

Dialogic[®] Brooktrout[®] SR140 Fax Software with Cisco Unified Communications Manager 7.0

Installation and Configuration Integration Note

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August 2009

64-0600-04B

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 7.0 (CUCM 7.0)* 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 7.0.1.11000-2

The following systems were used for the sample configuration described in the document.

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 7.0**.

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 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 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 7.0 or Cisco CUCM 7.0, 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 7.0 – H.323 / H.323 Configuration

Vendor	Cisco
Model	Cisco Unified Communication Manager
Software Version	7.0.1.11000-2
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- SPSERVICESK9-M), Version 12.4(3i), 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 7.0
Protocol to CUCM	Н.323

4.3 Dialogic® Brooktrout® SR140 Fax Software

Vendor	Dialogic	
Model	Dialogic [®] Brooktrout [®] SR140 Fax Software	
	SDK 5.2.7	
Software Version	SDK 6.0.2	
	SDK 6.1.0	
Protocol to CUCM	Н.323	
	SDK 5.2.7 – All defaults except set h323_H245Stage = 3	
calictri.crg file	SDK 6.02 – All defaults	
	SDK 6.1.0 –All defaults	

Vendor	Dialogic
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Software Version	SDK 5.2.7 SDK 6.0.2 SDK 6.1.0
Protocol to GW	T1 Robbed Bit Signaling with E&M Wink Start signal protocol
callctrl.cfg file	All defaults

4.4 Dialogic® Brooktrout® TR1034 Fax Board

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 7.0	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—> CUCM7.0(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—> CUCM7.0(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 using SDK 6.0 and later, the SR140 was configured using the default values.

For previous SDKs, the following parameter in the callctrl.cfg file must be set to 3: h323_H245Stage = 3

The callctrl.cfg file can be modified via the GUI Brooktrout Configuration Tool. The parameter h323_H245Stage can be found when you launch this tool in Advanced Mode for H323. Consult the Dialogic® Brooktrout® Fax Products Installation and Configuration Guide for details.

The Installation and Configuration Guides for SDK 5.2.x, SDK 6.0.x and SDK 6.1.x 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 7.0 Setup Notes – H.323 / H.323 Configuration

The CUCM 7.0 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 7.0. 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.



From the menu select Tools | Service Activation.

	Unified Serviceability-Service Activation - Windows Inte	ernet Explorer
Ge	 https://10.50.50.20:8443/conservice/serviceactivation 	n.jsp?hbtNiodeID=1175d0d5-fbff-428e-a%a4-5211a2c60feb0hbtSubmb 💌 😵 Certificate Error 🛛 🕂 🗶 Uve Search 🖉
Ele E	R Yew Favorites Icols Help	
ê 🔅	Cisco Unified Serviceability-Service Activation	💁 = 🔂 - 👼 = 🕞 Exper = 🛞 Tools =
cis	Cisco Unified Serviceability For Cisco Unified Communications Solution	Navigation Cisco Unified Serviceability 💌 60
Alerm	• Irace • Tegis • Snmp • Help •	Administrator About Logout
Servio	e Activation	Related Links Control Center - Feature Services 💌 Go
:	Save 🤣 Set to Default 🔇 Refresh	
State	IS bur : Dasidu	
W sta	tus : Ready	
Serve	d Server	
	icemam 00	
-		
E d	neck All Services	
E d	eck All Services	
CM Se	eck All Services	
CM S	eck All Services ervices Service Name	Activation Status
CM Se	eck All Services ervices Service Name Cisco CallManager	Activation status Activated
CM Se F	reck All Services revices Service Name Cisco CallManager Cisco Thp	Activation status Activated Deactivated
CM Si	eck All Services	Activation Natus Activated Deactivated Deactivated
CM Si CM Si F F F F	eck All Services rvices Service Name Cisco CallManager Cisco Thay Cisco Messaging Interface Cisco Unite Mobile Voice Access Service	Activation Status Activated Deactivated Deactivated Deactivated
	eck All Services	Activation Status Activated Deactivated Deactivated Deactivated Deactivated
	eck All Services rvices service Name Cisco Callkanager Cisco Titp Cisco Massaging Interface Cisco United Mobie Voice Access Service Cisco United Mobie Voice Access Service Cisco United Mobie Voice Access Service Cisco CI Voice Media Streaming App Cisco CTManager	Activation Status Activated Deactivated Deactivated Deactivated Deactivated Deactivated
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	eck All Services	Activates status Activated Deactivated Deactivated Deactivated Deactivated Deactivated Deactivated Deactivated Deactivated Deactivated
	erck All Services services services service Name Cisco CallManager Cisco Thp Cisco Thp Cisco Unified Mobile Voice Access Service Cisco Unified Mobile Voice Access Service Cisco Evision Mobility Cisco Extended Functions Cisco Diradom Mobility Cisco Extended Functions Cisco Diradom Mobility Cisco Extended Functions Cisco Diradom Service Cisco Diradom Service	Activation Status Activated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated
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	eck All Services	Activation status Activated Deactivated Deactivated Deactivated Deactivated Deactivated Deactivated Deactivated Deactivated Deactivated Deactivated Deactivated Deactivated
	Intervices	Activation Status Activated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated
	Intervices	Activation Status Activated Deactivated Deactivated
	Interface All Services	Activated Activated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated Descrivated

