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Dialogic® Brooktrout® SR140 Fax Software with Microsoft® Exchange Server 2010

Installation and Configuration Integration Note

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Table of Contents

1 Scope

Microsoft® Exchange Server 2007 provides built-in support for T.38 fax. In Microsoft® Exchange Server 2010 Unified Messaging, this support was removed and replaced with the ability to interact with fax partner solutions for inbound fax routing. Outbound faxing continues to be supported directly by the fax partner solution with no requirement for interacting with Microsoft Exchange 2010.

The required protocol support to interact with Microsoft® Exchange Server 2010 is available in Dialogic® Brooktrout® SR140 Fax Products, SDK 6.2.1 and above.

This document is intended as a general guide for configuring a basic installation of ***Microsoft® Exchange Server 2010*** with a ***Microsoft® Exchange 2010 Fax Partner Solution*** based on the ***Dialogic® Brooktrout® SR140 Fax Software*** and the ***Dialogic® DMG 2120 Gateway.*** The sample configuration uses SIP call control and supports both G.711 RTP and T.38 fax, however only the T.38 sample configuration is shown.

This document is not intended to be comprehensive and thus does not replace the manufacturer's detailed configuration documentation. Users of this document should already have a general knowledge of how to install and configure Microsoft® Exchange Server 2010 with a Dialogic® DMG 2120 gateway.

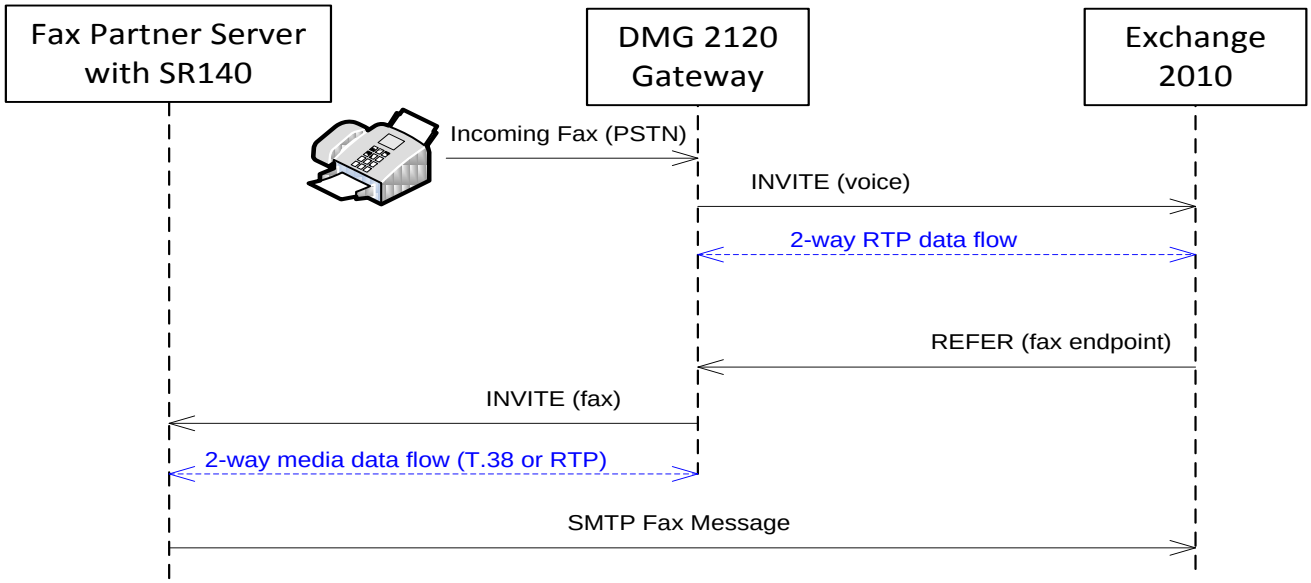
The sample configuration shown and/or referred in the subsequent sections was used for lab validation testing by Dialogic. Therefore, it is possible and even likely that the example configuration will not match the exact configuration and versions that would be present in a deployed environment. However, the sample configuration does provide a possible starting point to work with the equipment vendor for configuring your device. Please consult the appropriate manufacturer's documentation for details on setting up your specific end user configuration.

For information related Bfv Application Changes or configuring an AudioCodes Mediant Gateway, refer to the Appendices.

For ease of reference, the Dialogic® Brooktrout® SR140 Fax Software will sometimes be denoted herein as SR140. The Dialogic® DMG 2120 Gateway will sometimes be denoted herein as DMG 2120 or the Gateway. All references to the SDK herein refer to the Dialogic® Brooktrout® Fax Products SDK. Microsoft® Exchange Server 2010 Unified Messaging will be denoted Exchange 2010 or Exchange 2010 UM, or some other form thereof.

2 Overview

The diagram below details the sample configuration used in connection with this document.



Sequence:

- Inbound call is directed via the Gateway to Exchange 2010 with a voice profile.
- RTP media stream is established.
- Exchange 2010 detects the calling fax tone (CNG) in the RTP stream.
- Exchange 2010 immediately issues a REFER to the Gateway, referring to the Fax Server based on its configuration information.
- The Gateway redirects the call to the Fax Server as a T38 fax call or G711 RTP. The redirect includes the SIP Referred-By header which the Fax Server will use to generate the SMTP Fax message.
- The Fax Server receives the fax image and Exchange 2010 address information.
- The Fax Server builds an SMTP message using the address information, attaches the fax image, and delivers it to Exchange 2010.

3 Configuration Details

The following software and hardware was used in the sample configuration described in the document.

3.1 Microsoft® Exchange Server 2010

Vendor	***Microsoft***
Model(s)	***Exchange 2010***
Software Version(s)	***Version: 14.00.0639.021***
IP Device	***Dialogic® Brooktrout® SR140***
Gateways	***Dialogic® DMG 2120***

