Dialogic.

Dialogic[®] Brooktrout[®] SR140 Fax Software with Cisco Unified Communications Manager 8.0

Installation and Configuration Integration Note

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www.dialogic.com

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1 Scope

This document is intended as a general guide for configuring a basic installation of the *Cisco Unified Communications Manager Version 8.0 (CUCM 8.0)* for use with Dialogic[®] Brooktrout[®] SR140 Fax over IP (FoIP) software platform. The interoperability includes *SIP, H.323 and MGCP* call control and T.38/T.30 media.

There are four (4) call control configurations described within this Configuration Note, specifically:

Configuration	1	2	3	4
Protocol Between Fax Server and CUCM	H.323	SIP	H.323	SIP
Protocol Between CUCM and Gateway	H.323	SIP	MGCP	MGCP

The specific version of CUCM tested was 8.0.2.40000-1.

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 the **CUCM 8.0.**

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 provides 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 ease of reference, the Dialogic[®] Brooktrout[®] SR140 Fax Software and Dialogic[®] Brooktrout[®] TR1034 Fax Boards will sometimes be denoted herein, respectively, as SR140 and TR1034. The Cisco Unified Communications Manager will be denoted herein as CUCM 8.0 or Cisco CUCM 8.0, or some other form thereof. All references to the SDK herein refer to the Dialogic[®] Brooktrout[®] Fax Products SDK.

2 Prerequisites

No special requirements to note.

3 Summary of Limitations

No special limitations to note.

4 H.323 / H.323 Configuration Details

4.1 Cisco Unified Communication Manager 8.0 – H.323 / H.323 Configuration

Vendor	Cisco
Model	Cisco Unified Communication Manager
Software Version	8.0.2.40000-1
Protocol to SR140	Н.323
Protocol to Gateway	Н.323

4.2 Cisco 2800 Gateway

Vendor	Cisco
Model	Cisco 2800 Integrated Service Router
Software Version	Cisco IOS Software, 2800 Software (C2800NM- ADVENTERPRISEK9_IVS-M), Version 12.4(25c), RELEASE SOFTWARE (fc2)
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Protocol to PSTN Device	T1 Robbed Bit Signaling with E&M Wink Start signal protocol
IP Device	Dialogic [®] Brooktrout [®] SR140 Fax Software and Cisco CUCM 8.0
Protocol to CUCM	Н.323

4.3 Dialogic® Brooktrout® SR140 Fax Software

Vendor	Dialogic
Model	Dialogic [®] Brooktrout [®] SR140 Fax Software
Software Version	SDK 6.3.0
Protocol to CUCM	Н.323
callctrl.cfg file	SDK 6.3.0 – All defaults

4.4 Dialogic® Brooktrout® TR1034 Fax Board

Vendor	Dialogic
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Software Version	SDK 6.3.0
Protocol to GW	T1 Robbed Bit Signaling with E&M Wink Start signal protocol
callctrl.cfg file	All defaults

4.5 Network System Configuration – H.323 / H.323 Configuration

The diagram below details the sample configuration used in connection with the H.323 / H.323 Configuration.



Diagram Notes:

- SR140 Fax Server = Fax Server including Dialogic[®] Brooktrout[®] SR140 Fax Software and third party fax application
- TR1034 Fax Server = Fax Server including Dialogic[®] Brooktrout[®] TR1034 Fax Board and third party fax application

4.5.1 Network Addresses

Device #	Device Make, Model, and Description	Device IP Address
1	Dialogic [®] Brooktrout [®] SR140	10.50.50.101
2	Cisco Unified Communication Manager 8.0	10.50.50.20
3	Cisco 2800 Integrated Service Router	10.50.50.21

4.5.2 Dialing Plan Overview

To call the SR140 from a POTS phone, dial 101101xxx, where x is a number between 0 and 9. POTS(dial 101101xxx)—T1 RBS—>

Gateway(dial 101101xxx@10.50.50.20)—H.323—>

CUCM8.0(dial 101101xxx@10.50.50.101)—H.323—>SR140

To call the POTS lines of the Gateway, dial 100021xxx@10.50.50.20, where x is a number between 0 and 9, from the SR140.

SR140(dial 101021xxx@10.50.50.20)—H.323—> CUCM8.0(dial 101021xxx@10.50.50.21)—H.323—> Gateway(dial 101021xxx)—T1 RBS—>POTS

4.6 Dialogic® Brooktrout® SR140 Fax Software Setup Notes

For the sample test configuration, the SR140 was configured using the default values, consult the Dialogic[®] Brooktrout[®] Fax Products Installation and Configuration Guide for details.

The Installation and Configuration Guides are available from the site:

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

Note: DHCP cannot be used.

4.7 Dialogic® Brooktrout® TR1034 Fax PSTN Setup Notes

For the sample test configuration, the TR1034 was configured using the default values, consult the Dialogic[®] Brooktrout[®] Fax Products Installation and Configuration Guide for details.

4.8 Cisco 2800 Gateway Setup Notes

For the sample test configuration, the Cisco 2800 Gateway was configured the Cisco IOS Command-Line Interface. The specific items configured include:

- Enable T.38 support
- Configure line card interface
- Configure IP Protocol
- Configure Dial-Peers POTS
- Configure Dial-Peers VoIP

4.8.1 Enable T.38 support

The following lines will allow T.38 fax calls. voice service voip fax protocol t38 ls-redundancy 2 hs-redundancy 0 fallback none

4.8.2 Configure line card interface

The following lines will allow T1 Robbed Bit Signalling with E&M Wink Start signal protocol. controller T1 0/0/0 framing esf clock source internal

linecode b8zs cablelength short 133 ds0-group 0 timeslots 1-24 type e&m-wink-start dtmf dnis description E&M Wink Start T1-RBS

Note: the ds0-group line must contain dtmf dnis when doing Wink Start.

4.8.3 Configure IP Protocol

The following will allow H.323 calls.

voice service voip fax protocol t38 ls-redundancy 2 hs-redundancy 0 fallback none h323

session transport udp

Note: session transport must contain udp.

4.8.4 Configure Dial-Peers - POTS

The following will allow the phone numbers 101021000 to 101021999 to be dialed out though the POTS lines.

dial-peer voice 101021000 pots destination-pattern 101021[0-9][0-9][0-9] no digit-strip direct-inward-dial port 0/0/0:0

4.8.5 Configure Dial Peers - VoIP

The following will allow the phone numbers 101101000 to 101101999 to be dialed out through H.323 to CUCM.

dial-peer voice 101101000 voip description H323 to CUCM destination-pattern 101101... voice-class h323 1 session target ipv4:10.50.50.20 session transport udp codec g711ulaw

Note: The session target ipv4 contains the IP address for CUCM.

4.9 CUCM 8.0 Setup Notes – H.323 / H.323 Configuration

The CUCM 8.0 configuration values that were used in the sample configuration involve configuring the following items:

- Configure Service Activation
- Configure License
- Configure SR140 Trunk
- Configure Gateway Trunk
- Configure Call Routing

4.9.1 Configure Service Activation

Using a web browser, log into CUCM 8.0. The following Cisco Unified CM Administration screen appears.



Select from the Navigation menu the option Cisco Unified Serviceability and press Go. The following Cisco Unified Serviceability screen appears.



Enter the username and password and press Login. The following screen appears.

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From the menu select Tools | Service Activation.

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Select the server from the Sever pulldown menu. Under the CM Services, select Cisco CallManager, at the minimum and then press Save.

4.9.2 Configure License

Using a web browser, log into the Cisco Unified CM Administration screen.



From the menu select System | Licensing | License File Upload.



Press Upload License File.

 ${\rm Dialogic}^{^{\otimes}} \, {\rm Brooktrout}^{^{\otimes}} \, {\rm SR140} \, {\rm Fax} \, {\rm Software} \, {\rm with} \, {\rm Cisco} \, {\rm Unified} \, {\rm Communications} \, {\rm Manager} \, 8.0 \, {\rm Installation} \, {\rm and} \, {\rm Configuration} \, {\rm Integration} \, {\rm Note}$

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Press Browse and select the License File provide by Cisco. Then press Upload.

4.9.3 Configure SR140 Trunk

Using a web browser, log into the Cisco Unified CM Administration screen.



From the menu select Device | Trunk.

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	Gatekeeper
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System version: 8.0.2.40000-1	Trunk
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System is operating on Demo licenses. Please upload rel Please visit the License Report Page for more details.	Device Settings
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Copyright © 1999 - 2009 Cisco Systems, Inc. All rights reserved.	
imply third-party authority to import, export, distribute or use encry	I States and local country laws governing import, export, transfer and use. Delivery of Cisco cryptographic products does not ption. Importers, exporters, distributors and users are responsible for compliance with U.S. and local country laws. By using this you are unable to comply with U.S. and local laws, return this product immediately.
A summary of U.S. laws governing Cisco cryptographic products ma	y be found at our Export Compliance Product Report web site.
For information about Cisco Unified Communications Manager please	e visit our <u>Unified Communications System Documentation</u> web site.
For Cisco Technical Support please visit our Technical Support web	site.
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Press Add New to add a new H.323 Trunk.

