Application Note

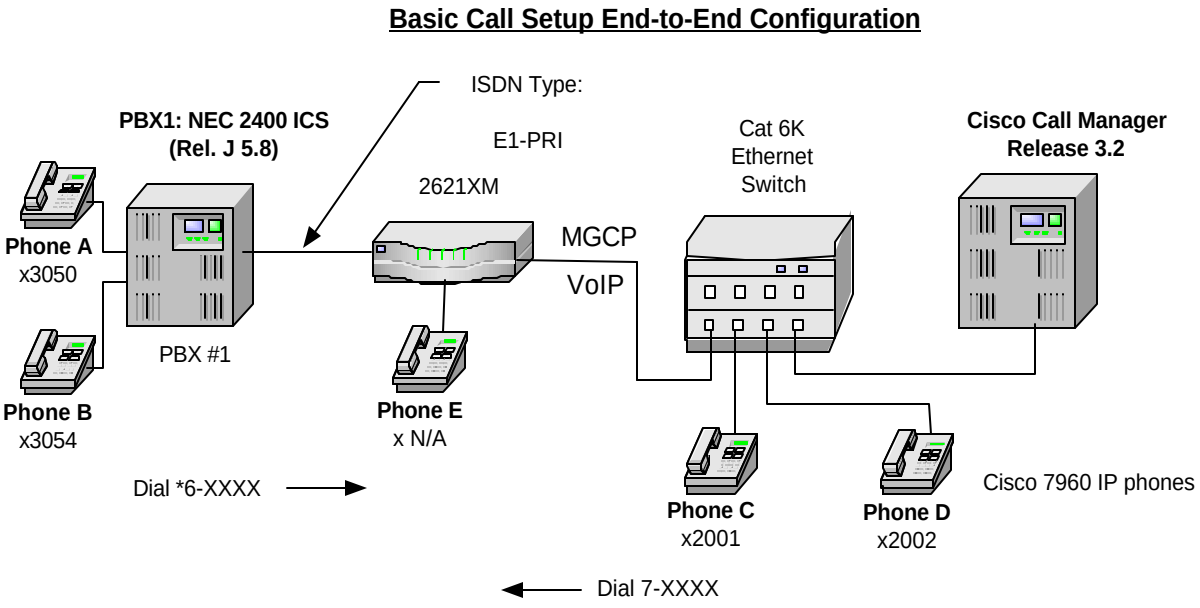
Cisco 2621 Gateway-PBX Interoperability: NEC 2400 ICS Release J.5.8 with CallManager Using 2621XM-E1 PRI as MGCP Gateway

Introduction

- This note describes the interoperability of the NEC 2400 ICS Release J 5.8 PBX and the Cisco 2621XM using-E1 PRI as MGCP Gateway.
- The Network Topology diagram shows the end-to-end interoperability.
- Connectivity is achieved by using the PRI EURO protocol type on the MGCP gateway and NEC/ETSI switch type on the NEC 2400 PBX.
- Features supported are as follows:
  - Calling Number Identification Presentation
  - Calling Number Identification Restriction

Network Topology

Figure 1. Network Topology



EDCS# 209919

Limitations

- Calling name delivery and presentation feature is not supported by the NEC 2400 ICS PBX because the NEC 2400 PBX is using the ETSI standard and Cisco CallManager is using the ISO standard.
- Cisco CallManager does not send connected number information in the connect message back to the PBX.
- When calling from the Cisco 7960 IP phone to the NEC digital phone, both phones display the number after the call is answered.
- When calling from the NEC digital phone to the Cisco 7960 IP phone, the Cisco IP phone displays calling number when the call is answered. NEC phone does not get updated when the call is answered. It displays the numbers being dialed (for example. Access Code + extension number). It was verified using an ISDN protocol analyzer that the Cisco CallManager was not sending connected number information in the connect message back to PBX.
- Though the NEC 2400 PBX can be configured as either "network side" (master) or "user side" (slave), configuration as "network side" is not recommended. The NEC TAC center will not resolve a case presented with the NEC PBX configured as "network side".

