Macfarlane Telesystems CallPlus 5.3 using DPNSS to Westell IiQ2000plus using QSIG to Cisco Unified CallManager 4.1

October 17, 2007 Revision 1

Table of Contents
Introduction ................................................................................................................... ...........................................................................................2
Network Topology ........................................................................................................3
Limitations ..................................................................................................................3
System Components ......................................................................................................3
  Hardware Requirements ............................................................................................3
  Software Requirements ............................................................................................4
Features ....................................................................................................................... ..........................................................................................4
  Features Supported..................................................................................................4
  Features Not Supported..........................................................................................4
Configuration ................................................................................................................5
  Configuring the Macfarlane Telesystems CallPlus 5.3. ..................................................5
  Configuring the Westell IiQ2000+ ............................................................................10
  Configuring the Cisco Unified CallManager 4.1 ..........................................................27
  Configuring the Cisco 2811 .....................................................................................41
  Configuring the Cisco 2821 .....................................................................................46
Acronyms .....................................................................................................................51
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 iQ2000plus, to convert between DPNSS and QSIG. The iQ2000plus 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 iQ2000plus 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.
**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 liQ2000plus convertors. Click on Configure Device.

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

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

Interface Tab.
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.
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.
Configuring the Westell iiQ2000+

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

Initial VisionIQ Connection to Define Shelf
Connect to Shelf and Configure HiQ2000plus
Connected to Westell Warning
Select QUICK Configuration Mode

**Offline Configuration**

Enter 'QUICK' for quickstart application setup
Enter 'CONF' to configure management settings

QUICK quick-start protocol setup
ADV perform advanced configuration
CONS console setting (ethernet/serial)
TIME configure date and time
REST reset to defaults
EXIT configuration menu

Select configuration option?
QUICK Configuration Instructions

This quick start "wizard" will help you set up your InterChange iQ 2000plus application by asking a series of questions to find out how you want to use this unit. When you have answered all the questions it will list the results and ask you for confirmation before storing them.

This procedure covers most applications, but will inform you if you need to use the advanced configuration menus to complete the configuration process.

At any stage you can type:
  UNDO to go back to the previous question.
  QUIT to exit to the top-level menu without asking any changes
  ? to list the current menu options again.

Press <Enter> or <Return> to continue.
Select CCM for Pre-defined Configuration Options
MGCP Gateway Connection Method Required for QSIG
QSIG Protocol to be Selected
CCM 4.1 Required for QSIG Functionality
Select Router ISDN ‘Side’ as NET – Westell to CCM
Define Overlap Sending
Select CallPlus DPNSS ‘End’
Define DPNSS X/Y Settings

- Please identify the TEP’s call collision avoidance strategy.
- Select "Other" if none of the options above apply.
- After you have finished QuickStart setup, you will have to enter the Advanced configuration menu to configure InterChange port 2 X/Y priorities.

**Options:**
- **EX**: All channels are X priority
- **TY**: All channels are Y priority
- **TX**: Channels 1-11 are X, remainder Y
- **TX**: Channels 1-11 are Y, remainder X
- **Other**: None of the above

How are the DPNSS TEP's channel priorities set?
Confirm Application Described Correctly

InterChange iQ 2000plus is being used to attach ISMSE equipment to a network using ISO QSIG AVID Call Manager gateway.

Your ISMSE is configured as a end. all channels X priority.

I/Q 2000plus will provide Basic Call and
simple Supplementary Services interworking
plus advanced Supplementary Services interworking.

Enter YES if your application is described correctly. otherwise QUIT or UNDO.
Configuration Confirmation (1 of 2)

**Offline Configuration**

- **Profile**: ISDN USIS
  - Configured for H.323 connection
- **Overlap signalling enabled**
- **User and CVC-4 multiframe**

- **Port 2 (SIPMCC)**
  - **B and Channel B priority**
  - **Double-frame**

- **Interworking**
  - **Basic Call**
  - **Simple supplementary services**
  - **Advanced supplementary services**

Enter **CONF** to confirm these settings. **RES** to start again, or **UNDO**.
Configuration Confirmation (2 of 2)

The text on the screen is as follows:

```
Interchange 10 2000Plus Quick Start protocol configuration.
You have completed Interchange 10 2000Plus Quick Start protocol configuration.
You should now ensure the time is set correctly and make any further
configuration changes you require.
All changes will be saved permanently when you exit from the top-level menu.
WARNING: Please check the clock synchronization switch is correctly set.
```

Select configuration option?
Configuring the Cisco Unified CallManager 4.1

List gateways, showing Cisco 2811 and 2821 voice gateways.