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Select Inter-Cluster Trunk (Non-Gatekeeper Controlled) for the Trunk Type.

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Select Inter-Cluster Trunk for the Device Protocol and press Next.

Set the following:

- Device Name: SR140-H323
- Device Description: SR140-H323
- Device Pool: Default
- Call Classification: OffNet
- Server 1 IP Address/Host Name: 10.50.50.101

Note: Server 1 IP Address/Host Name is the IP address of the SR140.

Trunk Configuration - Windows Internet Explorer			
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Device Pool*	Default		
Common Device Configuration	< None >		
Call Classification *	OffNet		
ledia Resource Group List	< None >	•	
ocation*	Hub_None		
AR Group	< None >		
unneled Protocol*	None	×	
SIG Variant*	No Changes	×.	
SN.1 ROSE OID Encoding*	No Changes	×	
acket Capture Mode*	None		
acket Capture Duration	0		
Media Termination Point Required			
Retry Video Call as Audio			
 Retry Video Call as Audio Path Replacement Support 			

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Press Save.

Message	from webpage 🔀
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	OK

Press OK.

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				-
Status Add successful				
Add successful				
- Device Information				
Product:	Inter-Cluster Trunk (Non-Gatekeeper Contro	lled)		
Device Protocol: Device Name*	Inter-Cluster Trunk			
	SR140-H323			
Description	SR140-H323			
Device Pool*	Default	•		
Common Device Configuration	< None >	*		
Call Classification*	OffNet	•		
Media Resource Group List	< None >			
Location*	Hub_None	•		
AAR Group	< None >	•		
Tunneled Protocol*	None	•		
QSIG Variant*	No Changes	v		
ASN.1 ROSE OID Encoding*	No Changes	v		
Packet Capture Mode*	None			
Packet Capture Duration	0			
Media Termination Point Required				
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Press Reset.

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Device Reset	
Reset 🖗 Restart	
Status: Ready	
Reset Information	
Selected Device: SR140-H323 (SR140-H323; Inter-Cluster Trunk (Non-Gatekeeper Controlle If a device is not registered with Cisco Unified Communications Manager, you cannot reset or restart it. device is registered, to restart a device without shutting it down, click the Restart button. To shut down device and bring it back up, click the Reset button. To return to the previous window without resetting/restarting the device, click Close .	Ifa
Note: Resetting a gateway/trunk/media devices drops any calls in progress that are using that gateway/trunk/media devices. Restarting a gateway/media devices tries to preserve the calls in progre are using that gateway/media devices, if possible. Other devices wait until calls are complete before restarting or resetting. Resetting/restarting a H323 device does not physically reset/restart the hardware only reinitializes the configuration loaded by Cisco Unified Communications Manager.	
Reset Restart Close	
Done	% • //.

Press Restart then press Close.

4.9.4 Configure H.323 Gateway Trunk

The following section describes how to add a gateway to the call manager as an H.323 trunk. If you have already added an H.323 trunk or H.323 gateway to your call manager, you may skip this section.

Using a web browser, log into the Cisco Unified CM Administration screen.



From the menu select Device | Trunk.

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	CTI Route Point		
	Gatekeeper		4
Cisco Unified CM Administration	Gateway		4
Cisco Unified CM Administration	Phone		
System version: 8.0.2.40000-1	Trunk		
Licensing Warnings:	Remote Destination		
System is operating on Demo licenses. Please upload rel Please visit the License Report Page for more details.	Device Settings		
Last Successful Logon: Aug 26, 2010 4:45:57 PM			
Copyright © 1999 - 2009 Cisco Systems, Inc. All rights reserved.			
This product contains cryptographic features and is subject to United imply third-party authority to import, export, distribute or use encryp product you agree to comply with applicable laws and regulations. If	tion. Importers, exporters, distributors	ig import, export, transfer and use. Delivery of Cisco cryptographic products does no and users are responsible for compliance with U.S. and local country laws. By using d local laws, return this product immediately.	t this
A summary of U.S. laws governing Cisco cryptographic products may	be found at our Export Compliance Pr	roduct Report web site.	
For information about Cisco Unified Communications Manager please	visit our Unified Communications Syste	em Documentation web site.	
For Cisco Technical Support please visit our Technical Support web s	ite.		
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The following screen will appear.

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System - Call Routing - Media Resources - Advanced Features - Device - Application - User Management	Bulk Administration Help
Find and List Trunks	
Add New	
Trunks	
	r +
Select item or enter search text -	
No active query. Please enter your search criteria u	using the options above.
Add New	
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Press Add New to add a new H.323 Trunk.

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Trunk Configuration	Related Links: Back To Find/List 💌	Go
Next		
Status		
(i) Status: Ready		
Trunk Information		
Trunk Type* Not Selected		
Device Protocol* Not Selected		
- Next		
Next .		
 *- indicates required item. 		
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Select Inter-Cluster Trunk (Non-Gatekeeper Controlled) for the Trunk Type.

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Next .	
Status: Ready	
Trunk Information	
Device Protocol* Not Selected	
H.225 Trunk (Gatekeeper Controlled) Inter-Cluster Trunk (Gatekeeper Controlled)	
Next SIP Trunk (Non-Gatekeeper Controlled)	
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Select Inter-Cluster Trunk for the Device Protocol and press Next.

Set the following:

- Device Name: GatewayTrunk-H323
- Device Description: GatewayTrunk-H323
- Device Pool: Default
- Call Classification: OffNet
- Server 1 IP Address/Host Name: 10.50.50.21

Note: Server 1 IP Address/Host Name is the IP address of the Gateway.

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(i) Status: Ready				
Device Information				_
Product:	Inter-Cluster Trunk (Non-Gatekeeper Contro	olled)		
Device Protocol:	Inter-Cluster Trunk			-
Device Name*	GatewayTrunk-H323			
Description	GatewayTrunk-H323			
Device Pool*	Default	•		
Common Device Configuration	< None >	•		
Call Classification*	OffNet	•		
Media Resource Group List	< None >	•		
Location*	Hub_None	•		
AAR Group	< None >	•		
Tunneled Protocol*	None	*		
QSIG Variant*	No Changes	w		
ASN.1 ROSE OID Encoding*	No Changes	×.		
Packet Capture Mode*	None			
Packet Capture Duration	0			
Media Termination Point Required				
Retry Video Call as Audio				
Path Replacement Support				
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Save			
Redirecting Number IE Delivery - Outbound			1
Enable Outbound FastStart			
Codec For Outbound FastStart G711 u-law 64K			
Server 1 IP Address/Host Name* I0:50:50:21 Server 2 IP Address/Host Name UUEC configuration UUEC configuration Security Access Level [:			
Geolocation Configuration			
Geolocation < None >			
Geolocation Filter < None >			
Send Geolocation Information			
Save			
(i) *- indicates required item.			
🚺 **- Device reset is not required for changes to Packet Capture Mode and Packet Capture Duration.			_
Done		🍾 😒 Local intranet	🐴 • 🔍 100% • //

Press Save.

Message	from webpage
1	Click on the Apply Config button to have the changes take effect.
	OK

Press OK.

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Status		
i Add successful		
Device Information		
Product:	Inter-Cluster Trunk (Non-Gatekee	eper Controlled)
Device Protocol:	Inter-Cluster Trunk	
Device Name*	GatewayTrunk-H323	
Description	GatewayTrunk-H323	
Device Pool*	Default	×
	Default < None >	
Common Device Configuration		
Device Pool* Common Device Configuration Call Classification * Media Resource Group List	< None >	×
Common Device Configuration Call Classification *	< None > OffNet	x x
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Common Device Configuration Call Classification * Media Resource Group List coation * AAR Group Frunneled Protocol * SSIS Variant * ASK1. ROSE OID Encoding * Packet Capture Mode * Packet Capture Mode * Media Termination Point Required	< None > OffNet < None > Hub_None < None > None No Changes No Changes None	
Common Device Configuration Call Classification * Media Resource Group List Location * AAR Group QSIG Variant * ASN.1 ROSE OID Encoding * Asakte Capture Mode * Packet Capture Duration	< None > OffNet < None > Hub_None < None > None No Changes No Changes None	

Press Reset.

🖉 Device Reset - Windows Internet Explorer	<u>- 🗆 ×</u>
Device Reset	
Reset 🚱 Restart	
Status	
i Status: Ready	
- Reset Information	
Selected Device: GatewayTrunk-H323 (GatewayTrunk-H323; Inter-Cluster Trunk (Non- Gatekeeper Controlled)) If a device is not registered with Cisco Unified Communications Manager, you cannot reset or restart it. device is registered, to restart a device without shutting it down, click the Restart button. To shut down device and bring it back up, click the Reset button. To return to the previous window without resetting/restarting the device, click Close .	
Note: Resetting a gateway/trunk/media devices drops any calls in progress that are using that gateway/trunk/media devices. Restarting a gateway/media devices tries to preserve the calls in progre are using that gateway/media devices, if possible. Other devices wait until calls are complete before restarting or resetting. Resetting/restarting a H323 device does not physically reset/restart the hardwar only reinitializes the configuration loaded by Cisco Unified Communications Manager.	
Reset Restart Close	
Done	% • //,

Press Restart then press Close.

