Macfarlane Telesystems CallPlus 5.3 using DPNSS to Westell liQ2000plus using QSIG to Cisco Unified CallManager 4.1

October 17, 2007 Revision 1

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Introduction

This application note provides configuration guidelines for interconnecting Cisco Unified CallManager to the Macfarlane Telesystems CallPlus system using DPNSS to standard BTNR 188.

Testing was done in the field, and not directly verified by the Cisco Unified Communications Interoperability Lab.

Cisco Unified CallManager does not natively support DPNSS. Interoperability required the use of an external protocol convertor, the Westell IiQ2000plus, to convert between DPNSS and QSIG. The IiQ2000plus converts E1-DPNSS to E1-QSIG, where possible mapping DPNSS features to their QSIG equivalent.

The Test Network Topology (Figure 1) contained a single CallPlus system interconnected to the Unified CallManager system using two E1-DPNSS interfaces. Each CallPlus E1-DPNSS interface was connected via a Westell protocol convertor into a Cisco 3800 Series IOS router acting as an E1-QSIG voice gateway, running MGCP backhaul. Each 3800 router had an NM-HDV module and E1 VWICS to provide the physical E1-QSIG interfaces. The Westell converter was connected to the IOS router using a standard E1 cross-over cable.

The CallPlus system supported contact centre agents that were situated physically on Unified CallManager controlled IP Phones. Each contact centre agent phone was also associated with PC-based dialogue boxes that controlled agent and phone functions. CallPlus was also able to connect to back office IP phones, also controlled by Unified CallManager. CallPlus treats agent and back office phones differently. Incoming calls to agents or transferred between agents are always CallPlus controlled, and CallPlus remains in the call path. However calls transferred from agents to back office phones are uncontrolled, and CallPlus is removed from the call path. Transfers from agent to back office IP phones must therefore utilise DPNSS Route Optimisation between CallPlus and Unified CallManager.

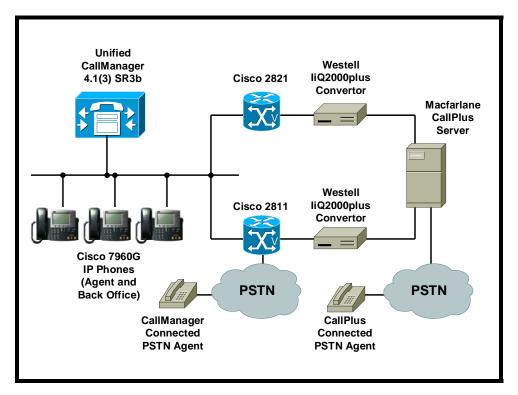
Dual E1 attachment of Callplus in the test setup was necessary to validate DPNSS Route Optimisation for calls transferred from agent to back office IP phones, and inter-working of DPNSS Route Optimisation with QSIG Path Replacement across the Westell IiQ2000plus convertors.

Typical Cisco router models (Cisco 2811 and 2821) were used as voice gateways in the test setup to validate the content of this Application Note. However the Application Note contents apply equally to other models including Cisco 1700, Cisco 2600, Cisco 3600, Cisco 3700, Cisco 2800, and Cisco 3800 series Cisco IOS voice gateways, the Catalyst 6608 module, the Catalyst 6500 Cisco Communication Media Module (CMM) and any future MGCP-controlled ISO QSIG device registered to Cisco Unified CallManager 4.X above 4.1(2).



Network Topology

Figure 1. Basic Call Setup



Limitations

No limitations were noted during the testing of this interoperability configuration.

System Components

Hardware Requirements

The following hardware is required:

Cisco Unified CallManager Server MCS 7825-H1

Cisco Unified IP Phones 7940G and 7960G.

Cisco 2800 Series Cisco IOS voice gateways with NM-HDV Modules and E1 VWICs.

Westell IiQ2000plus Protocol Convertors

E1 Crossover Cable

Dialogic D300JCT DPNSS cards

Special cards, blades, or cables required



Software Requirements

The following software is required:

Macfarlane Telesystems CallPlus: V5.3

Cisco Unified CallManager: 4.1 (3) SR3b

Cisco IOS for voice gateways: IOSIP Voice 12.4.9(T2)

Westell IiQ2000plus Protocol Convertors: R3.0.1

Westell VisionIQ Management Software

Features

This section lists new and changed features and features that are not supported using the specified hardware and software.

Features Supported

Incoming PSTN Calls from Cisco Unified CallManager or CallPlus to Agent IP Phones [Calls to the Contact Centre from citizens via the PSTN. May be directly into the Unified CallManager or into CallPlus.]

Transfer of Calls from Agent to Agent IP Phones [Normal agent to agent transfers – CallPlus retains control of call.]

Transfer of Calls from Agent to Agent IP Phones when the transferred DN is Call Forwarded, Translated by Cisco Unified CallManager, or Re-directed via Route Point.

[Agent to agent transfers where the call is re-routed via IP phone or Cisco Unified CallManager re-directs – CallPlus retains control of call.]

Transfer of Calls from Agent IP Phones to Back Office IP Phones. [Transfer of calls between Contact Centre agents and back office IP phones. CallPlus relinquishes control of the call. This function requires DPNSS Route Optimisation and QSIG Path Replacement and interoperability via the Westell IiQ2000plus.]

DPNSS Route Optimisation and QSIG Path Replacement Functionality.

[This was validated in two separate configurations - over a single Cisco Unified CallManager to CallPlus interconnect and over dual interconnects with call routing forced via route pattern manipulation.]

It was verified that QSIG Path Replacement was working correctly through diagnostics on the Macfarlane CallPlus system and through use of Windows Performance Monitor that displayed both ISDN channels in use and successful QSIG Path Replacements during each test.

Features Not Supported

No features tested were found to be not supported.

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Configuration

This section contains configuration menus and commands and describes configuration sequences and tasks.

