



Mitel 3300 ICP Release 4.1 using T1 QSIG to Cisco Unified CallManager 4.0

November 29, 2007 Revision 2

Table of Contents

Introduction	1
Network Topology.....	2
Limitations.....	2
System Components	3
Hardware Requirements	3
Software Requirements	3
Features	3
Features Supported.....	3
Features Not Supported	3
Configuration.....	3
Configuring the Mitel 3300 ICP PBX	3
Configuring the Cisco Unified CallManager.....	21
Acronyms	37

Introduction

This is an application note for connectivity of Mitel 3300 ICP Release 4.1 PBX with Cisco Unified CallManager (CUCM) Release 4.0 using Cisco 6608-T1 QSIG as MGCP gateway.

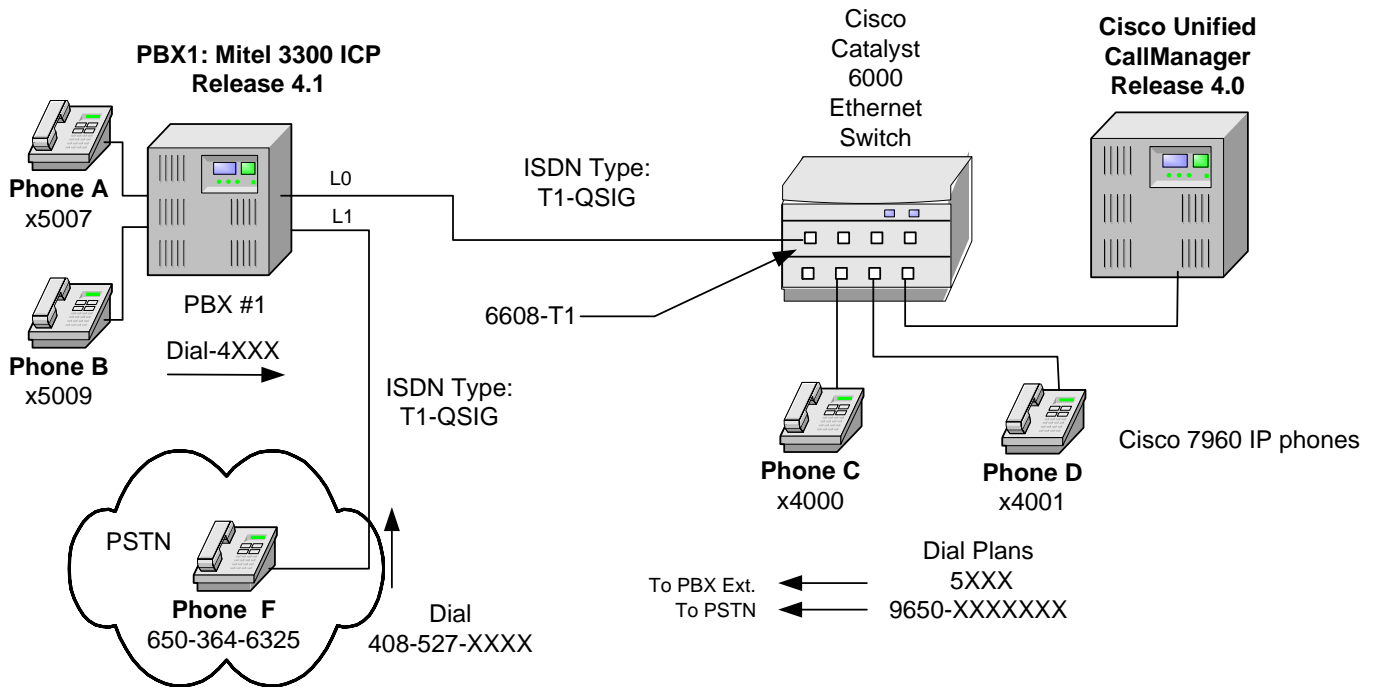
The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with the Cisco Unified CallManager connected to the PBX via 6608-T1 QSIG link as MGCP gateway.

Connectivity is achieved by using the PRI ISO QSIG T1 protocol type on the MGCP gateway and QSIG protocol (ISO Protocol Variant) type on the Mitel 3300 ICP PBX.

Network Topology

Figure 1. Network Topology

Basic Call Setup End-to-End Configuration



Limitations

Calling Name and Number Features

When calling from Mitel digital phone to Cisco 7960 IP phone, IP phone displays Calling Name and Number. Mitel phone however displays Connected Name only even though Cisco Unified CallManager QSIG trunk is sending Connected Name and Connected Number information in the connect message back to PBX.

When calling from Cisco 7960 IP phone to Mitel digital phone, Mitel phone displays Calling Name and Number. IP phone displays Called Number.

Mitel QSIG trunk does not support sending Connected Name or Connected Number information in the connect message back to Cisco Unified CallManager.



System Components

Hardware Requirements

Cisco Hardware:

Cisco Catalyst 6000 switch with 6608-T1 gateway

Cisco Unified CallManager 4.0

Mitel 3300 ICP PBX Hardware:

3300 Controller P/N 56004538

3300 Universal NSU P/N 56002115

SX2000 Expansion Chassis P/N 144236601

Software Requirements

PBX Software 4.1

Cisco Unified CallManager 4.0

Cisco WS-X6608-T1 gateway Version 7.6(2)

Features

Features Supported

CLIP-Calling Line (Number) Identification Presentation

CLIR-Calling Line (Number) Identification Restriction

CNIP-Calling Name Identification Presentation

CNIR-Calling Name Identification Restriction

CT-Call Transfer (by join)

CFU-Call Forwarding Unconditional (by join)

CFB-Call Forwarding Busy (by join)

CFNR-Call Forwarding No Reply (by join)

QSIG MWI- Message Waiting Indication (lamp ON, lamp OFF) supported by Cisco Unified CallManager 4.0 (not tested ¹)_

Features Not Supported

COLP-Connected Line (Number) Identification Presentation not supported by Mitel

COLR- Connected Line (Number) Identification Restriction not supported by Mitel

CONP-Connected Name Identification Presentation not supported by Mitel

CONR- Connected Name Identification Restriction not supported by Mitel

Configuration

Configuring the Mitel 3300 ICP PBX

System Hardware Modules

¹ MWI is supported on CUCM 4.0 but was not tested because CUCM was not configured with a messaging System at the time of testing therefore it is not known at this time whether QSIG MWI integration with Mitel will work.