3.2 Dialogic® Brooktrout® SR140 Fax Software

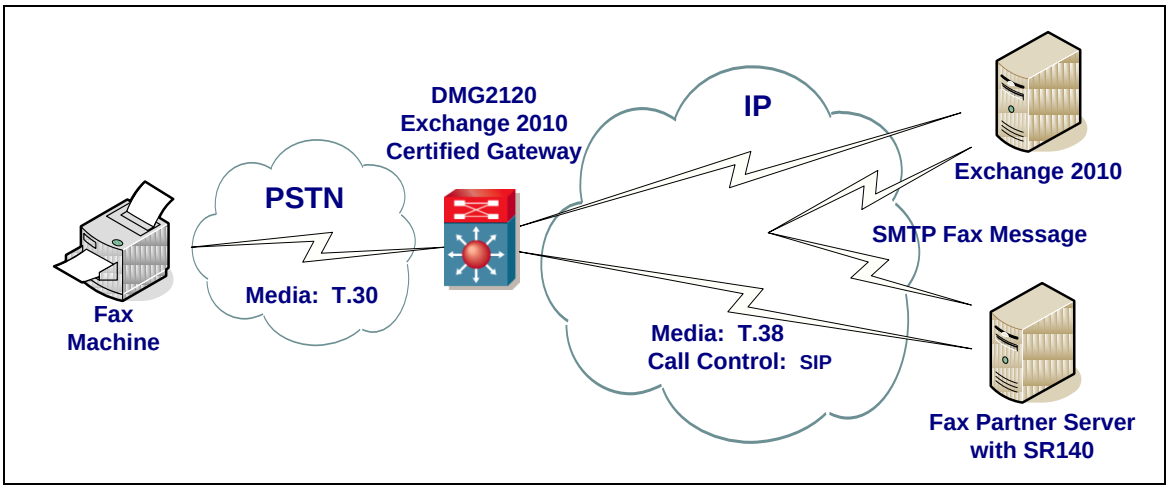
Vendor	***Dialogic***
Model	***Dialogic® Brooktrout® SR140 Fax Software***
Software Version	***SDK 6.2.1***
Microsoft® Fax Partner Certified	***Yes - various Applications based on SR140***
Protocol to Gateway	***SIP***
callctrl.cfg file	***All defaults***

3.3 Dialogic® DMG 2120 Gateway

Vendor	***Dialogic***
Model	***Dialogic® DMG 2120 Gateway***
Software Version	***6.0.SU3.1.003_B001_74757.1***
Microsoft® Exchange 2010 Interoperability Certified	***Yes***
Protocol to Exchange 2010 Server	***SIP***
Configuration file	***All defaults***

3.4 Network System Configuration

The diagram below details the sample configuration used in connection with this document.



4 Microsoft® Exchange Server 2010 UM Setup Notes

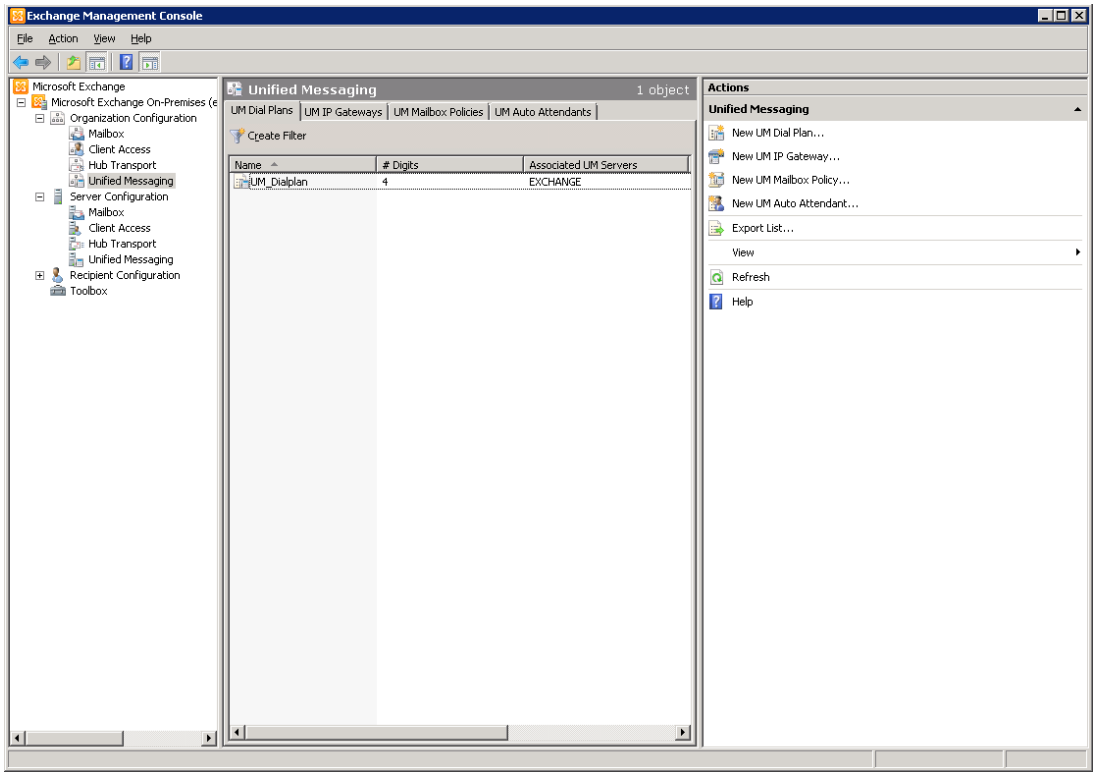
4.1 Assumptions:

- Exchange 2010 is installed with Unified Messaging Support.
- Mailbox(es) have been created for users.
- Mailbox(es) have been configured for support with UM with phone number.
- If Exchange is already configured with a gateway and a dial plan exists, skip to the section titled: Creating a new UM Mailbox Policy: for instructions on how to modify the UM policy to allow inbound faxes.

4.2 Creating a new UM Dial Plan:

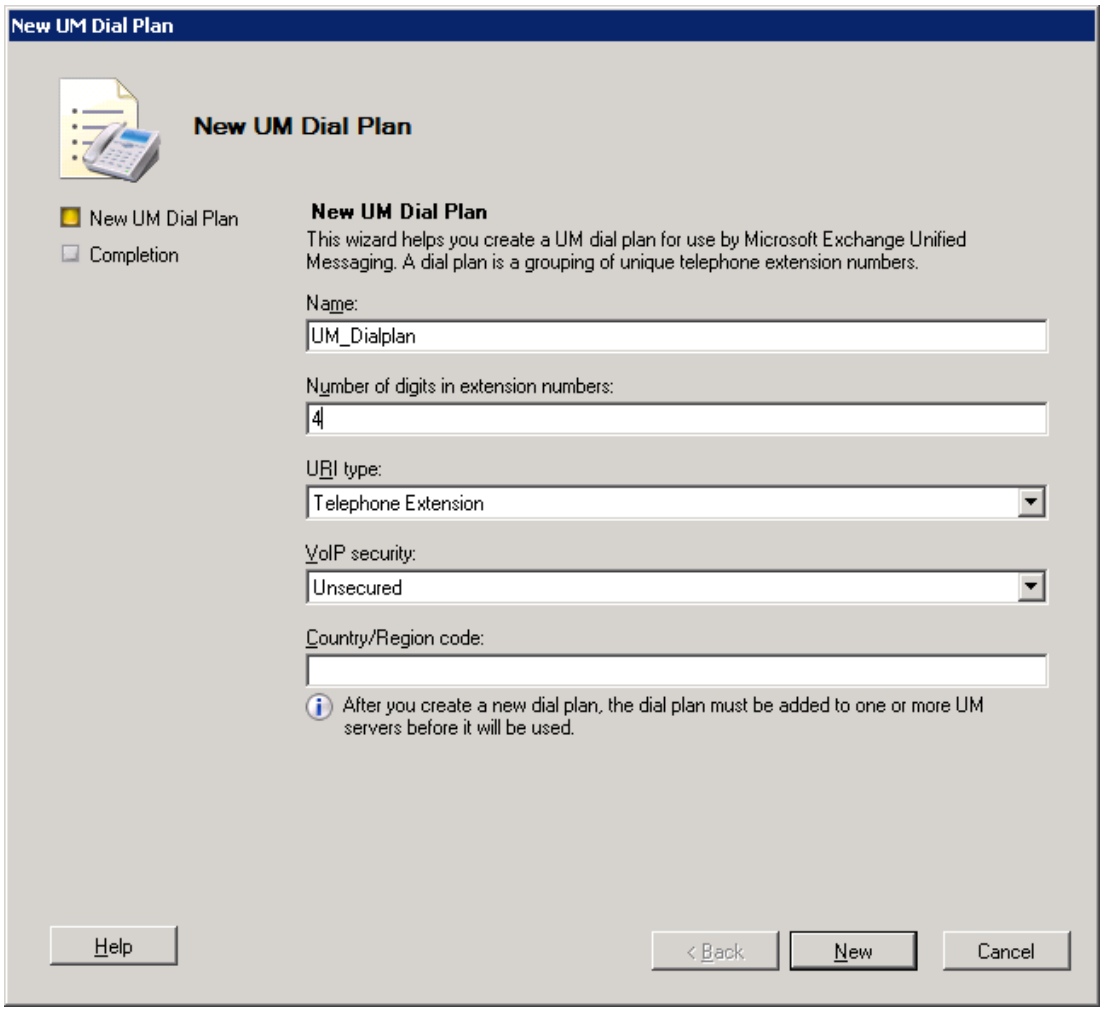
The Exchange Management Console screenshot shown here will be referred to throughout the Exchange 2010 Setup Notes.

