Cisco Unified CallManager Release 4.1-PBX Interoperability: Alcatel 4400 Release 5.1 PBX with 2650XM-E1 QSIG as MGCP Gateway

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Introduction

This is an application note for connectivity of Alcatel 4400 Release 5.1 PBX with Cisco Unified CallManager Release 4.1 using 2650XM_E1 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 2650XM_E1 QSIG link as MGCP gateway.

Connectivity is achieved by using the PRI QSIG E1 protocol type on the MGCP gateway and ABC_F (QSIG_GF filtered) switch type on the Alcatel 4400 PBX.

This Application Note uses the 2650XM_E1 voice gateway, however other Cisco voice gateways are also an option to use since Cisco Unified CallManager QSIG implementation does not depend on the physical interface.

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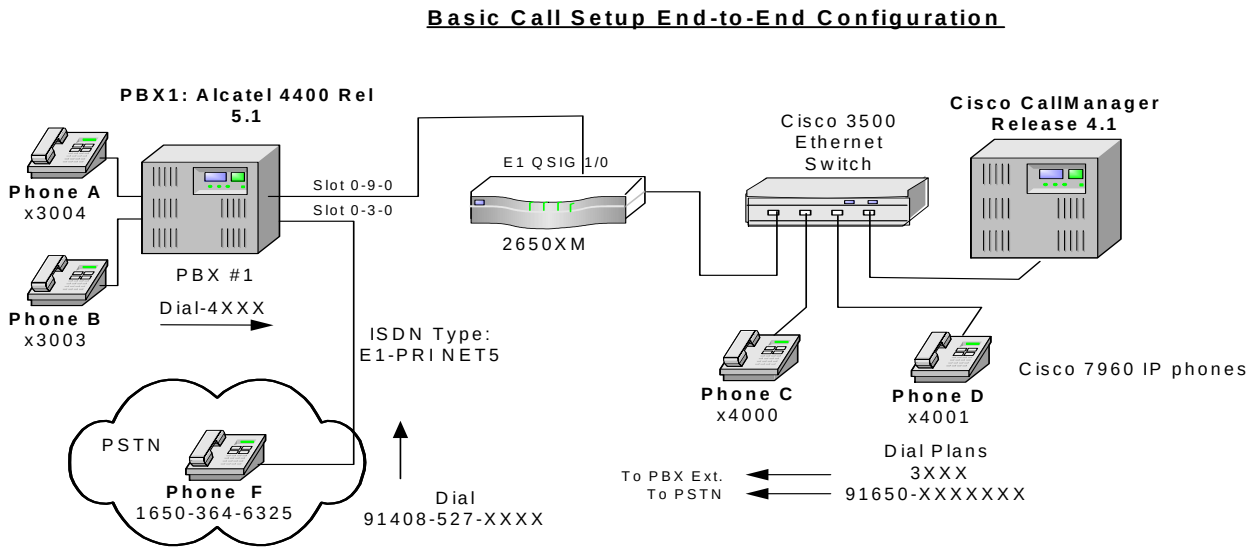
Network Topology

Figure 1. Network Topology or Test Setup



Limitations

Basic Call with Overlap Sending

- Alcatel does not display connected number when configured for Overlap Sending. CCM does send connected name and number when answering the original call.

Call Forward by Join

- Alcatel does not support call forwarding by join. Instead the Alcatel performs a reroute.

Path Replacement for Call Transfer

- Alcatel did not update connected name and number after Path Replacement.

Additional Network Feature Path Replacement for Call Diversion

- Alcatel does not send Path Replacement proposal for Call Diversion by forward switch.

MWI

- Cisco has not been able to validate MWI functionality in our labs due to the fact that we do not have an internal voicemail system on our Alcatel PBX. However, Alcatel's documentation confirms that OmniPCX 4400 PBX's does support MWI as long as the Alcatel PBX is the message center PINX. Also MWI was confirmed to be working at a Cisco customer's site on an Alcatel 4400 Release 4.2 system supporting an internal Octel voicemail blade.

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– With Cisco Unified CallManager configured as the message center PINX, Alcatel 4400 PBX Release 4.2 system does not support QSIG MWI.