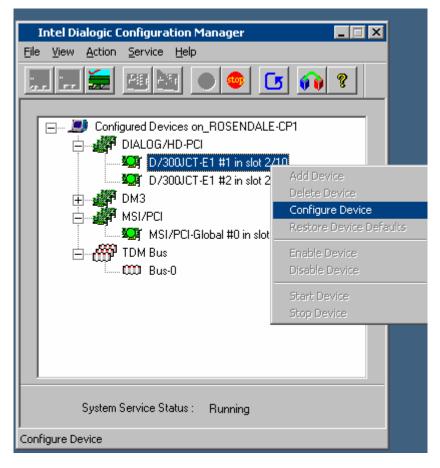
Configuring the Macfarlane Telesystems CallPlus 5.3

The CallPlus server needs to have the Dialogic cards configured with the DPNSS Telephony Protocol.

To check that this is set to DPNSS, open the Dialogic Configuration Manager (Click on Start -> Programs -> Intel Dialogic System Software -> Configuration Manager – DCM).

The following window opens. Right click on the Dialogic card(s) that connects to the Westell IiQ2000plus convertors. Click on Configure Device.

Dialogic Configuration Manager.



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The following window opens. Click on the Telephony Tab. The Parameter PCMEncoding should be set to ALAW.

Telephony Bus Tab.

Intel Dialogic Configuration Manager - Properties for D/300JCT-E1 #1 i 🗴
TDM Bus Configuration Country Files System Telephony Bus Interface Misc
Parameter Value SCbus Speed 4 AllowCTBusLoopModeWithoutClk Yes ALAW Image: Contract of the second sec
OK Cancel Apply Help



Now Click on the Interface Tab, the Parameter ISDNProtocol should be set to DPNSS

Interface Tab.

Intel Dialogic Configu	ration Manager	Properties for D/300	JCT-E1 #1 i 🗙
TDM Bus Config System	guration Telephony Bus	Country I Interface	Files Misc
Parameter ISDNProtoc		Value DPNSS	· · ·
	[OK Cancel	Apply Help



Click on the Country Tab, the Parameter Country should be set to United Kingdom. The other Tabs in the Intel Dialogic Configuration Manager do not need to be changed.

Country Tab.

Intel Dialogic Config	uration Manager	- Properties for D/3	300JCT-E1 #1 i 💌
System TDM Bus Cor	Telephony Bus nfiguration	Interface Country	Misc Files
	naling maling Resolution Detection	Value United Kingdor PROT_BTCAL TS16_SIG SIG_HF FREQRES_HI DPD_NONE	LSTREAM
	[OK Cancel	Apply Help



For DPNSS Route Optimisation (ROP) to occur the following registry setting needs to be set up correctly. The only settings that need to be changed are TrunkNetDPNSS.

This should contain all the Trunks that are set to DPNSS. TrunkNetID_1 should contain all the DPNSS trunks that are required to be optimised (not necessarily the same as TrunkNetDPNSS).

Registry Settings for ROP.

Registry Editor					- 8
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>H</u> elp					
🗄 🦲 Apache Group 📃		Туре	Data		
🗄 🧰 Borland	(Default)	REG_SZ	(value not set)		
CO7ft5Y	EnableEventsRLL	REG_SZ	2		
Classes	HoldRetrieve	REG_SZ	1		
Clients	TextDisplayAsCLI	REG_SZ	0		
- Dialogic	TrunkNetDPNSS	REG_SZ	1001-1060		
	TrunkNetID_1	REG_SZ	1001-1060		
IBM		REG_SZ	1		
- InstallShield		REG_SZ	0		
		REG_SZ	10		
JAM Software	UseRLLSetInfo	REG_SZ	1		
🔚 lameme	ab) WaitBlindXfer	REG_SZ	5		
- 🦲 Macfarlane					
🗄 🛅 CallPlus					
🚊 🦲 CallPlus v5					
🗀 ACD					
- BroadCast					
- icence					
- ConeWorker					
🚞 Message					
🛅 mis					
🗀 Music					
🗀 Paths					
record					
Recording					
Schedule					
🔄 Signal					
- Support					
System					
Trace					
🛄 Tuning					
VOIP					
HA Table RLL					
HA Winsock RLL					
TU Registry RLL					
TU System RLL					
CPBack					
Housekeeper					
- Microsoft - DDBC					
OOC					
- Policies - Program Groups					
Program Groups RAINBOW TECHNOLOGIES					
- Safenet Sentinel					
- Schlumberger					
Sension					
- Symantec					
Westek					
SYSTEM					
KEY_USERS					
•	1				
	J			 	
Computer\HKEY_LOCAL_MACHINE\SOF	TWARE\Macfarlane\CallPlu	ıs\CallPlus v5\Sign	al		



Configuring the Westell liQ2000+

The following figures show the sequence of steps to configure the Westell convertors using Westell VisionIQ Management Software.

Initial VisionIQ Connection to Define Shelf

Shelf Definitions	
Shell definitions present	Shell ID: CARD.0 Shell password: HELLO



Connect to Shelf and Configure IiQ2000plus

Vision iQ - Connected t			
Mode Connect Diagnostics	Layer 1	Port 1	∠ ≧
	Orientation Layer 3		
	Layer 3 Advanced Channel Groups		
	Hunt Groups Address Routing		
	Call Routing SNMP		
	Download		
	IQ2000 - Config		
Configure the iQ 2000 via the terr	ninal window.		



Connected to Westell Warning

Vision IQ., Connected to Westell' [Configuration Mode]. Mode Connect Disposition Connect Disposition Configuration Image: Source Disposition Configuration <t< th=""><th></th></t<>	
Vision iQ Image: This operation is service affecting and may reset the product. Continue and enter offline configuration? Yes No	
Ready	
N009.	