Alarm Status: Major 2004-Feb-19 14:27:34

Data Refresh Help Exit

System Message:

Selection:

Maintenance and Diagnostics

- Maintenance and Diagnostics
 - Alarm Details
 - Maintenance Commands
 - All
 - Logs
 - System Hardware Profile
 - System Hardware Modules
 - System Hardware Compute Co
 - IP Telephones
 - Backup
 - Restore

Previous Page 1 of 1 Next Go to: value: Go

System Hardware Modules

Slot Number	Module ID, Driver ID	Variant ID	Card Description
1	12,1	n/a	Dual FIM - Multimode 820nm
2	12,1	n/a	Dual FIM - Multimode 820nm
3	--	--	--
4	--	--	--
5	22,1	n/a	Echo Cancellation 64 Channels
6	--	--	--
7	--	--	--
8	47,6	n/a	SHARC Enhanced DSP - 4 circuit

System Hardware Modules

Slot Number: 1
Module ID, Driver ID: 12,1
Minimum Reset Timing: 0
Card Description: Dual FIM - Multimode 820nm
PCB Assembly: 56001801
PCB Revision Level: RC
Processor Type: n/a
Processor Speed (Core, Clock): 0,0
MAC Address: 00:00:00:00:00:00
Country Code: NA



System Software Version 4.1.6

Alarm Status: Major 2004-Mar-04 13:17:08 Data Refresh Help Exit

Cisco - System Message:

Selection:
Maintenance and Diagnostics

- Maintenance and Diagnostics
 - Alarm Details
 - Maintenance Commands
 - Logs
 - System Hardware Profile
 - System Hardware Modules
 - System Hardware Compute Cards
 - IP Telephones
 - Backup
 - Restore

Previous Page 1 of 1 Next Go to: value: Go

Slot ID	PCB Assembly and Rev Level	IP Address
1	143890303 R1.2	172.20.12.254
2	143890303 R1.2	172.20.12.253

System Hardware Compute Cards

Slot ID:	1
PCB Assembly and Rev Level:	143890303 R1.2
Core Speed:	297000000
Bus Speed:	66000000
Memory Size:	268435456
MAC Address:	08:00:0f:0f:3e:95
IP Address:	172.20.12.254
BOOTROM Rev:	1.2/5 Nov 4 2003
Post Rev:	2.9 27/05/2003



PRI QSIG Trunk configuration

Site Options

```

-----
Connected Platform:      SX-2000 Light
PLATFORM:               PRI Card
Options:: CLIP / CLIR / Data / CBC / DDI / Network PRA / QSIG /
Created with IMAT Version "7.3.0.10"
Database Version  "PRI 8.2 or NSU 1.3"

```

Link Mapping

```

=====

```

PBX Link*	MVIP Link	PRI Card	Card Variant	PRI link #	PRI logical #	Physical Type
1	4	1	Dual link card	1	1	T1/DSX1
2	5	1	Dual link card	2	2	T1/DSX1

```

=====

```

PRI Link Characteristics

```

-----

```

PRI logical#	Protocol Type	Protocol Variant	Test Call Number	Physical Characteristics
1	QSIG	ISO		Invert D Channel: Off QSIG Master: On Enbloc-only: Off Disable Fake Answer Supervision: Off Qsig Channel Numbering: Off Line Coding=B8ZS Framing=ESF Line Build Out=0-133 feet Invert Data=Disable Comment ""
2	QSIG	ISO		Invert D Channel: Off QSIG Master: Off Enbloc-only: Off Disable Fake Answer Supervision: Off Qsig Channel Numbering: Off Line Coding=B8ZS Framing=ESF Line Build Out=0-133 feet Invert Data=Disable Comment ""

```

=====

```



Trunk Data

Incoming Call Characteristics

PBX

link#	Trunks*	DDI Delivery	CPN Delivery
-------	---------	--------------	--------------

1	01-23	Yes	Yes
---	-------	-----	-----

PRI Link: 1 Calling Party Number Prefix Insertion:

International Prefix =
National Prefix =
Subscriber Prefix =
Unknown Prefix =

PRI Link: 1 Called Party Number Prefix Insertion:

International Prefix =
National Prefix =

2	01-23	Yes	Yes
---	-------	-----	-----

PRI Link: 2 Calling Party Number Prefix Insertion:

International Prefix =
National Prefix =
Subscriber Prefix =
Unknown Prefix =

PRI Link: 2 Called Party Number Prefix Insertion:

International Prefix =
National Prefix =

=====
CPN Substitutions Setup

DID1: 5000-5900
CPN1: 408554xxxx
DID2:
CPN2:
DID3:
CPN3:
DID4:
CPN4:
DID5:
CPN5:
DID6:
CPN6:
DID7:
CPN7:
DID8:
CPN8:
DID9:
CPN9:
DID10:



CPN10 :
DID11 :
CPN11 :
DID12 :
CPN12 :
DID13 :
CPN13 :
DID14 :
CPN14 :
DID15 :
CPN15 :
DID16 :
CPN16 :
DID17 :
CPN17 :
DID18 :
CPN18 :
DID19 :
CPN19 :
DID20 :
CPN20 :
DID21 :
CPN21 :
DID22 :
CPN22 :
DID23 :
CPN23 :
DID24 :
CPN24 :
DID25 :
CPN25 :
DID26 :
CPN26 :
DID27 :
CPN27 :
DID28 :
CPN28 :
DID29 :
CPN29 :
DID30 :
CPN30 :
DID31 :
CPN31 :
DID32 :
CPN32 :
DID33 :
CPN33 :
DID34 :
CPN34 :
DID35 :
CPN35 :
DID36 :
CPN36 :
DID37 :
CPN37 :
DID38 :
CPN38 :
DID39 :
CPN39 :
DID40 :



CPN40 :
DID41 :
CPN41 :
DID42 :
CPN42 :
DID43 :
CPN43 :
DID44 :
CPN44 :
DID45 :
CPN45 :
DID46 :
CPN46 :
DID47 :
CPN47 :
DID48 :
CPN48 :
DID49 :
CPN49 :
DID50 :
CPN50 :
DID51 :
CPN51 :
DID52 :
CPN52 :
DID53 :
CPN53 :
DID54 :
CPN54 :
DID55 :
CPN55 :
DID56 :
CPN56 :
DID57 :
CPN57 :
DID58 :
CPN58 :
DID59 :
CPN59 :
DID60 :
CPN60 :
DID61 :
CPN61 :
DID62 :
CPN62 :
DID63 :
CPN63 :
DID64 :
CPN64 :
DID65 :
CPN65 :
DID66 :
CPN66 :
DID67 :
CPN67 :
DID68 :
CPN68 :
DID69 :
CPN69 :
DID70 :