System Components

Hardware Requirements

Cisco Hardware:

Cisco 2650XM router with 2MFT-E1 ports

Cisco Unified CallManager

Alcatel 4400 PBX:

PRA2

Software Requirements

Cisco Unified CallManager 4.1

PBX Software version 5.1

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

COLP-Connected Line (Number) Identification Presentation

COLR- Connected Line (Number) Identification Restriction

CONP-Connected Name Identification Presentation

CONR- Connected Name Identification Restriction

Sending Alerting Name

CT-Call Transfer (by join)

CFU-Call Forwarding Unconditional (by join)

CFB-Call Forwarding Busy (by join)

CFNR-Call Forwarding No Reply (by join)

CFU-Call Forwarding Unconditional (by Reroute)

CFB-Call Forwarding Busy (by Reroute)

CFNR-Call Forwarding No Reply (by Reroute)

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CCBS-Call Completion to Busy Subscriber

CCNR-Call Completion No Reply

ANF-PR-Additional Network Feature Path Replacement (for Call Transfer by join).

ANF-PR-Additional Network Feature Path Replacement (for Call Diversion by forward switching)

ANF-PR-Additional Network Feature Path Replacement (for Trombone connection)

Message Waiting Indication is supported by Alcatel OmniPCX PBX's (lamp ON, lamp OFF, (See Limitation))

Configuration

Configuration Sequence and Tasks

Configure Board.

Configure Digital Access

Configure "ISO Function" System Parameter.

Configure PRI-ABC_F Trunk Group

Configure PSTN Trunk Group

Configure Network Routing

Configure Network Routing "Own Node".

Configure Routing Prefix.

Configure Digital Station

Configure Digital Station Phone Facilities

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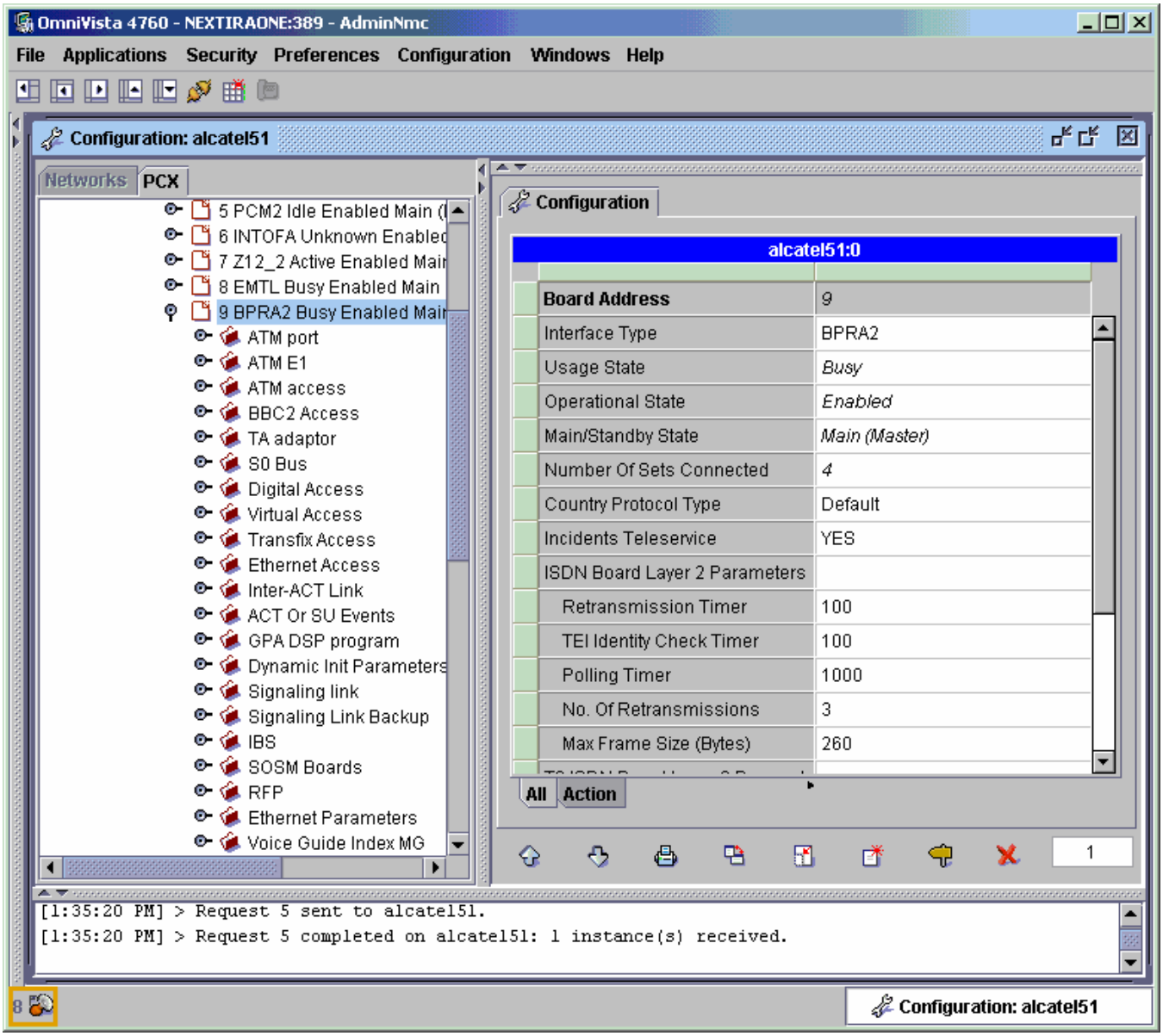
Configuring the Alcatel 4400 PBX