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

Cisco Unified Communications ?	Manager Console - Windows Internet Explore	
C * https://10.50.50.2	0:0443/conadmin/showHome.do#	💌 😨 Certificate Error 🕴 🗙 Uve Search 🖉
Ele Edit Yew Favorites Took	s Help	
😪 🔌 🄏 Osco Unified Communic	cations Manager Console	🔂 + 🗔 - 📾 + 🕞 Bage + 🎯 Tgols +
aluala Cisco Unifie	d CM Administration	Navigation Cisco Unified CM Administration 🗾 Go
CISCO For Cisco Unified	Communications Solutions	Administrator About Logout
System • Call Routing • Media R	Resources • Voice Mail • Device • Applic	aton 👻 User Management 🔹 Buk Administration 👻 Help 💌
Server		
Cisco Unified CM		
Cisco Unified CM Group		
Phone NTP Reference		
Date/Time Group	Administration	
Presence Group	2	
Region		s and s a
Device Pool		
Device Mobility	•	
DHCP	Is. Inc.	
LDAP	•	
Location	tures and is subject to United States a	id local country laws governing import, export, transfer and use. Delivery of Cisco cryptographic products does not
Physical Location	cable laws and regulations. If you are	inable to comply with U.S. and local laws, return this product immediately.
SRST	co cryptographic products may be foun	d at: http://www.cisco.com/wwl/export/crypto/tool/storo.html-
MLPP	contact us by sending email to export	Beisco.com.
Enterprise Parameters		
Service Parameters		
Security Profile	•	
Application Server		
Licensing	License Unit Report	
	License Unit Calculator	
	License File Upload	
	Capabilities Assignment	
https://10.50.50.20:8443/conadmin/lice	nsingFileUploadEdit.do	🕞 🕒 Internet 🗮 100% -
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Press Upload License File.

🜔 Upload File - Windows Intern	t Explorer					×
https://10.50.50.20:8443/ccmad	nin/uploadFormAction.do?typ	e=licenseFile		🔽 😵 Ce	rtificate Error	
Upload File					-	<u>^</u>
File:				Br	rowse	
Upload						
-]	-
Done			📑 🚱 Internet		100% 👻	11.

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.

Cisco Unified Communications Manager Console - Window	s Internet Explorer			_ [0] ×
G + https://10.50.50.20:0443/ccmadmin/showHome.d	b	- 😵	Certificate Error 😽 🗙 Uve Search	ρ.
Ele Edit Yew Favorites Tools Help				
😪 🔗 🏀 Cisco Unified Communications Manager Console			🟠 + 🖸 - 🖷	* 🞲 Bage + 🎯 Tgols + 🍟
alialia Cisco Unified CM Administra	ation		Navigation Cisco Unified	d CM Administration 💌 Go
CISCO For Cisco Unified Communications Soluti	ions		Administra	ator About Logout
System • Call Routing • Media Resources • Voice Mail •	Device • Application • User Manager	rent 👻 Buik Administration 👻 Help	•	
	CTI Route Point			
	Gatekeeper			4
	Gateway			
	Phone			
Cisco Unified CM Administra	Trunk			
System version: 7.0.1.11000-2	Remote Destination			
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Copyright (c) 1999 - 2008 Glaco Systems, Inc. All right rearrow.d. This product contains cryptographic features and is subject. This product contains cryptographic features and is subject product you agree to comply with applicable laws and regul A summary of U.S. Ises governing Cisco cryptographic If you require further assistance please contact us by sende	to United States and local country laws exercitydon. Importera, excontera, di blobes. If you are unable to comply with fuction may be from at <u>Statu Jones</u> Line ng small to export@cocc.com.	governing import, export, transfe tributors and users are response U.S. and local laws, return this p a.com/wwl/export/crypto/tool/sto	r and use. Delivery of Cisco cryptogra le for compliance with U.S. and local o roduct immediately. co intro-	phic products does not country laws. Dy using this
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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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Done

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.