System Components

Hardware Requirements

- Cisco 2621XM with 2MFT-E1 port
- Cisco Catalyst 6000 switch
- Cisco CallManager 3.2
- NEC 2400 ICS PBX, PA-30PRTB

Software Requirements

- Cisco IOS Software Release 12.2(10.7)T2
- PBX Software Release J 5.8.
- Cisco CallManager Release 3.2

Configuration

Configuring the NEC 2400 ICS PBX

The NEC PBX requires a substantial amount of programming and circuit card switch settings to properly install E1 PRI. It is beyond the scope of this document to provide the entire configuration; therefore the NEC PBX information that follows is mostly helpful for NEC technicians. It is strongly recommended that you have a NEC ISDN certified technician set up the NEC portion. Refer to the NEC 2400 PBX documentation for complete configuration information

Install circuit card (PA-30PRTB) and set the switches.

Switch	Position	Description	Setting
SW00		Make Busy	Down
SW01	0	All Channel Make Busy	Off
	1	External Loop Back	Off
	2	Internal Loop Back	Off
	3	Dch Handler Make Busy	Off

Switch	Position	Description	Setting
SW02 (SENSE - Rotary)		1 = AT&T 2 = Australia 3 = NTT Japan 4 = NEC/ETSI 5 = AT&T 6 = INS A = Q.SIG	4
SW10	Jumper	Off = Coax On = Twisted Pair	On
SW11	Jumper	Off = Coax On = Twisted Pair	On
SW12	Jumper	Off = Coax On = Twisted Pair	On
SW13	1	On = PAD ROM Special Version Off = PAD ROM Standard Version	Off
	2	On = ISDN BUS Not Used Off = ISDN BUS Used	On
	3	Not Used	Off
	4	Not Used	Off
SW14	1	On = CCITT Signaling Off =CEPT Signaling	On
	2	On = Alarm Release: 2sec (Aus) Off = Alarm Release 15 Sec.	On
	3	PAD	On
	4	PAD	On
	5	PAD	On
	6	PAD	On
	7	PAD	On
	8	Fixed Off	Off
SW15	1	Loopback Pattern Off = Loopback inhibited	Off
	2	Loopback Pattern Off = Loopback inhibited	Off
	3	Loopback Pattern Off = Loopback inhibited	Off
	4	Loopback Pattern Off = Loopback inhibited	Off

Switch	Position	Description	Setting
	5	TS16 Control: On = Data Through (CCIS/ISDN) Off = Signaling	On
	6	On = No CRC4 Off = CRC4	Off
	7	Firmware (CCITT/China/Thailand/Aux)	On
	8	Firmware (CCITT/China/Thailand/Aux)	On
SW16	1	Fixed Off	Off
	2	Fixed Off	Off
	3	All “1” Supervision On = To be controlled Off = Not to be controlled	Off
	4	On = Dch User Side Off = Dch Network Side	On
	5	On = Dch NegativeLogic Off = Dch Positive Logic	Off
	6	On = Dch Packet Service On Off = Dch Packet Service Off	Off
	7	Fixed Off	Off
	8	Fixed Off	Off

Configure the route (ARTD). The following are the route settings found in ARTD. Route 12 is the B channel and route 13 is the D channel. Setting the NEC PBX to emulate the network side is not supported by NEC. However, you can have limited success emulating network side. CDN 64 must remain set to 0 or the calling number is not be passed.