In the ***Exchange Management Console***, open the Organization Configuration.
Select from directory structure: ***Unified Messaging***
Select tab under Unified Messaging section: ***UM Dial Plans***

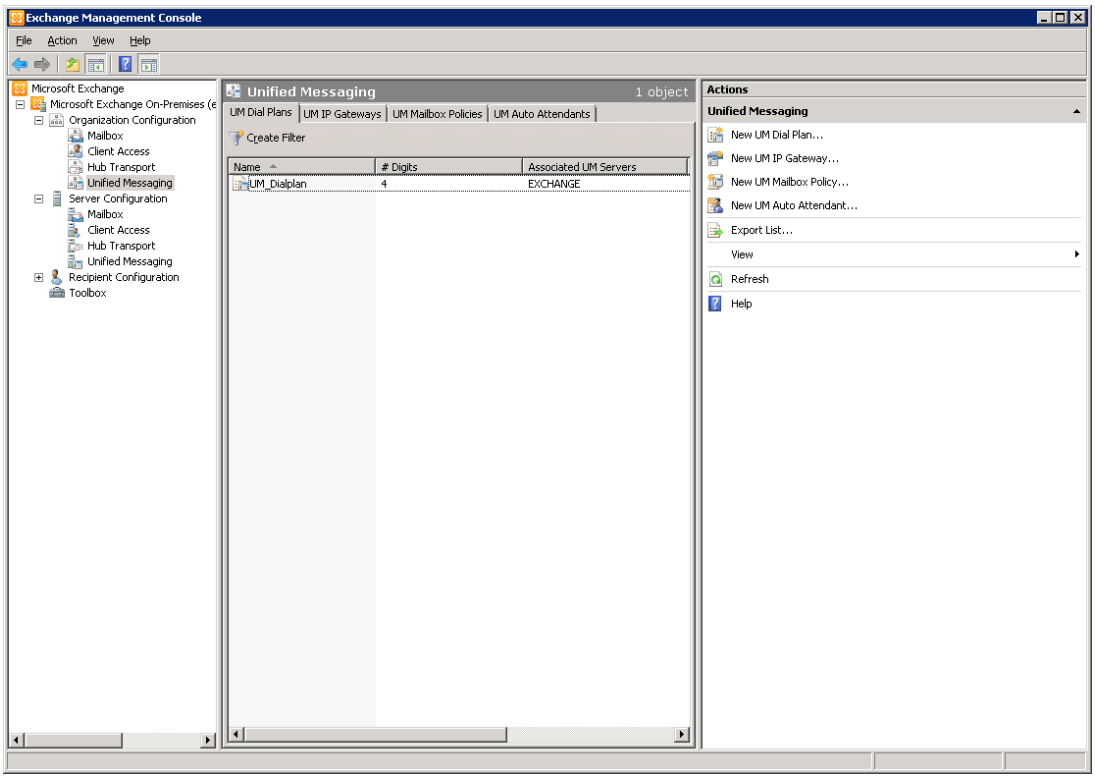


If this is a new installation, you will need to create a dial plan. To create a new UM Dial Plan, select from the ***Actions*** section: ***New UM Dial Plan…***

Provide a ***Name:*** for the Dial Plan. In this example, we named the Dial Plan: UM_Dialplan. You will need to know this name later to associate it to a UM Gateway. Add the ***Number of digits in extension numbers:.*** This should match your PBX configuration. Once completed, click ***New*** to save your changes.