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Product:	Inter-Cluster Trunk (Non-Gate	keeper Controlled)			
Device Protocol: Device Name*	Inter-Cluster Trunk				
Description	00140 4223				
Device Pool*	Default				
Common Device Configuration	s None is				
Call Classification*	Offnet				
Media Resource Group List	< None >				
Location*	Hub None				
AAR Group					
Tunneled Protocol*	None				
Packet Capture Mode*	None				
Packet Capture Duration	0				
Media Termination Point Required	1.				
Retry Video Call as Audio					
Path Replacement Support					
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Called Numbering Plan* Cisco CalManager			
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Server 2 IP Address/Host Name			
Server 3 IP Address/Host Name			
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Press Save

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⚠	Click on the Reset button to have the changes take effect.
	OK

Press OK

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				-
Status				
Add successful				
- Device Information				
Product:	Inter-Cluster Trunk (Non-Ga	tekeeper Controlled)		
Device Protocol:	Inter-Cluster Trunk			
Device Name*	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			
Packet Capture Mode*	None			
Packet Capture Duration	0			
Media Termination Point Required				
Retry Video Call as Audio				
Path Replacement Support				
Transmit UTF-8 for Calling Party Name				
Unattended Port				
SRTP Allowed - When this flag is checked, IPSec needs to	be configured in the network to	provide end to end securit	ty. Failure to do so will expose keys and other information.	
lice Trusted Delay Drint*	Teach a	=		-
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Press Reset

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🙋 https://10.50.50.20:8443/ccmadmin/reset.do?pkid=648059ba-6683-507d-2999-af1314a50d1a&type= 💌 😵 Certificate Error
Device Reset
Reset 🚱 Restart
Status: Ready
- Reset Information
Selected Device: SR140-H323 (SR140-H323; Inter-Cluster Trunk (Non-Gatekeeper Controlled)) 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 that 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.
- 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.



The following screen will appear.

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Trunks	
Find Trunks where Device Name 💌 begins with 💌 Find Clear Filter 😳 🚥	
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Press Add New to add a new H.323 Trunk.

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

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(j) Status: Ready	
- Trunk Information	
Trunk Type* Not Selected	
Device Protocol H.225 Trunk (Gatekeeper Controlled)	
Next S1P Trunk (Non-Gatekeeper Controlled)	
A	
U *- indicates required item.	
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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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Status						
U Status: Ready						
- Device Information						
Product:	Inter-Cluster Trunk (Non-Gate	keeper Controlled)				
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					
Packet Capture Mode*	None	×				
Packet Capture Duration	0					
Media Termination Point Required						
Retry Video Call as Audio						
Path Replacement Support						
Transmit UTF-8 for Calling Party Name						
Unattended Port						
SRTP Allowed - When this flag is checked, IPSec needs	to be configured in the network to p	rovide end to end security	. Failure to do so v	vill expose	keys and other information.	
Lise Trusted Belay Point*	Default.					*
Done					🕞 😝 Internet	100% - //

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Save	
Called Party IE Number Type Unknown* Cisco CallManager	
Calling Party IE Number Type Unknown* Cisco CallManager	
Called Numbering Plan* Cisco CallManager	
Calling Numbering Plan* Cisco CallManager	
Caller ID DN	
R Display IE Delivery	
Redirecting Number IE Delivery - Outbound	
Enable Outbound FastStart	
Codec For Outbound FastStart G711 u-law 64K	
- Remote Cisco Unified Communications Manager Information	
Server 1 IP Address/Host Name* 10.50.50.21	
Server 2 IP Address/Host Name	
Server 3 IP Address/Host Name	
UUIE Configuration	
Passing Precedence Level Through UUIE	
Security Access Level 2	
Save	
1 * indicates required item.	
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U Device reset is not required for changes to Packet Capture Mode and Packet Capture Duration.	
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Press Save

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⚠	Click on the Reset button to have the changes take effect.
	OK

Press OK

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- Status		
Add successful		
Device Information	The state of the s	
Product: Device Protocol:	Inter-Cluster Trunk (Non-Gatekeeper Inter-Cluster Trunk	(Concroited)
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	*
Packet Capture Mode*	None	×
Packet Capture Duration	0	
Media Termination Point Required		
Retry Video Call as Audio		
Path Replacement Support		
Transmit UTF-8 for Calling Party Name		
Unattended Port		
SRTP Allowed - When this flag is checked, IDSec needs	to be configured in the network to provide	end to end security. Failure to do so will expose keys and other information.
lice Trusted Delay Print*	Endersh	
Done		🔰 🚺 🕞 Internet 🔍 100% 🔹

Press Reset

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Device Reset	
Preset 🗞 Restart	
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Status: Ready	
- Pacet 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.	Ifa
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 .	a
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 progres	s that
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 bardware	e: it
only reinitializes the configuration loaded by Cisco Unified Communications Manager.	,
Reset Restart Close	
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	11.

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.

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No active query. Please enter your search criteria using the opti	ions above.
Add New	
Done	100% • //

Press Add New

Set the following:

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

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Save								
Status								-î
Status: Ready								
-								_
Pattern Definition								
Route Pattern*		101021XXX						
Route Partition		< None >	*					
Description		101021XXX						
Numbering Plan		Not Selected	<u>×</u>					
Route Filter		< None >	7					
MLPP Precedence*		Default						
Resource Priority Namespace I	Network Domain	< None >						
Gateway/Route List*		GatewayTrunk-H323		(Edit)				
Route Option		Route this pattern						
		C Block this pattern No Error	¥					
Call Classification*	ffNet	-						
Allow Device Override 🕅 🖗	Provide Outside D	ial Tone 🗖 Allow Overlap Sending 🗖 I	Urgent Priority					
Require Forced Authorization	on Code							
Authorization Level*								
Require Client Matter Code								
-Calling Party Transformati	ions							
Use Calling Party's External	I Phone Number	Mask						
Calling Party Transform Mask								-
xone						😈 😜 Internet	100	9% - 1