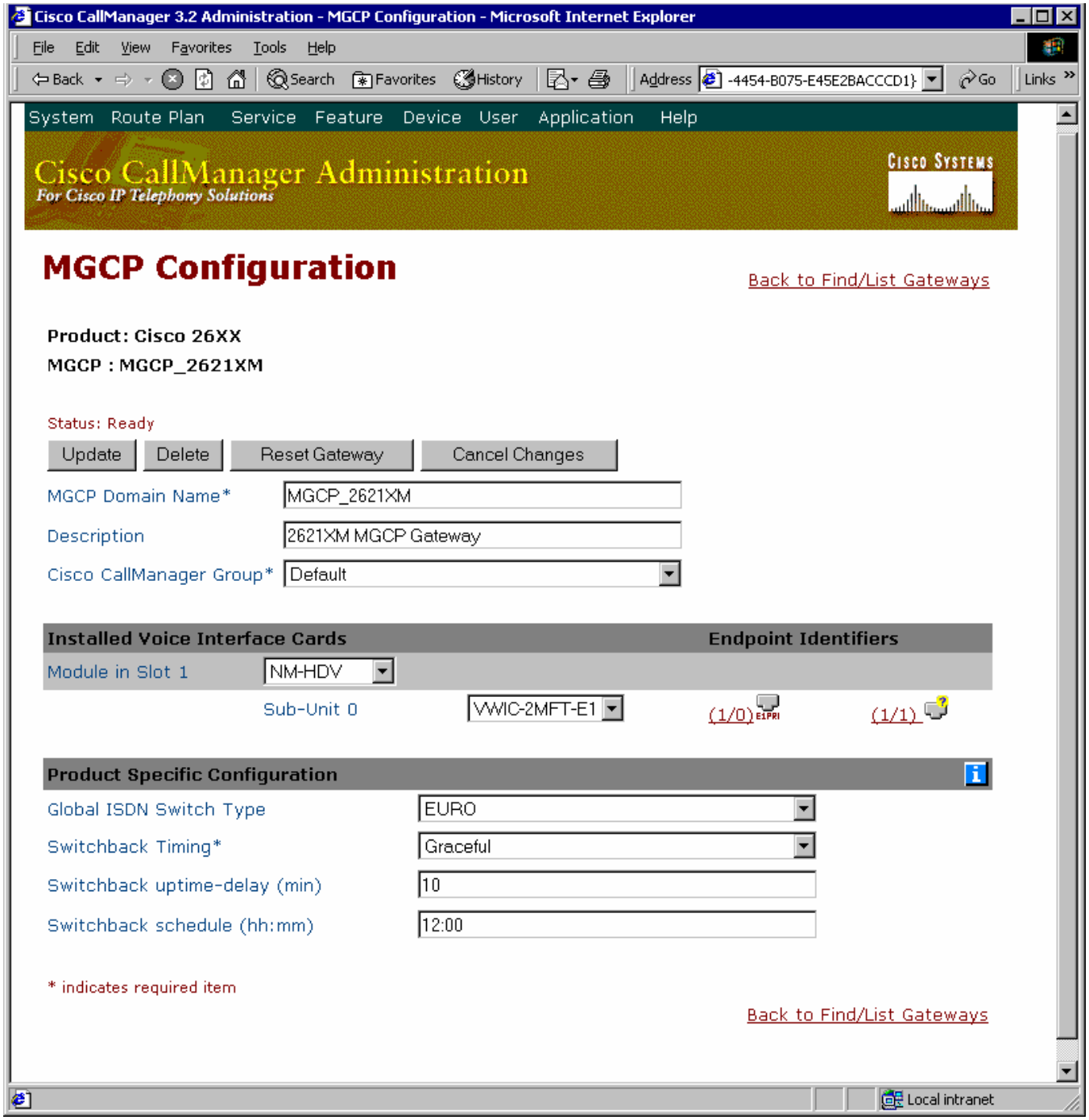
```
   [LRTD]                CISCO TEST FACILITY      02/05/10         PAGE:  5

            *  ROUTE CLASS DATA LIST  *

                 -------  R O U T E     N U M B E R  -------
CDN FUNCTION      11         12         13         14         15

  1  OSGS          7          0          0          0          0
  2  ONSG          3          2          0          2          2
  3  ISGS          7          0          0          0          0
  4  INSG          3          2          0          2          2
  5   TF           3          3          3          3          3

  6   TCL          4          4          4          4          4
  7   L/T          1          1          1          1          1
  8   RLP          2          2          0          2          0
  9   TQ           0          0          0          0          0
 10  SMDR          0          1          1          1          1

 11   TD           0          0          0          0          0
 12   DR           0          0          0          0          0
 13   AC           1          1          0          1          0
 14   TNT          0          0          0          0          0
 15   LSG          5         12         13         12         13

 16 SMDR2          0          0          0          0          0
 17   H/M          0          0          0          0          0
 18   MC           0          0          0          0          0
 19   ANI          0          1          1          1          0
 20   D            0          0          0          0          0

 21   MSB          0          0          0          0          0
 22   MSW          0          0          0          0          0
 23   TR           0          0          0          0          0
 24   OC           0          0          0          0          0
 25   R/L          0          0          0          0          0

 26  RVSD          0          0          0          0          0
 27   TL           0          0          0          0          0
 28   ANS          0          1          1          1          1
 29  TELP          0          0          0          0          0
 30   PAD          0          4          7          4          7

 31  OGRL          0          1          1          1          1
 32  ICRL          0          1          1          1          1
 33   HD           0          0          0          0          0
 34 GUARD          0          1          1          1          1
 35  WINK          0          0          0          0          0

 36   VAD          0          0          0          0          0
 37   CLD          0          0          0          0          0
 38   FA           0          0          0          0          0
```

