

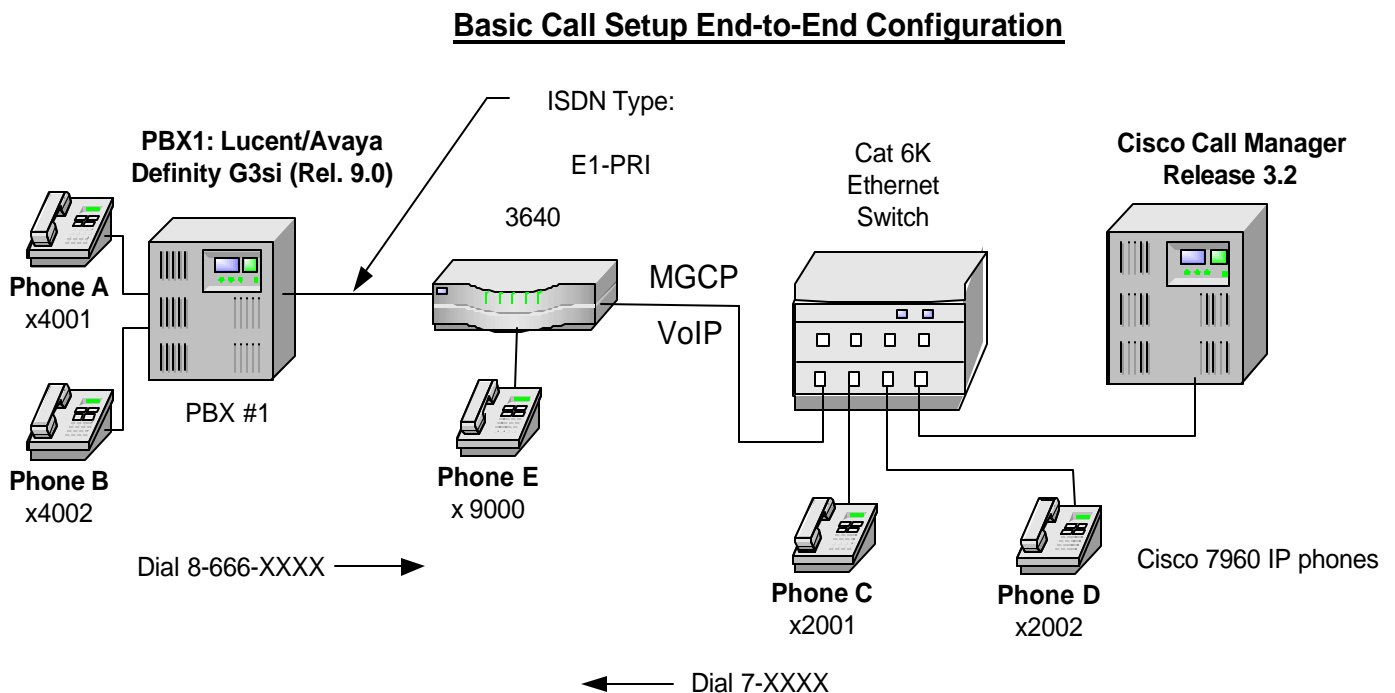
Cisco 3640 Gateway-PBX Interoperability: Lucent/Avaya Definity G3si Version 9 with CallManager Using 3640-E1 PRI as MGCP Gateway

Introduction

- This note describes the interoperability of the /Avaya Definity G3 Version 9 PBX and the Cisco 3640 using-E1 PRI as MGCP Gateway.
- The Network Topology diagram shows the end-to-end interoperability.
- Connectivity is achieved by using the ETSI standard PRI protocol. The Lucent/Avaya Definity G3si can be configured as either network or user side.
- Features supported are as follows:
 - Calling/Called Number
 - Calling Name