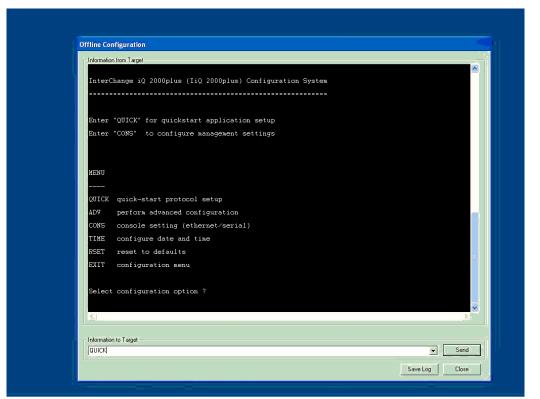


IiQ2000plus Off-line Configuration Screen

Offline Configuration		
Information from Target		
SYSTEM CONFIGURATION		
READING EEPROM(S)		
READING ELFRON(5)		
CARD(S)	MAC	
PRESENT	S/NO MOD TYP REV BLD ADDRESS MAN DATE CSM	
0 T102000 BASE CARD	00005915 0 7 1 16 A00000138C02 QUA 02/00 OK	
2, 112000 Dabb, omb		
SELFTEST COMPLETE: READY H	FOR SERVICE	
IiQ 2000plus Q3/DP R3.0.1	1	
ille boopins godi no.c.	-	
Hit RETURN to continue		
<u></u>		<u>.</u>
Information to Target		
		▼ Send

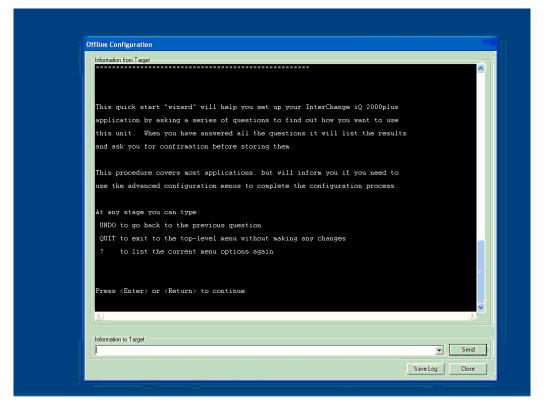


Select QUICK Configuration Mode





QUICK Configuration Instructions



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Select CCM for Pre-defined Configuration Options

Informal	ion from Target	
equip	oment) and a network. It may also be sited between two PBXs	
Pleas	se choose the option that best describes how your equipment is attached:	
MENU		
MERO		
TODM	Attach me to a public Euro-ISDN network	
	Attach me to a packet voice network (IP or ATM) via a router or gateway	
CCM	Attach me to a Cisco AVVID VoIP PBX network	
OSIG	Attach me to a private network which uses QSIG signalling	
	Attach me to a private network using Q.931 signalling	
DPNSS	6 Attach me to a DPNSS network or VPN (e.g. Featurenet)	
PBX	InterChange iQ 2000plus is sited in a direct connection between two PBXs	
CUST	Select predefined custom configuration	
QUIT	None of the above	
Sele	ot an application description:	
<u>S</u>		
Informat	ion to Target	
CCM	ion or rage.	▼ Ser

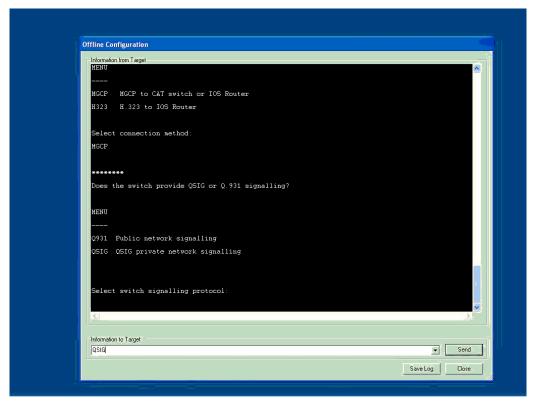


MGCP Gateway Connection Method Required for QSIG

ffline Configuration	
Information from Target PBX InterChange iQ 2000plus is sited in a direct connection between two PBXs	
CUST Select predefined custom configuration	
OUIT None of the above	
Select an application description:	
ссм	
We need to understand something of your AVVID application	
How is Call Manager connected to the PRI link?	
MENU	
MGCP MGCP to CAT switch or IOS Router	
H323 H.323 to IOS Router	
Select connection method:	
	<u>, 8.</u>
Information to Target	
MGCP	- Send
SaveLog	Close

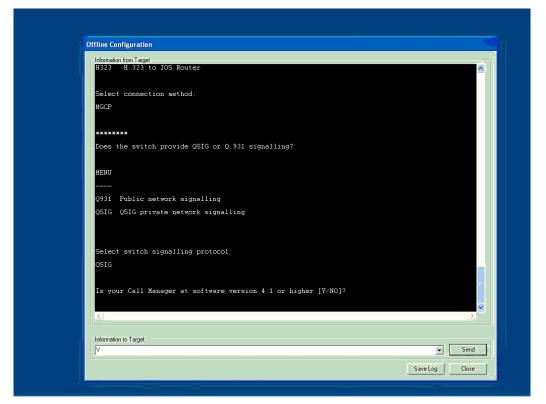
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QSIG Protocol to be Selected





CCM 4.1 Required for QSIG Functionality





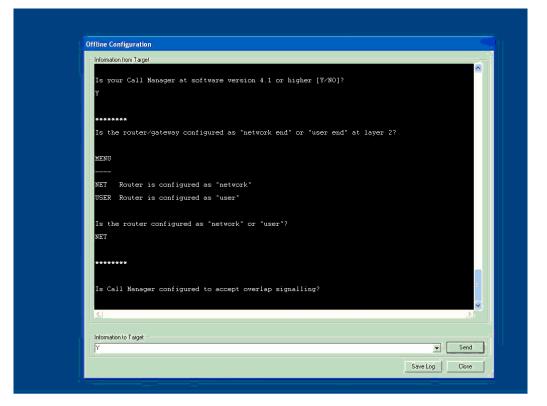
Select Router ISDN 'Side' as NET – Westell to CCM

Offline Configuration			
Information from Target			
QSIG QSIG private netw	ork signalling		
Select switch signallin	ng protocol:		
QSIG			
Is your Call Manager at	söftware version 4.1 or hig	ner [Y/NO]?	
Y			

Is the router/gateway o	configured as "network end" o	r "user end" at layer 2?	
MENU			
NET Router is configu	ured as "network"		
USER Router is configu	ured as "user"		
Is the router configure	ed as "network" or "user"?		
Information to Target			
[NET]			💌 🛛 Ser
			Save Log Clos