Configure the Board



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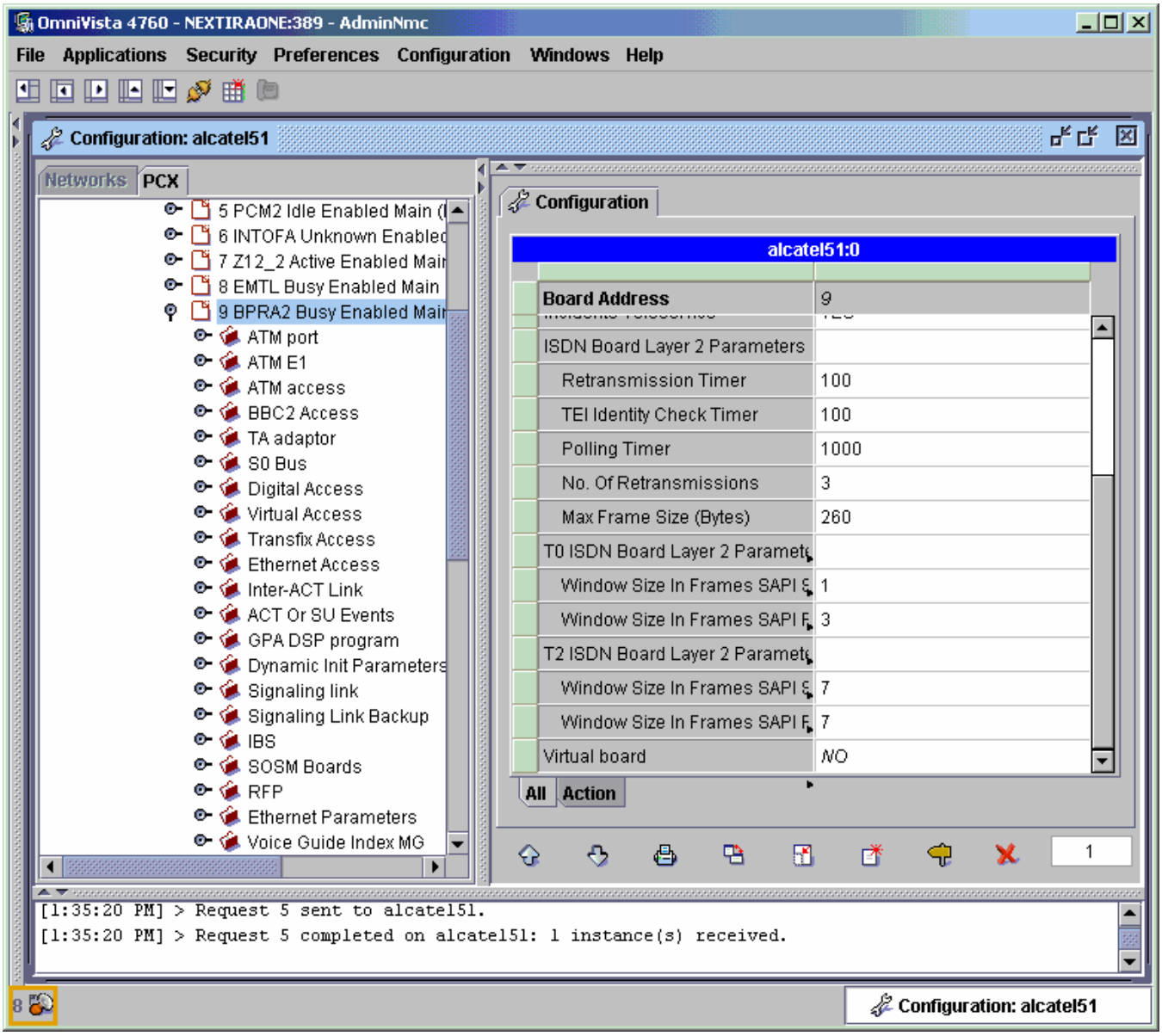