Network Topology

Figure 1. Network Topology







Limitations

- Cisco CallManager does not send connected name or connected number information in the connect message back to PBX.
- When calling from Cisco 7960 IP phone to Lucent/Avaya digital phone, Lucent/Avaya phone displays Calling Name and Number after the call is answered as expected. Cisco 7960 IP phone however only displays called number but no connected name even though Lucent/Avaya PBX was sending both connected name and connected number IE information in the connect message back to 3640 Gateway.
- When calling from Lucent/Avaya digital phone to Cisco 7960 IP phone, the Cisco IP phone displays connected name and number after the call is answered. Lucent/Avaya phone however did not display called name or called number. It displays trunk name instead. This was verified using ISDN protocol analyzer that the Cisco CallManager was not sending connected name or connected number information in the connect message back to PBX.
- Features not supported are as follows:
 - Connected Name
 - Connected Number

System Components

Hardware Requirements

- Cisco 3640 Gateway with 2MFT E1 Port
- Cisco Catalyst 6000 switch
- Cisco CallManager 3.2
- Lucent/Avaya Definity G3si V9 PBX, TN464F, DS1 INTFC 24/32

Software Requirements

- Cisco IOS Software Release c3640-js-mz.122-2.XN
- PBX Software Version 9.
- Cisco CallManager Release 3.2

Configuration

Configure the Lucent/Avaya definity G3si PDX in the following sequence:

1. Add the new circuit pack.
2. Add the new signaling group.
3. Add the new trunk group.
4. Add Uniform Dialing Plan.



Step 1. DS1 CIRCUIT PACK

DEFINITY Site Administration - [Lucent Test PBX GED]

File Edit View Tools Window Help

Lucent Test PBX

change ds1 a12 send (rtt) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f6)

1

DS1 CIRCUIT PACK

Location: 01A12 Name: E1 ISDN PRI
Bit Rate: 2.048 Line Coding: hdb3

Signaling Mode: isdn-pri
Connect: network
CentreUu Long Timers? n Country Protocol: etsi
Interworking Message: PROGress Protocol Version: a
Interface Companding: alaw CRC? u
Idle Code: 11111111 DCP/Analog Bearer Capability: 3.1kHz

Slip Detection? n Near-end CSU Type: other

Right-click in a field to see a list of valid entries or help text
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Step 2. Signaling Group

DEFINITY Site Administration - [Lucent Test PBX GEDI]

File Edit View Tools Window Help

Lucent Test PBX

change signaling-group 3 send (rtt) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f6)

1 2 3 4 5

SIGNALING GROUP

Group Number: 3

Associated Signaling?

Primary D-Channel:

Max number of NCA TSC:

Max number of CA TSC:

Trunk Group for NCA TSC:

Trunk Group for Channel Selection:

Supplementary Service Protocol:

Right-click in a field to see a list of valid entries or help text

Ready



Step 3. Trunk Group

DEFINITY Site Administration - [Lucent Test PBX GEDI]

File Edit View Tools Window Help

Lucent Test PBX

change trunk-group 14 send (rt) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1 2 3 4 5 6 7 8 9 10

TRUNK GROUP

Group Number: 14 Group Type: isdn CDR Reports:
Group Name: ISDN E1 PRI COR: 1 TN: 1 TAC: 669
Direction: two-way Outgoing Display?
Dial Access? Busy Threshold: 99 Night Service:
Queue Length: 0
Service Type: tie Auth Code? n TestCall ITC: rest
Far End Test Line No:
TestCall BCC: 4

TRUNK PARAMETERS

Codeset to Send Display: 0 Codeset to Send National IEs: 7
Max Message Size to Send: 260 Charge Advice: none
Supplementary Service Protocol: c Digit Handling (in/out): enbloc/enbloc
Trunk Hunt: ascend
Digital Loss Group: 13
Calling Number - Delete: Insert: Numbering Format:
Bit Rate: 1200 Synchronization: async Duplex: full
Disconnect Supervision - In? Out?
Answer Supervision Timeout: 0

Right-click in a field to see a list of valid entries or help text
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DEFINITY Site Administration - [Lucent Test PBX GEDJ]

File Edit View Tools Window Help

Lucent Test PBX

change trunk-group 14 send (rtt) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1 2 3 4 5 6 7 8 9 10

TRUNK FEATURES

ACA Assignment? Measured: Wideband Support?
Internal Alert? Maintenance Tests?
Data Restriction? NCA-TSC Trunk Member:
Send Name: Send Calling Number:

Used for DCS?
Suppress # Outpulsing? Numbering Format:
Outgoing Channel ID Encoding: UI IE Treatment:

Replace Restricted Numbers?
Replace Unavailable Numbers?
Send Connected Number:

Send UCID?
Send Codeset 6/7 LAI IE? Ds1 Echo Cancellation?