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 7.0 – H.323 / MGCP Configuration

Vendor	Cisco
Model	Cisco Unified Communication Manager
Software Version	7.0.1.11000-2
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- SPSERVICESK9-M), Version 12.4(3i), 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 7.0
Protocol to CUCM	MGCP

5.3 Dialogic® Brooktrout® SR140 Fax Software

Vendor	Dialogic
Model	Dialogic [®] Brooktrout [®] SR140 Fax Software
Software Version	SDK 5.2.7 SDK 6.0.2 SDK 6.1.0
Protocol to CUCM	Н.323
callctrl.cfg file	SDK 5.2.7 – All defaults except set h323_H245Stage = 3 SDK 6.02 – All defaults SDK 6.1.0 –All defaults

5.4 Dialogic® Brooktrout® TR1034 Fax Board

Vendor	Dialogic
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Software Version	SDK 5.2.7 SDK 6.0.2 SDK 6.1.0
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

The diagram below details the sample configuration used in connection with the 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 7.0	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—> CUCM7.0(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—> CUCM7.0(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 using SDK 6.0 and later, the SR140 was configured using the default values.

For previous SDKs, the following parameter in the callctrl.cfg file must be set to 3: h323_H245Stage = 3

The callctrl.cfg file can be modified via the GUI Brooktrout Configuration Tool. The parameter h323_H245Stage can be found when you launch this tool in Advanced Mode for H323. Consult the Dialogic® Brooktrout® Fax Products Installation and Configuration Guide for details.

The Installation and Configuration Guides for SDK 5.2.x, SDK 6.0.x and SDK 6.1.x 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 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 Registered 10.50.50.20 First Backup None Second Backup None

Current active Call Manager: 10.50.50.20 Backhaul/Redundant link port: 2428 Failover Interval: 30 seconds

Keepalive Interval: 15 seconds Last keepalive sent: 13:41:11 PCTime Apr 16 2009 (elapsed time: 00:00:03) Last MGCP traffic time: 13:41:11 PCTime Apr 16 2009 (elapsed time: 00:00:03) 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

Configuration Error History: FAX mode: cisco

5.9 CUCM 7.0 Setup Notes – H.323 / MGCP Configuration

The CUCM 7.0 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 SR140 Trunk refer to <u>section 4.9.3</u>
- Configure Gateway Trunk
- Configure Call Routing

5.9.1 Configure Gateway Trunk

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

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From the menu select Device | Gateway.



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Cisco 2851	
Cisco 362X	
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Cisco 3725	
Cisco 3745	
Cisco 3925	
Cisco Catalyst 4000 Access Gateway Module	
Cisco Catalyst 4224 Voice Gateway Switch	
Cisco Catalyst 6000 24 port FXS Gateway	
Cisco Catalyst 6000 E1 VolP Gateway	
Cisco VG200	
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- Cisco Unified Communications Manager Group: Default ٠

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- Status				
Status: Ready				
Gateway Details	Circle 2801			
Gateway	firestar.dialogic.com			
Protocol	MGCP			
Domain Name*	ficestar dialogic com			
Description	Freedow dollaria com	-		
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Configured Slots, VICs and Endpoints				
Module in Slot 0 NM-4VWIC-MBRD				
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Global ISDN Switch Type 4ESS	·			
Switchback Timing* Graceful				
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Fax mode* Fax Relay	-			
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Press the port icon with the question mark next to the Subunit 0.

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Select Digital Access T1 for the Device Protocol.

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Status					î
(1) Status: Ready					
Device Information	Circle MCCO TI Dect				
Gateway	firestar.dialogic.com				
Device Protocol	Digital Access T1				
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				
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- Set the following: Device Pool: Default
 - Call Classification: OffNet •

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Status: Ready					
Device Information					
Product	Cisco MGCP T1 Port				
Gateway	firestar.dialogic.com				
Device Protocol	Digital Access 11				
End-Point Name	su/suo/usi-ognrestar.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				
MLPP Preemption*	Default				
Handle DTMF Precedence Sig	inals				
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Press Save

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Press OK

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HOU & HEH FOL	Gateway	firestar.dialogic.com			
	Device Protocol	Digital Access T1			
	Registration	Unknown			
	IP Address	Unknown			
	End-Point Name *	50/5U0/D51-0@firestar.dialogic.com			
	Description	S0/SUD/DS1-08firestar dialogic com			
	Device Pool*	Default			
	Common Device Configuration				
	Call Classification 8	< 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 >			
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Press Add a New Port on the Ports section

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Select EANDM for the Port Type.