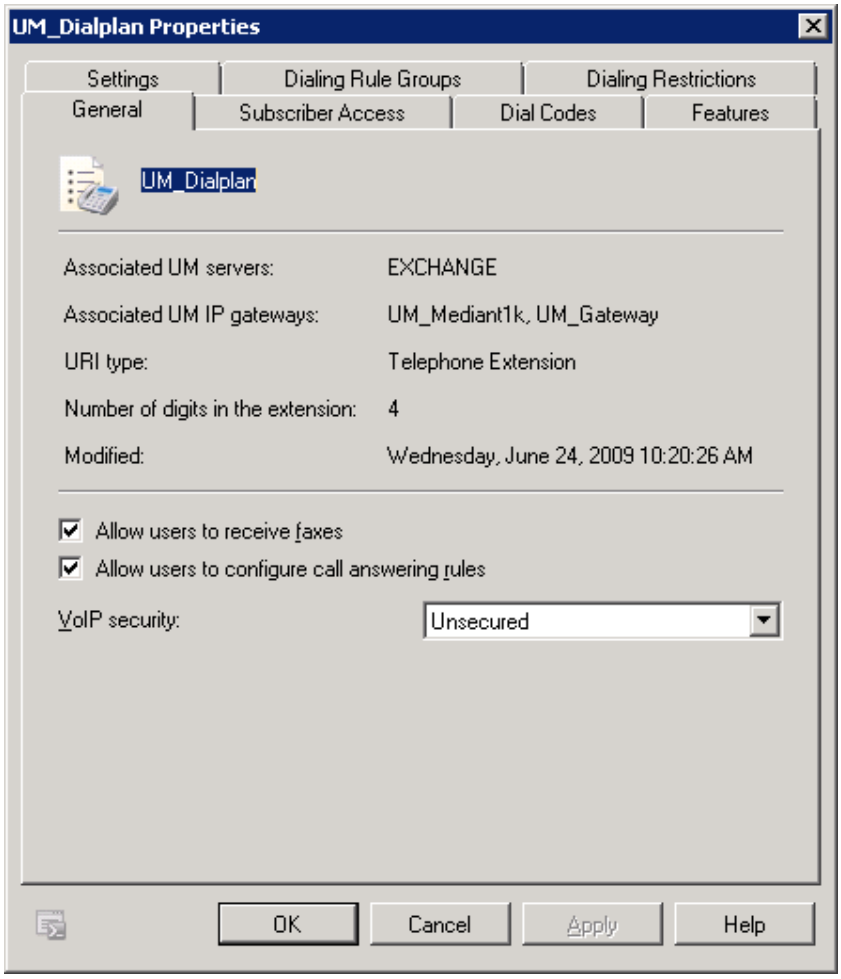


The newly created Dial Plan should now show up in the ***Exchange Management Console.*** Select and right click the newly created dial plan, then and select properties.



,

Under the ***General*** tab, enable the checkbox to ***Allow user to receive faxes*** and save your changes by clicking ***OK***.

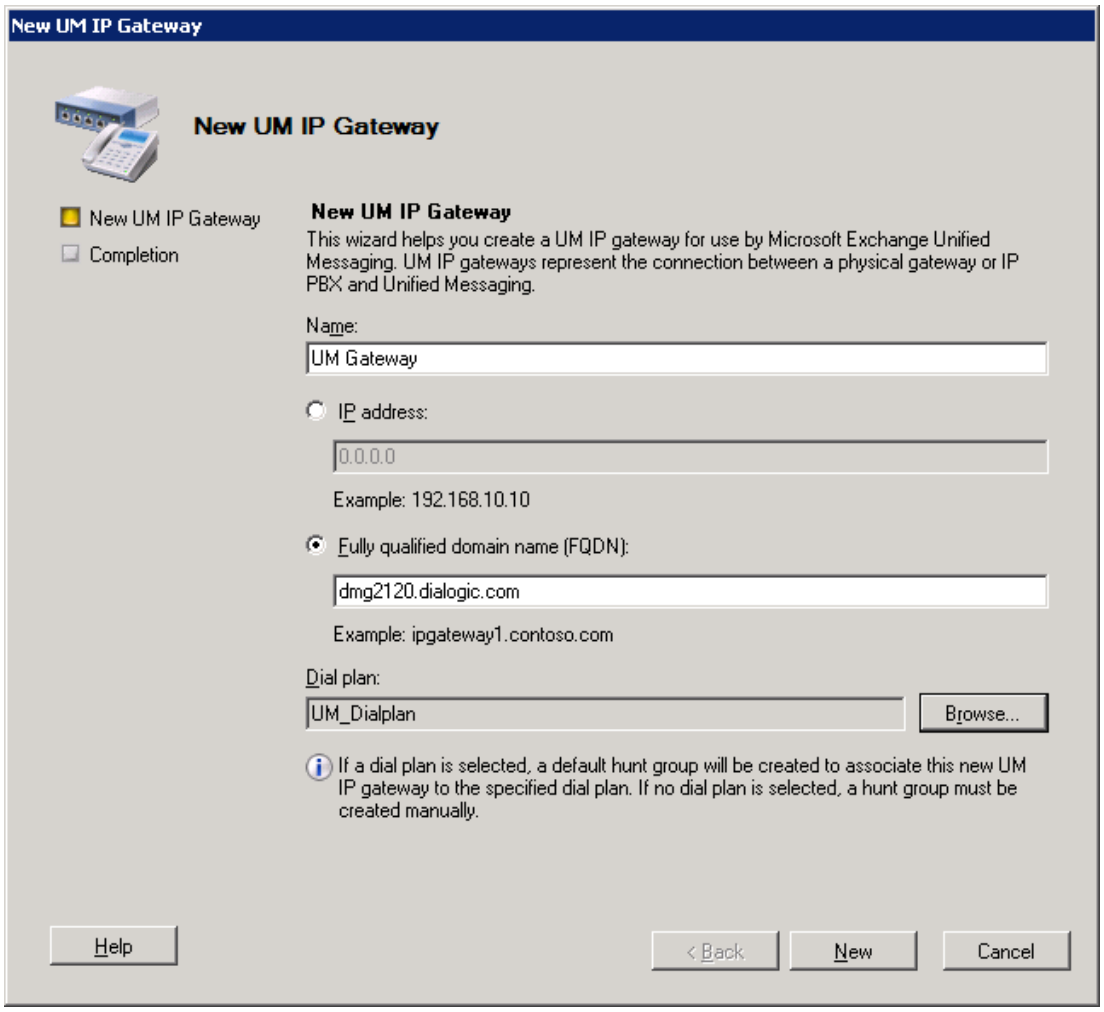


Next select the ***UM IP Gateways*** tab on the ***Exchange Management Console***.

4.3 Adding a new UM Gateway:

Select the ***UM IP Gateways*** tab on the ***Exchange Management Console***. To create a new UM IP Gateway, select ***New UM IP Gateway…*** from the ***Actions*** section.