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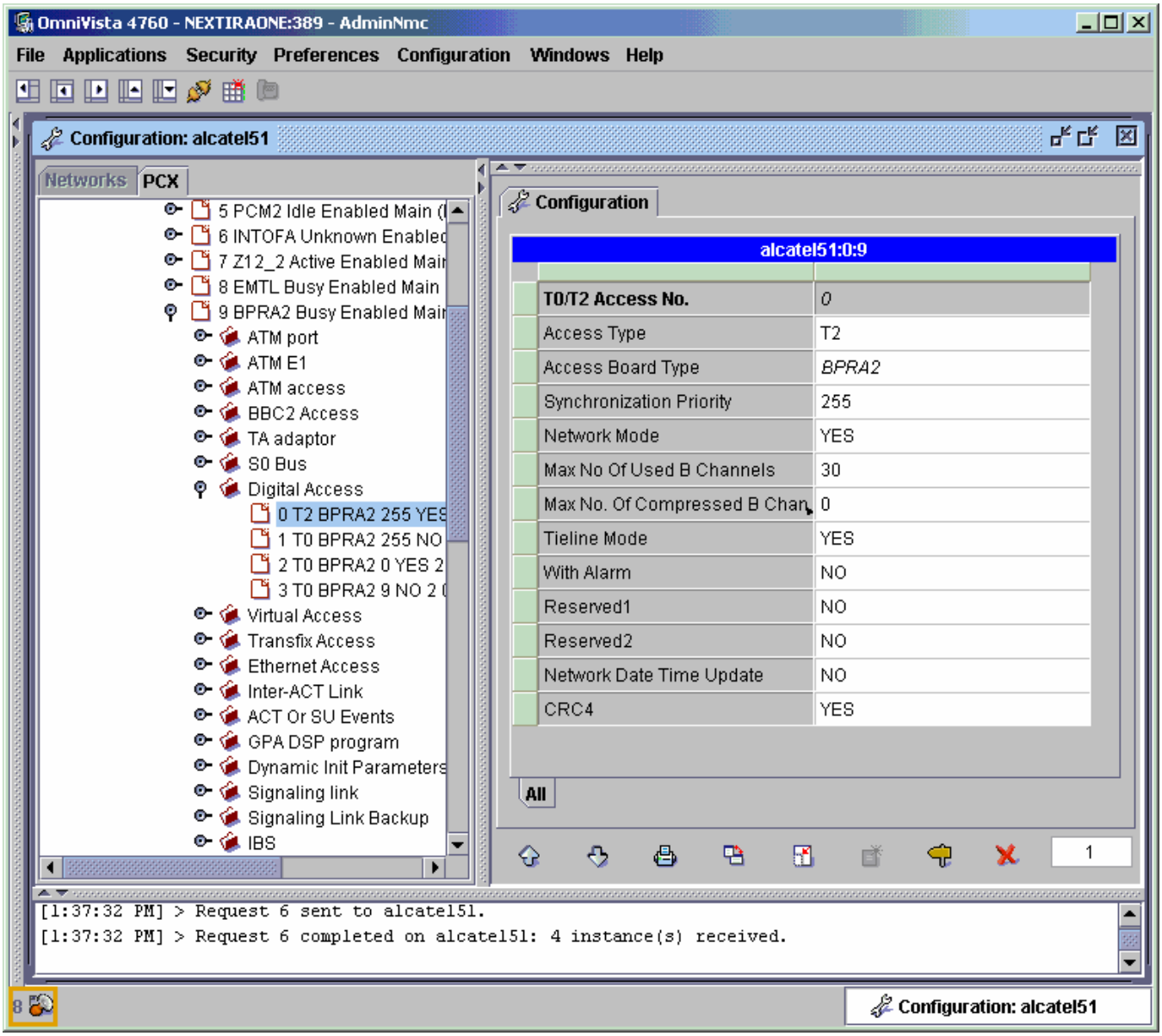
Configure Digital Access