CPN70 :
DID71 :
CPN71 :
DID72 :
CPN72 :
DID73 :
CPN73 :
DID74 :
CPN74 :
DID75 :
CPN75 :
DID76 :
CPN76 :
DID77 :
CPN77 :
DID78 :
CPN78 :
DID79 :
CPN79 :
DID80 :
CPN80 :
DID81 :
CPN81 :
DID82 :
CPN82 :
DID83 :
CPN83 :
DID84 :
CPN84 :
DID85 :
CPN85 :
DID86 :
CPN86 :
DID87 :
CPN87 :
DID88 :
CPN88 :
DID89 :
CPN89 :
DID90 :
CPN90 :
DID91 :
CPN91 :
DID92 :
CPN92 :
DID93 :
CPN93 :
DID94 :
CPN94 :
DID95 :
CPN95 :
DID96 :
CPN96 :
DID97 :
CPN97 :
DID98 :
CPN98 :
DID99 :
CPN99 :
DID100 :



CPN100:

=====

Outgoing Call Characteristics

PBX
link# Trunks*

PBX link#	Trunks*	
1	01-23	Receive Call Charge Notice: No Fixed Bearer Capability: Voice Speech, Data Null Fixed Network Specific Facilities: Unassigned (len=0) Network: QSIG Fixed CLIR: Voice Allow, Data Allow Per Call Network Specific Facilities: call by call on per call: Yes Network: QSIG 0: Unassigned (len=0) 1: Unassigned (len=0) 2: Unassigned (len=0) 3: Unassigned (len=0) 4: Unassigned (len=0) 5: Unassigned (len=0) 6: Unassigned (len=0) 7: Unassigned (len=0) 8: Unassigned (len=0) CPN Value: Voice Default CPN: CPN Substitutions: Data Default CPN: CPN Substitutions:
2	01-23	Receive Call Charge Notice: No Fixed Bearer Capability: Voice Speech, Data Null Fixed Network Specific Facilities: Unassigned (len=0) Network: QSIG Fixed CLIR: Voice Allow, Data Allow Per Call Network Specific Facilities: call by call on per call: Yes Network: QSIG 0: Unassigned (len=0) 1: Unassigned (len=0) 2: Unassigned (len=0) 3: Unassigned (len=0) 4: Unassigned (len=0) 5: Unassigned (len=0) 6: Unassigned (len=0) 7: Unassigned (len=0) 8: Unassigned (len=0) CPN Value: Voice Default CPN: CPN Substitutions: Data Default CPN: CPN Substitutions:



=====

PBX Trunk Range Assignments

TRA Id	Starting Link Trunk	Ending Link Trunk	AssocTRLs	TRA Description	Protocol
--------	---------------------	-------------------	-----------	-----------------	----------

=====

Min/Max Limits Definitions

TRL Id	AssocSGLs	AssocISLs /RejCause	Counts Min Max	CxC Service /Param	Protocol/ Description
--------	-----------	---------------------	----------------	--------------------	-----------------------



Link Descriptor Assignment

Alarm Status: Major 2004-Feb-19 14:27:34 Data Refresh Help Exit

System Message:

Selection:

System Configuration

- System Configuration
 - System Capacity
 - Units/Modules
 - Trunks
 - Class of Service Options Assign
 - Analog Trunks
 - Digital Trunks
 - DPNSS
 - Link Descriptor Assignment**
 - Digital Link Assignment
 - MSDN-DPNSS-DASSII Tr
 - Trunk Service Assignmer
 - Digital Trunk Assignment
 - Network Synchronization
 - E1/CEPT
 - T1/D4
 - IP Networking/NET
 - Direct Trunk Select
 - Automatic Route Selection (AR
 - Devices
 - Music On Hold
 - Loudspeaker Paging
 - Telephone Paging
 - System Output Ports

Previous Page 1 of 1 Next Go to: value:

Link Descriptor Assignment

Number	Address for Message Control	BER - Maintenance Limit, 10 ^{ms} -n	BER - Service Limit, 10 ^{ms} -n	Data Call Alternate Digit Inversion
1	B	4	3	Yes
3	B	6	6	Yes
4		5	3	Yes
10	B	6	6	Yes
12	B	5	5	Yes
13	B	4	3	Yes
14	A	5	4	Yes

Link Descriptor Assignment

Number: 1
 Address for Message Control: B
 BER - Maintenance Limit, 10^{ms}-n: 4
 BER - Service Limit, 10^{ms}-n: 3
 Data Call Alternate Digit Inversion: Yes
 Framing Losses in 24 hrs - Maintenance Limit: 255
 Framing Losses in 24 hrs - Service Limit: 9000
 Integrated Digital Access: ISDN NODE
 Satellite Link Delay: NO
 Slip Rate - Maintenance Limit: 255



MSDN-DPNSS-DASSII Trunk Circuit Descriptor

Alarm Status: Major 2004-Feb-19 14:27:34 Data Refresh Help Exit

System Message:

Selection:

System Configuration

- System Configuration
- System Capacity
- Units/Modules
- Trunks
 - Class of Service Options Assig
 - Analog Trunks
 - Digital Trunks
 - DPNSS
 - Link Descriptor Assignm
 - Digital Link Assignment
 - MSDN-DPNSS-DASSII Tr
 - Trunk Service Assignmer
 - Digital Trunk Assignment
 - Network Synchronization
 - E1/CEPT
 - T1/O4
 - IP Networking/XNET
 - Direct Trunk Select
 - Automatic Route Selection (AR
- Devices
- Music On Hold
- Loudspeaker Paging
- Telephone Paging
- System Output Ports

Add Change Delete

Previous Page 1 of 1 Next Go to: value: Go

MSDN-DPNSS-DASSII Trunk Circuit Descriptor

Number	Card Type	Dual Seizure Priority	Far End Connection	Signalling Protocol	ISDN BRI Mode
13	UNIVERSAL E1	Incoming	Main PBX	MSDN-DPNSS	
25	CEPT	Incoming	Local Office	MSDN-DPNSS	
26	UNIVERSAL E1	Incoming	Main PBX	MSDN-DPNSS	
27	UNIVERSAL E1	Incoming	Local Office	MSDN-DPNSS	
28	UNIVERSAL T1	Incoming	Local Office	MSDN-DPNSS	
30	UNIVERSAL T1	Incoming	Toll Office	MSDN-DPNSS	