### Find and List Gateways

9 matching record(s) for Device Name contains **

Find gateways where
and show XX items per page. Show endpoints.
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 9 of 9
Real-time information service returned information for 6 of 9 devices listed below.

<table>
<thead>
<tr>
<th>Device Name</th>
<th>Description</th>
<th>Device Pool</th>
<th>Status</th>
<th>IP Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0.0.2</td>
<td></td>
<td>10.0.0.2</td>
<td>Default</td>
<td>10.0.0.2</td>
</tr>
<tr>
<td>10.0.0.3</td>
<td></td>
<td>10.0.0.3</td>
<td>Unknown</td>
<td>10.0.0.3</td>
</tr>
<tr>
<td>20.0.0.204</td>
<td></td>
<td>20.0.0.254</td>
<td>Default</td>
<td>20.0.0.254</td>
</tr>
<tr>
<td>2811</td>
<td></td>
<td>c2811</td>
<td>See Endpoints</td>
<td></td>
</tr>
<tr>
<td>2821</td>
<td></td>
<td>c2821</td>
<td>See Endpoints</td>
<td></td>
</tr>
<tr>
<td>SU/210/001</td>
<td>SU/210/001</td>
<td>SU/210/001</td>
<td>Central Site Phones</td>
<td>Unknown</td>
</tr>
<tr>
<td>SU/501/001</td>
<td>SU/501/001</td>
<td>SU/501/001</td>
<td>Central Site Phones</td>
<td>Unknown</td>
</tr>
<tr>
<td>SU/502/001</td>
<td>SU/502/001</td>
<td>SU/502/001</td>
<td>Central Site Phones</td>
<td>Unknown</td>
</tr>
<tr>
<td>SU/503/001</td>
<td>SU/503/001</td>
<td>SU/503/001</td>
<td>Central Site Phones</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

[Delete Selected] [Reset Selected]
### Gateway Configuration (1 of 5)

**Product**: Cisco 2811  
**Protocol**: MGCP  
**MGCP**: c2811

**Status**: Ready  

<table>
<thead>
<tr>
<th>Domain Name*</th>
<th>c2811</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>c2811</td>
</tr>
</tbody>
</table>

**Cisco CallManager Group***: Default

#### Installed Voice Interface Cards

<table>
<thead>
<tr>
<th>Module in Slot 0</th>
<th>NM-KWLCMDID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subunit 0</td>
<td>(None)</td>
</tr>
<tr>
<td>Subunit 1</td>
<td>(None)</td>
</tr>
<tr>
<td>Subunit 2</td>
<td>FMC-WKFT-ET</td>
</tr>
<tr>
<td>Subunit 3</td>
<td>N1009X</td>
</tr>
</tbody>
</table>

| Module in Slot 1 | (None) |

**Product Specific Configuration**

- **Global ISDN Switch Type**: EUROI  
- **Switchback Timing***: Grateful  
- **Switchback uptime-delay (min)**: 10  
- **Switchback schedule (hh:mm)**: 12:00

### Gateway Configuration (2 of 5)

**Product**: Cisco 2811  
**Gateway**: 90/802/DB1-1@c2811  
**Device Protocol**: Digital Access PRI  
**Registration**: Unknown  
**IP Address**: 20.0.0.240