4.9.5 Configure Call Routing

Using a web browser, log into the Cisco Unified CM Administration screen.



From the menu select Call Routing | Route / Hunt | Route Pattern.



The following screen will appear.

C Find and List Route Patterns - Windows Internet Explorer
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Find and List Route Patterns
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Route Patterns
Find Route Pattern 🔹 begins with \star 🛛 Find Clear Filter 🕀 📼
No active query. Please enter your search criteria using the options above.
Add New
Done

Press Add New.

Set the following:

- Route Pattern: 101021XXX
- Description: 101021XXX
- Gateway/Route List: GatewayTrunk-H323
- Call Classification: OffNet

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Route Pattern Configuration						Related Links	Back To Find/List 💌 Go
Save							
							-
Status: Ready							
U Status: Ready							
Pattern Definition							
Route Pattern*	101021XXX		1				
Route Partition	< None >		I				
Description	101021XXX]				
Numbering Plan	Not Selected	Y	I				
Route Filter	< None >	v	1				
	Default]				
Resource Priority Namespace Network Domain		•					
Route Class*	Default						
	GatewayTrunk-H323		(Edit)				
Route Option	Route this pattern						
	C Block this pattern No Erro	or 💌					
Call Classification* OffNet		-					
Allow Device Override 🔽 Provide Outside D	ial Tone 🗖 Allow Overlap Ser	nding 🗖 Urgent Priority					
Require Forced Authorization Code							
Authorization Level*							
Require Client Matter Code							
Calling Party Transformations							
Done						Second Intranet	

Press Save. The following appears because you did not require a Forced Authorization Code.



Press OK.



Press OK.

Repeat the same steps and set the following to route to the SR140:

- Route Pattern: 101101XXX
- Description: 101101XXX
- Gateway/Route List: SR140-H323
- Call Classification: OffNet

5 H.323 / MGCP Configuration Details

5.1 Cisco Unified Communication Manager 8.0 – H.323 / MGCP Configuration

Vendor	Cisco
Model	Cisco Unified Communication Manager
Software Version	8.0.2.40000-1
Protocol to SR140	Н.323
Protocol to Gateway	MGCP

5.2 Cisco 2800 Gateway

Vendor	Cisco
Model	Cisco 2800 Integrated Service Router
Software Version	Cisco IOS Software, 2800 Software (C2800NM- ADVENTERPRISEK9_IVS-M), Version 12.4(25c), RELEASE SOFTWARE (fc2)
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Protocol to PSTN Device	T1 Robbed Bit Signaling with E&M Wink Start signal protocol
IP Device	Dialogic [®] Brooktrout [®] SR140 Fax Software and Cisco CUCM 8.0
Protocol to CUCM	MGCP

5.3 Dialogic® Brooktrout® SR140 Fax Software

Vendor	Dialogic
Model	Dialogic [®] Brooktrout [®] SR140 Fax Software
Software Version	SDK 6.3.0
Protocol to CUCM	H.323
callctrl.cfg file	SDK 6.3.0 – All defaults

5.4 Dialogic® Brooktrout® TR1034 Fax Board

Vendor	Dialogic
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Software Version	SDK 6.3.0
Protocol to GW	T1 Robbed Bit Signaling with E&M Wink Start signal protocol
callctrl.cfg file	All defaults

5.5 Network System Configuration – H.323 / MGCP Configuration





Diagram Notes:

- SR140 Fax Server = Fax Server including Dialogic[®] Brooktrout[®] SR140 Fax Software and third party fax application
- TR1034 Fax Server = Fax Server including Dialogic[®] Brooktrout[®] TR1034 Fax Board and third party fax application

5.5.1 Network Addresses

Device #	Device Make, Model, and Description	Device IP Address
1	Dialogic [®] Brooktrout [®] SR140	10.50.50.101
2	Cisco Unified Communication Manager 8.0	10.50.50.20
3	Cisco 2800 Integrated Service Router	10.50.50.21

5.5.2 Dialing Plan Overview

To call the SR140 from a POTS phone, dial 101101xxx, where x is a number between 0 and 9. POTS(dial 101101xxx)—T1 RBS—> Gateway(dial 101101xxx@10.50.50.20)—MGCP—> CUCM8.0(dial 101101xxx@10.50.50.101)—H.323—>SR140

To call the POTS lines of the Gateway, dial 301021xxx@10.50.50.20, where x is a number between 0 and 9, from the SR140.

SR140(dial 301021xxx@10.50.50.20)—H.323—> CUCM8.0(dial 301021xxx@10.50.50.21)—MGCP—> Gateway(dial 301021xxx)—T1 RBS—>POTS

5.6 Dialogic® Brooktrout® SR140 Fax Software Setup Notes

For the sample test configuration, the SR140 was configured using the default values, consult the Dialogic[®] Brooktrout[®] Fax Products Installation and Configuration Guide for details.

The Installation and Configuration Guides are available from the site:

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

Note: DHCP cannot be used.

5.7 Dialogic® Brooktrout® TR1034 Fax PSTN Setup Notes

For the sample test configuration, the TR1034 was configured using the default values, consult the Dialogic[®] Brooktrout[®] Fax Products Installation and Configuration Guide for details.

5.8 Cisco 2800 Gateway Setup Notes

For the sample test configuration, the Cisco 2800 Gateway was configured the Cisco IOS Command-Line Interface. The specific items configured include:

- Configure line card interface
- Configure MGCP
- Configure Dial-Peers

5.8.1 Configure line card interface

The following lines will allow T1 Robbed Bit Signaling with E&M Wink Start signal protocol.

controller T1 0/0/0

framing esf clock source internal linecode b8zs cablelength short 133 ds0-group 0 timeslots 1-24 type e&m-wink-start description E&M Wink Start T1-RBS

Note: the ds0-group line must NOT contain dtmf dnis when doing Wink Start and MGCP.

5.8.2 Configure MGCP

The following will allow MGCP calls. ccm-manager mgcp ccm-manager music-on-hold ccm-manager config server 10.50.50.20 ! mgcp mgcp call-agent 10.50.50.20 2427 service-type mgcp version 0.1 mgcp default-package fxr-package ! mgcp profile default

> Note: 10.50.50.20 is the IP address of the CUCM. Note: Verify that **mgcp fax t38 inhibit** is not present since it disables T.38

5.8.3 Configure Dial-Peers - POTS

With MGCP the dial-peers are configured on CUCM. The POTS port controlled by MGCP must be configured as follows:

dial-peer voice 301021000 pots service mgcpapp port 0/0/0:0

After configuring CUCM verify that the Gateway is registered with the command **sh ccm-manager**. firestar#sh ccm-manager

MGCP Domain Name: firestar.dialogic.com Priority Status Host ______ Primary 10.50.50.20 Registered First Backup None Second Backup None Current active Call Manager: 10.50.50.20 Backhaul/Redundant link port: 2428 30 seconds Failover Interval: Keepalive Interval: 15 seconds Last keepalive sent: 12:46:14 PCTime Aug 31 2010 (elapsed time: 00:00:05) Last MGCP traffic time:12:46:14 PCTime Aug 31 2010 (elapsed time: 00:00:05)Last failover time:NoneLast switchback time:NoneSwitchback mode:GracefulMGCP Fallback mode:Not SelectedLast MGCP Fallback start time:NoneLast MGCP Fallback end time:NoneMGCP Download Tones:DisabledTFTP retry count to shut Ports: 2

Configuration Error History: FAX mode: cisco

5.9 CUCM 8.0 Setup Notes – H.323 / MGCP Configuration

The CUCM 8.0 configuration values that were used in the sample configuration involve configuring the following items:

- Configure Service Activation refer to section 4.9.1
- Configure License refer to <u>section 4.9.2</u>
- Configure SR140 Trunk refer to section 4.9.3
- Configure Gateway Trunk
- Configure Call Routing

5.9.1 Configure Gateway Trunk

Using a web browser, log into the Cisco Unified CM Administration screen.



From the menu select Device | Gateway.



The following screen will appear.

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Press Add New to add a new MGCP Trunk.

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Select Cisco 2801 for the Gateway Type.



Press Next.

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Next .		
Select the type of gateway you would like to add: Gateway Type Cisco 2801 Change Gateway type		
Protocol* Not Selected		
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Select MGCP for the Protocol.