Digital Trunk Assignment

Alarm Status: Major 2004-Feb-19 14:27:34 Data Refresh Help Exit

System Message:

Selection: System Configuration

- System Configuration
 - System Capacity
 - Units/Modules
 - Trunks
 - Class of Service Options Assig
 - Analog Trunks
 - Digital Trunks
 - DPNSS
 - Link Descriptor Assignm
 - Digital Link Assignment
 - MSDN-DPNSS-DASSII Tr
 - Trunk Service Assignmer
 - Digital Trunk Assignment
 - Network Synchronization
 - E1/CEPT
 - T1/D4
 - IP NetworkingXNET
 - Direct Trunk Select
 - Automatic Route Selection (AR
 - Devices
 - Music On Hold
 - Loudspeaker Paging
 - Telephone Paging
 - System Output Ports

Change Clear

Previous Page 7 of 11 Next Go to: value: Go

Digital Trunk Assignment

Cabinet	Shelf	Slot	Circuit	Card Type	Trunk Number
8	1	1	1	UNIVERSAL T1	801
8	1	1	2	UNIVERSAL T1	802
8	1	1	3	UNIVERSAL T1	803
8	1	1	4	UNIVERSAL T1	804
8	1	1	5	UNIVERSAL T1	805
8	1	1	6	UNIVERSAL T1	806
8	1	1	7	UNIVERSAL T1	807
8	1	1	8	UNIVERSAL T1	808
8	1	1	9	UNIVERSAL T1	809
8	1	1	10	UNIVERSAL T1	810

Digital Trunk Assignment

Cabinet: 8
 Shelf: 1
 Slot: 1
 Circuit: 1
 Card Type: UNIVERSAL T1
 Trunk Number: 801
 Trunk Service Number: 12
 DTS Service Number:
 Circuit Descriptor Number: 28
 Interconnect Number: 1



Trunk Service Assignment

Alarm Status: Major 2004-Feb-19 14:27:34 Data Refresh Help Exit

System Message:

Selection:

- System Administration
 - System Administration
 - User Authorization Profiles
 - System Options
 - Automatic Route Selection (AR)
 - Trunk Service Assignment**
 - Trunk Group Assignment
 - Class of Restriction Group Assignment
 - System Account Code Definition
 - Independent Account Code
 - Default Account Code Definition
 - Call Progress Tone Detection
 - Digit Modification Assignment
 - Maximum Dialed Digits
 - Route Assignment
 - Route List Assignment (Optional)
 - Day and Time Zone Assignment
 - Route Plan Assignment (Optional)
 - ARS Digits Dialed Assignment
 - ARS Leading Digits Assignment
 - Interconnect Restriction
 - Node Identity Assignment
 - Automatic Call Distribution (ACD)
 - Call Handling
 - Telephone Management
 - Telephone Directory Management
 - Property Management System

Change Clear

Previous Page 1 of 15 Next Go to: value: Go

Trunk Service Assignment

Trunk Service Number	Release Link Trunk	Class of Service	Class of Restriction	Baud Rate	Intercept Number	Trunk Label
1	NO	11	1	300	1	
2	NO	12	1	300	1	
3	NO	13	1	300	1	
4	NO	1	1	300	1	
5	NO	1	12	300	1	
6	NO	1	1	300	1	
7	NO	1	1	300	1	
8	NO	1	1	300	1	
9	NO	1	1	300	1	
10	NO	1	1	300	1	

Trunk Service Assignment

Trunk Service Number: 1
 Release Link Trunk: NO
 Class of Service: 11
 Class of Restriction: 1
 Baud Rate: 300
 Intercept Number: 1
 Non-dial In Trunks Answer Point - Day: 500
 Non-dial In Trunks Answer Point - Night 1: 500
 Non-dial In Trunks Answer Point - Night 2: 500
 Dial In Trunks Incoming Digit Modification - Absorb:



Alarm Status: Major 2004-Feb-20 12:02:30

Data Refresh Help Exit

System Message:

Selection:

- System Administration
 - System Administration
 - User Authorization Profiles
 - System Options
 - Automatic Route Selection (ARS)
 - Trunk Service Assignment
 - Trunk Group Assignment
 - Class of Restriction Group Assignment
 - System Account Code Definition
 - Independent Account Code
 - Default Account Code Definition
 - Call Progress Tone Detection
 - Digit Modification Assignment
 - Maximum Dialed Digits
 - Route Assignment
 - Route List Assignment (Optional)
 - Day and Time Zone Assignment
 - Route Plan Assignment (Optional)
 - ARS Digits Dialed Assignment
 - ARS Leading Digits Assignment
 - Interconnect Restriction
 - Node Identity Assignment
 - Automatic Call Distribution (ACD)
 - Call Handling
 - Telephone Management
 - Telephone Directory Management
 - Property Management System

Change Clear

Previous Page 2 of 14 Next Go to: value: Go

Trunk Service Assignment

Trunk Service Number	Release Link Trunk	Class of Service	Class of Restriction	Baud Rate	Intercept Number	Trunk Label
11	NO	1	1	300	1	
12	NO	1	1	300	1	
13	NO	1	1	300	1	
14	NO	1	1	300	1	
15	NO	1	1	300	1	
16	NO	1	1	300	1	
17	NO	1	1	300	1	
18	NO	1	1	300	1	
19	NO	1	1	300	1	
20	NO	1	1	300	1	

Trunk Service Assignment

Trunk Service Number: 12
 Release Link Trunk: NO
 Class of Service: 1
 Class of Restriction: 1
 Baud Rate: 300
 Intercept Number: 1
 Non-dial In Trunks Answer Point - Day:
 Non-dial In Trunks Answer Point - Night 1:
 Non-dial In Trunks Answer Point - Night 2:
 Dial In Trunks Incoming Digit Modification - Absorb: 0



Digit Modification Assignment

Alarm Status: Major 2004-Feb-19 14:27:34 Data Refresh Help Exit

System Message:

Selection:

System Administration

- System Administration
- User Authorization Profiles
- System Options
- Automatic Route Selection (ARS)
 - Trunk Service Assignment
 - Trunk Group Assignment
 - Class of Restriction Group Assignment
 - System Account Code Definition
 - Independent Account Code
 - Default Account Code Definition
 - Call Progress Tone Detection
 - Digit Modification Assignment**
 - Maximum Dialed Digits
 - Route Assignment
 - Route List Assignment (Optional)
 - Day and Time Zone Assignment
 - Route Plan Assignment (Optional)
 - ARS Digits Dialed Assignment
 - ARS Leading Digits Assignment
 - Interconnect Restriction
 - Node Identity Assignment
- Automatic Call Distribution (ACD)
- Call Handling
- Telephone Management
- Telephone Directory Management
- Property Management System

Digit Modification Number	Number of Digits to Absorb	Digits to be Inserted	Final Tone Plan/Information Marker
1	1		
2	2		
3	0		
4	3		
5	0		
6	0		
7	0		
8	0		
9	0		
10	0		
11	0		
12	0		
13	0		
14	0		
15	0		
16	0		
17	0		
18	0		
19	0		

Page 1 of 3 Go to: value:



Route Assignment

Alarm Status: Major 2004-Feb-19 14:27:34 Data Refresh Help Exit

System Message:

Selection:

- System Administration
 - System Administration
 - User Authorization Profiles
 - System Options
 - Automatic Route Selection (ARS)
 - Trunk Service Assignment
 - Trunk Group Assignment
 - Class of Restriction Group Assignment
 - System Account Code Definition
 - Independent Account Code
 - Default Account Code Definition
 - Call Progress Tone Detection
 - Digit Modification Assignment
 - Maximum Dialed Digits
 - Route Assignment**
 - Route List Assignment (Optional)
 - Day and Time Zone Assignment
 - Route Plan Assignment (Optional)
 - ARS Digits Dialed Assignment
 - ARS Leading Digits Assignment
 - Interconnect Restriction
 - Node Identity Assignment
 - Automatic Call Distribution (ACD)
 - Call Handling
 - Telephone Management
 - Telephone Directory Management
 - Property Management System

Change Clear

Previous Page 1 of 8 Next Go to: value: Go

Route Assignment

Route Number	Trunk Group Number	COR Group Number	Digit Modification Number	Digits Before Outpulsing	XNET Trunk Group Number	Route Type	Compression
1	1	1	1				Off
2	2	1	5				Off
3	3	1	3				Off
4		1	1				Off
5		1	1				Off
6		1	1				Off
7		1	1				Off
8		1	1				Off
9		1	1				Off
10		1	1				Off
11		1	1				Off
12	12	1	5				Off
13	13	1	4				Off
14	14	1	2				Off
15		1	1				Off
16		1	1				Off
17		1	1				Off
18		1	1				Off



ARS Digits Dialing Plan

Alarm Status: Major 2004-Feb-20 12:02:30 Data Refresh Help Exit

System Message: New record successfully added.

Selection:

System Administration

- System Administration
- User Authorization Profiles
- System Options
- Automatic Route Selection (ARS)
 - Trunk Service Assignment
 - Trunk Group Assignment
 - Class of Restriction Group Assignment
 - System Account Code Definition
 - Independent Account Code
 - Default Account Code Definition
 - Call Progress Tone Detection
 - Digit Modification Assignment
 - Maximum Dialed Digits
 - Route Assignment
 - Route List Assignment (Optional)
 - Day and Time Zone Assignment
 - Route Plan Assignment (Optional)
 - ARS Digits Dialed Assignment**
 - ARS Leading Digits Assignment
 - Interconnect Restriction
 - Node Identity Assignment
- Automatic Call Distribution (ACD)
- Call Handling
- Telephone Management
- Telephone Directory Management
- Property Management System

Previous Page 1 of 1 Next Go to: value: Go

Digits Dialed	Number of Digits to Follow	Termination Type	Termination Number
100	1	Route	13
40	2	Route	2
49	2	Route	12
666	4	Route	13
7	Unknown	Route	1
80	Unknown	Route	2
90	Unknown	Route	3
91	Unknown	Route	13
950484	4	Route	3
650364	4	Route	12
527	4	Route	2



Configuring the Cisco Unified CallManager

6608-T1 Gateway Configuration

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Gateway Configuration

[Back to Find/List Gateways](#)
[Dependency Records](#)

Product : Cisco Catalyst 6000 T1 VoIP Gateway
Gateway : S0/DS1-0@SDA0001C9D93A98
Device Protocol: Digital Access PRI
Registration: Registered with Cisco CallManager 172.20.32.254
IP Address: [172.20.32.112](#)

Status: Ready

Device Information

MAC Address*	<input type="text" value="0001C9D93A98"/>
Description	<input type="text" value="SDA0001C9D93A98"/>
Device Pool*	<input type="text" value="Default"/>
Network Locale	<input type="text" value="United States"/>
Media Resource Group List	<input type="text" value=" < None >"/>
Location	<input type="text" value=" < None >"/>
AAR Group	<input type="text" value=" < None >"/>
Load Information	<input type="text"/>

Multilevel Precedence and Preemption (MLPP) Information

MLPP Domain (e.g., "0000FF")	<input type="text"/>
MLPP Indication	<input type="text" value="Off"/>
MLPP Preemption	<input type="text" value="Disabled"/>

Interface Information

PRI Protocol Type*	<input type="text" value="PRI ISO QSIG T1"/>
Protocol Side*	<input type="text" value="User"/>
Channel Selection Order*	<input type="text" value="Top Down"/>
Channel IE Type*	<input type="text" value="Timeslot Number"/>



PCM Type*	<input type="text" value="µ-law"/>
Delay for first restart (1/8 sec ticks)	<input type="text" value="32"/>
Delay between restarts (1/8 sec ticks)	<input type="text" value="4"/>
<input checked="" type="checkbox"/> Inhibit restarts at PRI initialization	
<input checked="" type="checkbox"/> Enable status poll	
Call Routing Information	
Inbound Calls	
Significant Digits*	<input type="text" value="All"/>
Calling Search Space	<input type="text" value="Incoming Trunk"/>
AAR Calling Search Space	<input type="text" value="< None >"/>
Prefix DN	<input type="text"/>
Outbound Calls	
Calling Line ID Presentation*	<input type="text" value="Allowed"/>
Calling Party Selection*	<input type="text" value="Originator"/>
Called party IE number type unknown*	<input type="text" value="National"/>
Calling party IE number type unknown*	<input type="text" value="National"/>
Called Numbering Plan*	<input type="text" value="ISDN"/>
Calling Numbering Plan*	<input type="text" value="ISDN"/>
Number of digits to strip*	<input type="text" value="0"/>
Caller ID DN	<input type="text"/>
SMDI Base Port*	<input type="text" value="0"/>
PRI Protocol Type Specific Information	
<input checked="" type="checkbox"/> Display IE Delivery	
<input checked="" type="checkbox"/> Redirecting Number IE Delivery - Outbound	
<input type="checkbox"/> Redirecting Number IE Delivery - Inbound	
<input checked="" type="checkbox"/> Send Extra Leading Character In DisplayIE***	
<input type="checkbox"/> Setup non-ISDN Progress Indicator IE Enable****	