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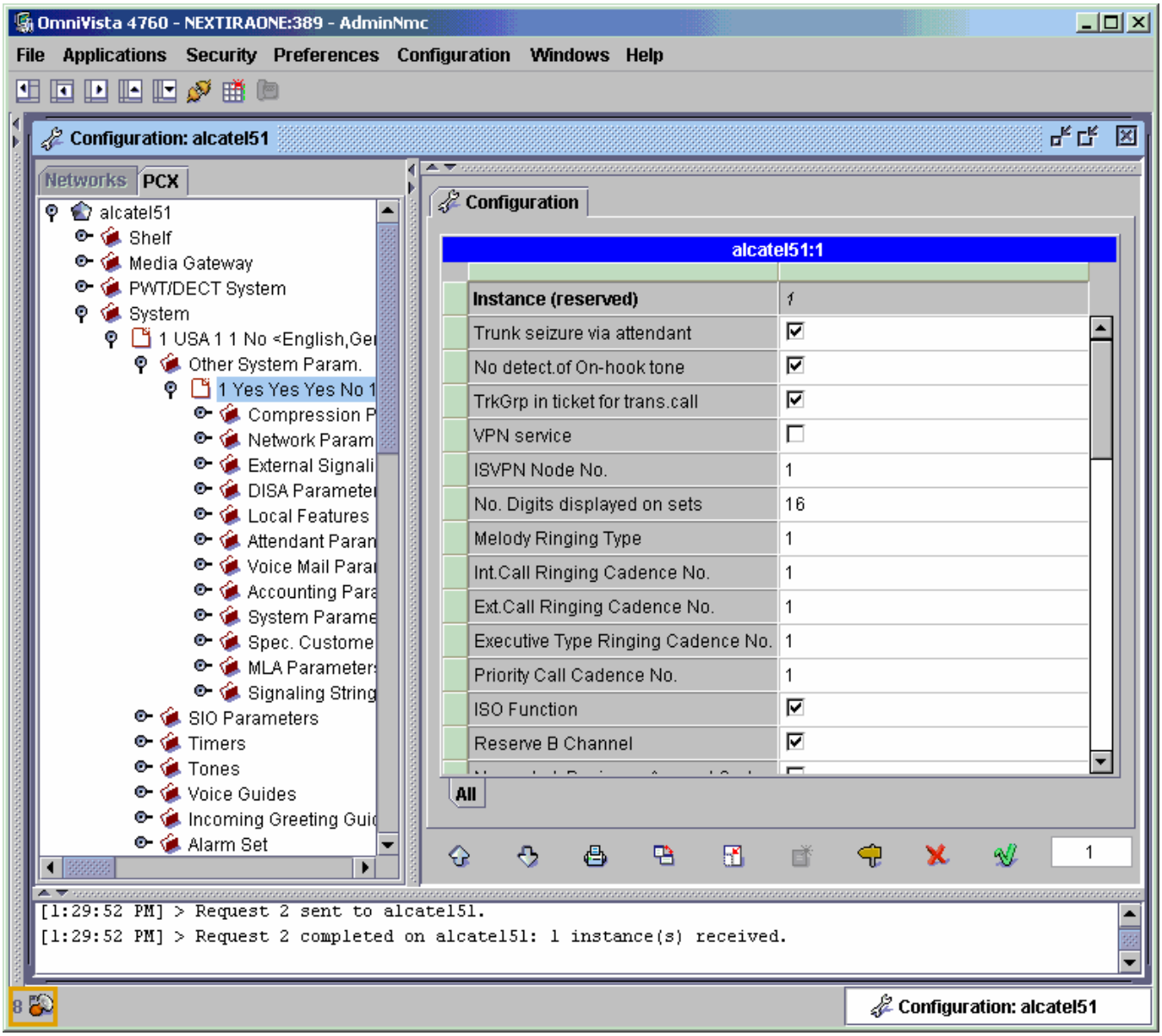
Configure “ISO Function” System Parameter