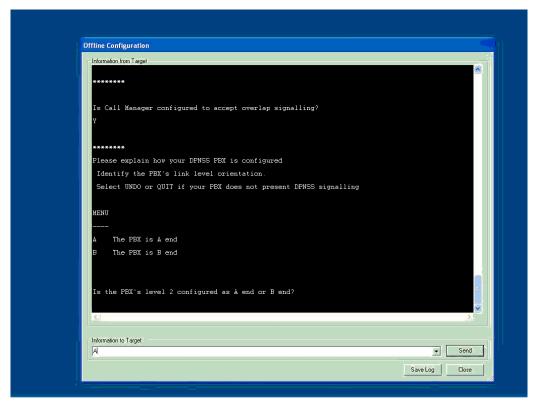
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Define Overlap Sending





Select CallPlus DPNSS 'End'



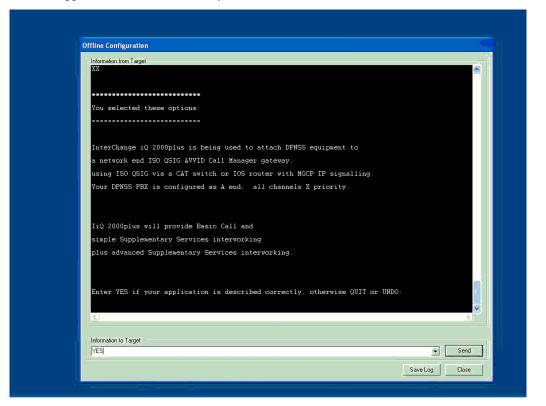
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Define DPNSS X/Y Settings

Offline C	Configuration	
Informa	lion from Target	
****	****	
Pleas	se identify the PBX's call collision avoidance strategy	
If i	t is none of the options shown here, select OTHER -	
afte	er you have finished QuickStart setup you will have to enter the	
ADVa	anced configuration menu to configure InterChange port 2 X/Y priorities	
char	nnel-by-channel	
MENU		
XX	All channels are X priority	
ΥY	All channels are Y priority	
XY	Channels 1-15 are X, remainder Y	
ΥX	Channels 1-15 are Y, remainder X	
OTHE	R None of the above	
Uov	are the DPNSS PBX's channel priorities set?	
now a		
5.		
	tion to Target	
×		Se



Confirm Application Described Correctly



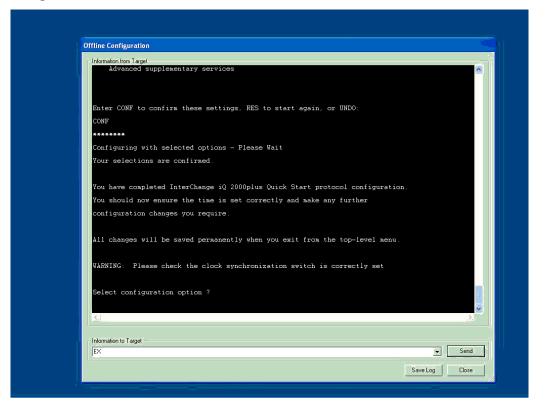


Configuration Confirmation (1 of 2)

Offline Configuration	
-Information from Target Profile = ISO QSIG	
Configured for AVVID connection	
Overlap signalling enabled	
User end	
CRC-4 multiframe	
Port 2 (DPNSS)	
B end	
All channels Y priority	
Double-frame	
Interworking	
Basic Call	
Simple supplementary services	
Advanced supplementary services	
Enter CONF to confirm these settings, RES to start again, or UNDO:	
	5
	<u>. 1</u>
Information to Target	
CONF	Sence Sence
	Save Log Close



Configuration Confirmation (2 of 2)





Configuring the Cisco Unified CallManager 4.1

List gateways, showing Cisco 2811 and 2821 voice gateways.

ind and List Gateways Add a New Gateway					
matching record(s) for Device Name contains ""					
ind gateways where Device Name Contains Find and show 20 items per page. Show endpoints. < Enter search text above > To list all items, click Find without any search text, or use "Device Name is not empty" as the search criteria. To list all items, click Find without any search text, or use "Device Name is not empty" as the search criteria.					
Matching record(s) 1 to Real-time Information Servin	e returned information f	In the second second second	A Report Distance	IP	
Device Name	Description	Device Pool	Status	Address	
10.0.02	10.0.0.2	Default	Unknown	10.0.0.2	
H.323 10.0.0.3	10.0.0.3	Default	Unknown	10.0.0.3	
20.0.0254	20.0.0.254	Default	Unknown	20.0.0.254	
C2811	c2811		See Endpoints		
C2821	c2821		See Endpoints		
S0/SU2/DS1-0@c281	1 SO/SU2/DS1-0@c281	Central Site Phones	Unknown	20.0.0.240	
S0/SU2/DS1-1@c281	1 S0/SU2/DS1-1@c2811	Central Site Phones	Unknown	20.0.0.240	
S1/SU0/DS1-0@c282	1 S1/SUO/DS1-0@c2821	Central Site Phones	Unknown	20.0.0.250	
S1/SU0/DS1-1@c282	1 S1/SU0/DS1-1@c2821	Central Site Phones	Not Found		
Delete Selected Reset Selected First Previous Next Last Page 1 of 1					



2811 MGCP Gateway Configuration (1 of 5)

Gateway C	onfi	gura	ntion			Back to Find/List Gateways
Product: Cisco 281 Protocol: MGCP MGCP : c2811	1					
Status: Ready Update Delete	Rese	et Gatewa	У			
Domain Name*	ci	2811				
Description	ci	2811				
Cisco CallManager Gi	roup* D)efault			~	
	_					
Installed Voice Inte	and the second second second	and a second second			Endpoint	Identifiers
Module in Slot 0	NM-4V	WIC-MBF	ND 💌			
	Subunit	to <	None >	~		
	Subunit	t 1 <	None >	~		
	Subunit	t 2 🗸 🗸	WIC-2MFT-E1	~	(0/2/ 0)	PRI (0/2/1) I EIPRI
	Subunit	t 3 🔇	None >	~		
Module in Slot 1	< None	>	~			
		25				
Product Specific Co	-	tion	-			<u>i</u>
Global ISDN Switch Type			EURO			~
Switchback Timing*			Graceful			~
Switchback uptime-o	Switchback uptime-delay (min)					
Switchback schedule	(hh:mn	n)	12:00			