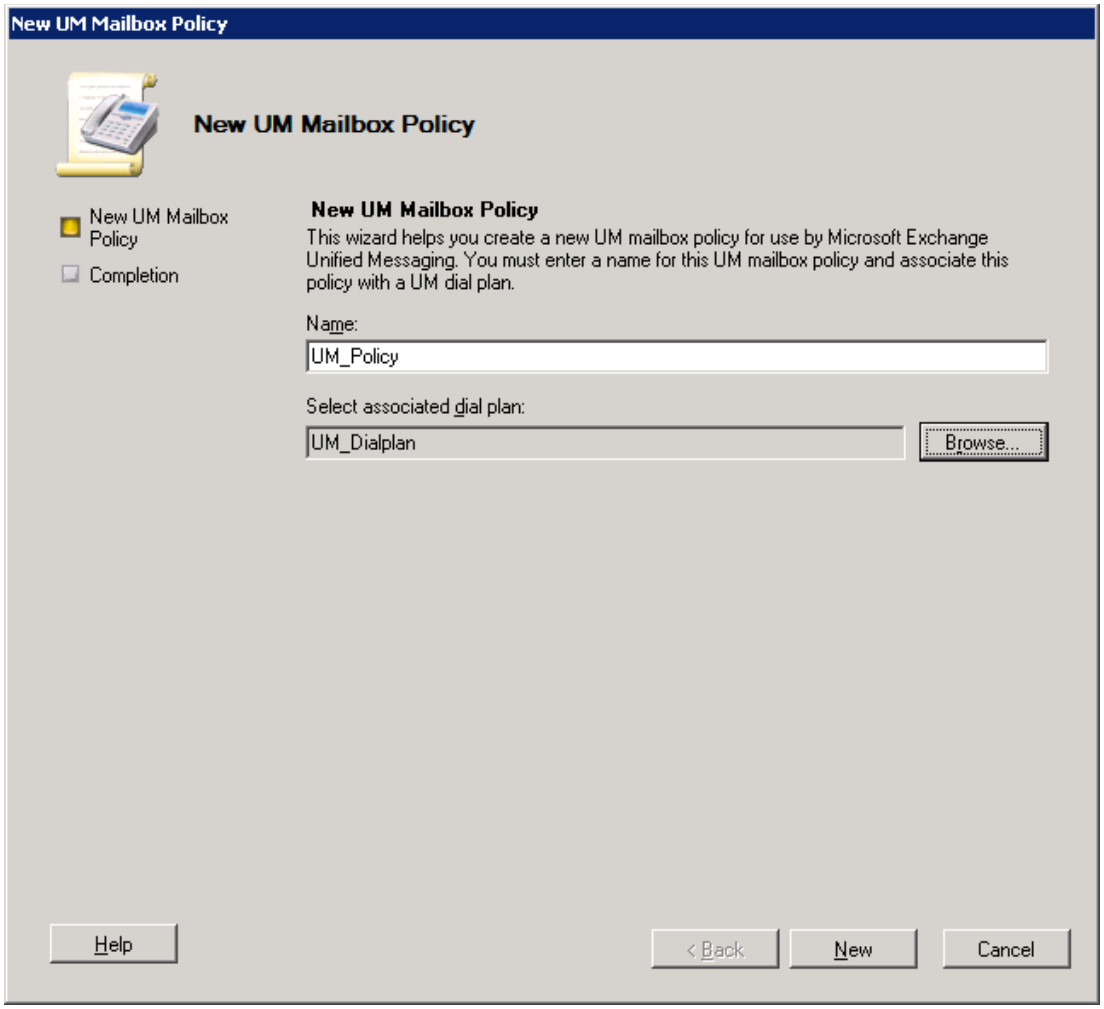
Provide the ***Name:*** for the new Gateway to be added. In this example, we named the Gateway: UM Gateway. Provide either the ***IP address*** of the gateway or the ***Fully qualified domain name (FQDN)***. ***Browse*** and select the ***Dial Plan*** that was configured in a previous step. Once completed, click ***New*** to save your changes.



4.4 Creating a new UM Mailbox Policy:

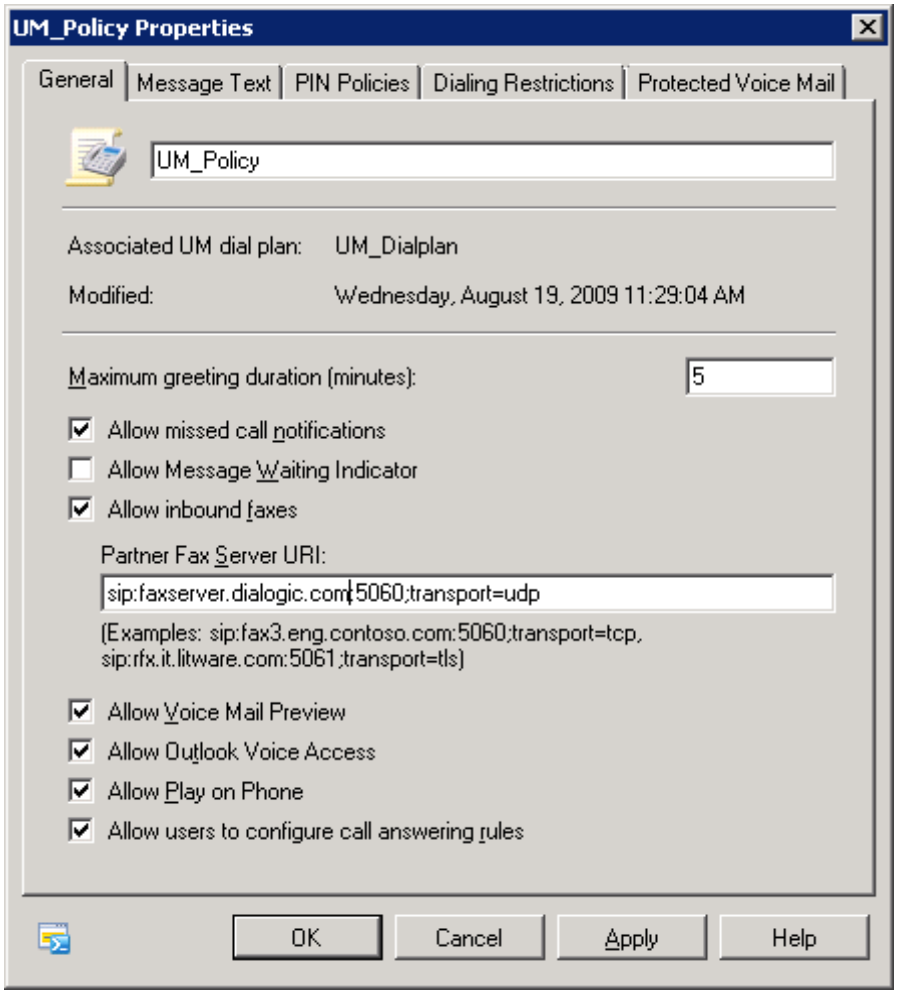
Select the ***UM Mailbox Policies*** tab on the ***Exchange Management Console***. To create a new UM Mailbox Policy, select ***New UM Mailbox Policy…*** from the ***Actions*** section.

Provide the ***Name:*** for the new Policy to be added. In this example, we named the Policy: UM_Policy. ***Browse*** and select the ***Dial Plan*** that was configured in a previous step. Once completed, click ***New*** to save your changes.