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Add a new Gateway	Related Links: Back To Find/List 💌 Go
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Select the type of gateway you would like to add: Gateway Type Cisco 2801 Change Gateway type	
Protocol* Not Selected	
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- Next SCCP	
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Press Next.
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Gateway Details				
Product Protocol	Cisco 2801 MGCP			
A Device is not trusted				
Domain Name*				
Description				
Cisco Unified Communications Ma	lanager Group* Not Selected			
Configured Slots, VICs and E Module in Slot 0 < None >	Endpoints			
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2				
Global ISDN Switch Type	4ESS •			
Switchback Timing*	Graceful			
Switchback uptime-delay (min)	10			
Switchback schedule (hh:mm)	12:00			
Modem Passthrough*	Enable			
Cisco Fax Relay*	Disable			
T38 Fax Relay*	Disable			-
Done			💦 😒 Local intranet	🐔 • 🔍 100% • //

Set the following:

- Domain Name: firestar.dialogic.com
- •
- Description: firestar.dialogic.com Cisco Unified Communications Manager Group: Default •

Gateway Configuration - Windo	ws Internet Exp	lorer						_10
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roduct		Cisco 2801 MGCP						
Device is not trusted		MGCP						
Domain Name*		firestar.dialogic.c	om					
Description		firestar.dialogic.c						
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Cisco Fax Relay*	Disable							
T38 Fax Relay*	Disable		•					
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Select NM-4VWIC-MBRD for the Module in Slot 0.

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A Device is not trusted		
Domain Name*	firestar.dialogic.com	
Description	firestar.dialogic.com	
Cisco Unified Communications M	Manager Group* Default	
Configured Slots, VICs and	Endpoints	-
Module in Slot 0 < None >		
< None > NM-4VWIC-MB	RD	_
Product Specific Configurat	ion Layout	
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Switchback Timing*	4ESS Graceful	
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Modem Passthrough*	Enable	
Cisco Fax Relay*	Disable	
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RTP Package Capability*	Enable	
MT Package Capability*	Disable	
RES Package Capability*	Disable	
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RTP Unreachable OnOff*	Enable	
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Press Save.

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Gateway		firestar.dialogic.com						
Protocol		MGCP						
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Description		firestar.dialogic.com						
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- 6 1-1								
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	Subunit 0 < None >							
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Select VWIC-1MFT-T1 for Subunit 0.

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Status		71
(i) Status: Ready		
Gateway Details		
Product	Cisco 2801	
Gateway	firestar.dialogic.com	
Protocol	MGCP	
A Device is not trusted		
Domain Name*	firestar.dialogic.com	
Description	firestar.dialogic.com	
Cisco Unified Communications Manager Group*		
Configured Slots, VICs and Endpoints		
Module in Slot 0 NM-4VWIC-MBRD		
Subunit 0 < None >		
Subunit 1 < None > VWIC-1MFT-T1		
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Sateway Details	Cisco 2801		
ateway	firestar.dialogic.com		
rotocol	MGCP		
🚹 Device is not trusted			
omain Name*	firestar.dialogic.com		
Description	firestar.dialogic.com		
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Subunit 1 < None > Subunit 2 < None >			
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Press the port icon with the question mark next to the Subunit 0.

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Next .	
Select Protocol for this Gateway Device Protocol* Not Selected	
- Next	
(i) *- indicates required item.	
Done	💦 📢 Locel intrenet 🛛 🖓 🔹 🔍 100% 🔹
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Select Digital Access T1 for the Device Protocol.

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Press Next.

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Gateway Configuration					Related Links: Back to MGC	P Configuration Go
Save						
Status						ī
i Status: Ready						
Product	Cisco MGCP T1 Port					
Gateway	firestar.dialogic.com					
Device Protocol	Digital Access T1					
A Device is not trusted	-					
End-Point Name *	S0/SU0/DS1-0@firestar.dialogic.com					
Description	S0/SU0/DS1-0@firestar.dialogic.com					
Device Pool*	Not Selected	•				
Common Device Configuration	< None >					
Call Classification*	Use System Default	•				
Media Resource Group List	< None >					
Packet Capture Mode*	None					
Packet Capture Duration	0					
Calling Search Space	< None >	•				
AAR Calling Search Space	< None >	-				
Location*	Hub None					
AAR Group	< None >					
MLPP Domain	< None >					
MLPP Indication*	Default					
MLPP Preemption*	Default					-
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- Set the following: Device Pool: Default
 - Call Classification: OffNet •

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Device Information Product	Cisco MGCP T1 Port				
Gateway	firestar.dialogic.com				
Device Protocol	Digital Access T1				
A Device is not trusted					
End-Point Name *	S0/SU0/DS1-0@firestar.dialogic.com				-
Description	S0/SU0/DS1-0@firestar.dialogic.com				
Device Pool*	Default				
Common Device Configuration	< None >				
Call Classification*	OffNet				
Media Resource Group List	< None >				
Packet Capture Mode*	None	•			
Packet Capture Duration	0				
Calling Search Space	< None >				
AAR Calling Search Space	< None >				
Location*	Hub_None				
AAR Group	< None >				
MLPP Domain	< None >				
MLPP Indication*	Default	•			
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 ${\rm Dialogic}^{^{\otimes}}$ Brooktrout $^{^{\otimes}}$ SR140 Fax Software with Cisco Unified Communications Manager 8.0 Installation and Configuration Integration Note



Press OK.

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Ports	Device Information Product	Cisco MGCP T1 Port						
Add a New Port	Gateway	firestar.dialogic.com						
	Device Protocol	Digital Access T1						
	Registration	Unknown						
	IP Address	Unknown						
	A Device is not trusted							
	End-Point Name *	S0/SU0/DS1-0@firestar.di	alogic.com					
	Description	S0/SU0/DS1-0@firestar.d	alogic.com					
	Device Pool*	Default		•				
	Common Device Configuration	< None >						
	Call Classification*	OffNet		•				
	Media Resource Group List	< None >						
	Packet Capture Mode*	None						
	Packet Capture Duration	0						
	Calling Search Space	< None >		•				
	AAR Calling Search Space	< None >						
	Location*	Hub_None		-				
	AAR Group	< None >						
	MLPP Domain	< None >		*				
	MLPP Indication*	Default						*
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Press Add a New Port on the Ports section.

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r−Status -	
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Peti Information Gateway: 50/SU/051-0@firestar.dialogic.com	
Port Type* Not Selected	
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Select EANDM for the Port Type.

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Press Next.

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Caller ID DN	ANI							
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Set the following:

- Beginning Port Number: All Ports
- Ending Port Number: All Ports
- Port Direction: Bothways
- Calling Party Selection: Originator
- Num Digits: 9
- Expected Digits:9

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Port Details	In						
Calling Party Selection*	Bothways Originator						
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Caller ID DN	[
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Press OK.

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Status	
Add successful	
Configured Ports	
Add a New Port Gateway S0/SU0/DS1-0@firestar.dialogic.com	
Port 1 Port Type EANDM Port Number 24	
Port 2	
Port 3 Port Details Port Direction * Bothways	
Calling Party Selection* Originator	×
Caller ID Type* ANI	×
Caller ID DN Caller ID DN Prefix DN	
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To verify CUCM is registered with the gateway, from the menu select Device | Gateway.

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Port 2	Port Humber 24					
Port 3	Port Details	Bothways				
Port 4	Calling Party Selection*					
Port 5		ANI				
	Caller ID DN					
E9W	Prefix DN					
Port 7	Num Digits* 9					
Port 8	Expected Digits*					
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The following screen appears.

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No active query. Please enter your search riteri	is using the options shows
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Change Hide to Show on the Find Gateways where.

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Gateways				
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Press Find.

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Find and List Gateway			
🕂 Add New 🏢 Select All 🔛 Clear All 🎇 Delete Selected 🏫 Reset Selected 🏒 Apply Config to Selected			
Status			
Gateways (1 - 2 of 2)		Rows per P	age 50 💌
Find Gateways where Name v begins with v Show v endpoints Find Clear Filte	· 4 -		
Select item or enter search text			
Device Name Description Device Pool Calling Search Space		Status	IP Address
S0/SU0/DS1-0@firestar.dialogic.com S0/SU0/DS1-0@firestar.dialogic.com Default	Cisco MGCP T1 Port	Registered with iceman	10.50.50.21
firestar.dialogic.com firestar.dialogic.com	Cisco 2801	See Endpoints	
Add New Select All Clear All Delete Selected Reset Selected Apply Config to Selected			
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The status of the Cisco MGCP T1 Port should show a status of Registered with CUCM server.

5.9.2 Configure Call Routing

Using a web browser, log into the Cisco Unified CM Administration screen.



From the menu select Call Routing | Route / Hunt | Route Pattern.



The following screen will appear.

Find and List Route Patterns - Windows Internet Explorer			
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Find and List Route Patterns			
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Add New			
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Done		Nocal intranet	🖓 • 🔍 100% • 🎢
Press Add New.			

Set the following:

- Route Pattern: 301021XXX
- Description: 301021XXX
- Gateway/Route List: S0/SU0/DS1-0@firestar.dialogic.com
- Call Classification: OffNet

Note: S0/SU0/DS1-0@firestar.dialogic.com is the MGCP Trunk of the Gateway

A Route Pattern Configuration - Windows Internet	et Explorer				<u>_0×</u>
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Route Pattern Configuration				Related Links: Back	To Find/List 💌 Go
Save					
Status					
(i) Status: Ready					
- Pattern Definition					
Route Pattern*	301021XXX				
Route Partition	< None >				
Description	301021XXX				
Numbering Plan	Not Selected	v			
Route Filter	< None >	w.			
MLPP Precedence*	Default				
Resource Priority Namespace Network Domain	< None >				
Route Class*	Default	-			
Gateway/Route List*	S0/SU0/DS1-0@firestar.dialogic.com	- (<u>Edit</u>)			
Route Option	 Route this pattern 				
	C Block this pattern No Error				
Call Classification* OffNet					
🗆 Allow Device Override 🗹 Provide Outside [Dial Tone 🗖 Allow Overlap Sending 🗖 Urgent	Priority			
Require Forced Authorization Code					
Authorization Level* 0					
Require Client Matter Code					
Calling Party Transformations				Second Second Second	✓ • ● 100% • ∠
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Press Save.