Right-click in a field to see a list of valid entries or help text
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DEFINITY Site Administration - [Lucent Test PBX GEDJ]

File Edit View Tools Window Help

Lucent Test PBX

change trunk-group 14 send (rtt) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1 2 3 4 5 6 7 8 9 10

TRUNK GROUP
Administered Members (min/max): 1/30
Total Administered Members: 30

GROUP MEMBER ASSIGNMENTS

	Port	Code	Sfx	Name	Night	Sig Grp
1:	01A1201	TN464	F			3
2:	01A1202	TN464	F			3
3:	01A1203	TN464	F			3
4:	01A1204	TN464	F			3
5:	01A1205	TN464	F			3
6:	01A1206	TN464	F			3
7:	01A1207	TN464	F			3
8:	01A1208	TN464	F			3
9:	01A1209	TN464	F			3
10:	01A1210	TN464	F			3
11:	01A1211	TN464	F			3
12:	01A1212	TN464	F			3
13:	01A1213	TN464	F			3
14:	01A1214	TN464	F			3
15:	01A1215	TN464	F			3

Right-click in a field to see a list of valid entries or help text
Ready



DEFINITY Site Administration - [Lucent Test PBX GEDJ]

File Edit View Tools Window Help

Lucent Test PBX

change trunk-group 14 send (rtt) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1 2 3 4 5 6 7 8 9 10

TRUNK GROUP
Administered Members (min/max): 1/30
Total Administered Members: 30

GROUP MEMBER ASSIGNMENTS

	Port	Code	Sfx	Name	Night	Sig Grp
16:	01A1217	TN464	F			3
17:	01A1218	TN464	F			3
18:	01A1219	TN464	F			3
19:	01A1220	TN464	F			3
20:	01A1221	TN464	F			3
21:	01A1222	TN464	F			3
22:	01A1223	TN464	F			3
23:	01A1224	TN464	F			3
24:	01A1225	TN464	F			3
25:	01A1226	TN464	F			3
26:	01A1227	TN464	F			3
27:	01A1228	TN464	F			3
28:	01A1229	TN464	F			3
29:	01A1230	TN464	F			3
30:	01A1231	TN464	F			3

Right-click in a field to see a list of valid entries or help text
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Step 4. Uniform Dialing Plan

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File Edit View Tools Window Help

Lucent Test PBX

change dialplan send (rtt) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1

DIAL PLAN RECORD

Local Node Number:

ETA Node Number:

Uniform Dialing Plan: ETA Routing Pattern:

UDP Extension Search Order:

FIRST DIGIT TABLE

First Digit	- 1 -	- 2 -	- 3 -	- 4 -	- 5 -	- 6 -
1:						
2:				extension		
3:				extension		
4:				extension		
5:						
6:			dac			
7:						
8:	fac					
9:	fac					
0:	attd					
*:	fac					
#:	fac		fac			

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Ready



DEFINITY Site Administration - [Lucent Test PBX GED]

File Edit View Tools Window Help

Lucent Test PBX

change udp 2 send (f7) help (f5) cancel (esc) enter (f3) schedule (f9) next (f7) previous (f8)