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Gateway S0/SU0/DS1-0@firestar.dialogic.com	
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Status			
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Port Information			
Gateway S0/SU0/DS1	0@firestar.dialogic.com		
Port Selection			
Port Type*	EANDM		
Beginning Port Number	Not Selected		
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Port Details			
Port Direction*	Not Selected		
Calling Party Selection*	Not Selected		
Caller ID Type*	ANI		
Caller ID DN			
Prefix DN			
Num Digits*	4		
Expected Digits*	4		
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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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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 Direction*	Bothways			
Port 4	Calling Party Selection	* Originator	x		
Port 5	Caller ID Type*	ANI	¥		
Eort.6	Caller ID DN				
Port 7	Num Digits*	6			-
EDH Dout 8	Expected Digits*	9			
	Unattended Port	7			
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em Port 11	Signaling Type* Wink	Start -			
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To verify CUCM is registered with the gateway, from the menu select Device | Gateway.

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Port 1 Port Type EANDM Port Number 24				
Port 2				
Port Details Port Direction*	lothways	×		
Port 4 Calling Party Selection*	Driginator	-		
Caller ID Type*	AN1	×		
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Port 9				
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Find and List Gateway				
🕂 Add New				
Gateways				
Find Gateways where Name	 begins with 	Select item or enter search text 💌		
		o active query. Please enter your search criteria using the options above.		
Add New				
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Find and List Gateway			
👍 Add New 🏢 Select All 💠 Clear All 🙀 Delete Selected 🏫 Reset Selected			
Status			
U 2 records round			
Gateways (1 - 2 of 2)		Rows per Pa	ge 50 💌
Find Gateways where Name Vegins with V Show Vendpoints Find Clear Filter	4 -		
Select item or enter search text			
Device Name Description Device Pool Calling Search Space	Device Type	Status	IP Address
S0/SU0/DS1-0@firestar.dialogic.com S0/SU0/DS1-0@firestar.dialogic.com Default	Cisco MGCP T1 Port	Registered with icemam	10.50.50.21
🗖 🛄 firestar.dialogic.com firestar.dialogic.com	Cisco 2801	See Endpoints	
Add New Select All Clear All Delete Selected Reset Selected			
Done		S Internet	\$ 100% ·
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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.

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Find and List Route Patterns			
Add New			
Route Patterns			
Find Route Patterns where Pattern 💌 begins with 💌 Find Clear Filter 🤯 😐			
No active query. Please enter your search criteria using the options al	bove.		
Add New			
Done		🕞 😜 Internet	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

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Status							
U Status: Ready							
- Pattern Definition-							
Route Pattern*		301021XXX					
Route Partition		< None >	¥				
Description		301021XXX					
Numbering Plan		Not Selected	.				
Route Filter		< None >	w.				
MLPP Precedence*		Default					
Resource Priority Name	space Network Domain	< None >	*				
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 Overric	de 🔽 Provide Outside I	Dial Tone 🗖 Allow Overlap Sending 🗖 Urgent	Priority				
Require Forced Auth	orization Code						
Authorization Level*	0						
Require Client Matte	r Code						
- Calling Party Transfe	ormations						
Use Calling Party's E	external Phone Number	Mask					
Calling Party Transform	Mask						
Done			_			Internet	100%



Windows	Internet Explorer
?	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.
	OK Cancel

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

A Route Pattern Configuration - Windows Interr	et Explorer				_10 ×
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🔲 Save 🗶 Delete 📄 Copy 🚽 Add N	ew				
Status					
Status: Ready					
- Pattern Definition					
Route Pattern*	101101XXX	-			
Route Partition	< None >	-			
Description	101101XXX	-			
Numbering Plan	Not Selected	-			
Route Filter	< None >	2			
MLPP Precedence*	Default	•			
Resource Priority Namespace Network Domain	< None >	-			
Gateway/Route List*	SR140-H323	 (Edit) 			
Route Option	 Route this pattern 				
	C Block this pattern No Error	4			
Call Classification* OffNet	×				
Allow Device Override 🗭 Provide Outside	Dial Tone 🗖 Allow Overlap Sending 🗖 Urgent Priorit	4			
Require Forced Authorization Code					
Authorization Level* 0					
Require Client Matter Code					
Calling Party Transformations	Mack				
Calling Party Transform Mask					
Dere				Internet	1 100% ·

6 SIP / SIP Configuration Details

6.1 Cisco Unified Communication Manager 7.0 – SIP / SIP Configuration

Vendor	Cisco
Model	Cisco Unified Communication Manager
Software Version	7.0.1.11000-2
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- SPSERVICESK9-M), Version 12.4(3i), 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 7.0
Protocol to CUCM	SIP

6.3 Dialogic® Brooktrout® SR140 Fax Software

Vendor	Dialogic
Model	Dialogic [®] Brooktrout [®] SR140 Fax Software
Software Version	SDK 5.2.7 SDK 6.0.2
	SDK 6.1.0
Protocol to CUCM	SIP
callctrl.cfg file	All defaults

6.4 Dialogic® Brooktrout® TR1034 Fax Board

Vendor	Dialogic
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Software Version	SDK 5.2.7 SDK 6.0.2 SDK 6.1.0
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 7.0	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—> CUCM7.0.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—> CUCM7.0.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 for SDK 5.2.x, SDK 6.0.x and SDK 6.1.x 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 - VoIP

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 7.0 Setup Notes – SIP / SIP Configuration

The CUCM 7.0 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 7.0. The following Cisco Unified CM Administration screen appears.