 ${\rm Dialogic}^{\circledast}$ Brooktrout $^{\circledast}$ SR140 Fax Software with Cisco Unified Communications Manager 8.0 Installation and Configuration Integration Note



Press OK.



Press OK.

Repeat the same steps and set the following to route to the SR140:

- Route Pattern: 101101XXX
- Description: 101101XXX
- Gateway/Route List: SR140-H323
- Call Classification: OffNet

CRoute Pattern Configuration - Windows Interr	net Explorer				
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(i) Status: Ready					
Pattern Definition	·				
	101101XXX				
Route Partition	< None >				
Description	101101XXX				
Numbering Plan	Not Selected				
Route Filter	< None >				
MLPP Precedence*	Default				
Resource Priority Namespace Network Domain	< None >				
Route Class*	Default				
Gateway/Route List*	SR140-H323 (Edit)				
Route Option	Route this pattern				
	C Block this pattern No Error				
Call Classification* OffNet					
	Dial Tone Allow Overlap Sending Urgent Priority				
Require Forced Authorization Code					
Authorization Level*					
10					
Require Client Matter Code					
Calling Party Transformations					
Done				🧐 Local intranet	🖓 • 🔍 100% • //

6 SIP / SIP Configuration Details

6.1 Cisco Unified Communication Manager 8.0 – SIP / SIP Configuration

Vendor	Cisco
Model	Cisco Unified Communication Manager
Software Version	8.0.2.40000-1
Protocol to SR140	SIP
Protocol to Gateway	SIP

6.2 Cisco 2800 Gateway

Vendor	Cisco
Model	Cisco 2800 Integrated Service Router
Software Version	Cisco IOS Software, 2800 Software (C2800NM- ADVENTERPRISEK9_IVS-M), Version 12.4(25c), RELEASE SOFTWARE (fc2)
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Protocol to PSTN Device	T1 Robbed Bit Signaling with E&M Wink Start signal protocol
IP Device	Dialogic [®] Brooktrout [®] SR140 Fax Software and Cisco CUCM 8.0
Protocol to CUCM	SIP

6.3 Dialogic® Brooktrout® SR140 Fax Software

Vendor	Dialogic
Model	Dialogic [®] Brooktrout [®] SR140 Fax Software
Software Version	SDK 6.3.0
Protocol to CUCM	SIP
callctrl.cfg file	SDK 6.3.0 – All defaults

6.4 Dialogic® Brooktrout® TR1034 Fax Board

Vendor	Dialogic
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Software Version	SDK 6.3.0
Protocol to GW	T1 Robbed Bit Signaling with E&M Wink Start signal protocol
callctrl.cfg file	All defaults

6.5 Network System Configuration – SIP / SIP Configuration



The diagram below details the sample configuration used in connection with the SIP / SIP Configuration.

Diagram Notes:

- SR140 Fax Server = Fax Server including Dialogic[®] Brooktrout[®] SR140 Fax Software and third party fax application
- TR1034 Fax Server = Fax Server including Dialogic[®] Brooktrout[®] TR1034 Fax Board and third party fax application

6.5.1 Network Addresses

Device #	Device Make, Model, and Description	Device IP Address
1	Dialogic [®] Brooktrout [®] SR140	10.50.50.101
2	Cisco Unified Communication Manager 8.0	10.50.50.20
3	Cisco 2800 Integrated Service Router	10.50.50.21

6.5.2 Dialing Plan Overview

To call the SR140 from a POTS phone, dial 201101xxx, where x is a number between 0 and 9. POTS(dial 201101xxx)—T1 RBS—> Gateway(dial 201101xxx@10.50.50.20)—SIP—> CUCM8.0.x(dial 201101xxx@10.50.50.101)—SIP—>SR140

To call the POTS lines of the Gateway from the SR140, dial 201021xxx@10.50.50.20, where x is a number between 0 and 9.

SR140(dial 201021xxx@10.50.50.20)—SIP—> CUCM8.0.x(dial 201021xxx@10.50.50.21)—SIP—> Gateway(dial 201021xxx)—T1 RBS—>POTS

6.6 Dialogic® Brooktrout® SR140 Fax Software Setup Notes

For the sample test configuration, the SR140 was configured using the default values, consult the *Dialogic*[®] *Brooktrout*[®] *Fax Products Installation and Configuration Guide* for details.

The Installation and Configuration Guides are available from the site:

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

Note: DHCP cannot be used.

6.7 Dialogic® Brooktrout® TR1034 Fax PSTN Setup Notes

For the sample test configuration, the TR1034 was configured using the default values, consult the *Dialogic*[®] *Brooktrout*[®] *Fax Products Installation and Configuration Guide* for details.

6.8 Cisco 2800 Gateway Setup Notes

For the sample test configuration, the Cisco 2800 Gateway was configured the Cisco IOS Command-Line Interface. The specific items configured include:

- Enable T.38 support
- Configure line card interface
- Configure IP Protocol
- Configure Dial-Peers POTS
- Configure Dial-Peers VoIP

6.8.1 Enable T.38 support

The following lines will allow T.38 fax calls. voice service voip

fax protocol t38 ls-redundancy 2 hs-redundancy 0 fallback none

6.8.2 Configure line card interface

The following lines will allow T1 Robbed Bit Signalling with E&M Wink Start signal protocol.

controller T1 0/0/0

framing esf clock source internal linecode b8zs cablelength short 133 ds0-group 0 timeslots 1-24 type e&m-wink-start dtmf dnis description E&M Wink Start T1-RBS

Note: the ds0-group line must contain dtmf dnis when doing Wink Start.

6.8.3 Configure IP Protocol

The following will allow SIP calls:

voice service voip fax protocol t38 ls-redundancy 2 hs-redundancy 0 fallback none sip

6.8.4 Configure Dial-Peers - POTS

The following will allow the phone numbers 201021000 to 201021999 to be dialed out though the POTS lines.

dial-peer voice 201021000 pots destination-pattern 201021[0-9][0-9][0-9] no digit-strip direct-inward-dial port 0/0/0:0

6.8.5 Configure Dial Peers - VolP

The following will allow the phone numbers 201101000 to 201101999 to be dialled out through SIP to CUCM.

dial-peer voice 201101000 voip description SIP to CUCM destination-pattern 201101... session protocol sipv2 session target ipv4:10.50.50.20 session transport udp codec g711ulaw

Note: The session target ipv4 contains the IP address for CUCM.

6.9 CUCM 8.0 Setup Notes – SIP / SIP Configuration

The CUCM 8.0 configuration values that were used in the sample configuration involve configuring the following items:

- Configure Service Activation refer to section 4.9.1
- Configure License refer to section 4.9.2
- Configure SIP Trunk Security Profile
- Configure SR140 Trunk
- Configure Gateway Trunk
- Configure Call Routing

6.9.1 Configure SIP Trunk Security Profile

Using a web browser, log into CUCM 8.0. The following Cisco Unified CM Administration screen appears.



From the menu select System | Security | SIP Trunk Security Profile.



The following screen will appear.

Find and List SIP Trunk Security Profiles - Windows Internet Explorer						_ 🗆 ×
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Find and List SIP Trunk Security Profiles						
Add New 🔛 Select All 🔛 Clear All 💥 Delete Selected						
Status i) 1 records found						
SIP Trunk Security Profile (1 - 1 of 1)				Rows	per Pa	ge 50 🔹
Find SIP Trunk Security Profile where Name v begins with v Find Clea	r Filter 🔂 🛥					
□ Name ▲	Description					Сору
Non Secure SIP Trunk Profile Non Secure SIP Trunk Profile authent	icated by null String					6
Add New Select All Clear All Delete Selected						
Done			- 12	Local intranet	- -	💐 100% 🔹 🏑

Click Non Secure SIP Trunk Profile.

SIP Trunk Security Profile C	onfiguration - Windows Internet Explorer		
	60.20:8443/ccmadmin/sipTrunkSecurityProfileEdit.do?key=0fd98c54-30ba-4bfd-83e7-eacfe1a2beae 🗾 😨 Certificate Error	🍫 🗙 Live Search	ρ.
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Status Status: Ready			ſ
-SIP Trunk Security Profi	e Information		
Name*	Non Secure SIP Trunk Profile		
Description	Non Secure SIP Trunk Profile authenticated by null Str		
Device Security Mode	Non Secure		
Incoming Transport Type*	TCP+UDP		
Outgoing Transport Type	TCP		
Enable Digest Authentica			
Nonce Validity Time (mins)*	600		
X.509 Subject Name			
Incoming Port*	5060		
Enable Application Level	Authorization		
Accept Presence Subscri			
Accept Out-of-Dialog RE			
Accept Unsolicited Notific	ation		
Accept Replaces Header			
Transmit Security Status			
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Change Outgoing Transport Type to UDP.