1 2

UNIFORM DIALING PLAN
Ext Codes: 2ddx

Ext Code: 2xxx Type: UDPCode 222

dd	Type	dd	Type	dd	Type	dd	Type	dd	Type
0x:	<input type="text"/>	1x:	<input type="text"/>	2x:	<input type="text"/>	3x:	<input type="text"/>	4x:	<input type="text"/>
00:	<input type="text"/>	10:	<input type="text"/>	20:	<input type="text"/>	30:	<input type="text"/>	40:	<input type="text"/>
01:	<input type="text"/>	11:	<input type="text"/>	21:	<input type="text"/>	31:	<input type="text"/>	41:	<input type="text"/>
02:	<input type="text"/>	12:	<input type="text"/>	22:	<input type="text"/>	32:	<input type="text"/>	42:	<input type="text"/>
03:	<input type="text"/>	13:	<input type="text"/>	23:	<input type="text"/>	33:	<input type="text"/>	43:	<input type="text"/>
04:	<input type="text"/>	14:	<input type="text"/>	24:	<input type="text"/>	34:	<input type="text"/>	44:	<input type="text"/>
05:	<input type="text"/>	15:	<input type="text"/>	25:	<input type="text"/>	35:	<input type="text"/>	45:	<input type="text"/>
06:	<input type="text"/>	16:	<input type="text"/>	26:	<input type="text"/>	36:	<input type="text"/>	46:	<input type="text"/>
07:	<input type="text"/>	17:	<input type="text"/>	27:	<input type="text"/>	37:	<input type="text"/>	47:	<input type="text"/>
08:	<input type="text"/>	18:	<input type="text"/>	28:	<input type="text"/>	38:	<input type="text"/>	48:	<input type="text"/>
09:	<input type="text"/>	19:	<input type="text"/>	29:	<input type="text"/>	39:	<input type="text"/>	49:	<input type="text"/>

Right-click in a field to see a list of valid entries or help text

Ready



DEFINITY® Site Administration - [AvayaV9 GEDI]

File Edit View System Action Tools Window Help

change route-pattern 2 send (return) help (F5) cancel (esc) enter (F3) schedule (F9) next (F7) previous (F8) next form (F6)

1

Pattern Number: 2

Grp. No.	FRL	NPA	Pfx	Hop	Toll	No. Del	Inserted Digits	IXC
1:	14	0	401	1			3	user
2:								user
3:								user
4:								user
5:								user
6:								user

BCC VALUE	TSC				CA-TSC Request	ITC	BCIE	Service/Feature	BAND	No. Numbering LAR	
	0	1	2	3						4	Dgts
1:	U	U	U	U	n		rest				none
2:	U	U	U	U	n		rest				none
3:	U	U	U	U	n		rest				none
4:	U	U	U	U	n		rest				none
5:	U	U	U	U	n		rest				none
6:	U	U	U	U	n		rest				none

Right-click in a field to see a list of valid entries or help text

Ready

NUM



Configuring Cisco CallManager

Configure the MGCP Cisco 3640 Gateway. Use the following screens as a reference.

The screenshot displays the Cisco CallManager Administration interface for MGCP Configuration. The browser window title is "Cisco CallManager 3.2 Administration - MGCP Configuration - Microsoft Internet Explorer". The address bar shows "4A50-99B7-98D60D28ADA6". The navigation menu includes System, Route Plan, Service, Feature, Device, User, Application, and Help. The main content area features the Cisco CallManager Administration logo and the title "MGCP Configuration". A link "Back to Find/List Gateways" is visible. The configuration details are as follows:

- Product: Cisco 364X
- MGCP : MGCP_3640
- Status: Ready
- Buttons: Update, Delete, Reset Gateway, Cancel Changes
- MGCP Domain Name*: MGCP_3640
- Description: MGCP Gateway
- Cisco CallManager Group*: Default
- Installed Voice Interface Cards section with dropdowns for Module in Slot 0 (< None >) and Module in Slot 1 (NM-HDV).