**Status**: Ready

#### Device Information

<table>
<thead>
<tr>
<th>End-Point Name*</th>
<th>90/802/DB1-1@c2811</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>90/802/DB1-1@c2811</td>
</tr>
<tr>
<td>Device Pool*</td>
<td>Central Site Phones</td>
</tr>
<tr>
<td>Call Classification*</td>
<td>Use System Default</td>
</tr>
<tr>
<td>Network Locale</td>
<td>(None)</td>
</tr>
<tr>
<td>Signal Packet Capture Mode</td>
<td>None</td>
</tr>
<tr>
<td>Packet Capture Duration</td>
<td>60</td>
</tr>
<tr>
<td>Media Resource Group List</td>
<td>(None)</td>
</tr>
<tr>
<td>Location</td>
<td>Central Site</td>
</tr>
<tr>
<td>AAR Group</td>
<td>(None)</td>
</tr>
<tr>
<td>Load Information</td>
<td></td>
</tr>
<tr>
<td>VLS (sublist)</td>
<td></td>
</tr>
</tbody>
</table>

#### Multilevel Precedence and Preemption (MLPP) Information

- **MLPP Domain (e.g., "0000FF")**: |
- **MLPP Export Control**: Not supported on the device.
### 2811 MGCP Gateway Configuration (3 of 5)

#### Interface Information
- **MLPP Indicator**: Not available on this device
- **MLPP Preemption**: Not available on this device

#### Call Routing Information

**Inbound Calls**
- **Significant Digits**: All
- **Calling Search Space**: <None>
- **AAA Calling Search Space**: <None>
- **Profile DN**: 

**Outbound Calls**
- **Calling Line ID Presentation**: Default
- **Calling Party Selection**: Last Redirect Number
- **Called party IE number type unknown**: Cisco CallManager

### 2811 MGCP Gateway Configuration (4 of 5)

#### PRI Protocol Type Specific Information
- **Display IE Delivery**
- **Redirecting Number IE Delivery - Outbound**
- **Redirecting Number IE Delivery - Inbound**
- **Send Extra Leading Character In DisplayIE***
- **Setup non-ISDN Progress Indicator IE Enable****
- **MCGN Channel Number Extension Bit Set to Zero**
- **Send Calling Name In Facility IE**
- **Interface Identifier Present***

#### UIIE Configuration
- **Passing Precedence Level Through UIIE**
- **Security Access Level**: 

© 2007 Cisco Systems, Inc. All rights reserved.
Important notices, privacy statements, and trademarks of Cisco Systems, Inc. can be found on cisco.com
Page 29 of 53
### 2821 MGCP Gateway Configuration (1 of 5)

**Gateway Configuration**

Product: Cisco 2821  
Protocol: MGCP  
MGCP: c2821

<table>
<thead>
<tr>
<th>Status: Ready</th>
<th>Update</th>
<th>Delete</th>
<th>Reset Gateway</th>
</tr>
</thead>
</table>

**Domain Name**: c2821  
**Description**: c2821  
**Cisco CallManager Group**: Default

#### Installed Voice Interface Cards

<table>
<thead>
<tr>
<th>Module in Slot 0</th>
<th>Module in Slot 1</th>
<th>Module in Slot 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Endpoint Identifiers

<table>
<thead>
<tr>
<th>Subunit</th>
<th>(LOU-8)</th>
<th>(LOU-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WWC/IMPE1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Product Specific Configuration

- **Global ISDN Switch Type**: EURO  
- **Switchback Timing**: Graculous  
- **Switchback uptime-delay (min)**: 10  
- **Switchback schedule (hh:mm)**: 12:00

* Indicates required item

### 2821 MGCP Gateway Configuration (2 of 5)

**Gateway Configuration**

Product: Cisco 2821  
Gateway: 81/910/911-08c2821  
Device Protocol: Digital Access PRI  
Registration: Unknown  
IP Address: 20.0.0.250