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Status						î
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SIP Trunk Security Prof						
Name*	Non Secure SIP Trunk Profile					
Description	Non Secure SIP Trunk Profile authenticated	by null Str				
Device Security Mode	Non Secure					
Incoming Transport Type*	TCP+UDP					
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Enable Digest Authentica	TCP					
Nonce Validity Time (mins)*	600					
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Incoming Port*	5060					
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Press Save.

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Name*	Non Secure SIP Trunk Profile				
Description	Non Secure SIP Trunk Profile authenticated by null Str				
Device Security Mode	Non Secure				
Incoming Transport Type*	TCP+UDP .				
Outgoing Transport Type	UDP 🔹				
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Nonce Validity Time (mins)*	600				
X.509 Subject Name					
Incoming Port*	5060				
Enable Application Level	Authorization				
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6.9.2 Configure SR140 Trunk

Using a web browser, log into the Cisco Unified CM Administration screen.



From the menu select Device | Trunk.



The following screen will appear.

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System - Call Routing - Media Resources - Advanced Features - Device - Application - User Management	Bulk Administration Help
Find and List Trunks	
Add New	
Trunks	
	r +
Select item or enter search text -	
No active query. Please enter your search criteria u	using the options above.
Add New	
Done	💦 📢 Local intranet 🖓 🔹 🔩 100% 🔹 🎢

Press Add New to add a new SIP Trunk.

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Trunk Configuration	Related Links: Back To Find/List 🗾 Go
Next .	
Status	
(i) Status: Ready	
Trunk Information	
Trunk Type* Not Selected	
Device Protocol* Not Selected	
- Next	
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Select SIP Trunk for the Trunk Type.

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Trunk Configuration	Related Links: Back To Find/List 🗾 Go
Next	
Status: Ready	
Trunk Information	
Trunk Type* Not Selected	
H.225 Trunk (Gatekeeper Controlled) Inter-Cluster Trunk (Gatekeeper Controlled)	
Inter-Cluster Trunk (Non-Gatekeeper Controlled) SIP Trunk	
(i) *- indicates required item.	
Done	🌇 📢 Local intranet 🖓 🔹 🔩 100% 🔹 🎢

Select SIP for the Device Protocol and press Next. Set the following:

- Device Name: SR140-SIP
- Device Description: SR140-SIP
- Device Pool: Default
- Call Classification: OffNet
- Destination Address: 10.50.50.101
- SIP Trunk Security Profile: Non Secure SIP Trunk Profile
- SIP Profile: Standard SIP Profile

Note: Destination Address is the IP address of the SR140.

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Save					
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Status					
(j) Status: Ready					
- Device Information					
Product:	SIP Trunk				
Device Protocol:	SIP				
Trunk Service Type	None(Default)				
Device Name*	SR140-SIP				
Description	SR140-SIP				
Device Pool*	Default	•			
Common Device Configuration	< None >				
Call Classification*	OffNet				
Media Resource Group List	< None >				
Location*	Hub None				
AAR Group	< None >				
Packet Capture Mode*	None				
Packet Capture Duration	none lo				
Media Termination Point Required	10				
Retry Video Call as Audio					
Transmit UTF-8 for Calling Party Name					
Unattended Port					
SRTP Allowed - When this flag is checked, Encrypted TLS needs			ilure to do so	will expose keys and oth	er information.
Route Class Signaling Enabled*	Default			Nocal intranet	√

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Save						
Destination Address	10.50.50.101					_
Destination Address IPv6	1					
Destination Address is an SRV						
Destination Port*	5060					
MTP Preferred Originating Codec*	711ulaw	w.				
Presence Group*	Standard Presence group	-				
SIP Trunk Security Profile*	Non Secure SIP Trunk Profile	•				
Rerouting Calling Search Space	< None >	•				
Out-Of-Dialog Refer Calling Search Space	< None >	•				
SUBSCRIBE Calling Search Space	< None >	•				
SIP Profile*	Standard SIP Profile	•				
DTMF Signaling Method*	No Preference					
Geolocation Configuration						
Geolocation < None >						
Geolocation Filter < None >						
Send Geolocation Information						
L						
Save						
(i) *- indicates required item.						
**- Device reset is not required for c	changes to Packet Capture Mode and Packet	t Capture Duration.				_
Done					Signal Local intranet	- - - - - - - - - - - - -
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Press Save.

Message	from webpage
<u>.</u>	Click on the Apply Config button to have the changes take effect.
	OK

Press OK.

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- Status		-
Add successful		
Device Information		
Product:	SIP Trunk	
Device Protocol:	SIP	
Trunk Service Type Device Name*	None(Default)	
Device Name"	SR140-SIP	
Description	SR140-SIP	
Device Pool*	Default	
Common Device Configuration	< None >	
Call Classification*	OffNet	
Media Resource Group List	< None >	
Location*	Hub_None	
AAR Group	< None >	
Packet Capture Mode*	None	
Packet Capture Duration		
Media Termination Point Required	10	
Retry Video Call as Audio		
Transmit UTF-8 for Calling Party Name		
Unattended Port		
	eds to be configured in the network to provide end to end security. Failure to do so will expose keys and other information	
Route Class Signaling Enabled*	Default	
Done	🐘 🔍 Local intranet 🧉 🔹 🔍 11	00% *

Press Reset.

🖉 Device Reset - Windows Internet Explorer	×
Device Reset	
Reset 🖗 Restart	
	_
Status: Ready	
-Reset Information-	
Selected Device: SR140-SIP (SR140-SIP; SIP Trunk) If a device is not registered with Cisco Unified Communications Manager, you cannot reset or restart it. If a device is registered, to restart a device without shutting it down, click the Restart button. To shut down a device and bring it back up, click the Reset button. To return to the previous window without resetting/restarting the device, click Close .	
Note: Resetting a gateway/trunk/media devices drops any calls in progress that are using that gateway/trunk/media devices. Restarting a gateway/media devices tries to preserve the calls in progress th are using that gateway/media devices, if possible. Other devices wait until calls are complete before restarting or resetting. Resetting/restarting a H323 device does not physically reset/restart the hardware; it only reinitializes the configuration loaded by Cisco Unified Communications Manager.	at
Reset Restart Close	
Done 🛛 👘 👘 🖓 Local intranet 🖓 👻 100% 🔹	- //.

Press Restart then press Close.

6.9.3 Configure Gateway Trunk

The following section describes an example on how to configure the gateway trunk. If your network is already configured, you may skip this section.

Using a web browser, log into the Cisco Unified CM Administration screen.



From the menu select Device | Trunk.

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	CTI Route Point				
	Gatekeeper				
Cisco Unified CM Administration	Gateway				
System version: 8.0.2.40000-1	Phone				
-,	Trunk				
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Please visit the License Report Page for more details.	Device Settings	,			
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Copyright © 1999 - 2009 Cisco Systems, Inc. All rights reserved.					
This product contains cryptographic features and is subject to United imply third-party authority to import, export, distribute or use encry product you agree to comply with applicable laws and regulations. If	ption. Importers, exp	orters, distributors and	users are responsible for	or compliance with U.S. and local	aphic products does not country laws. By using this
A summary of U.S. laws governing Cisco cryptographic products ma	y be found at our Exp	ort Compliance Produ	ct Report web site.		
For information about Cisco Unified Communications Manager please	e visit our <u>Unified Cor</u>	nmunications System [Documentation web site.		
For Cisco Technical Support please visit our Technical Support web a	site.				
https://10.50.50.20:8443/ccmadmin/trunkFindList.do				🍾 😼 Local intranet	🖓 • 🔍 100% • //

The following screen will appear.

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Find and List Trunks						
Add New						
Trunks						
Find Trunks where De	vice Name	ns with 💌	Find Clear Filte	r + =		
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		No active query. Plea	se enter your search criteria u	using the options above		
Add New						
Done					💦 📢 Local intranet	√A • € 100% • //

Press Add New to add a new SIP Trunk.

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Trunk Configuration	Related Links: Back To Find/List 🗾 Go
Next .	
Status Status: Ready	
Trunk Information	
Trunk Type* Not Selected Device Protocol* Not Selected	
Levice Protocol Not Selected	
Next	
indicates required item.	
Done	🎧 📢 Local intranet 🍕 🔹 🔍 100% 🔹 🎢

Select SIP Trunk for the Trunk Type.

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Next	
Status: Ready	
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Trunk Information	
Trunk Type* Not Selected	
H.25 Trunk (Gatekeeper Controlled)	
Next Inter-Cluster Trunk (Non-Gatekeeper Controlled) SIP Trunk	
(i) *- indicates required item.	
Done	🌇 📢 Local intranet 🖓 🔹 🕅 100% 🔹 🎢

Select SIP for the Device Protocol and press Next. Set the following:

- Device Name: GatewayTrunk-SIP
- Device Description: GatewayTrunk -SIP
- Device Pool: Default
- Call Classification: OffNet
- Destination Address: 10.50.50.21
- SIP Trunk Security Profile: Non Secure SIP Trunk Profile
- SIP Profile: Standard SIP Profile

Note: Destination Address is the IP address of the Gateway.