<input type="checkbox"/>	MCDN Channel Number Extension Bit Set to Zero**	
<input checked="" type="checkbox"/>	Send Calling Name In Facility IE	
<input type="checkbox"/>	Interface Identifier Present**	
Interface Identifier Value**		<input type="text" value="0"/>
Connected Line ID Presentation (QSIG Inbound Call)*		<input type="text" value="Default"/>
Connected PBX Model		<input type="text" value="None"/>
Product Specific Configuration i		
Clock Reference*		<input type="text" value="Network"/>
TX-Level CSU*		<input type="text" value="0dB"/>
FDL Channel*		<input type="text" value="ATT 54016"/>
Framing*		<input type="text" value="ESF"/>
Audio Signal Adjustment into IP Network*		<input type="text" value="NoDbPadding"/>
Audio Signal Adjustment from IP Network*		<input type="text" value="NoDbPadding"/>
Yellow Alarm*		<input type="text" value="Bit2"/>
Zero Suppression*		<input type="text" value="B8ZS"/>
Digit On Duration(50-500ms)*		<input type="text" value="100"/>
Interdigit Duration(50-500msec)*		<input type="text" value="100"/>
SNMP Community String		<input type="text" value="public"/>
Disable SNMP Set operations*		<input type="checkbox"/>
Debug Port Enable*		<input checked="" type="checkbox"/>
Hold Tone Silence Duration*		<input type="text" value="0"/>
Port Used for Voice Calls*		<input checked="" type="checkbox"/>
Port Used for Modem Calls*		<input checked="" type="checkbox"/>
Port Used for Fax Calls*		<input checked="" type="checkbox"/>
Fax and Modem Parameters		
Fax Relay Enable*		<input checked="" type="checkbox"/>
Fax Error Correction Mode Override*		<input checked="" type="checkbox"/>
Maximum Fax Rate*		<input type="text" value="14400bps"/>

Maximum Fax Rate*	14400bps
Fax Payload Size*	20
Non Standard Facilities Country Code*	65535
Non Standard Facilities Vendor Code*	65535
Fax/Modem Packet Redundancy*	<input type="checkbox"/>
NSE Type*	Non-IOS Gateways

Playout Delay Parameters

Initial Playout Delay*	40
Minimum Playout Delay*	20
Maximum Playout Delay*	150

Echo Canceller Configuration

Echo TailLength (ms)*	32 ms
Minimum ERL (db)*	6 db

* indicates required item
** applicable to DMS-100 protocol only
*** applicable to DMS-100 protocol and DMS-250 protocol only
**** may be required to force ringback from some PBXs

[Back to Find/List Gateways](#)

Partitions Configuration

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions



CISCO SYSTEMS

Find and List Partitions [Add a New Partition](#)

2 matching record(s) for Partition Name begins with ""

Find Partitions where Partition Name
and show items per page
To list all items, click Find without entering any search text.

Matching record(s) 1 to 2 of 2

<input type="checkbox"/>	Partition Name	Description
<input type="checkbox"/>	 Incoming Trunk	Incoming Trunk
<input type="checkbox"/>	 Phones	Phones

First Previous Next Last Page of 1

Calling Search Space Configuration

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Calling Search Space Configuration

[Add New Calling Search Space](#)
[Back to Find/List Calling Search Spaces](#)
[Dependency Records](#)

Calling Search Space: Incoming Trunk
Status: Ready

Calling Search Space Information

Calling Search Space Name*

Description

Route Partitions for this Calling Search Space

Find Partitions containing

Available Partitions

Phones

▼ ▲

Selected Partitions*
(ordered by highest priority)

Incoming Trunk

▲ ▼

* indicates required item

Calling Search Space Configuration

[Add New Calling Search Space](#)
[Back to Find/List Calling Search Spaces](#)
[Dependency Records](#)

Calling Search Space: Phones (in use)

Status: Ready

Calling Search Space Information

Calling Search Space Name*

Description

Route Partitions for this Calling Search Space

Find Partitions containing

Available Partitions



Selected Partitions*
(ordered by highest priority)

* indicates required item



Enbloc Route Pattern Configuration

Route Pattern/Hunt Pilot: 5XXX
Status: Ready
Note: Any update to this Route Pattern or Hunt Pilot automatically resets the associated gateway or Route/Hunt List

Pattern Definition

Route Pattern/Hunt Pilot*	<input type="text" value="5XXX"/>	
Partition	<input style="border: none;" type="text" value=" < None > "/>	
Description	<input type="text"/>	
Numbering Plan*	<input style="border: none;" type="text" value="North American Numbering Plan"/>	
Route Filter	<input style="border: none;" type="text" value=" < None > "/>	
MLPP Precedence	<input style="border: none;" type="text" value="Default"/>	
Gateway or Route/Hunt List*	<input style="border: none;" type="text" value="S0/DS1-0@SDA0001C9D93A98"/> (Edit)	
Route Option	<input checked="" type="radio"/> Route this pattern <input type="radio"/> Block this pattern <input style="border: none;" type="text" value=" — Not Selected — "/>	
<input checked="" type="checkbox"/> Provide Outside Dial Tone	<input type="checkbox"/> Allow Overlap Sending	<input type="checkbox"/> Urgent Priority

Calling Party Transformations

<input type="checkbox"/> Use Calling Party's External Phone Number Mask	
Calling Party Transform Mask	<input type="text"/>
Prefix Digits (Outgoing Calls)	<input type="text"/>
Calling Line ID Presentation	<input style="border: none;" type="text" value="Default"/>
Calling Name Presentation	<input style="border: none;" type="text" value="Default"/>

Connected Party Transformations

Connected Line ID Presentation	<input style="border: none;" type="text" value="Default"/>
Connected Name Presentation	<input style="border: none;" type="text" value="Default"/>