* ROUTE CLASS DATA LIST *

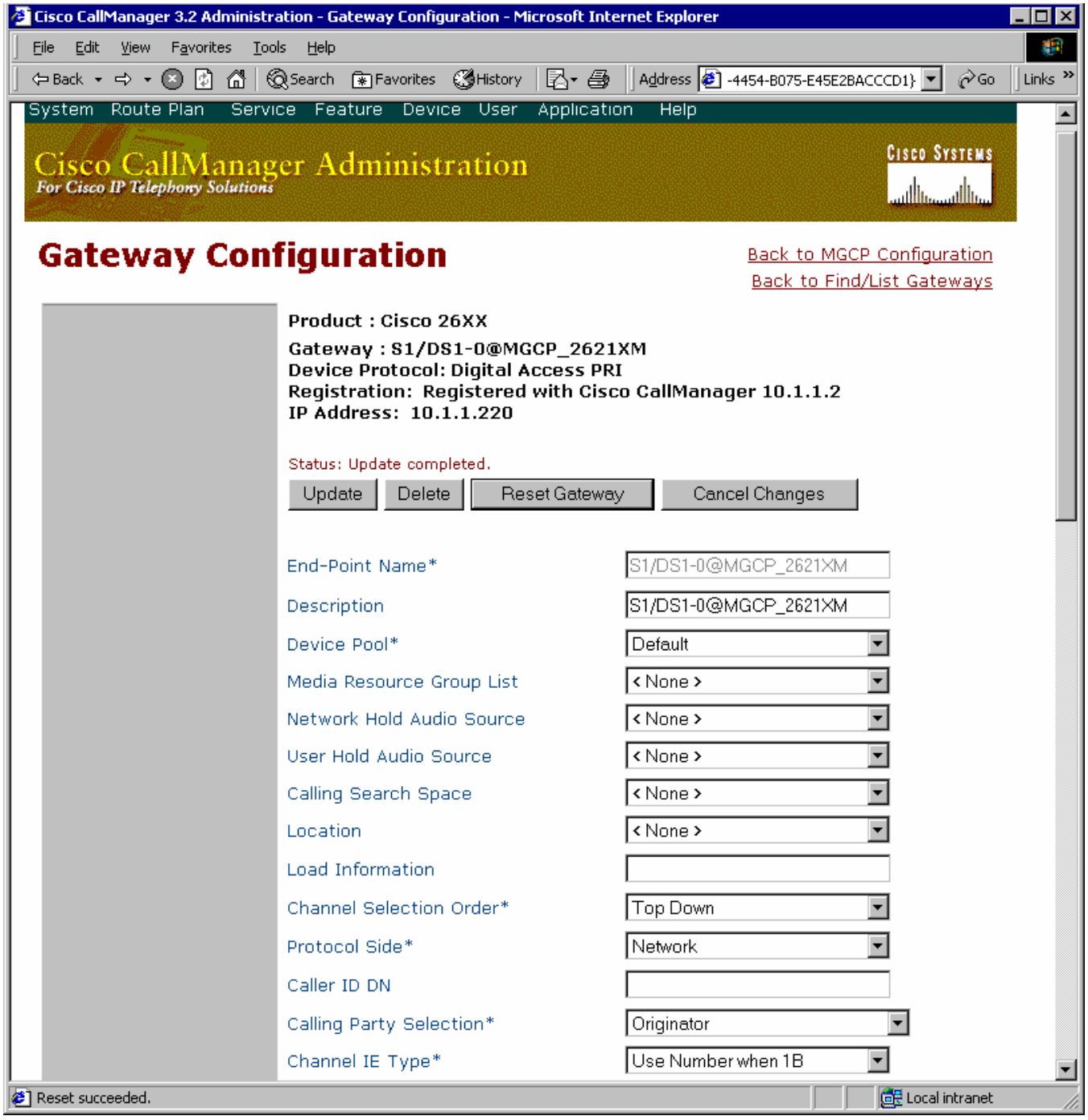
CDN	FUNCTION	ROUTE NUMBER 11	12	13	14	15
39	BC	0	0	0	0	0
40	TCM	0	0	0	0	0
41	TDMQ	0	0	0	0	0
42	TRSC	0	0	0	0	0
43	BT	0	1	0	1	1
44	PRV	0	0	0	0	0
45	A/D	0	1	1	1	1
46	CW	0	0	0	0	0
47	TPQ	0	0	0	0	0
48	BL	0	0	0	0	0
49	TRKS	0	1	1	0	0
50	DPLY	0	1	1	1	1
51	ACD	0	0	0	0	0
52	2W/4W	1	0	0	0	0
53	FAAT	0	0	0	0	0
54	GW	0	0	0	0	0
55	TCMA	0	0	0	0	0
56	SMDR3	0	0	0	0	0
57	HDT	0	0	0	0	0
58	CD	0	0	0	0	0
59	CCH	0	0	0	0	0
60	TC/EC	0	0	0	0	0
61	IRE	0	0	0	0	0
62	SCR	0	0	0	0	0
63	LYER1	0	1	1	1	1
64	NET	0	1	0	0	0
65	INT	0	4	4	4	4
66	DC	0	4	4	4	4
67	HKS	0	0	0	0	0
68	SCF	0	0	0	0	0
69	SMDR4	0	0	0	0	0