Cisco CallManager 3.2 Administration - MGCP Configuration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print Address 4A50-99B7-98D60D28ADA6 Go Links >>

Module in Slot 1	NM-HDV			
	Sub-Unit 0	VVIC-2MFT-E1	(1/0) E1PRI	(1/1) ?
Module in Slot 2	NM-2V			
	Sub-Unit 0	VIC-2FXS	(2/0/0) POTS	(2/0/1) ?
	Sub-Unit 1	VIC-2FXO	(2/1/0) ?	(2/1/1) ?
Module in Slot 3	NM-HDV			
	Sub-Unit 0	VVIC-2MFT-T1	(3/0) T1PRI	(3/1) ?

Product Specific Configuration i

Global ISDN Switch Type	N12
Switchback Timing*	Graceful
Switchback uptime-delay (min)	10
Switchback schedule (hh:mm)	12:00

* indicates required item

[Back to Find/List Gateways](#)

Local intranet



Configure the ISDN PRI. Use the following screens as a reference.

Gateway Configuration

[Back to MGCP Configuration](#)
[Back to Find/List Gateways](#)

Product : Cisco 364X
Gateway : S1/DS1-0@MGCP_3640
Device Protocol: Digital Access PRI
Registration: Registered with Cisco CallManager 10.1.1.2
IP Address: 10.1.1.200

Status: Ready

End-Point Name*	<input type="text" value="S1/DS1-0@MGCP_3640"/>
Description	<input type="text" value="S1/DS1-0@MGCP_3640"/>
Device Pool*	<input type="text" value="Default"/>
Media Resource Group List	<input type="text" value="< None >"/>
Network Hold Audio Source	<input type="text" value="< None >"/>
User Hold Audio Source	<input type="text" value="< None >"/>
Calling Search Space	<input type="text" value="< None >"/>
Location	<input type="text" value="< None >"/>



Cisco CallManager 3.2 Administration - Gateway Configuration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print Address 4A50-99B7-98D60D28ADA6 Go Links >>

Load Information	<input type="text"/>
Channel Selection Order*	Top Down
Protocol Side*	Network
Caller ID DN	<input type="text"/>
Calling Party Selection*	Originator
Channel IE Type*	Use Number when 1B
MCDN Channel Number Extension Bit Set to Zero**	<input type="checkbox"/>
Interface Identifier Present**	<input type="checkbox"/>
Interface Identifier Value**	0
Display IE Delivery	<input checked="" type="checkbox"/>
Redirecting Number IE Delivery - Outbound	<input checked="" type="checkbox"/>
Redirecting Number IE Delivery - Inbound	<input checked="" type="checkbox"/>
Delay for first restart (1/8 sec ticks)	32
Delay between restarts (1/8 sec ticks)	4
Num Digits*	23

Local intranet



Cisco CallManager 3.2 Administration - Gateway Configuration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print Address 4A50-99B7-98D60D28ADA6 Go Links >>

Sig Digits	<input checked="" type="checkbox"/>
Prefix DN	<input type="text"/>
Presentation Bit*	Allowed
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
PRI Protocol Type*	PRI EURO
Inhibit restarts at PRI initialization	<input checked="" type="checkbox"/>
Enable status poll	<input type="checkbox"/>
Number of digits to strip*	0
Network Locale	< None >
Setup non-ISDN Progress Indicator IE Enable****	<input type="checkbox"/>

Product Specific Configuration

Line Coding*	HDB3
--------------	------

Local intranet



Cisco CallManager 3.2 Administration - Gateway Configuration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Print Address 4A50-99B7-98D60D28ADA6 Go Links

Inhibit restarts at PRI initialization

Enable status poll

Number of digits to strip* 0

Network Locale < None >

Setup non-ISDN Progress Indicator IE Enable****

Product Specific Configuration

Line Coding* HDB3

Framing* CRC4

Clock* External

* 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 MGCP Configuration](#)
[Back to Find/List Gateways](#)

Local intranet



Configure the route pattern. Use the following screens as a reference.