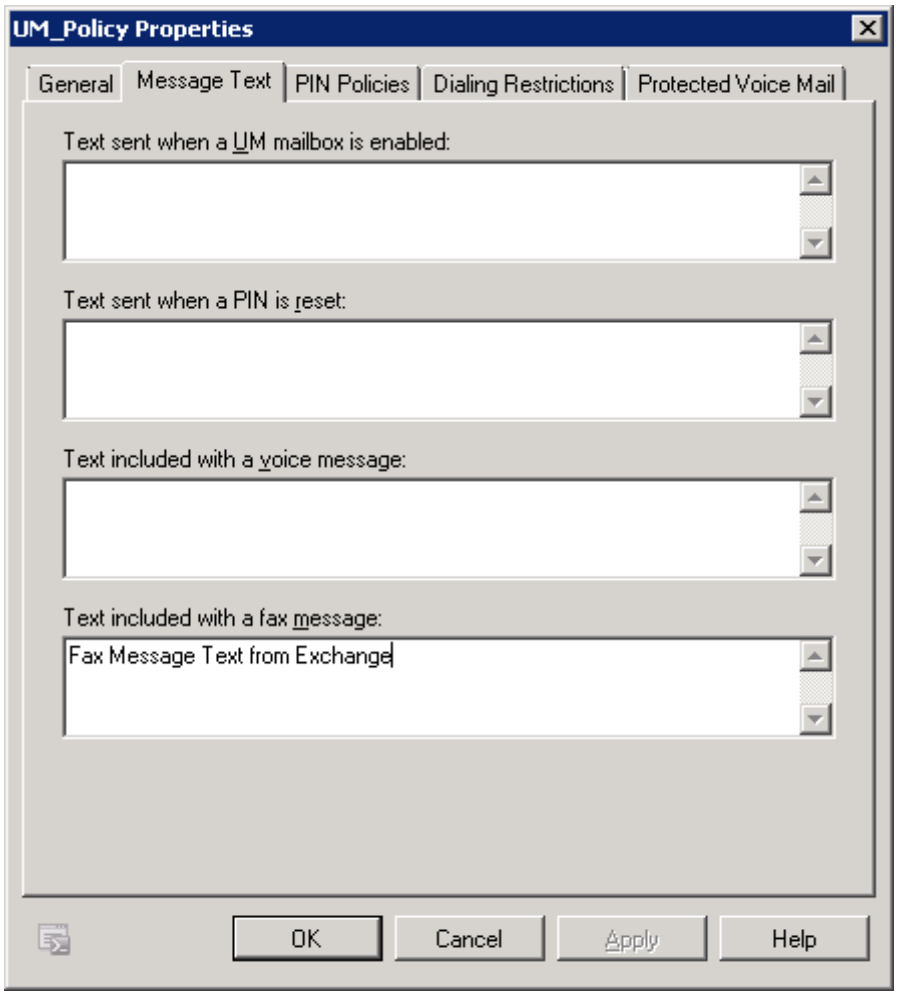
The newly created UM Mailbox Policy should now show up in the ***Exchange Management Console.*** Select and right click the newly created policy, then select properties.

Enable the ***Allow inbound faxes*** checkbox. This will allow you to configure a Partner Fax Server URI. Enter the SIP URI into the ***Partner Fax Server URI:*** text box. This URI must contain the FQDN of the fax server, port number and the protocol information; or SIP URI's of this form are allowed. For use with the SR140, the transport of UDP must be entered as shown below.



Next, select the ***Message Text*** tab.

On the ***Message Text*** tab, the Exchange Administrator may add ***Text included with a fax message:***. This fax message will be sent to the fax application in the Referred-By header and the fax application will append the message to the body of the SMTP message returned to Exchange. In this example, add text will be: Fax Message Text from Exchange. Save your changes by clicking ***OK***.



After the completing the above steps, any Mailbox associated with the defined UM Mailbox Policy will have inbound fax support from the Exchange 2010 server and Partner Fax Server.

5 Dialogic® Brooktrout® SR140 Fax Configuration

5.1 Prerequisites

Referred-By support was added in SDK 6.2.1.

5.2 Summary of Limitations

None.

5.3 SR140 Setup Notes

For the sample test configuration, the default callctrl.cfg included with SDK 6.2.1 was used.

The Installation and Configuration Guides for the SR140 are available from the following site:

http://www.dialogic.com/manuals/brooktrout/default.htm

6 Dialogic® DMG 2120 Gateway Configuration

6.1 Prerequisites

Referred-By support was added in SU 6.0.SU3.1.003_B001_74757.1 This version added the support to direct the TCP call to UDP if the transport was not defined in the referred message.

6.2 Summary of Limitations

None.

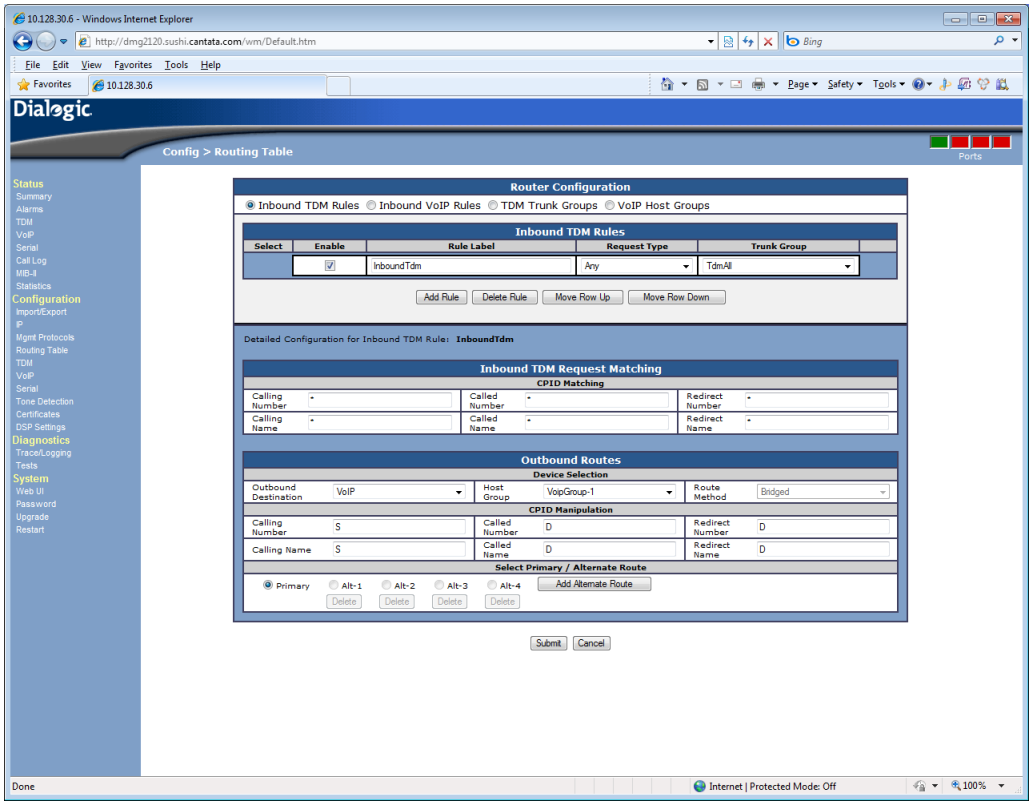
6.3 Gateway Setup Notes

Since the DMG 2120 Gateway supports sending CNG tones using RFC2833, there are no special configuration changes required for the Exchange 2010 server of the DMG 2120 gateway.