2811 MGCP Gateway Configuration (2 of 5)

ateway Co	nfiguration	Back to MGCP Configuration Back to Find/List Gateways Dependency Records
	Product : Cisco 2811 Gateway : SO/SU2/DS1-1@c28 Device Protocol: Digital Access Registration: Unknown IP Address: 20.0.0.240	
	Status: Ready Update Delete Reset Gat Device Information	eway
	End-Point Name*	S0/SU2/DS1-1@c2811
	Description	S0/SU2/DS1-1@c2811
	Device Pool*	Central Site Phones 🛛 👻
	Call Classification*	Use System Default
	Network Locale	< None >
	Signal Packet Capture Mode	None
	Packet Capture Duration	60
	Media Resource Group List	< None >
	Location	Central Site
	AAR Group	< None >
	Load Information	
	V150 (subset)	
	Multilevel Precendence and Pre	eemption (MLPP) Information
	MLPP Domain (e.g., "0000FF")	
	MLBB Indication	Not available on this device



2811 MGCP Gateway Configuration (3 of 5)

MLPP Indication	Not available on this dev	ice
MLPP Preemption	Not available on this dev	ice
Interface Information		
PRI Protocol Type*	PRIEURO	*
Protocol Side*	User	~
Channel Selection Order*	Top Down	*
Channel IE Type*	Use Number when 1B	*
PCM Type*	A-law	~
Delay for first restart (1/8 sec ticks)	32	
Delay between restarts (1/8 sec ticks)	4	
Version and the second se		
Inhibit restarts at PRI initializatio	n	
	n	
 Inhibit restarts at PRI initializatio Enable status poll 	n	
Enable status poll	n	
Call Routing Information	n	
Call Routing Information	n	
	All	~
Call Routing Information Inbound Calls		~
Call Routing Information Inbound Calls Significant Digits*	All	
Call Routing Information Inbound Calls Significant Digits* Calling Search Space	All <none></none>	_
Call Routing Information Inbound Calls Significant Digits* Calling Search Space AAR Calling Search Space	All <none></none>	_
Call Routing Information Inbound Calls Significant Digits* Calling Search Space AAR Calling Search Space Prefix DN	All <none></none>	_
Enable status poll Call Routing Information Inbound Calls Significant Digits* Calling Search Space AAR Calling Search Space Prefix DN Outbound Calls	All <none></none>	*
Enable status poll Call Routing Information Inbound Calls Significant Digits* Calling Search Space AAR Calling Search Space Prefix DN Outbound Calls Calling Line ID Presentation*	All <none> Default</none>	*

2811 MGCP Gateway Configuration (4 of 5)

unknown*	
Calling party IE number type unknown*	Cisco CallManager
Called Numbering Plan*	Cisco CallManager 🖌
Calling Numbering Plan*	Cisco CallManager 👻
Number of digits to strip*	0
Caller ID DN	
SMDI Base Port*	0
PRI Protocol Type Specific Informa	tion
🔲 Display IE Delivery	
Redirecting Number IE Delivery -	Outbound
Redirecting Number IE Delivery -	Inbound
☑ Send Extra Leading Character In	DisplayIE***
Setup non-ISDN Progress Indicat	or IE Enable****
MCDN Channel Number Extension	Bit Set to Zero**
Send Calling Name In Facility IE	
Interface Identifier Present**	
Interface Identifier Value**	0
Connected Line ID Presentation (QSIG Inbound Call)*	Default
UUIE Configuration	
Passing Precedence Level Throug	h UUIE
Security Access Level	2



2811 MGCP Gateway Configuration (5 of 5)

Setup non-ISDN Progress Indicat	or IE Enable****
MCDN Channel Number Extension	
	bit Set to Zelo.
Send Calling Name In Facility IE	
Interface Identifier Present**	
Interface Identifier Value**	0
Connected Line ID Presentation (QSIG Inbound Call)*	Default
UUIE Configuration	
Passing Precedence Level Throug	h UUIE
Security Access Level	2
Product Specific Configuration	<u>.</u>
Line Coding*	HDB3
Framing*	CRC4
Clock*	External
Input Gain (-614 db)*	0
Output Attenuation (-614 db)*	0
Echo Cancellation Enable*	Enable 🖌
Echo Cancellation Coverage (ms)*	Default
 indicates required item ** applicable to DMS-100 protocol only *** applicable to DMS-100 protocol and DM **** may be required to force ringback fro 	
	Pack to MCCD Configuration



2821 MGCP Gateway Configuration (1 of 5)

Gateway Con	figurati	on		Back to Find/List Gateways
Product: Cisco 2821 Protocol: MGCP MGCP : c2821				
Status: Ready Update Delete Re	eset Gateway			
Domain Name*	c2821			
Description	c2821			
Cisco CallManager Group*	Default		~	
Installed Voice Interface	e Cards		Endpoint	Identifiers
Module in Slot 0 <no< td=""><td>one > 💦 💽</td><td>~</td><td></td><td></td></no<>	one > 💦 💽	~		
Module in Slot 1 NM-	HDV	~		
Subi	unit VWIC-21	MFT-E1 💌	<u>(1/0/ 0)</u>	(<u>1/0/ 1</u>)
Module in Slot 2 < No	one > 💌			
1. 	000			
Product Specific Configu	ration			<u>i</u>
Global ISDN Switch Type		EURO		*
Switchback Timing*		Graceful		~
Switchback uptime-delay ((min)	10		
Switchback schedule (hh:r	mm)	12:00		
* indicates required item				Back to Find/List Gateways