Called Party Transformations

Discard Digits	<input style="border: none;" type="text" value=" < None > "/>
Called Party Transform Mask	<input type="text"/>
Prefix Digits (Outgoing Calls)	<input type="text"/>

ISDN Network-Specific Facilities Information Element

Carrier Identification Code	<input type="text"/>				
Network Service Protocol	<input style="border: none;" type="text" value=" — Not Selected — "/>				
Network Service	<input style="border: none;" type="text" value=" — Not Selected — "/>	Service Parameter Name	<input style="border: none;" type="text" value=" < Not Exist > "/>	Service Parameter Value	<input type="text"/>



Overlap Sending Route Pattern Configuration

Route Pattern/Hunt Pilot: 9.X
Status: Ready
Note: Any update to this Route Pattern or Hunt Pilot automatically resets the associated gateway or Route/Hunt List

Pattern Definition

Route Pattern/Hunt Pilot*	<input type="text" value="9.X"/>	
Partition	<input type="text" value=" < None >"/>	
Description	<input type="text"/>	
Numbering Plan*	<input type="text" value="North American Numbering Plan"/>	
Route Filter	<input type="text" value=" < None >"/>	
MLPP Precedence	<input type="text" value="Default"/>	
Gateway or Route/Hunt List*	<input type="text" value="S0/DS1-0@SDA0001C9D93A98"/> (Edit)	
Route Option	<input checked="" type="radio"/> Route this pattern <input type="radio"/> Block this pattern <input type="text" value=" — Not Selected —"/>	
<input checked="" type="checkbox"/> Provide Outside Dial Tone	<input checked="" type="checkbox"/> Allow Overlap Sending	<input type="checkbox"/> Urgent Priority

Calling Party Transformations

<input type="checkbox"/> Use Calling Party's External Phone Number Mask	
Calling Party Transform Mask	<input type="text"/>
Prefix Digits (Outgoing Calls)	<input type="text"/>
Calling Line ID Presentation	<input type="text" value="Default"/>
Calling Name Presentation	<input type="text" value="Default"/>

Connected Party Transformations

Connected Line ID Presentation	<input type="text" value="Default"/>
Connected Name Presentation	<input type="text" value="Default"/>

Called Party Transformations

Discard Digits	<input type="text" value="PreDot"/>
Called Party Transform Mask	<input type="text"/>
Prefix Digits (Outgoing Calls)	<input type="text"/>

ISDN Network-Specific Facilities Information Element

Carrier Identification Code	<input type="text"/>				
Network Service Protocol	<input type="text" value=" — Not Selected —"/>				
Network Service	<input type="text" value=" — Not Selected —"/>	Service Parameter Name	<input type="text" value=" < Not Exist >"/>	Service Parameter Value	<input type="text"/>

Translation Pattern Configuration

Translation Pattern Configuration

[Add a New Translation Pattern](#)
[Back to Find/List Translation Patterns](#)

Translation Pattern: 4XXX

Status: Ready

Pattern Definition

Translation Pattern	<input type="text" value="4XXX"/>
Partition	<input type="text" value="Incoming Trunk"/>
Description	<input type="text"/>
Numbering Plan*	<input type="text" value="North American Numbering Plan"/>
Route Filter	<input type="text" value="< None >"/>
Calling Search Space	<input type="text" value="Phones"/>
MLPP Precedence	<input type="text" value="Default"/>
Route Option	<input checked="" type="radio"/> Route this pattern <input type="radio"/> Block this pattern <input type="text" value="— Not Selected —"/>
<input checked="" type="checkbox"/> Provide Outside Dial Tone <input type="checkbox"/> Allow Overlap Sending <input checked="" type="checkbox"/> Urgent Priority	

Calling Party Transformations

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask	<input type="text"/>
Prefix Digits (Outgoing Calls)	<input type="text"/>
Calling Line ID Presentation	<input type="text" value="Default"/>
Calling Name Presentation	<input type="text" value="Default"/>

Connected Party Transformations

Connected Line ID Presentation	<input type="text" value="Default"/>
Connected Name Presentation	<input type="text" value="Default"/>

Called Party Transformations

Discard Digits	<input type="text" value="< None >"/>
Called Party Transform Mask	<input type="text"/>
Prefix Digits (Outgoing Calls)	<input type="text"/>

* indicates required item.



Translation Pattern for Incoming PSTN Calls

Translation Pattern Configuration

[Add a New Translation Pattern](#)
[Back to Find/List Translation Patterns](#)

Translation Pattern: 527.XXXX
Status: Ready

Pattern Definition

Translation Pattern	<input type="text" value="527.XXXX"/>
Partition	<input type="text" value="Incoming Trunk"/>
Description	<input type="text"/>
Numbering Plan*	<input type="text" value="North American Numbering Plan"/>
Route Filter	<input type="text" value="< None >"/>
Calling Search Space	<input type="text" value="Phones"/>
MLPP Precedence	<input type="text" value="Default"/>
Route Option	<input checked="" type="radio"/> Route this pattern <input type="radio"/> Block this pattern <input type="text" value="— Not Selected —"/>
<input checked="" type="checkbox"/> Provide Outside Dial Tone	<input checked="" type="checkbox"/> Urgent Priority

Calling Party Transformations

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask	<input type="text"/>
Prefix Digits (Outgoing Calls)	<input type="text"/>
Calling Line ID Presentation	<input type="text" value="Default"/>
Calling Name Presentation	<input type="text" value="Default"/>

Connected Party Transformations

Connected Line ID Presentation	<input type="text" value="Default"/>
Connected Name Presentation	<input type="text" value="Default"/>

Called Party Transformations

Discard Digits	<input type="text" value="PreDot"/>
Called Party Transform Mask	<input type="text"/>
Prefix Digits (Outgoing Calls)	<input type="text"/>

* indicates required item.