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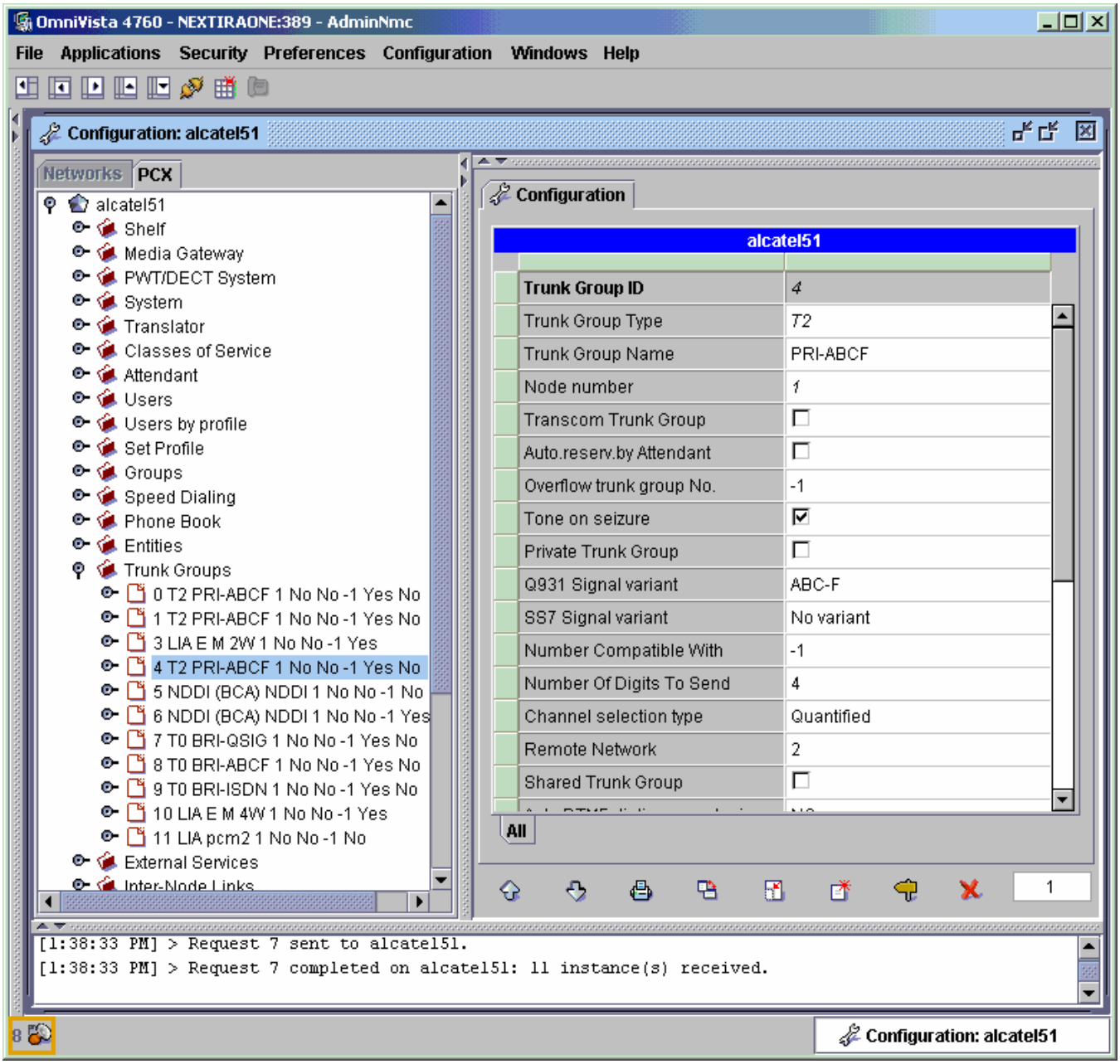
Configure PRI ABC_F Trunk Group



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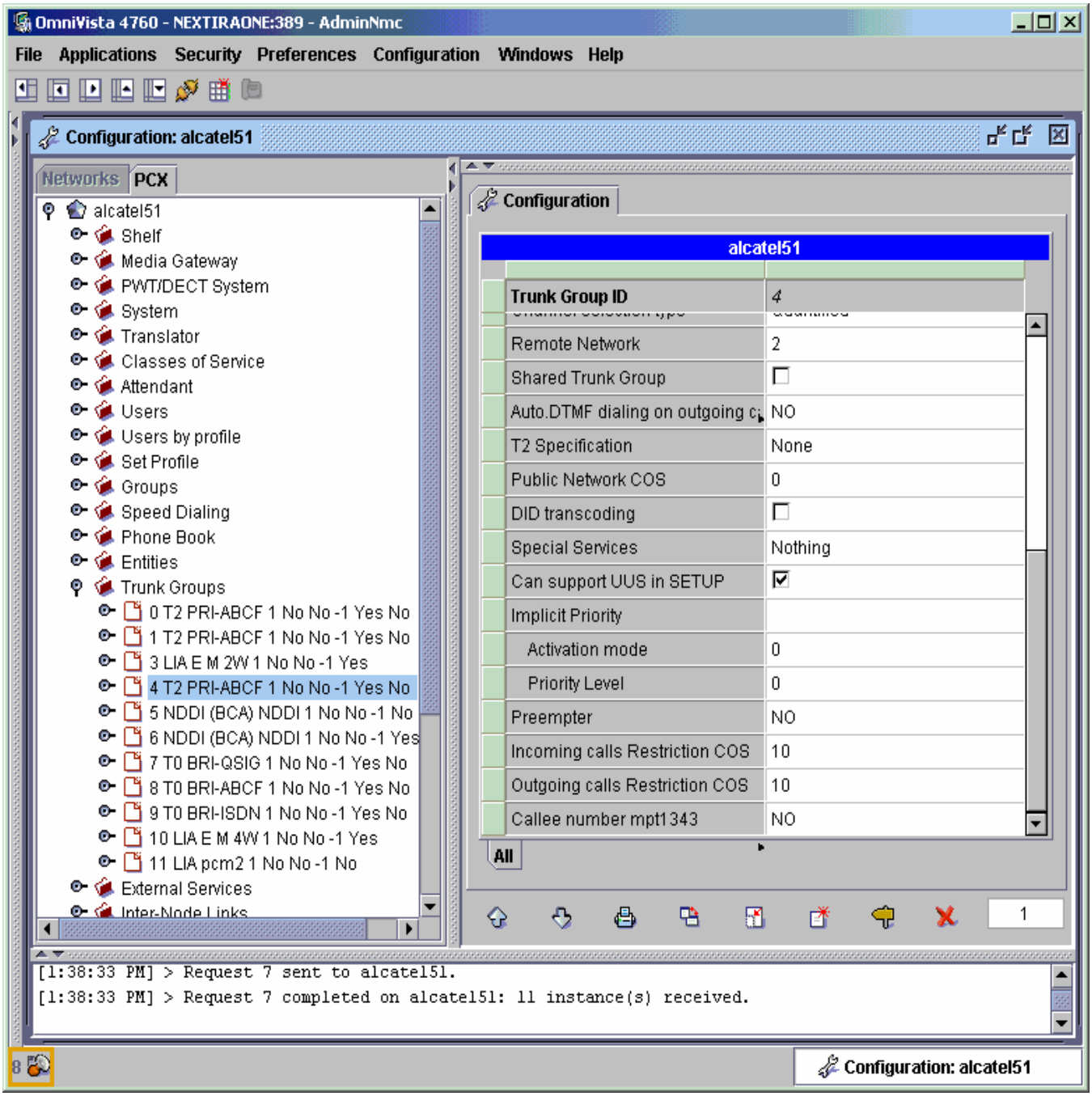