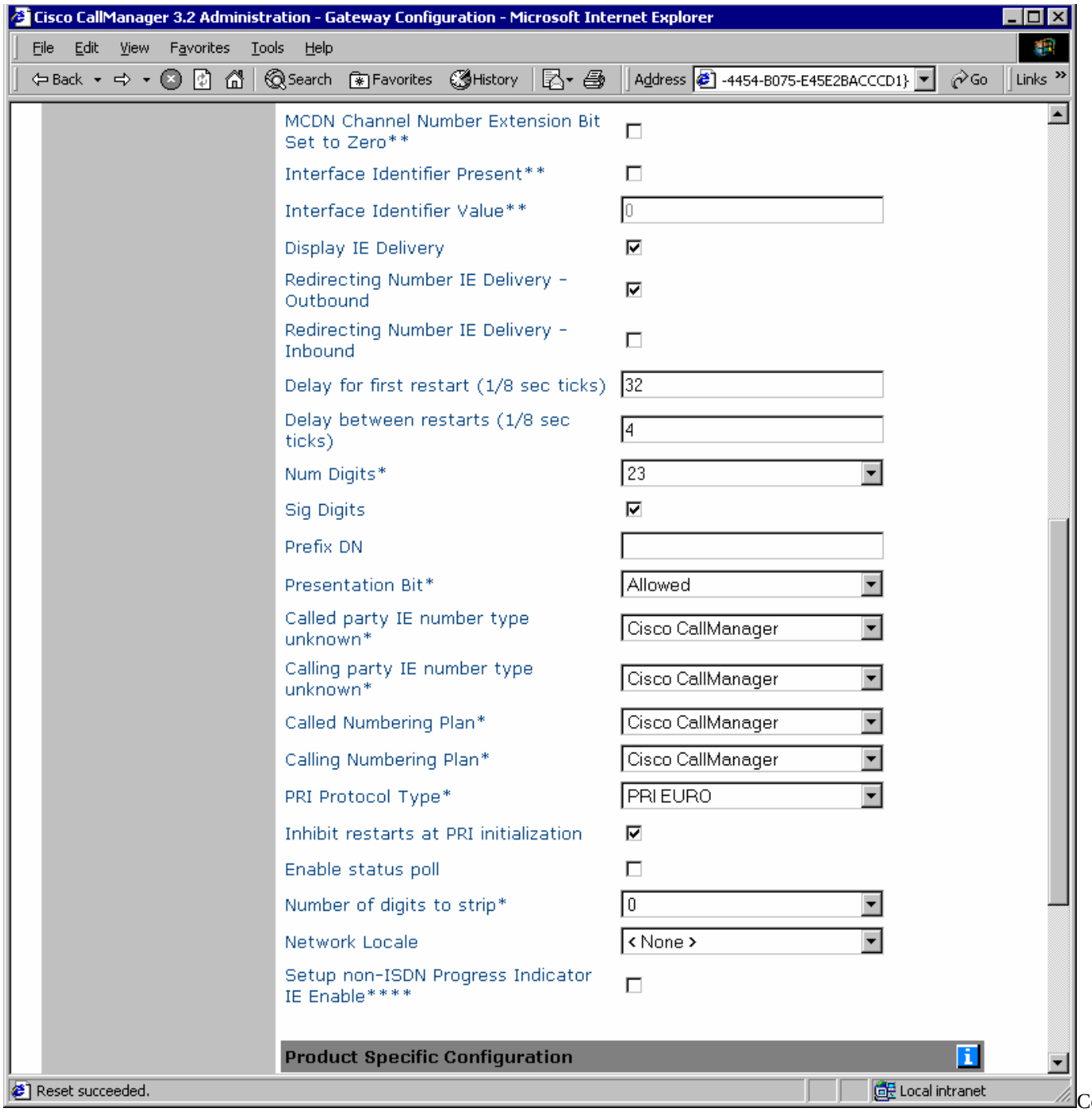
Configuring Cisco CallManager

Configure the MGCP 2621XM-E1 gateway. Use the following screen as a reference.