2821 MGCP Gateway Configuration (2 of 5)

Gateway Co	nfiguration	<u>Back to MGCP Configuration</u> <u>Back to Find/List Gateway</u> <u>Dependency Record</u>	5
	Product : Cisco 2821 Gateway : S1/SU0/DS1-0@c28 Device Protocol: Digital Access Registration: Unknown IP Address: 20.0.0.250 Status: Ready Update Delete Reset Gate	PRI	
	Device Information		
	End-Point Name*	S1/SU0/DS1-0@c2821	
	Description	S1/SU0/DS1-0@c2821	
	Device Pool*	Central Site Phones 🛛	
	Call Classification*	Use System Default	
	Network Locale	< None >	
	Signal Packet Capture Mode	None	
	Packet Capture Duration	60	
	Media Resource Group List	< None >	
	Location	Central Site	
	AAR Group	< None >	
	Load Information		
	V150 (subset)		
	Multilevel Precendence and Pre	emption (MLPP) Information	
	MLPP Domain (e.g., "OOOOFF")		
	MI DD Indication	Not available on this device	



2821 MGCP Gateway Configuration (3 of 5)

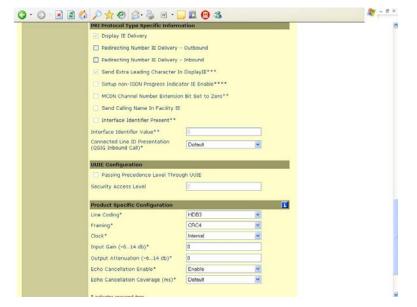
Load Information	
V150 (subset)	
Multilevel Precendence and Preem	ption (MLPP) Information
MLPP Domain (e.g., "0000FF")	
MLPP Indication	Not available on this device
MLPP Preemption	Not available on this device
Interface Information	
PRI Protocol Type*	PRI QSIG E1
Protocol Side*	Network
Channel Selection Order*	Top Down 💌
Channel IE Type*	Use Number when 1B 🛛
PCM Type*	A-law
Delay for first restart (1/8 sec ticks)	32
Delay between restarts (1/8 sec ticks)	4
Inhibit restarts at PRI initialization	(
🔲 Enable status poll	
Call Routing Information	
Inbound Calls	
Significant Digits*	All
Calling Search Space	< None >
AAR Calling Search Space	< None >

2821 MGCP Gateway Configuration (4 of 5)

🔲 Enable status poll	
Call Routing Information Inbound Calls	
the second second second	All
Significant Digits*	
Calling Search Space	<none></none>
AAR Calling Search Space	< None >
Prefix DN	
Outbound Calls	
Calling Line ID Presentation*	Default 💌
Calling Party Selection*	Originator
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 🖌
Number of digits to strip*	0
Caller ID DN	
SMDI Base Port*	0
PRI Protocol Type Specific Informa	tion
🗹 Display IE Delivery	
🔲 Redirecting Number IE Delivery -	Outbound
🔲 Redirecting Number IE Delivery -	Inbound
Send Extra Leading Character In	DicolovIE***



2821 MGCP Gateway Configuration (5 of 5)





Route Patterns

System Route Plan Service F Cisco CallManager A For Cisco IP Telephony Solutions	eature Device User App Administration	lication Hel		o Systems
Find and List Ro	ute Patterns		Add a New Rout	te Pattern
3 matching record(s) for Pattern begins with "" Find Route Patterns where Pattern v begins with v Find and show 20 v items per page To list all items, click Find without entering any search text. Matching record(s) 1 to 3 of 3				
Route Pattern Par	tition Description	Route Filter	Gateway/Route List	Сору
🔲 🧱 1XXX	Route to Cal		Calls_to_Callplus	⊡ ‡ ¹
🔲 🎎 5XXX	Route to Cal		Calls_to_Callplus	B ₽
D 🐹 97XXX	PSTN or Agent		S0/SU2/DS1-0@c2811	B ₽

CallManager Route Pattern Configuration (1 of 5)

Route Pattern Configuration			<u>Back</u>	<u>Add a New Route Pattern</u> to Find/List Route Patterns
Route Pattern: 1XXX				
Status: Ready Note: Any update to this Route Patter	n automatically resets the ass	sociated gateway	or Route	List
Copy Update Delete				
Pattern Definition				
Route Pattern*	h≫×			
Partition	< None >	*		
Description	Route to Callplus			
Numbering Plan*	North American Numbering	Plan 💌		
Route Filter	< None >	~		
MLPP Precedence	Default	*		
Gateway or Route List*	S1/SU0/DS1-0@c2821	~ (Edit)	
Route Option	Route this pattern			
	OBlock this pattern 📃	Not Selected —		*
Call Classification*	OnNet	~		Allow Device Override
Provide Outside Dial Tone	Allow Overlap	Sending		Urgent Priority
Require Forced Authorization	on Code			
Authorization Level	0			
🔲 Require Client Matter Code				
Calling Party Transformations				
Use Calling Party's Externa	Phone Number Mask			
Calling Party Transform Mask				



CallManager Route Pattern Configuration (2 of 5)

Calling Party Transformations		
Use Calling Party's External	Phone Number Mask	
Calling Party Transform Mask		
Prefix Digits (Outgoing Calls)		
Calling Line ID Presentation	Default 💌	
Calling Name Presentation	Default	
Connected Party Transformat	ions	
Connected Line ID Presentation	Default 💌	
Connected Name Presentation	Default 💌	
Called Party Transformations		
Discard Digits	< None >	
Called Party Transform Mask		
Prefix Digits (Outgoing Calls)		
ISDN Network-Specific Faciliti	es Information Element	
Carrier Identification Code		
Network Service Protocol	- Not Selected	
Network Service	Service Parameter Name	Service Parameter Value
- Not Selected -	 Not Exist > 	
* indiantas required item		

CallManager Route Pattern Configuration (3 of 5)