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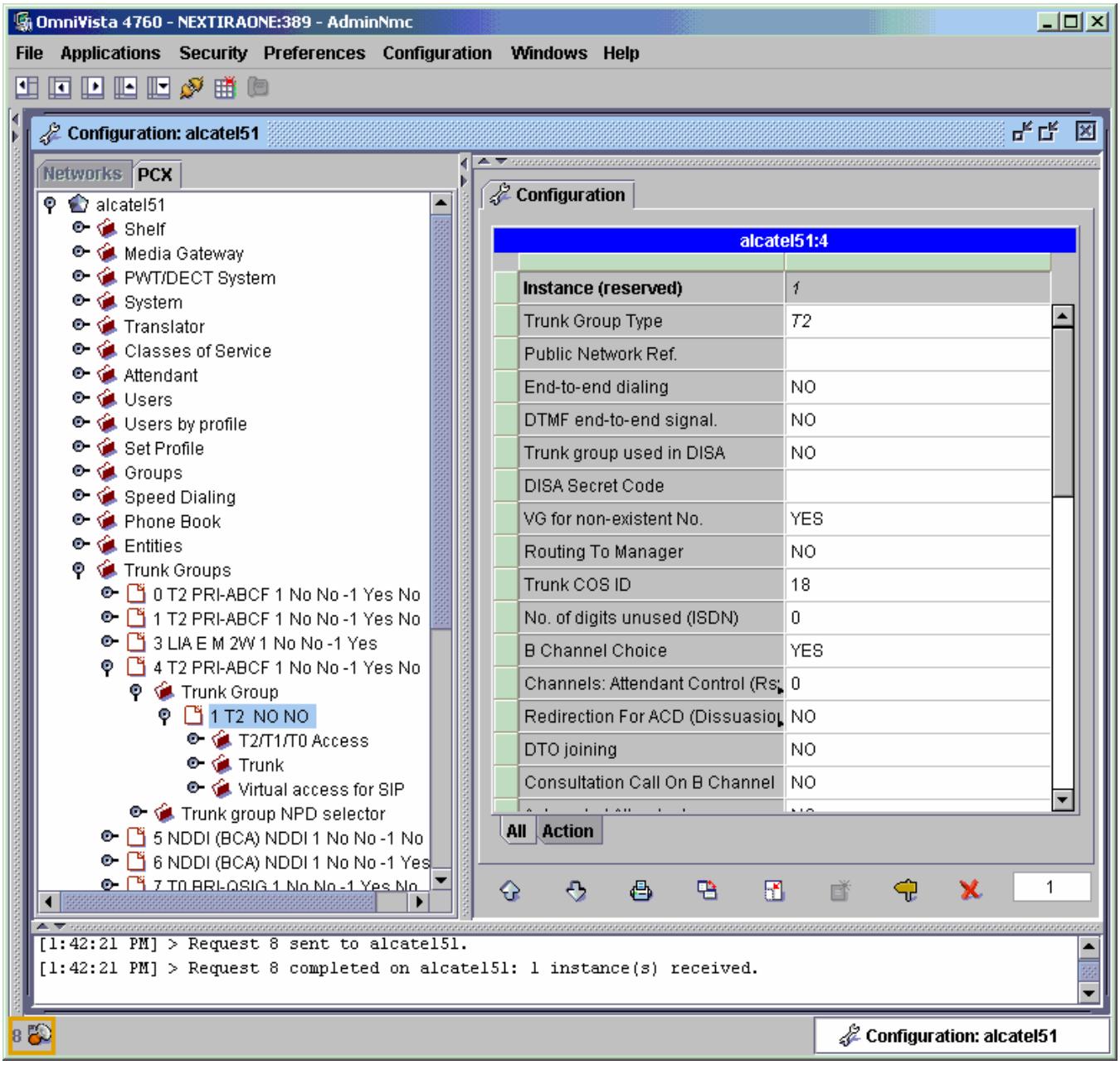