PSTN Route Pattern Configuration



Route Pattern/Hunt Pilot: 9.650XXXXXX
Status: Ready
Note: Any update to this Route Pattern or Hunt Pilot automatically resets the associated gateway or Route/Hunt List

Pattern Definition

Route Pattern/Hunt Pilot*
Partition
Description
Numbering Plan*
Route Filter
MLPP Precedence
Gateway or Route/Hunt List* (Edit)
Route Option
 Route this pattern
 Block this pattern
 Provide Outside Dial Tone Allow Overlap Sending Urgent Priority

Calling Party Transformations

Use Calling Party's External Phone Number Mask
Calling Party Transform Mask
Prefix Digits (Outgoing Calls)
Calling Line ID Presentation
Calling Name Presentation

Connected Party Transformations

Connected Line ID Presentation
Connected Name Presentation

Called Party Transformations

Discard Digits
Called Party Transform Mask
Prefix Digits (Outgoing Calls)

ISDN Network-Specific Facilities Information Element

Carrier Identification Code
Network Service Protocol
Network Service Service Parameter Name Service Parameter Value

7960 IP phone Configuration

Phone Configuration

[Add a new phone](#)
[Add/Update Speed Dials](#)
[Subscribe/Unsubscribe Services](#)
[Dependency Records](#)
[Back to Find/List Phones](#)

Directory Numbers

Base Phone

- Line 1 - 4000 in Phones
- Line 2 - Add new DN

Phone: SEP000B5FD22FE8 (Auto 4000)
Registration: Registered with Cisco CallManager 172.20.32.254
IP Address: [172.20.32.102](#)
Status: Ready

Phone Configuration (Model = Cisco 7960)

Device Information

MAC Address*	<input type="text" value="000B5FD22FE8"/>
Description	<input type="text" value="Auto 4000"/>
Owner User ID	<input type="text"/> (Select User ID)
Device Pool*	<input type="text" value="Default"/> (View details)
Calling Search Space	<input type="text" value="< None >"/>
AAR Calling Search Space	<input type="text" value="< None >"/>
Media Resource Group List	<input type="text" value="< None >"/>
User Hold Audio Source	<input type="text" value="< None >"/>
Network Hold Audio Source	<input type="text" value="< None >"/>
Location	<input type="text" value="< None >"/>
User Locale	<input type="text" value="< None >"/>
Network Locale	<input type="text" value="< None >"/>
Device Security Mode	<input type="text" value="Use System Default"/>
Built In Bridge	<input type="text" value="Default"/>
Privacy	<input type="text" value="Default"/>

Phone Button Template Information

Phone Button Template* [\(View button list\)](#)


Softkey Template Information

Softkey Template

Expansion Module Information

Module 1

Module 2

Firmware Load Information (leave blank to use default)	
Phone Load Name	<input type="text"/>
Module 1 Load Name	<input type="text"/> (Module 1 selection required)
Module 2 Load Name	<input type="text"/> (Module 2 selection required)
Cisco IP Phone - External Data Locations (leave blank to use default)	
Information	<input type="text"/>
Directory	<input type="text"/>
Messages	<input type="text"/>
Services	<input type="text"/>
Authentication Server	<input type="text"/>
Proxy Server	<input type="text"/>
Idle	<input type="text"/>
Idle Timer (seconds)	<input type="text"/>
Extension Mobility (Device Profile) Information	
<input type="checkbox"/> Enable Extension Mobility Feature	
Log Out Profile	<input type="text" value="-- Not Selected --"/>
Log In User ID	< None >
Log In Time	< None >
Log Out Time	< None >
Multilevel Precedence and Preemption (MLPP) Information	
MLPP Domain	<input type="text"/> (e.g., "0000FF")
MLPP Indication	<input type="text" value="Default"/>
MLPP Preemption	<input type="text" value="Default"/>
Product Specific Configuration 	
Disable Speakerphone	<input type="checkbox"/>
Disable Speakerphone and Headset	<input type="checkbox"/>
Forwarding Delay*	<input type="text" value="Disabled"/>
PC Port*	<input type="text" value="Enabled"/>
Settings Access*	<input type="text" value="Enabled"/>
Gratuitous ARP*	<input type="text" value="Enabled"/>
PC Voice VLAN Access*	<input type="text" value="Enabled"/>



Directory Number Configuration

[Configure Device \(SEP000B5FD22FE8\)](#)
[Dependency Records](#)

Associated With

SEP000B5FD22FE8
7960 (Line 1)

Directory Number: 4000 (Phones)

Status: Ready
Note: Any update to this Directory Number automatically resets the associated devices

Directory Number

Directory Number*
Partition

Directory Number Settings

Voice Mail Profile
(Choose <None> to use default)
Calling Search Space
AAR Group
User Hold Audio Source
Network Hold Audio Source
Auto Answer

Call Forward and Pickup Settings

	Voice Mail Destination	Calling Search Space
Forward All <input type="checkbox"/>	<input type="text"/>	<input type="text" value=" < None >"/>
Forward Busy <input type="checkbox"/>	<input type="text"/>	<input type="text" value=" < None >"/>
Forward No Answer <input type="checkbox"/>	<input type="text"/>	<input type="text" value=" < None >"/>
No Answer Ring Duration <input type="text"/>	(seconds)	
Call Pickup Group <input type="text"/>	<input type="text" value=" < None >"/>	

MLPP Alternate Party Settings

Target (Destination)
Calling Search Space
No Answer Ring Duration (seconds)

Line Settings for this Device

Display (Internal Caller ID)
Line Text Label
External Phone Number Mask



Message Waiting Lamp Policy	<input type="text" value="Use System Policy"/>
Ring Setting (Phone Idle)	<input type="text" value="Use System Default"/>
Ring Setting (Phone Active)**	<input type="text" value="Use System Default"/>
Multiple Call / Call Waiting Settings	
Maximum Number of Calls*	<input type="text" value="4"/> (1 - 200)
Busy Trigger*	<input type="text" value="2"/> (<= Max. Calls)
Forwarded Call Information Display	
<input checked="" type="checkbox"/> Caller Name	<input checked="" type="checkbox"/> Caller Number
<input checked="" type="checkbox"/> Redirected Number	<input checked="" type="checkbox"/> Dialed Number
<p>* indicates required item; changes to Line or Directory Number settings require restart. ** Ring Setting (Phone Active) applies to this line when any line on the phone has a call in progress.</p>	
<p>Note: If you are using a language other than English for Display (Internal Caller ID) or Line Text Label text, make sure the correct character set (shown below) is selected. Text displays incorrectly if the wrong characterset is selected. (English characters are included in all character sets.)</p>	
Character Set	<input type="text" value="Western European (Latin 1)"/>



Acronyms

Acronym	Definitions
CUCM	Cisco Unified CallManager



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.



Corporate Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters

Cisco Systems International
BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters

Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 317 7777
Fax: +65 317 7799

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 Welcome to the Human Network 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, 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, Networkers, Networking Academy, Network Registrar, 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. (0711R)

Printed in the USA