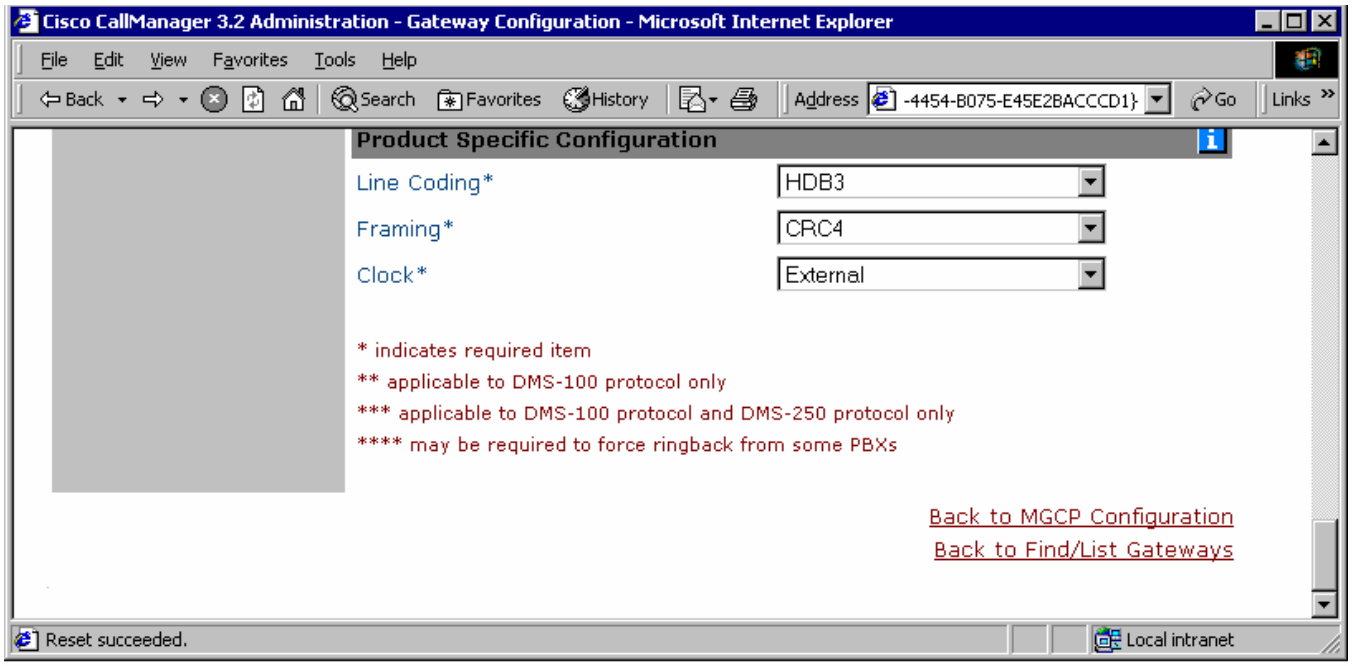


Configure the ISDN PRI. Use the following screens as a reference.

