'Trace Output - All Channels' section provides a detailed log of SIP messages and system events related to the call on channel 4.

Channel Number	Call Ref	Current State	Time in State	Routing Digits	Caller ID or Dialed Digits	Other Party on Call	Direction of Call
1		Idle	00:02:13				
2		Idle	00:02:13				
3		Idle	00:02:13				
4	5	Connected	00:00:21	0400	None	Line: 18 SIP avaya.com Group	Incoming
5		Idle	00:02:13				
6		Idle	00:02:13				
7		Idle	00:02:13				
8		Idle	00:02:13				
9		Idle	00:02:13				
10		Idle	00:02:13				
11		Idle	00:02:13				
12		Idle	00:02:13				
13		Idle	00:02:13				
14		Idle	00:02:13				

Trace Output - All Channels:

```

21:07:11 17:57:08-843ms Line = 1, Channel = 4, Q.931 Message = Setup, Direction = To Switch, Called Party Number = 400
21:07:11 17:57:08-849ms Call Ref = 5, Short Code Matched = System, 400
21:07:11 17:57:08-857ms Call Ref = 5, Originator State = Incoming Alerting, Type = Trunk, Destination Type = none
21:07:11 17:57:08-862ms Line = 1, Channel = 4, Q.931 Message = Progress, Call Ref = 5, Direction = From Switch
21:07:11 17:57:09-865ms Call Ref = 5, Originator State = Incoming Alerting, Type = Trunk, Destination Type = none
21:07:11 17:57:09-863ms Line = 18, Channel = 1, SIP Message = Invite, Call Ref = 5, Direction = From Switch, From = 123456@avaya.com, To = 400@netfax.avaya.com
21:07:11 17:57:09-868ms Line = 18, Channel = 1, SIP Message = Response, Call Ref = 5, Direction = To Switch, From = 123456@avaya.com, To = 400@netfax.avaya.com, Response = 100 Trying
21:07:11 17:57:09-871ms Line = 18, Channel = 1, SIP Message = Response, Call Ref = 5, Direction = To Switch, From = 123456@avaya.com, To = 400@netfax.avaya.com, Response = 183 Session Progress
21:07:11 17:57:09-872ms Call Ref = 5, Alerting, Line = 18, Channel = 1
21:07:11 17:57:10-025ms Line = 18, Channel = 1, SIP Message = Response, Call Ref = 5, Direction = To Switch, From = 123456@avaya.com, To = 400@netfax.avaya.com, Response = 200 Ok
21:07:11 17:57:10-028ms Line = 18, Channel = 1, SIP Message = Ack, Call Ref = 5, Direction = From Switch, From = 123456@avaya.com, To = 400@netfax.avaya.com
21:07:11 17:57:10-060ms Line = 1, Channel = 4, Q.931 Message = ConnectAck, Call Ref = 5, Direction = To Switch
21:07:11 17:57:10-063ms Call Ref = 5, Originator State = Connected, Type = Trunk, Destination State = Connected, Type = Trunk
21:07:11 17:57:10-063ms Call Ref = 5, Answered, Line = 18, Channel = 1
21:07:11 17:57:10-158ms Line = 18, Channel = 1, SIP Message = Invite, Call Ref = 5, Direction = To Switch, From = 400@netfax.avaya.com, To = 123456@avaya.com
21:07:11 17:57:10-159ms Line = 18, Channel = 1, SIP Message = Response, Call Ref = 5, Direction = From Switch, From = 400@netfax.avaya.com, To = 123456@avaya.com, Response = 100 Trying
21:07:11 17:57:10-167ms Line = 18, Channel = 1, SIP Message = Response, Call Ref = 5, Direction = From Switch, From = 400@netfax.avaya.com, To = 123456@avaya.com, Response = 200 Ok
21:07:11 17:57:10-171ms Line = 18, Channel = 1, SIP Message = Ack, Call Ref = 5, Direction = To Switch, From = 400@netfax.avaya.com, To = 123456@avaya.com
  
```

7.2. Verify receipt and delivery of Fax in NetFAX FaxBox

To verify the receipt of a fax into FaxBox 400 on NetFAX, click **My FaxBoxes** → **400 – 400** → **Inbox**. The screen shown below confirms **Received** and **Pages** amongst other details.