**Device Information**

<table>
<thead>
<tr>
<th>End-Point Name*</th>
<th>Device ID: 81/910/911-08c2821</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>81/910/911-08c2821</td>
</tr>
<tr>
<td>Device Pool*</td>
<td>Central Site Phones</td>
</tr>
<tr>
<td>Call Classification*</td>
<td>Use System Default</td>
</tr>
<tr>
<td>Network Locale</td>
<td></td>
</tr>
<tr>
<td>Signal Packet Capture Mode</td>
<td>None</td>
</tr>
<tr>
<td>Packet Capture Duration</td>
<td>60</td>
</tr>
<tr>
<td>Media Resource Group List</td>
<td>&lt;None&gt;</td>
</tr>
<tr>
<td>Location</td>
<td>Central Site</td>
</tr>
<tr>
<td>AAR Group</td>
<td>&lt;None&gt;</td>
</tr>
<tr>
<td>Load Information</td>
<td></td>
</tr>
<tr>
<td>V130 (subet)</td>
<td></td>
</tr>
</tbody>
</table>

**Multilevel Precedence and Preemption (MLPP) Information**

<table>
<thead>
<tr>
<th>MLPP Domain (e.g., &quot;000FF&quot;)</th>
<th>MLPP Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not available on this device</td>
</tr>
</tbody>
</table>

© 2007 Cisco Systems, Inc. All rights reserved.  
Important notices, privacy statements, and trademarks of Cisco Systems, Inc. can be found on cisco.com  
Page 31 of 53
### 2821 MGCP Gateway Configuration (3 of 5)

<table>
<thead>
<tr>
<th>Load Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>VLSR (Subnet)</td>
<td></td>
</tr>
</tbody>
</table>

#### Multilevel Precedence and Preemption (MLPP) Information

<table>
<thead>
<tr>
<th>MLPP Domain (e.g., &quot;000000&quot;)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MLPP Indication</td>
<td>Not available on this device</td>
</tr>
<tr>
<td>MLPP Preemption</td>
<td>Not available on this device</td>
</tr>
</tbody>
</table>

#### Interface Information

<table>
<thead>
<tr>
<th>PRI Protocol Type*</th>
<th>PRI QSIG E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol Side*</td>
<td>Network</td>
</tr>
<tr>
<td>Channel Selection Order*</td>
<td>Top Down</td>
</tr>
<tr>
<td>Channel IE Type*</td>
<td>Use Number when IE</td>
</tr>
<tr>
<td>PCM Type*</td>
<td>Artex</td>
</tr>
<tr>
<td>Delay for first restart (1/8 sec ticks)</td>
<td>32</td>
</tr>
<tr>
<td>Delay between restarts (1/8 sec ticks)</td>
<td>4</td>
</tr>
<tr>
<td>Enable status poll</td>
<td></td>
</tr>
</tbody>
</table>

#### Call Routing Information

<table>
<thead>
<tr>
<th>Inbound Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant Digits*</td>
</tr>
<tr>
<td>Calling Search Space</td>
</tr>
<tr>
<td>AAR Calling Search Space</td>
</tr>
</tbody>
</table>

#### 2821 MGCP Gateway Configuration (4 of 5)

#### Call Routing Information

<table>
<thead>
<tr>
<th>Inbound Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant Digits*</td>
</tr>
<tr>
<td>Calling Search Space</td>
</tr>
<tr>
<td>AAR Calling Search Space</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outbound Calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calling Line ID Presentation*</td>
</tr>
<tr>
<td>Calling Party Salutation*</td>
</tr>
<tr>
<td>Called party IE number type unknown*</td>
</tr>
<tr>
<td>Calling party IE number type unknown*</td>
</tr>
<tr>
<td>Called Numbering Plan*</td>
</tr>
<tr>
<td>Called Numbering Plan*</td>
</tr>
<tr>
<td>Number of digits to strip*</td>
</tr>
<tr>
<td>Caller ID DN</td>
</tr>
<tr>
<td>SMCo Base Port*</td>
</tr>
</tbody>
</table>

#### PRI Protocol Type Specific Information

- Display IE Delivery
- Redirecting Number IE Delivery - Outbound
- Redirecting Number IE Delivery - Inbound
- Send Extra Leading Character in DisplayIE***
2821 MGCP Gateway Configuration (5 of 5)
Route Patterns

Find and List Route Patterns

3 matching record(s) for Pattern begins with "*

Find Route Patterns where Pattern begins with:

To list all items, click Find without entering any search text.