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Save		
Status		
i Status: Ready		
Device Information		
Product: Device Protocol:	SIP Trunk SIP	
Trunk Service Type	None(Default)	
Device Name*	GatewayTrunk-SIP	
Description	GatewayTrunk-SIP	
Device Pool*	Default	
Common Device Configuration	< None >	
Call Classification*	OffNet	-
Media Resource Group List	< None >	
Location*	Hub_None	-
AAR Group	< None >	·
Packet Capture Mode*	None	·
Packet Capture Duration	0	
Media Termination Point Required		
Retry Video Call as Audio		
Transmit UTF-8 for Calling Party Name		
Unattended Port		
-	and the first second first second second	to provide end to end security. Failure to do so will expose keys and other information.
SRTP Allowed - When this flag is checked. Encrypted TLS		

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Trunk Configuration					Related Links: Back	. To Find/List 💌 Go
Save						
Destination Address	10.50.50.21					<u> </u>
Destination Address IPv6						
Destination Address is an SRV						
Destination Port*	5060					
MTP Preferred Originating Codec*	711ulaw	*				
Presence Group*	Standard Presence group	•				
SIP Trunk Security Profile*	Non Secure SIP Trunk Profile	.				
Rerouting Calling Search Space	< None >	.				
Out-Of-Dialog Refer Calling Search Space	< None >					
SUBSCRIBE Calling Search Space	< None >					
SIP Profile*	Standard SIP Profile					
DTMF Signaling Method*	No Preference	•				
Geolocation Configuration						
Geolocation < None >	•					
Geolocation Filter < None >						
Send Geolocation Information						
Save						
(i) *- indicates required item.						
(i) **- Device reset is not required for c	changes to Packet Capture Mode and Packet Capt	ture Duration.				-
Done					🧐 Local intranet	🕼 • 🔍 100% • 🎢

Press Save.

Message	from webpage 🛛 🔀
1	Click on the Apply Config button to have the changes take effect.
	OK

Press OK.

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Trunk Configuration	Related Links: Back To Find/List 🔽 Go
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Status	
Add successful	
Product:	SIP Trunk
Device Protocol:	SIP
Trunk Service Type	None(Default)
Device Name*	GatewayTrunk-SIP
Description	GatewayTrunk-SIP
Device Pool*	Default
Common Device Configuration	< None >
Call Classification*	OffNet
Media Resource Group List	< None >
Location*	Hub_None
AAR Group	< None >
Packet Capture Mode*	None
Packet Capture Duration	0
Media Termination Point Required	
Retry Video Call as Audio	
Transmit UTF-8 for Calling Party Name	
Unattended Port	
	teds to be configured in the network to provide end to end security. Failure to do so will expose keys and other information.
Route Class Signaling Enabled*	Default
Done	💦 💦 Local intranet 🖓 • 🔍 100% •

Press Reset.

🖉 Device Reset - Windows Internet Explorer	<u>- 🗆 ×</u>
Device Reset	
Reset 🚱 Restart	
Status Status: Ready	
Reset Information Selected Device: GatewayTrunk-SIP (GatewayTrunk-SIP; SIP Trunk) If a device is not registered with Cisco Unified Communications Manager, you cannot reset or restart it. device is registered, to restart a device without shutting it down, click the Restart button. To shut down device and bring it back up. click the Reset button. To return to the previous window without	
resetting/restarting the device, click Close. Note:	
Resetting a gateway/trunk/media devices drops any calls in progress that are using that gateway/trunk/media devices. Restarting a gateway/media devices tries to preserve the calls in progress are using that gateway/media devices, if possible. Other devices wait until calls are complete before restarting or resetting. Resetting/restarting a H323 device does not physically reset/restart the hardware only reinitializes the configuration loaded by Cisco Unified Communications Manager.	
Reset Restart Close	
Done	% • //,

Press Restart then press Close.

6.9.4 Configure Call Routing

Using a web browser, log into the Cisco Unified CM Administration screen.



From the menu select Call Routing | Route / Hunt | Route Pattern.



The following screen will appear.

2 Find and List Route Patterns - Windows Internet Explorer	1×I
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🍘 Find and List Route Patterns 👌 + 🔂 + 🔜 - Eage + Safety + Tigds + 👔 +	*
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CISCO For Cisco Unified Communications Solutions Administrator Search Documentation About Log	out
System 👻 Call Routing 👻 Media Resources 👻 Advanced Features 👻 Device 👻 Application 👻 User Management 👻 Buk Administration 👻 Heip 👻	
Find and List Route Patterns	
Ch Add New	
Route Patterns	_
Find Route Pattern verse vers	
No active query. Please enter your search criteria using the options above. Add New	
AGO NEW	
Done	• //

Press Add New.

Set the following:

- Route Pattern: 201021XXX
- Description: 201021XXX
- Gateway/Route List: GatewayTrunk-SIP
- Call Classification: OffNet

Route Pattern Configuration - Windows Intern	et Explorer						
🕒 🗢 🖉 https://10.50.50.20:8443/ccmadmin	iroutePattern2Edit.do		-	😵 Certificate Error	+7 ×	🦉 Live Search	P .
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Save							
D Save							
Status							
i Status: Ready							
<u> </u>							
Pattern Definition							
Route Pattern*	201021XXX						
Route Partition	< None >	•					
Description	201021XXX						
Numbering Plan	Not Selected	v					
Route Filter	< None >	v					
MLPP Precedence*	Default	•					ļ
Resource Priority Namespace Network Domain	< None >	•					
Route Class*	Default	•					
Gateway/Route List*	GatewayTrunk-SIP	•	(Edit)				
Route Option	 Route this pattern 						
	C Block this pattern No Er	ror 💽					
Call Classification* OffNet		•					
Allow Device Override Provide Outside	Dial Tone 🗖 Allow Overlap S	ending Urgent Priority					
Require Forced Authorization Code							
Authorization Level*							
Require Client Matter Code							
- Calling Party Transformations							i
Done						🌇 😒 Local intranet	🖓 • 🔍 100% •

Press Save.

 ${\rm Dialogic}^{^{(0)}}$ Brooktrout $^{^{(0)}}$ SR140 Fax Software with Cisco Unified Communications Manager 8.0 Installation and Configuration Integration Note



Press OK.

Message	from webpage
1	Any update to this Route Pattern automatically resets the associated gateway or Route List
	OK

Press OK.

Repeat the same steps and set the following to route to the SR140:

- Route Pattern: 201101XXX
- Description: 201101XXX
- Gateway/Route List: SR140-SIP
- Call Classification: OffNet

Scote Pattern Configuration - Windows Internet	et Explorer					
C	routePattern2Edit.do?done=18key=b16959c6-5119	-ff56-498f-46e572209c	😧 Certificate Error	57 🗙 🗖	Live Search	P -
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aludu Cisco Unified CM Adr	ninistration			Na	vigation Cisco Unified CM A	dministration 💌 Go
CISCO For Cisco Unified Communicati	ons Solutions		Adm	inistrator	Search Documentation	About Logout
System - Call Routing - Media Resources - A	dvanced Features • Device • Application •	User Management 👻	Bulk Administration 👻	Help 👻		
Route Pattern Configuration					Related Links: Back	To Find/List 💌 Go
				_		
Save						
Status						^
Status: Ready						
Route Pattern*	201101XXX					
Route Partition	< None >					
Description	201101XXX					
Numbering Plan	Not Selected	*				
Route Filter	< None >	*				
MLPP Precedence*	Default	•				
Resource Priority Namespace Network Domain	< None >	-				
Route Class*	Default	*				
Gateway/Route List*	SR140-SIP	 (Edit) 				
Route Option	 Route this pattern 					
	C Block this pattern No Error	-				
Call Classification* OffNet	•					
🗆 Allow Device Override 🗹 Provide Outside D	Dial Tone 🗖 Allow Overlap Sending 🗖 Urge	nt Priority				
Require Forced Authorization Code						
Authorization Level* 0						
C Require Client Matter Code						
Calling Party Transformations					Sucal intranet	✓ ▼ 100% ▼ //
June 10				1 1 100	J S COLOR AND AND A	

7 SIP / MGCP Configuration Details

7.1 Cisco Unified Communication Manager 8.0 – SIP / MGCP Configuration

Vendor	Cisco
Model	Cisco Unified Communication Manager
Software Version	8.0.2.40000-1
Protocol to SR140	SIP
Protocol to Gateway	MGCP

7.2 Cisco 2800 Gateway

Vendor	Cisco
Model	Cisco 2800 Integrated Service Router
Software Version	Cisco IOS Software, 2800 Software (C2800NM- ADVENTERPRISEK9_IVS-M), Version 12.4(25c), RELEASE SOFTWARE (fc2)
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Protocol to PSTN Device	T1 Robbed Bit Signaling with E&M Wink Start signal protocol
IP Device	Dialogic [®] Brooktrout [®] SR140 Fax Software and Cisco CUCM 8.0
Protocol to CUCM	MGCP

7.3 Dialogic® Brooktrout® SR140 Fax Software

Vendor	Dialogic
Model	Dialogic [®] Brooktrout [®] SR140 Fax Software
Software Version	SDK 6.3.0
Protocol to CUCM	SIP
callctrl.cfg file	SDK 6.3.0 – All defaults

7.4 Dialogic® Brooktrout® TR1034 Fax Board

Vendor	Dialogic
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Software Version	SDK 6.3.0
Protocol to GW	T1 Robbed Bit Signaling with E&M Wink Start signal protocol
callctrl.cfg file	All defaults

Media: T.30

7.5 Network System Configuration – SIP / MGCP Configuration

Media: T.38



Cisco

2800 GW

The diagram below details the sample configuration used in connection with the SIP / MGCP Configuration.