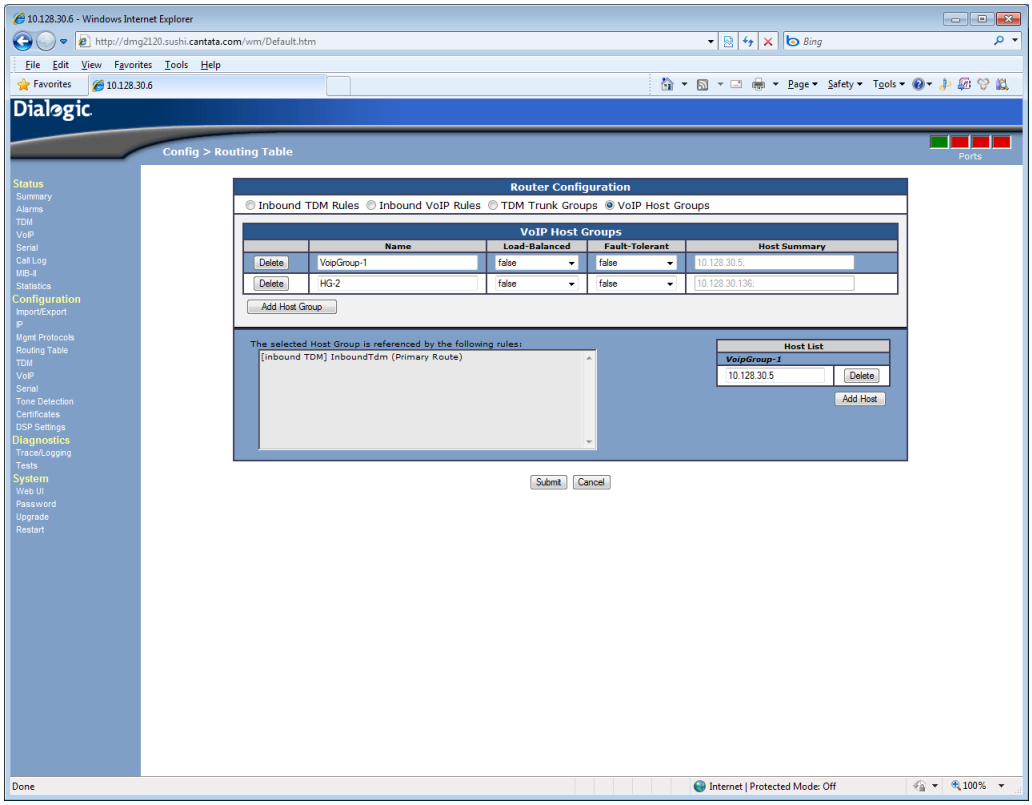
The DMG 2000 Series Configuration Guide was used to configure the dial-peer and routing tables for the sample test configuration. The Installation and Configuration Guides for the DMG Gateways are available from the site:

http://www.dialogic.com/support/helpweb/mg/integration.aspx

For the sample test configuration, in the CPID Manipulation table for the Inbound TDM Rules, the Redirect Number and Name were modified from R to D to copy the dialed information into this location. This change is only required when testing without a PBX.


10.128.30.6 - Windows Internet Explorer
http://dmg2120.sushi.cantata.com/wm/Default.htm
Dialogic
Config > Routing Table
Ports
Status
Summary
Alarms
TDM
VoIP
Serial
Call Log
MIB-II
Statistics
Configuration
Import/Export
IP
Mgmt Protocols
Routing Table
TDM
VoIP
Serial
Tone Detection
Certificates
DSP Settings
Diagnostics
Trace/Logging
Tests
System
Web UI
Password
Upgrade
Restart
Router Configuration
Inbound TDM Rules
Inbound VoIP Rules
TDM Trunk Groups
VoIP Host Groups
Inbound TDM Rules
Select
Enable
Rule Label
Request Type
Trunk Group
InboundTdm
Any
TdmAll
Add Rule
Delete Rule
Move Row Up
Move Row Down
Detailed Configuration for Inbound TDM Rule: InboundTdm
Inbound TDM Request Matching
CPID Matching
Calling Number
Called Number
Redirect Number
Calling Name
Called Name
Redirect Name
Outbound Routes
Device Selection
Outbound Destination
VoIP
Host Group
VoipGroup-1
Route Method
Bridged
CPID Manipulation
Calling Number
Called Number
Redirect Number
Calling Name
Called Name
Redirect Name
Select Primary / Alternate Route
Primary
Alt-1
Alt-2
Alt-3
Alt-4
Add Alternate Route
Delete
Submit
Cancel
Done
Internet | Protected Mode: Off
100%

The following screenshot points the VoipGroup-1 to the Exchange box.



Appendix A - Bfv Application Changes to Interoperate with Exchange 2010

This section is intended as a general guide for identifying the changes required in the Dialogic® Brooktrout® Bfv based Application to interoperate with Exchange 2010.

Starting with SDK 6.2.1 and above, the SIP Referred-By header can be extracted from the SIP call to forward the fax image to Exchange 2010. An application can retrieve the value of the SIP Referred-By header after calling one of the following functions `BfvLineWaitForCall()` or `BfvCallWaitForSetup()`. The value will be available as the referred_id element of the `struct args_telephone.callres` or `struct args_cc.cres` structures. The referred_id is a null-terminated ASCII string. The Bfv application must unescape this parameter value according to standard SIP character unescaping rules (RFC 3261) before attempting to send mail.

Two pieces of information will be provided in the Referred-By header (RFC 3892) as character strings.

Parameter name	Required?	Meaning	Example
msExchUMFaxRecipient	Required	The identity of the intended recipient of the fax, as their primary SMTP address.	support@dialogic.com
msExchUMContext	Required	A string, which will contain encoded callerID, recipient identification, and other fields. The maximum length is 1024 characters.	383d7f930aa7b28912b190bc92830ff

The following is an example of what the Referred-By header would contain. More details can be obtained from the Microsoft® Exchange Server 2010 UM Fax Partner Program.

```
Referred-By: <sip:exum1.exdc.dialogic.com
      ;msExchUMFaxRecipient=smtp:jdoe%40dialogic.com
      ;msExchUMContext=7383d7f930aa7b28912b190bc92830ff>
```

The following code fragment illustrates how the Referred-By header information would be retrieved from the Bfv API.

```
struct args_line_admin args_admin;
struct args_telephone args_tel;
BTLINE *lp = NULL;
BTERR bterr;

BT_ZERO(args_admin);
args_admin.unit = 0;
lp = BfvLineAttach(&args_admin);
if ( lp == NULL )
{
    BfvErrorMessage(lp,&args_admin.res,&bterr);
    printf ("BfvLineAttach: %s\n",bterr.long_msg);
    exit(1);
}

BT_ZERO(args_admin);
args_admin.config_file_name = "btcall.cfg";
if (BfvLineReset(lp, &args_admin) < 0)
```

```
{
    BfvErrorMessage(lp,&args_admin.res,&bterr);
    fprintf (stderr, "BfvLineReset: %s: status %lX.\n",
             bterr.long_msg,args_admin.reset_status);
    exit(1);
}

BT_ZERO(args_tel);
BfvLineWaitForCall (lp, &args_tel);
if (args_tel.res.status != BT_STATUS_OK ||
    args_tel.res.line_status != WAIT_FOR_CALL_OK)
{
    BfvErrorMessage(lp,&args_tel.res,&bterr);
    printf ("BfvLineWaitForCall: %s\n",bterr.long_msg);
    goto err_1;
}

//Display Referred-By header with escaped characters
printf (args_tel.call_res.referred_id);
```

Microsoft Fax Partner Solution Certification

In order to become a fax partner certified for interoperability with Microsoft® Exchange 2010 UM, the Microsoft fax partner must implement the requirements contained in the Microsoft® Fax Partner Interoperability Specification and the fax solution must be certified by an independent certification vendor (for example, TekVizion Labs). For more information about certifying a fax product to work with Microsoft® Exchange 2010 Unified Messaging, submit a request to the following: mailto:fax-part@microsoft.com.