Rou	te Pattern: 5XXX	
	us: Update completed : Any update to this Route Patter	n automatically resets the associated gateway or Route List
Co		
	tern Definition	
Rout	te Pattern*	5xxx
Part	ition	<none></none>
Desc	cription	Route to Call plus
Num	bering Plan*	North American Numbering Plan
Rout	te Filter	< None >
MLP	P Precedence	Default
Gate	eway or Route List*	S1/SU0/DS1-0@c2821
Rout	te Option	Route this pattern
		OBlock this pattern - Not Selected -
Call	Classification*	OnNet ConNet ConNet C
	Provide Outside Dial Tone	🗹 Allow Overlap Sending 🛛 🗹 Urgent Priority
	Require Forced Authorization	on Code
	Authorization Level	0
	Require Client Matter Code	
Call	ing Party Transformations	
	Use Calling Party's External	Phone Number Mask
Calli	ng Party Transform Mask	
Pref	ix Digits (Outgoing Calls)	
Calli	ng Line ID Presentation	Default



CallManager Route Pattern Configuration (4 of 5)

Calling Name Presentation	Default 🔽	
Connected Party Transformat	ions	
Connected Line ID Presentation	Default	
Connected Name Presentation	Default	
Called Party Transformations		
Discard Digits	< None >	
Called Party Transform Mask		
Prefix Digits (Outgoing Calls)		
ISDN Network-Specific Faciliti	es Information Element	
Carrier Identification Code		
Network Service Protocol	- Not Selected -	
Network Service	Service Parameter Name	Service Parameter Value
- Not Selected -	Not Exist >	

CallManager Route Pattern Configuration (5 of 5)

Route Pattern Configuration	<u>Add a New Route Pattern</u> <u>Back to Find/List Route Patterns</u>
Route Pattern: 97XXX	
	n automatically resets the associated gateway or Route List
Copy Update Delete	
Route Pattern*	97
Partition	<none></none>
Description	PSTN or Agent
Numbering Plan*	North American Numbering Plan
Route Filter	<none></none>
MLPP Precedence	Default 💌
Gateway or Route List*	S0/SU2/DS1-1@c2811
Route Option	Route this pattern
	O Block this pattern - Not Selected -
Call Classification*	OffNet Allow Device Override
Provide Outside Dial Tone	Allow Overlap Sending Urgent Priority
📃 Require Forced Authorizati	on Code
Authorization Level	0
🔲 Require Client Matter Code	
Calling Party Transformations	
Use Calling Party's Externa	Phone Number Mask
Calling Party Transform Mask	
Prefix Digits (Outgoing Calls)	

CallManager Route Plans (1 of 3)

1/1		evice User Applicat	ion Help Cisco System	
CISCO For Cisco II	CallManager Adminis P Telephony Solutions	stration		
Matching record(s) 1 to 20 of 24				
	Pattern/Directory Number	Туре	Route Detail	
	1XXX	Route Pattern	Calls_to_Callplus	
			2821_then_2811	
			HECPS1/SUO/DS1-0@c2821, all ports	
			 ™∝⊳SO/SU2/DS1-1@c2811, all ports	
•771S 7715	4000	Directory Number	7960 ADP0003E3340763	
97718 8177 <mark>-</mark> 8177	4000	Directory Number	7960 SEP0003E3340763	
•7718 •7719	4001	Directory Number	7960 SEP003094C32A3B	
•7718 •7719	4002	Directory Number	7960 SEP0003E3340766	
•7715 •7719	4003	Directory Number	7940 SEP000BBEE39AB6	
•7718 •7719	4005	Directory Number	🗃 7960 James Dean	
•7718 •7719	4006	Directory Number	7960 SEP0003E3340763	
•7718 •7719	4006	Directory Number	940 SEP000BBEE39AB6	
•771S •7719	4006	Directory Number	7960 ADP0003E3340763	
97718 7719	4010	Directory Number		
900X	4020	Translation Pattern		
Park	4100	Call Park		
XXXX	4199	Translation Pattern		

CallManager Route Plans (2 of 3)

5.8		Translation	
XXXE	4199	Pattern	
7718 7719	4299	Directory Number	4299
00	4300	Conference	
Pickup	4999	Call Pickup Group	
XXXE	5XXX	Route Pattern	Calls_to_Callplus
			XX 2821_then_2811
			насрS1/SU0/DS1-0@c2821, all ports
			ESO/SU2/DS1-1@c2811, all ports
SOOK	8000	Hunt Pilot	🔨 VoiceMail-Pilot
			VoiceMail-Huntgroup
			8001
			8002
()	8001	Voice Mail Port	
1.01	0001	VOICE MAIL POIL	CiscoUM1-VI1



CallManager Route Plans (3 of 3)

isco CallManager Administration Cisco IP Telephony Solutions				Cisco System 	
Matchir	Natching record(s) 21 to 24 of 24				
	Pattern/Directory Part Number	tition	Туре	Route Detail	
S	8002		Voice Mail Port	SiscoUM1-VI2	
3	8040		Message Waiting		
\$	8041		Message Waiting		
SCOCE	97XXX		Route Pattern	BO/SU2/DS1-0@c2811, all ports	

CallManager Translation Patterns

Find and List Translation Patterns						
2 matching record(s) for Pattern begins with ""						
Find Translation patterns where Pattern v begins with v Find and show 20 v items per page To list all items, click Find without entering any search text.						
Matching record(s) 1 to 2 c	of 2					
Matching record(s) 1 to 2 c	of 2 Partition	Description	Route Filter	Сору		
		Description Divert to Call pl	Route Filter	Сору		
Translation Pattern			Route Filter			

CallManager Service Parameters

Name		049903004 10140
Path Replacement Enabled*	True	False
Path Replacement on Tromboned Calls*	True	True
Start Path Replacement Minimum Delay Time (sec)*	4	0
Start Path Replacement Maximum Delay Time (sec)*	10	0
Path Replacement T1 Timer (sec) *	30	30
Path Replacement T2 Timer (sec) *	15	15
Path Replacement PINX ID	4999	
Path Replacement Calling Search Space	<none></none>	
Clusterwide Pa	arameters (Feature - Call Back)	