Matching record(s) 1 to 3 of 3

<table>
<thead>
<tr>
<th>Route Pattern</th>
<th>Description</th>
<th>Gateway/Route List</th>
<th>Copy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1XXX</td>
<td>Route to Cal...</td>
<td>Cells_to_Callplus</td>
<td></td>
</tr>
<tr>
<td>2XXX</td>
<td>Route to Cal...</td>
<td>Cells_to_Callplus</td>
<td></td>
</tr>
<tr>
<td>9700X</td>
<td>PSTN or Agent</td>
<td>SO/50/501-902011</td>
<td></td>
</tr>
</tbody>
</table>

CallManager Route Pattern Configuration (1 of 5)

Route Pattern Configuration

Route Pattern: 1XXX
Status: Ready
Note: Any update to this Route Pattern automatically resets the associated gateway or Route List

Pattern Definition

<table>
<thead>
<tr>
<th>Route Pattern*</th>
<th>Partition</th>
<th>Description</th>
<th>Gateway or Route List*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1XXX</td>
<td>(None)</td>
<td>Route to Callplus</td>
<td>SO/50/501-902011</td>
</tr>
</tbody>
</table>

Call Classification*

- [ ] Block this pattern: Not Selected

- [ ] Allow Device Override
- [ ] Allow Overlap Sending
- [ ] Urgent Priority

- [ ] Require Faxed Authentication Code
- [ ] Authorization Level: 0

Calling Party Transformations

- [ ] Use Calling Party’s External Phone Number Mask

Calling Party Transform Mask: None

© 2007 Cisco Systems, Inc. All rights reserved.
Important notices, privacy statements, and trademarks of Cisco Systems, Inc. can be found on cisco.com
CallManager Route Pattern Configuration (2 of 5)

<table>
<thead>
<tr>
<th>Calling Party Transformations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Calling Party's External Phone Number Mask</td>
</tr>
<tr>
<td>Calling Party Transform Mask</td>
</tr>
<tr>
<td>Prefix Digits (Outgoing Calls)</td>
</tr>
<tr>
<td>Calling Line ID Presentation</td>
</tr>
<tr>
<td>Calling Name Presentation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connected Party Transformations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected Line ID Presentation</td>
</tr>
<tr>
<td>Connected Name Presentation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Called Party Transformations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discard Digits</td>
</tr>
<tr>
<td>Called Party Transform Mask</td>
</tr>
<tr>
<td>Prefix Digits (Outgoing Calls)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ISDN/Network-Specific Facilities Information Element</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corner Identification Code</td>
</tr>
<tr>
<td>Network Service Protocol</td>
</tr>
<tr>
<td>Network Service</td>
</tr>
</tbody>
</table>

CallManager Route Pattern Configuration (3 of 5)

<table>
<thead>
<tr>
<th>Route Pattern: 5XXX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status: Update completed</td>
</tr>
<tr>
<td>Note: Any update to this Route Pattern automatically resets the associated gateway or Route List</td>
</tr>
<tr>
<td>Copy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route Pattern*</td>
</tr>
<tr>
<td>Partition</td>
</tr>
<tr>
<td>Description</td>
</tr>
<tr>
<td>Numbering Plan*</td>
</tr>
<tr>
<td>Route Filter</td>
</tr>
<tr>
<td>MILPP Precedence</td>
</tr>
<tr>
<td>Gateway or Route List*</td>
</tr>
<tr>
<td>Route Option</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Call Classification*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Require Forced Authorization Code</td>
</tr>
<tr>
<td>Authorization Level</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Calling Party Transformations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Calling Party's External Phone Number Mask</td>
</tr>
<tr>
<td>Calling Party Transform Mask</td>
</tr>
<tr>
<td>Prefix Digits (Outgoing Calls)</td>
</tr>
<tr>
<td>Calling Line ID Presentation</td>
</tr>
</tbody>
</table>
CallManager Route Pattern Configuration (4 of 5)

CallName Presentation: Default

Connected Party Transformations
- Connected Line ID Presentation: Default
- Connected Name Presentation: Default

Called Party Transformations
- Discard Digits: None
- Called Party Transform Mask: None
- Prefix Digits (Outgoing Calls): None

3GPP Network-Specific Facilities Information Element
- Carrier Identification Code: None
- Network Service Protocol: Default
- Network Service: Default

* indicates required item.