Multiple applications based on Dialogic® Brooktrout® SR140 Fax Products, SDK 6.2.1 or above, have been certified or passed the certification test plan using multiple gateways.

When obtaining Fax Partner Certification, or when deploying, the Gateway should be certified for Exchange 2010 interoperability (see Telephony Advisor for Exchange Server 2007).

Appendix B - AudioCodes Mediant Gateway Configuration

Vendor	***AudioCodes***
Model	***Mediant 1000 Gateway***
Software Version	***5.60A.027.002***
Protocol to Exchange 2010 Server	***SIP***
callctrl.cfg file	***All defaults***

B.1 Prerequisites

None.

B.2 Summary of Limitations

The AudioCodes Mediant 1000 Gateway does not support CNG via RFC2833. As a result, Exchange 2010 must be configured to detect inband fax tones.

B.3 Exchange 2010 Specific Configuration:

Since the CNG tones are not supported using RFC2833 by the gateway, the Exchange 2010 server must be configured to perform inband fax tone detection on the RTP media stream. To configure the Exchange 2010 server to enable this support, the user must modify the ***MSExchangeUM*** config file that is located in the ***V14\Bin directory*** of their Exchange 2010 installation.

The key for ***EnableInbandFaxDetection*** shall be modified to be **TRUE**.

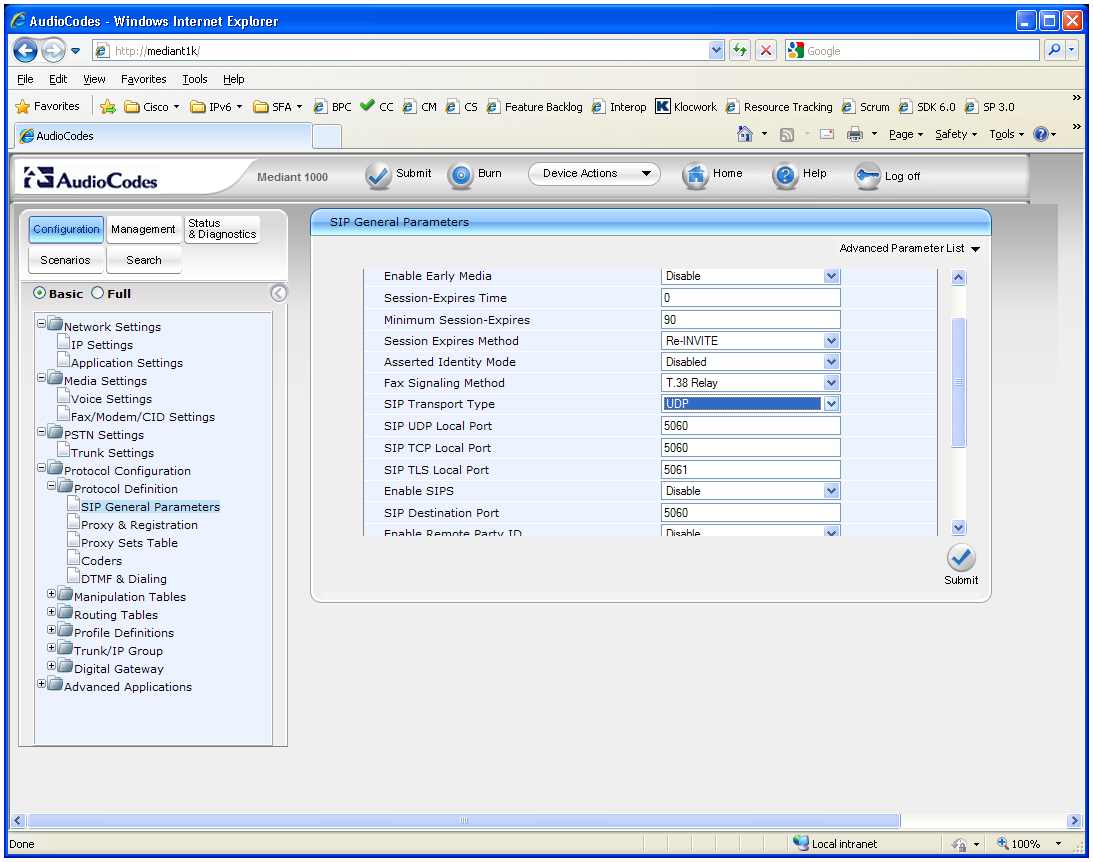
```
<!--  Specifies whether inband fax detection is enabled. If false, UM relies on the
IP Gateways to perform detection.  -->
    <add key="EnableInbandFaxDetection" value="TRUE"/>
```

After this key has been modified, the Exchange 2010 server must be restarted for the new settings to go into effect.

B. 4 Gateway Setup Notes

The *Configuration Guide Enabling Fax for Microsoft Exchange Server 2007* provided by AudioCodes was used to configure the Mediant 1000 for the sample test configuration.

The Mediant 1000 gateway must be configured with the SR140 fax server to use UDP instead of TCP. The option for the SIP Transport Type is located under the SIP General Parameters as shown below.


AudioCodes - Windows Internet Explorer
http://mediant1k/
File Edit View Favorites Tools Help
AudioCodes
Mediant 1000
Submit
Burn
Device Actions
Home
Help
Log off
Configuration
Management
Status & Diagnostics
Scenarios
Search
Basic
Full
Network Settings
IP Settings
Application Settings
Media Settings
Voice Settings
Fax/Modem/CID Settings
PSTN Settings
Trunk Settings
Protocol Configuration
Protocol Definition
SIP General Parameters
Proxy & Registration
Proxy Sets Table
Coders
DTMF & Dialing
Manipulation Tables
Routing Tables
Profile Definitions
Trunk/IP Group
Digital Gateway
Advanced Applications
SIP General Parameters
Advanced Parameter List
Enable Early Media Disable
Session-Expires Time 0
Minimum Session-Expires 90
Session Expires Method Re-INVITE
Asserted Identity Mode Disabled
Fax Signaling Method T.38 Relay
SIP Transport Type UDP
SIP UDP Local Port 5060
SIP TCP Local Port 5060
SIP TLS Local Port 5061
Enable SIPS Disable
SIP Destination Port 5060
Submit
Done
Local intranet
100%

In the IP Profile Settings, the setting of Copy Destination Number to the Redirect number was updated from disable to Before Manipulation.