CallManager PINX Pickup Group

Pickup Group Configuration				
Pickup Group: PINX Status: Ready Update Delete				
Pickup Group Informat	ion			
Pickup Group Name*	PINX			
Pickup Group Number*	4999			
Route Partition	< None >			
Associated Pickup Grou	up Information			
Find Pickup Numbers to	o add to Pickup Group			
Route Partition	< None >			
Pickup Numbers Contain				
	Find			
Available Call Pickup Numbers/Route Partition				
	Add to Pickup Group			
Current Pickup Group N				
Guillent Pickup Group h				
Selected Pickup Numbers/Route Partition	Reverse Order of Selected Numbers			

```
Configuring the Cisco 2811
c2811#sh run
Building configuration...
Current configuration : 2464 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
!
hostname c2811
!
boot-start-marker
boot system flash:c2800nm-ipvoicek9-mz.124-9.T2.bin
boot-end-marker
!
card type e1 0 2
enable password 7 104D000A0618
!
no aaa new-model
!
resource policy
!
network-clock-participate wic 2
!
ip cef
!
no ip domain lookup
```

```
!
isdn switch-type primary-net5
!
voice-card 0
no dspfarm
!
controller E1 0/2/0
pri-group timeslots 1-31 service mgcp
!
controller E1 0/2/1
pri-group timeslots 1-31 service mgcp
!
interface FastEthernet0/0
ip address 20.0.0.240 255.0.0.0
duplex auto
speed auto
!
interface FastEthernet0/1
no ip address
shutdown
duplex auto
speed auto
!
interface FastEthernet0/1/0
!
interface FastEthernet0/1/1
!
interface FastEthernet0/1/2
!
```



interface FastEthernet0/1/3
!
interface FastEthernet0/1/4
!
interface FastEthernet0/1/5
!
interface FastEthernet0/1/6
!
interface FastEthernet0/1/7
!
interface FastEthernet0/1/8
!
interface Serial0/2/0:15
no ip address
encapsulation hdlc
isdn switch-type primary-net5
isdn protocol-emulate network
isdn incoming-voice voice
no cdp enable
!
interface Serial0/2/1:15
no ip address
encapsulation hdlc
isdn switch-type primary-qsig
isdn protocol-emulate network
isdn incoming-voice voice
isdn T310 120000
no cdp enable
!

```
interface Vlan1
no ip address
!
ip http server
no ip http secure-server
!
control-plane
!
voice-port 0/2/0:15
cptone C1
!
voice-port 0/2/1:15
cptone C1
!
ccm-manager fallback-mgcp
ccm-manager mgcp
ccm-manager music-on-hold
ccm-manager config server 20.0.0.1
ccm-manager config
ccm-manager download-tones
!
mgcp
mgcp call-agent 20.0.0.1 2427 service-type mgcp version 0.1
mgcp dtmf-relay voip codec all mode out-of-band
mgcp rtp unreachable timeout 1000 action notify
mgcp modem passthrough voip mode nse
mgcp ip qos dscp cs3 signaling
mgcp package-capability rtp-package
no mgcp package-capability res-package
```



```
mgcp package-capability sst-package
no mgcp package-capability fxr-package
mgcp package-capability pre-package
no mgcp timer receive-rtcp
mgcp sdp simple
mgcp fax t38 inhibit
mgcp rtp payload-type g726r16 static
!
mgcp profile default
!
banner motd ^CC
^C
!
line con 0
line aux 0
line vty 04
password 7 104D000A0618
login
!
scheduler allocate 20000 1000
!
end
```

c2811#



Configuring the Cisco 2821

c2821#sh run Building configuration... Current configuration : 2155 bytes ! version 12.4 service timestamps debug datetime msec service timestamps log datetime msec service password-encryption ! hostname c2821 ! boot-start-marker boot-end-marker ! enable password 7 1511021F0725 ! no aaa new-model ! resource policy ! network-clock-participate slot 1 voice-card 0 no dspfarm ! voice-card 1 no dspfarm !

```
ip cef
!
no ip domain lookup
!
isdn switch-type primary-net5
!
controller E1 1/0/0
pri-group timeslots 1-31 service mgcp
!
controller E1 1/0/1
pri-group timeslots 1-31 service mgcp
!
interface GigabitEthernet0/0
no ip address
shutdown
duplex auto
speed auto
!
interface GigabitEthernet0/1
ip address 20.0.0.250 255.0.0.0
duplex auto
speed auto
!
interface Serial1/0/0:15
no ip address
encapsulation hdlc
isdn switch-type primary-net5
isdn overlap-receiving
isdn protocol-emulate network
```

...... CISCO.

!

!

!

!

!

!

isdn incoming-voice voice no cdp enable interface Serial1/0/1:15 no ip address encapsulation hdlc isdn switch-type primary-qsig isdn overlap-receiving isdn incoming-voice voice no cdp enable ip http server no ip http secure-server control-plane voice-port 1/0/0:15 cptone C1 voice-port 1/0/1:15 cptone C1 ccm-manager fallback-mgcp ccm-manager mgcp ccm-manager music-on-hold ccm-manager config server 20.0.0.1 ccm-manager config ccm-manager download-tones

!

mgcp

mgcp call-agent 20.0.0.1 2427 service-type mgcp version 0.1 mgcp dtmf-relay voip codec all mode out-of-band mgcp rtp unreachable timeout 1000 action notify mgcp modem passthrough voip mode nse mgcp ip qos dscp cs3 signaling mgcp package-capability rtp-package no mgcp package-capability res-package mgcp package-capability sst-package no mgcp package-capability fxr-package mgcp package-capability pre-package no mgcp timer receive-rtcp mgcp sdp simple mgcp fax t38 inhibit mgcp rtp payload-type g726r16 static ! mgcp profile default ! dial-peer voice 1 pots service mgcp ! banner motd ^C ^C ! line con 0 line aux 0 line vty 04



password 7 070C285F4D06

login

!

scheduler allocate 20000 1000

!

end

c2821#



Acronyms

Acronym	Definitions	
BTNR	British Telecom Network Requirement (BT Standard)	
DPNSS	Digital Private Network Signalling System	
MGCP	Media Gateway Control Protocol	
NM-HDV	Network Module – High Density Voice (Cisco Router Module)	
PINX	Private Integrated Network Exchange	
QSIG	Q (Point of the ISDN) Model	
ROP	(DPNSS) Route Optimisation	
VWIC	Voice / WAN Interface Card (Cisco Router Module)	



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