NetFAX
Business Fax Solution

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Folder Inbox in FaxBox 400 - 400

Available Contexts: / Back to /

Filters:

From: * To: * Fax ID: Start Date: End Date: Filter

Reload Every: minute(s) Set Refresh

Record No. 1 From 5 Go Records on Page: 20 20 Use

	From	To	Fax ID	PIN	Received	Pages	Resolution
View Fax Download Send as E-mail Delete Edit ID	123456	400			27. 06. 2011 10:50	1	204x98
View Fax Download Send as E-mail Delete Edit ID	123456	400			24. 06. 2011 17:00	20	204x98
View Fax Download Send as E-mail Delete Edit ID	123456	400			24. 06. 2011 16:49	1	204x98
View Fax Download Send as E-mail Delete Edit ID	123456	400			24. 06. 2011 16:27	1	204x98
View Fax Download Send as E-mail Delete Edit ID	123456	400			24. 06. 2011 16:11	1	204x196

In order to verify delivery of a fax from FaxBox 400, click **My FaxBoxes → 400 – 400 → Sent Faxes**. The screen below displays, among other details, the **Created** date, **Sent** date, and the **Send State (Successful or Failed)**.

NetFAX
Business Fax Solution

Folder Sent Faxes in FaxBox 400 - 400

Available Contexts: Back to /

My FaxBoxes: Rules and Actions, Signatures, Signature Templates, Settings

400 - 400: Send Fax, Inbox, Drafts, Outbox, Sent Faxes

401 - 401: Send Fax, Inbox, Drafts, Outbox, Sent Faxes

402 - 402: Send Fax, Inbox, Drafts, Outbox, Sent Faxes

Filters: From, To, Fax ID, Start Date, End Date

Reload Every: [] minute(s) [Set] [Refresh]

Record No. 1 From 12 Go [] Records on Page: 20 [20] Use

	View Fax	Download	Resend	Send as E-mail	Delete	From	To	Fax ID	PIN	Created	Sent	Pages	Resolution	Send State
						400	91301			27.06.2011 10:37	27.06.2011 10:38	1	204x196	Successful
						400	91301			27.06.2011 10:20	27.06.2011 10:21	1	204x196	Failed: end of list T.38 list was reached
						400	91301			27.06.2011 10:14	27.06.2011 10:15	1	204x196	Failed: end of list T.38 list was reached
						400	91301			24.06.2011 17:08	24.06.2011 17:24	24	204x196	Successful
						400	91301			24.06.2011 17:02	24.06.2011 17:02	1	204x196	Successful
						400	91301			24.06.2011 16:28	24.06.2011 16:30	5	204x196	Successful
						400	91301			24.06.2011 15:34	24.06.2011 15:36	5	204x196	Failed: end of list T.38 list was reached
						400	91301			24.06.2011 15:19	24.06.2011 15:20	1	204x196	Successful
						400	91301			24.06.2011 15:05	24.06.2011 15:07	5	204x196	Successful
						400	91301			24.06.2011 15:02	24.06.2011 15:04	5	204x196	Failed: end of list T.38 list was reached
						400	91301			24.06.2011 13:42	24.06.2011 13:43	5	204x196	Failed: end of list T.38 list was reached
						400	91301			23.06.2011 17:28	23.06.2011 17:29	5	204x196	Failed: end of list T.38 list was reached

8. Conclusion

These Application Notes describe the configuration steps required for the 2Ring NetFAX to successfully interoperate with Avaya IP Office IP500. All functionality and serviceability test cases were completed successfully.

9. Additional References

Product documentation for Avaya products may be found at <http://support.avaya.com>
[1] IP Office KnowledgeBase 7.0 Documentation CD (English Only)

Product documentation for 2Ring NetFAX can be found at <http://www.2ring.sk>

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