CallManager Route Pattern Configuration (5 of 5)

Route Pattern Configuration

Route Pattern: 07XXX
Status: Ready
Note: Any update to this Route Pattern automatically resets the associated gateway or Route list

Pattern Definition
- Route Pattern: 07XXX
- Partition: None
- Description: PSTN or Agent
- Numbering Plan: North American Numbering Plan
- Route Filter: None
- NLPF Precedence: Default
- Gateway or Route List: 50/50/0/0/0/12@1011 (Edit)
- Route Option: Route this pattern
- Route Classification: Default

- Provide Outside Dial Tone
- Require Forced Authorization Code
- Authorization Level: 0
- Require Client Matter Code

Calling Party Transformations
- Use Calling Party's External Phone Number Mask
- Calling Party Transform Mask: None
- Prefix Digits (Outgoing Calls): None
## CallManager Route Plans (1 of 3)

<table>
<thead>
<tr>
<th>Pattern/Directory Number</th>
<th>Partition</th>
<th>Type</th>
<th>Route Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000X</td>
<td></td>
<td>Route Pattern</td>
<td>2cal_fe_to_Callplus</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D01_fv_wan_2811</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6/25/03/5/6/1-0-0@2801, all ports</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5/20/52/5/1-1-0@2801, all ports</td>
</tr>
<tr>
<td>4000</td>
<td></td>
<td>Directory Number</td>
<td>ADD000033E3340763</td>
</tr>
<tr>
<td>4000</td>
<td></td>
<td>Directory Number</td>
<td>SEP00003340763</td>
</tr>
<tr>
<td>4001</td>
<td></td>
<td>Directory Number</td>
<td>SEP00003340763</td>
</tr>
<tr>
<td>4002</td>
<td></td>
<td>Directory Number</td>
<td>SEP00003340763</td>
</tr>
<tr>
<td>4003</td>
<td></td>
<td>Directory Number</td>
<td>SEP00003340763</td>
</tr>
<tr>
<td>4005</td>
<td></td>
<td>Directory Number</td>
<td>James_Dean</td>
</tr>
<tr>
<td>4006</td>
<td></td>
<td>Directory Number</td>
<td>SEP00003340763</td>
</tr>
<tr>
<td>4008</td>
<td></td>
<td>Directory Number</td>
<td>SEP00003340763</td>
</tr>
<tr>
<td>4009</td>
<td></td>
<td>Directory Number</td>
<td>SEP00003340763</td>
</tr>
<tr>
<td>4010</td>
<td></td>
<td>Directory Number</td>
<td>CallPark</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Translation Pattern</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4100</td>
<td>Call Park</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4199</td>
<td>Translation Pattern</td>
<td></td>
</tr>
</tbody>
</table>

## CallManager Route Plans (2 of 3)

<table>
<thead>
<tr>
<th>Pattern/Directory Number</th>
<th>Partition</th>
<th>Type</th>
<th>Route Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>4199</td>
<td></td>
<td>Translation Pattern</td>
<td></td>
</tr>
<tr>
<td>4299</td>
<td></td>
<td>Directory Number</td>
<td>4299</td>
</tr>
<tr>
<td>4300</td>
<td></td>
<td>Conference</td>
<td></td>
</tr>
<tr>
<td>4999</td>
<td></td>
<td>Call Pickup Group</td>
<td></td>
</tr>
<tr>
<td>5000</td>
<td></td>
<td>Route Pattern</td>
<td>2cal_fe_to_Callplus</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D01_fv_wan_2811</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6/25/03/5/6/1-0-0@2801, all ports</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5/20/52/5/1-1-0@2801, all ports</td>
</tr>
<tr>
<td>8000</td>
<td></td>
<td>Hunt Pilot</td>
<td>VoiceMail-Huntgroup</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8001</td>
</tr>
<tr>
<td></td>
<td>8002</td>
<td>Voice Mail Port</td>
<td>8002</td>
</tr>
<tr>
<td></td>
<td>801</td>
<td></td>
<td>801</td>
</tr>
<tr>
<td></td>
<td>8001</td>
<td>Voice Mail Port</td>
<td>8001</td>
</tr>
</tbody>
</table>
### CallManager Route Plans (3 of 3)