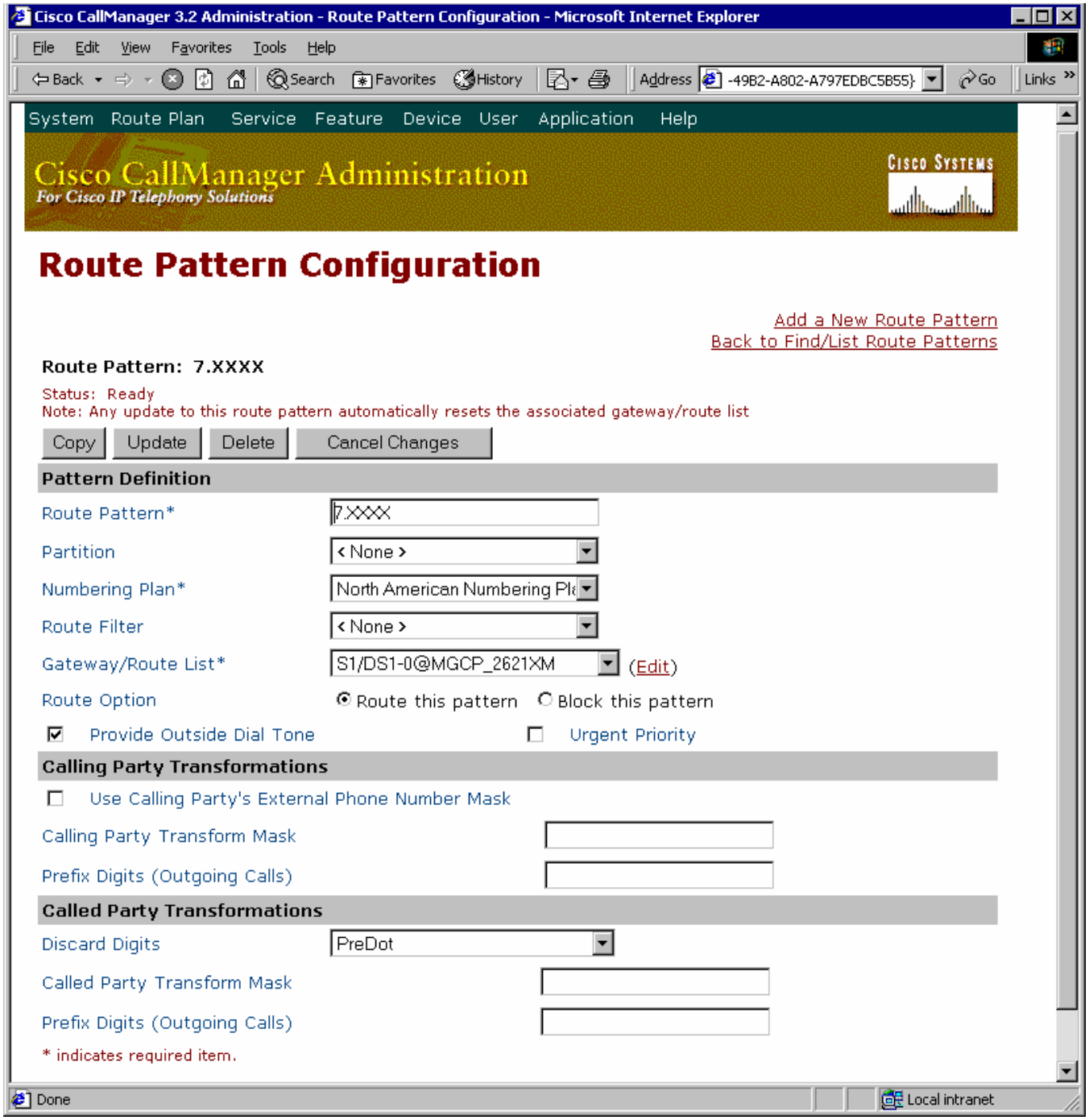




Con



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



Configuring the Cisco 2621XM Gateway

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

```
MGCP_2621XM#sh run
Building configuration...

Current configuration : 1381 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname MGCP_2621XM
!
!
voice-card 1
!
ip subnet-zero
!
!
!
isdn switch-type primary-net5
!
!
voice call carrier capacity active
!
!
!
!
!
!
!
!
!
!
ccm-manager mgcp
ccm-manager music-on-hold
ccm-manager config server 10.1.1.2
ccm-manager config
fax interface-type fax-mail
mta receive maximum-recipients 0
!
controller E1 1/0
 pri-group timeslots 1-31 service mgcp
!
controller E1 1/1
!
!
!
!
interface FastEthernet0/0
 ip address 10.1.1.220 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
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 bind-l3 ccm-manager
 no cdp enable
!
ip classless
no ip http server
ip pim bidir-enable
!
!
!
!
call rsvp-sync
!
voice-port 1/0:15
!
mgcp
mgcp call-agent 10.1.1.2 service-type mgcp version 0.1
mgcp dtmf-relay voip codec all mode out-of-band
mgcp modem passthrough voip mode nse
mgcp package-capability rtp-package
no mgcp timer receive-rtcp
mgcp sdp simple
!
mgcp profile default
!
dial-peer cor custom
!
!
!
dial-peer voice 1015 pots
 application mgcpapp
 port 1/0:15
!
!
line con 0
line aux 0
line vty 0 4
 login
line vty 5 15
 login
!
!
end

MGCP_2621XM#
```

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