Diagram Notes:

SR140 Fax

Server

- SR140 Fax Server = Fax Server including Dialogic[®] Brooktrout[®] SR140 Fax Software and third party fax application
- TR1034 Fax Server = Fax Server including Dialogic[®] Brooktrout[®] TR1034 Fax Board and third party fax application

7.5.1 Network Addresses

Device #	Device Make, Model, and Description	Device IP Address
1	Dialogic [®] Brooktrout [®] SR140	10.50.50.101
2	Cisco Unified Communication Manager 8.0	10.50.50.20
3	Cisco 2800 Integrated Service Router	10.50.50.21

7.5.2 Dialing Plan Overview

To call the SR140 from a POTS phone, dial 201101xxx, where x is a number between 0 and 9. POTS(dial 201101xxx)—T1 RBS—> Gateway(dial 201101xxx@10.50.50.20)—MGCP—>

CUCM8.0.x(dial 201101xxx@10.50.50.101)-SIP->SR140

To call the POTS lines of the Gateway from the SR140, dial 301021xxx@10.50.50.20, where x is a number between 0 and 9.

SR140(dial 301021xxx@10.50.50.20)—SIP—> CUCM8.0.x(dial 301021xxx@10.50.50.21)—MGCP—> Gateway(dial 301021xxx)—T1 RBS—>POTS

7.6 Dialogic® Brooktrout® SR140 Fax Software Setup Notes

For the sample test configuration, the SR140 was configured using the default values, consult the Dialogic[®] Brooktrout[®] Fax Products Installation and Configuration Guide for details.

The Installation and Configuration Guides are available from the site:

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

Note: DHCP cannot be used.

7.7 Dialogic® Brooktrout® TR1034 Fax PSTN Setup Notes

For the sample test configuration, the TR1034 was configured using the default values, consult the Dialogic[®] Brooktrout[®] Fax Products Installation and Configuration Guide for details.

7.8 Cisco 2800 Gateway Setup Notes

For the sample test configuration, the Cisco 2800 Gateway was configured the Cisco IOS Command-Line Interface. The specific items configured include:

- Configure line card interface
- Configure MGCP
- Configure Dial-Peers

7.8.1 Configure line card interface

The following lines will allow T1 Robbed Bit Signaling with E&M Wink Start signal protocol.

controller T1 0/0/0 framing esf clock source internal linecode b8zs cablelength short 133 ds0-group 0 timeslots 1-24 type e&m-wink-start description E&M Wink Start T1-RBS

Note: the ds0-group line must NOT contain dtmf dnis when doing Wink Start and MGCP.

7.8.2 Configure MGCP

The following will allow MGCP calls.

ccm-manager mgcp ccm-manager music-on-hold ccm-manager config server 10.50.50.20 ! mgcp mgcp call-agent 10.50.50.20 2427 service-type mgcp version 0.1 mgcp default-package fxr-package ! mgcp profile default

Note: 10.50.50.20 is the IP address of the CUCM. Note: Verify that **mgcp fax t38 inhibit** is not present since it disables T.38

7.8.3 Configure Dial-Peers - POTS

With MGCP the dial-peers are configured on CUCM. The POTS port controlled by MGCP must be configured as follows:

dial-peer voice 301021000 pots service mgcpapp port 0/0/0:0

After configuring CUCM verify that the Gateway is registered with the command **sh ccm-manager**. firestar#sh ccm-manager MGCP Domain Name: firestar.dialogic.com Priority Status Host

Current active Call Manager: 10.50.50.20 Backhaul/Redundant link port: 2428 Failover Interval: 30 seconds Keepalive Interval: 15 seconds Last keepalive sent: 12:46:14 PCTime Aug 31 2010 (elapsed time: 00:00:05) Last MGCP traffic time: 12:46:14 PCTime Aug 31 2010 (elapsed time: 00:00:05) Last failover time: None Last switchback time: None Graceful Switchback mode: MGCP Fallback mode: Not Selected Last MGCP Fallback start time: None Last MGCP Fallback end time: None MGCP Download Tones: Disabled TFTP retry count to shut Ports: 2

Configuration Error History: FAX mode: cisco

7.9 CUCM 8.0 Setup Notes – SIP / MGCP Configuration

The CUCM 8.0 configuration values that were used in the sample configuration involve configuring the following items:

- Configure Service Activation refer section 4.9.1
- Configure License refer to section 4.9.2
- Configure SIP Trunk Security Profile refer to section 6.9.1
- Configure SR140 Trunk refer to section 6.9.2
- Configure Gateway Trunk refer to section 5.9.1
- Configure Call Routing

7.9.1 Configure Call Routing

Using a web browser, log into the Cisco Unified CM Administration screen.



From the menu select Call Routing | Route / Hunt | Route Pattern.



The following screen will appear.

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No active query. Please enter your search criteria	a using the options above.
Add New	
Done	🔰 💦 😼 Local intranet 🦙 🔩 100% 🔹

Press Add New.

Set the following:

- Route Pattern: 301021XXX
- Description: 301021XXX
- Gateway/Route List: S0/SU0/DS1-0@firestar.dialogic.com
- Call Classification: OffNet

Note: S0/SU0/DS1-0@firestar.dialogic.com is the MGCP Trunk of the Gateway

Route Pattern Configuration - Windows Internet	t Explorer	
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Route Pattern Configuration		Related Links: Back To Find/List
		Related Links. Back to Find/List
Save		
Status		
Status: Ready		
Pattern Definition		
Route Pattern*	301021XXX	
Route Partition	< None >	
Description	301021XXX	
Numbering Plan	Not Selected	
Route Filter	< None >	
MLPP Precedence*	Default	
Resource Priority Namespace Network Domain	< None >	
Route Class*	Default	
Gateway/Route List*	S0/SU0/DS1-0@firestar.dialogic.com 🔹 (Edit)	
Route Option	Route this pattern	
	C Block this pattern No Error	
Call Classification* OffNet		
Allow Device Override Provide Outside D	ial Tone 🗌 Allow Overlap Sending 🗌 Urgent Priority	
Require Forced Authorization Code		
Authorization Level*		
Require Client Matter Code		
Calling Party Transformations		💟 Local intranet 🥖 🔹 👻 100%

Press Save.

Message	from webpage	×
?	The Authorization Code will not be activated. Press OK if you want to proceed and activate it at a later time. Press Cancel and check the Force Authorization Code checkbox if you want to activate it now	

Press OK.



Press OK.

Repeat the same steps and set the following to route to the SR140:

- Route Pattern: 201101XXX
- Description: 201101XXX
- Gateway/Route List: SR140-SIP
- Call Classification: OffNet

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Pattern Definition	201101XXX							1
Route Partition	< None >							L
Description	201101XXX							L
Numbering Plan	Not Selected							L
Route Filter	< None >							L
MLPP Precedence*	Default							L
Resource Priority Namespace Network Domain								
Route Class*	Default	*						
Gateway/Route List*	SR140-SIP		(Edit)					
Route Option	 Route this pattern 							
	C Block this pattern No Error	•						
Call Classification* OffNet								
Allow Device Override Provide Outside I	ial Tone 🗌 Allow Overlap Sending	Urgent Priority						
Require Forced Authorization Code								
Authorization Level*								
Require Client Matter Code								
								1
- Calling Party Transformations Done						🍾 😒 Local intranet	- 	12

8 References

- Dialogic® Brooktrout® Fax Products Installation and Configuration Guide for SDK 5.2.x, 6.0.x, and 6.1.x
 <u>http://www.dialogic.com/manuals/brooktrout/default.htm</u>
- CUCM Documentation Roadmaps
 <u>http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_documentation_roadmaps_list.html</u>
- How to Configure MGCP with Digital PRI and Cisco CallManager, Document ID 23966: <u>http://www.cisco.com/en/US/tech/tk1077/technologies_configuration_example 09186a00801ad22f.shtml</u>
- MGCP with Digital CAS and Cisco CallManager Configuration Example, Document ID 43802: <u>http://www.cisco.com/en/US/tech/tk1077/technologies_configuration_example 09186a008022eaa3.shtml</u>
- Understanding Cisco IOS H.323 Gatekeeper Call Routing Document ID 24462.
 http://www.cisco.com/en/US/tech/tk1077/technologies_tech_note09186a00800_a8928.shtml