<table>
<thead>
<tr>
<th>Pattern/directory Number</th>
<th>Partition</th>
<th>Type</th>
<th>Route Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>8002</td>
<td>Voice Mail Port</td>
<td>CiscoUML-V12</td>
<td></td>
</tr>
<tr>
<td>8840</td>
<td>Message Waiting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8841</td>
<td>Message Waiting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9700X</td>
<td>Route Pattern</td>
<td>50/SUL/D81-09-c2011, all ports</td>
<td></td>
</tr>
</tbody>
</table>

### CallManager Translation Patterns

**Find and List Translation Patterns**

2 matching record(s) for Pattern begins with ""

Find Translation patterns where Pattern begins with:

Find

To list all items, click Find without entering any search text.

Matching record(s) 1 to 2 of 2

<table>
<thead>
<tr>
<th>Translation Pattern</th>
<th>Partition</th>
<th>Description</th>
<th>Route Filter</th>
<th>Copy</th>
</tr>
</thead>
<tbody>
<tr>
<td>4028</td>
<td></td>
<td>Divert to Call pl...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4159</td>
<td></td>
<td>Divert to 4001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### CallManager Service Parameters

<table>
<thead>
<tr>
<th>Name</th>
<th>Current Value</th>
<th>Suggested Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Path Replacement Enabled*</td>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>Path Replacement on Tornined Call*</td>
<td>True</td>
<td>True</td>
</tr>
<tr>
<td>Start Path Replacement Minimum Delay Time (sec)*</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Start Path Replacement Maximum Delay Time (sec)*</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Path Replacement TL Timer (sec) *</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Path Replacement TE Timer (sec) *</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Path Replacement PRLC ID</td>
<td>4999</td>
<td></td>
</tr>
<tr>
<td>Path Replacement calling Search Space</td>
<td>&lt;None&gt;</td>
<td></td>
</tr>
</tbody>
</table>

### Clusterwide Parameters (Feature - Call Back)
**Pickup Group Configuration**

**Pickup Group: PINX**
Status: Ready

<table>
<thead>
<tr>
<th>Pickup Group Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickup Group Name*</td>
</tr>
<tr>
<td>Pickup Group Number*</td>
</tr>
<tr>
<td>Route Partition</td>
</tr>
</tbody>
</table>

**Associated Pickup Group Information**

**Find Pickup Numbers to add to Pickup Group**

| Route Partition                  | (None)                   |
|----------------------------------|
| Pickup Numbers Contain           |                          |
|                                  | Find                     |

**Current Pickup Group Members**

<table>
<thead>
<tr>
<th>Selected Pickup Numbers/Route Partition</th>
<th>4999</th>
</tr>
</thead>
</table>

**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:e2800nm-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 sd p simple
mgcp fax t38 inhibit
mgcp rtp payload-type g726r16 static
!
mgcp profile default
!

banner motd ^CC

**************** 2811 ****************
**************** 2811 ****************
^C
!

line con 0
line aux 0
line vty 0 4
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
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

*********** 2821 ***********
*********** 2821 ***********
°C
!
line con 0
line aux 0
line vty 0 4
password 7 070C285F4D06

login
!

scheduler allocate 20000 1000
!

end

c2821#
### Acronyms

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

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.
Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the Cisco Web site at www.cisco.com/go/offices.

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia • Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

© 2007 Cisco Systems, Inc. All rights reserved.

CCVP, the Cisco logo, and the Cisco Square Bridge logo are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networking Academy, Network Registrar, Packet, PIX, ProConnect, ScriptShare, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0705R)