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

Cisco Unified Communications Mana	iger Console - Windows Internet Explorer		_10 ×
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Cisco Unified CM			
Cisco Unified CM Group			
Phone NTP Reference			
Date/Time Group	Administration	= 1	1 B E -
Presence Group			
Region			
Device Pool			1
Device Mobility +			
DHCP +	s, Inc.		
LDAP >			
Location	tures and is subject to United States and local country laws governing import, expo	rt, transfer and use. Delivery of Cisco cryptographic product	s does not
Physical Location	cable laws and regulations. If you are unable to comply with U.S. and local laws, re	turn this product immediately.	by daing this
SRST	co cryptographic products may be found at: http://www.cisco.com/wwl/export/crypt	to/tool/storg.html.	
MLPP +	contact us by sending email to export@cisco.com.		
Enterprise Parameters			
Service Parameters			
Security Profile	Phone Security Profile		
Application Server	SIP Trunk Security Profile		
Licensing	CUMA Server Security Profile		
https://10.50.50.20:8443/ccmadmin/sipTruni	SecurityProfileFindList.do	🛛 🗍 🕞 🕞 Internet	🔩 100% • 🦽

The following screen will appear.

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(i) 1 records found	
SIP Trunk Security Profile (1 - 1 of 1) Rows per Page	50 💌
Find SIP Trunk Security Profile where Name	
	Com
Name - Construction - Non Secure SIP Trunk Profile authenticated by null String	0
Add New Select All Clear All Delete Selected	
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Click Non Secure SIP Trunk Profile.

SIP Trunk Security Profile 0	onfiguration - Windows Internet Explorer		
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🔜 Save 🗶 Delete 🗋	Copy 🏫 Reset 👍 Add New		
			-
Status			
U Status: Ready			
SIP Trunk Security Profi	le 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 Authentics	tion		
Nonce Validity Time (mins)	600		
X.509 Subject Name			
Incoming Port*	5060		
Enable Application Level	Authorization		
Accept Presence Subscri	ption		
Accept Out-of-Dialog RE	FER		
Accept Unsolicited Notific	tation		
Accept Replaces Header			
Transmit Security Status	1		
Save Delete Copy	Reset Add New		
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Change Outgoing Transport Type to UDP.

SIP Trunk Security Profile	Configuration - Windows Internet Explorer		_ [0] ×
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Status			
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SIP Trunk Security Prof	ile 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 Authentics	M UDP		
Nonce Validity Time (mins)	600		
X.509 Subject Name			
Incoming Port*	5060		
Enable Application Level	Authorization		
Accept Presence Subscr	iption		
Accept Out-of-Dialog RE	FER		
Accept Unsolicited Notifi	cation		
Accept Replaces Header			
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Press Save.

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Update successful				
Reset of the trunk is re	quired to have changes take effect.			
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Description	Non Secure SIP Trunk Profile authenticated by null Str			
Device Security Mode	Non Secure			
Incoming Transport Type*	TCP+UDP			
Outgoing Transport Type	UDP 💌			
Enable Digest Authentica	tion			
Nonce Validity Time (mins)	600			
X.509 Subject Name				
Incoming Port*	5060			
Enable Application Level	Authorization			
Accept Presence Subscri	ption			
Accept Out-of-Dialog RE	FER			
Accept Unsolicited Notific	ation			
Accept Replaces Header				
Transmit Security Status				
Save Delete Copy	Reset Add New			
Done			🖉 💽 Internet	100% · //

6.9.2 Configure SR140 Trunk

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



From the menu select Device | Trunk.

Cisco Unified Communications Manager Console - Window	s Internet Explorer	_O_X
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System version: 7.0.1.11000-2	Remote Destination	
	Device Settings	
Copyright © 1999 - 2008 Cisco Systems, Inc. All rights reserved.		
This product contains cryptographic features and is subject t	to United States and local country laws	governing import, export, transfer and use. Delivery of Cisco cryptographic products does not
imply third-party authority to import, export, distribute or us product you agree to comply with applicable laws and regula	e encryption. Importers, exporters, dis ations. If you are unable to comply with	tributors and users are responsible for compliance with U.S. and local country laws. By using this U.S. and local laws, return this product immediately.
A summary of U.S. laws governing Cisco cryptographic prod	lucts may be found at: http://www.cisco	a.com/wwl/export/crypto/tool/stara.html-
If you require further assistance please contact us by sendir	ng email to export@cisco.com.	
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The following screen will appear.

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Press Add New to add a new SIP Trunk.