Route Pattern Configuration

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

Route Pattern: 7.XXXX
Status: Ready
Note: Any update to this route pattern automatically resets the associated gateway/route list

Copy Update Delete Cancel Changes

Pattern Definition

Route Pattern* 7.XXXX
Partition <None >
Numbering Plan* North American Numbering Plan
Route Filter <None >
Gateway/Route List* S1/DS1-0@MGCP_3640 (Edit)
Route Option
 Route this pattern Block this pattern
 Provide Outside Dial Tone Urgent Priority



Cisco CallManager 3.2 Administration - Route Pattern Configuration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites History Address -4982-A802-A797EDBC5B55 Go Links >>

Route Pattern* 7XXXX

Partition <None >

Numbering Plan* North American Numbering Plan

Route Filter <None >

Gateway/Route List* S1/DS1-0@MGCP_3640 (Edit)

Route Option Route this pattern Block this pattern

Provide Outside Dial Tone Urgent Priority

Calling Party Transformations

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask

Prefix Digits (Outgoing Calls)

Called Party Transformations

Discard Digits PreDot

Called Party Transform Mask

Prefix Digits (Outgoing Calls)

* indicates required item.

Local intranet



Configuring the Cisco 3640 Gateway

- The following sample output shows the router configuration for interoperability with the PBX.

```
MGCP_3640#show running configuration
Using 2297 out of 129016 bytes
!
version 12.2
no parser cache
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
no service dhcp
!
hostname MGCP_3640
!
logging rate-limit console 10 except errors
!
!
!
voice-card 1
!
voice-card 3
!
ip subnet-zero
!
!
!
no ip dhcp-client network-discovery
mgcp
mgcp call-agent 10.1.1.2 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 cisco
mgcp sdp simple
mgcp package-capability rtp-package
mgcp package-capability sst-package
no mgcp timer receive-rtcp
no mgcp explicit hookstate
isdn switch-type primary-ni
call rsvp-sync
!
!
!
!
!
ccm-manager mgcp
ccm-manager music-on-hold
ccm-manager config server 10.1.1.2
ccm-manager config
!
!
controller E1 1/0
  pri-group timeslots 1-31 service mgcp
!
controller E1 1/1
!
controller T1 3/0
  framing esf
  linecode b8zs
  pri-group timeslots 1-24 service mgcp
!
controller T1 3/1
  framing sf
  linecode ami
```



```
!  
!  
!  
interface Ethernet0/0  
  ip address 10.1.1.200 255.255.255.0  
  no ip mroute-cache  
  half-duplex  
!  
interface Ethernet0/1  
  ip address 171.69.231.23 255.255.255.0  
  no ip mroute-cache  
  half-duplex  
!  
interface Serial1/0:15  
  no ip address  
  no logging event link-status  
  isdn switch-type primary-net5  
  isdn protocol-emulate network  
  isdn incoming-voice voice  
  isdn T310 4000  
  isdn bind-13 ccm-manager  
  no cdp enable  
!  
interface Serial3/0:23  
  no ip address  
  no logging event link-status  
  isdn switch-type primary-ni  
  isdn protocol-emulate network  
  isdn incoming-voice voice  
  isdn T306 30000  
  isdn T310 40000  
  isdn bind-13 ccm-manager  
  no cdp enable  
!  
ip classless  
no ip http server  
!  
!  
!  
snmp-server manager  
!  
voice-port 1/0:15  
!  
voice-port 2/0/0  
!  
voice-port 2/0/1  
!  
voice-port 2/1/0  
!  
voice-port 2/1/1  
!  
voice-port 3/0:23  
!  
dial-peer cor custom  
!  
!  
!  
dial-peer voice 1 pots  
  application mgcp  
!  
dial-peer voice 3 pots  
  application mgcpapp  
  port 2/0/1  
!  
dial-peer voice 2 pots  
  application mgcpapp
```



```
port 2/0/0
!  
dial-peer voice 999200 pots  
  application mgcpapp  
  port 2/0/0  
!  
dial-peer voice 9991015 pots  
  application mgcpapp  
  port 1/0:15  
!  
dial-peer voice 9993023 pots  
  application mgcpapp  
  port 3/0:23  
!  
!  
line con 0  
line aux 0  
line vty 0 4  
  login  
!  
!  
end
```

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