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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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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		
Status		
(i) Status: Ready		
<u> </u>		
Device Information		
Product:	SIP Trunk	
Device Protocol:	SIP	
	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 >	x l
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		
SPTP Allowed - When this flag is checked. Encounter	d TLS needs to be configured in the network	to provide and to and security. Failure to do so will expose keys and other information
Use Trusted Relay Point*	Default	Composition and a second y in our read as will expose keys and other information.
-Incoming Calling Party Settings		I I I I I I I I I I I I I I I I I I I

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Calling Name Presentation* Defau	tt 💌			
Caller ID DN				
Caller Name				
Redirecting Diversion Header Delivery	/ - Outbound			
[L]
SIP Information				
Destination Address	10.50.50.101			
Destination Address is an SRV				
Destination Port*	\$060			
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			
Save				
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Press Save

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⚠	Click on the Reset button to have the changes take effect.
	OK

Press OK

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Save 🎽 Delete 💁 Reset 🞝 Add New		
Status		
Add successful		
Device Tofore No.		
Product:	SIP Trunk	
Device Protocol:	SIP	
Device Name*	SR140-SIP	
Description	SR140-SIP	
Device Pool*	Default	
Common Device Configuration	< None >	×
Call Classification*	OffNet	T
Media Resource Group List	< None >	
Location*	Hub_None	×
AAR Group	< None >	T
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		
SRTP Allowed - When this flag is checked, Encrypted 1	TLS needs to be configured in the network t	to provide end to end security. Failure to do so will expose keys and other information.
Use Trusted Relay Point*	Default	
		_
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Press Reset

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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 that 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.
- Reset Restart Close
Done

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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System version: 7.0.1.11000-2	Remote Destination	
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Copyright © 1999 - 2008 Cisco Systems, Inc. All rights reserved.		
This product contains cryptographic features and is subject imply third-party authority to import, export, distribute or product you agree to comply with applicable laws and registered and the subject of the subject	t to United States and local country laws use encryption. Importers, exporters, di ulations. If you are unable to comply wit	governing import, export, transfer and use. Delivery of Cisco crystographic products does not stributors and users are responsible for compliance with U.S. and local country laws. By using this U.S. and local laws, return this product immediately.
A summary of U.S. laws governing Cisco cryptographic pr	oducts may be found at: http://www.cise	to.com/wwi/export/crypto/tool/stgrg.html-
If you require further assistance please contact us by sen	ding email to export@cisco.com.	
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Press Add New to add a new SIP Trunk.

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Next	
- Status	
1 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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Next			
- Status			
(i) Status: Ready			
- Trunk Information			
Trunk Type Not Selected			
Device Protocol* Not Selected H.225 Trunk (Gatekeeper Controlled)			
Inter-Cluster Trunk (Gatekeeper Controlled) Inter-Cluster Trunk (Non-Gatekeeper Controlled)			
THERE STP THERE			
Indicates required item.			
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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		
(1) Status: Ready		
Device Information		
Product:	SIP Trunk	
Device Protocol:	SIP	
Device Name*	GatewayTrunk-SIP	
Description	GatewayTrunk-SIP	
Device Pool*	Default	2
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		
SRTP Allowed - When this flag is checked. Encour	ed TIS needs to be configured in the network to pro-	vide end to end security. Failure to do so will expose keys and other information.
Use Trusted Relay Point*	Default	Consideration and a second secon
- Incoming Calling Party Settings-		

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Calling Name Presentation* Defa	ult 💌				
Caller ID DN					
Caller Name					
Redirecting Diversion Header Delive	ry - Outbound				
L					
SIP Information					
Destination Address	10.50.50.21				
Destination Address is an SRV					
Destination Port*	5060				
MTP Preferred Originating Codec*	711ulaw	1 million			
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 Spac	< None >	×			
SUBSCRIBE Calling Search Space	< None >	T			
StP Profile*	Standard SIP Profile	*			
DTMF Signaling Method *	No Preference	×			
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save					
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Press Save

Windows Internet Explorer					
⚠	Click on the Reset button to have the changes take effect.				
	OK				

Press OK

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Status Add successful				
U NO BOCCASION				
Device Information				
Product:	SIP Trunk			
Device Protocol: Device Name*	SIP Cataway Tevely C10	_		
Description	Falleway Hulle-ale			
Device Bool	GatewayTrunk-SIP	-		
Common Davies Configuration	Default	•		
Coll Classification	< None >	×		
Call Classification	OffNet	*		
Media Resource Group List	< None >	*		
Location *	Hub_None	×		
AAR Group	< None >	<u>×</u>		
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				
SRTP Allowed - When this flag is checked, Encrypted TLS needs	s to be configured in the network to provide end	to end security. Failure to do	so will expose keys and other informatio	un.
Use Trusted Relay Point*	Default	•		
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Press Reset

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Status	
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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. 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 .	э
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 t 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; i only reinitializes the configuration loaded by Cisco Unified Communications Manager.	hat t
- 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.

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Find and List Route Patterns			
Add New			
Route Patterns			
Find Route Patterns where Pattern 💌 begins with 💌 🛛 Find Clear Filter 🤤 🛥			
No active query. Please enter your search oriteria using the options above.			
Add New			
Done		🕞 💽 Internet	100% · /

Press Add New

Set the following:

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

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Save							
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Status							
U Status: Ready							
- Pattern Definition-							
Route Pattern*		201021XXX					
Route Partition		< None >	<u>.</u>				
Description		201021XXX					
Numbering Plan		Not Selected					
Route Filter		< None >	¥				
MLPP Precedence*		Default					
Resource Priority Names	pace Network Domain	< None >					
Gateway/Route List*		GatewayTrunk-SIP		(Edit)			
Route Option		 Route this pattern 					
		C Block this pattern No Error					
Call Classification*	OffNet	×					
Allow Device Overrid	e 🖻 Provide Outside I	Dial Tone 🗖 Allow Overlap Sending	Urgent Priority				
Require Forced Autho	orization Code						
Authorization Level*	0						
Require Client Matter	Code						
Lise Calling Party Transfo	vternal Phone Number	Mask					
Calling Party Transform	Mask	P103K	-				
Door						a faternet	* 100%

Press Save



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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Save Save					
- Status		×			
Status: Ready					
Pattern Definition					
Route Pattern*	201101XXX				
Route Partition	< None >				
Description	201101XXX				
Numbering Plan	Not Selected				
Route Filter	< None >				
MLPP Precedence*	Default				
Resource Priority Namespace Network Domain	< None >				
Gateway/Route List*	SR140-SIP	(Edit)			
Route Option	 Route this pattern 				
	C Block this pattern No Error				
Call Classification* OffNet					
Require Forced Authorization Code					
Authorization Level*					
Require Client Matter Code					
Calling Party Transformations					
Use Calling Party's External Phone Number Mask					
Calling Party Transform Mask		*			
Done		🔰 🕞 🕞 Internet 🗮 100% - 🥂			
7 SIP / MGCP Configuration Details

7.1 Cisco Unified Communication Manager 7.0 – SIP / MGCP Configuration

Vendor	Cisco
Model	Cisco Unified Communication Manager
Software Version	7.0.1.11000-2
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- SPSERVICESK9-M), Version 12.4(3i), 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 7.0
Protocol to CUCM	MGCP

7.3 Dialogic® Brooktrout® SR140 Fax Software

Vendor	Dialogic	
Model	Dialogic [®] Brooktrout [®] SR140 Fax Software	
Software Version	SDK 5.2.7 SDK 6.0.2	
	SDK 6.1.0	
Protocol to CUCM	SIP	
callctrl.cfg file	All defaults	

7.4 Dialogic® Brooktrout® TR1034 Fax Board

Vendor	Dialogic
PSTN Device	Dialogic [®] Brooktrout [®] TR1034 Fax Board
Software Version	SDK 5.2.7 SDK 6.0.2 SDK 6.1.0
Protocol to GW	T1 Robbed Bit Signaling with E&M Wink Start signal protocol
callctrl.cfg file	All defaults

7.5 Network System Configuration – SIP / MGCP Configuration

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

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 7.0	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—> CUCM7.0.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—> CUCM7.0.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.

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.

The Installation and Configuration Guides for SDK 5.2.x, SDK 6.0.x and SDK 6.1.x are available from the site:

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

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 13:41:11 PCTime Apr 16 2009 (elapsed time: 00:00:03) Last keepalive sent: Last MGCP traffic time: 13:41:11 PCTime Apr 16 2009 (elapsed time: 00:00:03) Last failover time: None Last switchback time: None Switchback mode: Graceful MGCP Fallback mode: Not Selected Last MGCP Fallback start time: None Last MGCP Fallback end time: None Disabled MGCP Download Tones:

Configuration Error History: FAX mode: cisco

7.9 CUCM 7.0 Setup Notes – SIP / MGCP Configuration

The CUCM 7.0 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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Find and List Route Patterns	
- Add New	
Route Patterns	
Find Route Patterns where Pattern V begins with V Find Clear Filter	
No active query. Please enter your search criteria us	ing the options above.
Add New	
Done	📄 🕞 Internet 🗮 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

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							2
Status							
U Status: Ready							
Pattern Definition							
Route Pattern*		301021XXX					
Route Partition		< None >	x				
Description		301021XXX					
Numbering Plan		Not Selected	x				
Route Filter		< None >	Ψ.				
MLPP Precedence*		Default					
Resource Priority Name	space Network Domain	< None >					
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 Overri	de 🖻 Provide Outside (Dial Tone 🗖 Allow Overlap Sending 🗖 Urge	ent Priority				
Require Forced Auth	orization Code						
Authorization Level*	0						
Require Client Matte	r Code						
Calling Party Transf	ormations						
Use Calling Party's t	External Phone Number	Mask					
Calling Party Transform	маяк						
in the second						- Internet	100%

Press Save



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	SALLALVOV						
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Description	201101333						
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Route Option	 Route this pattern 						
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8 References

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