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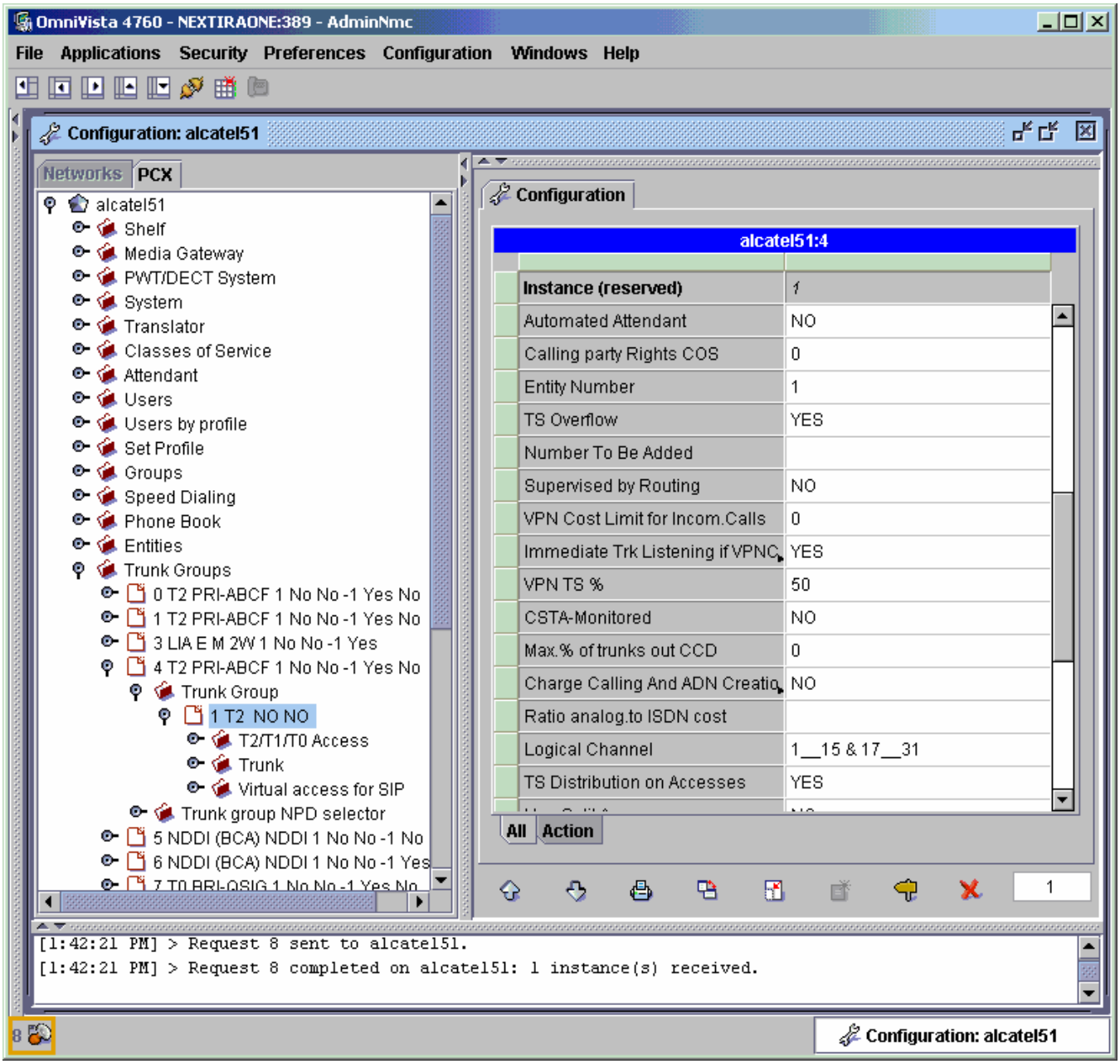

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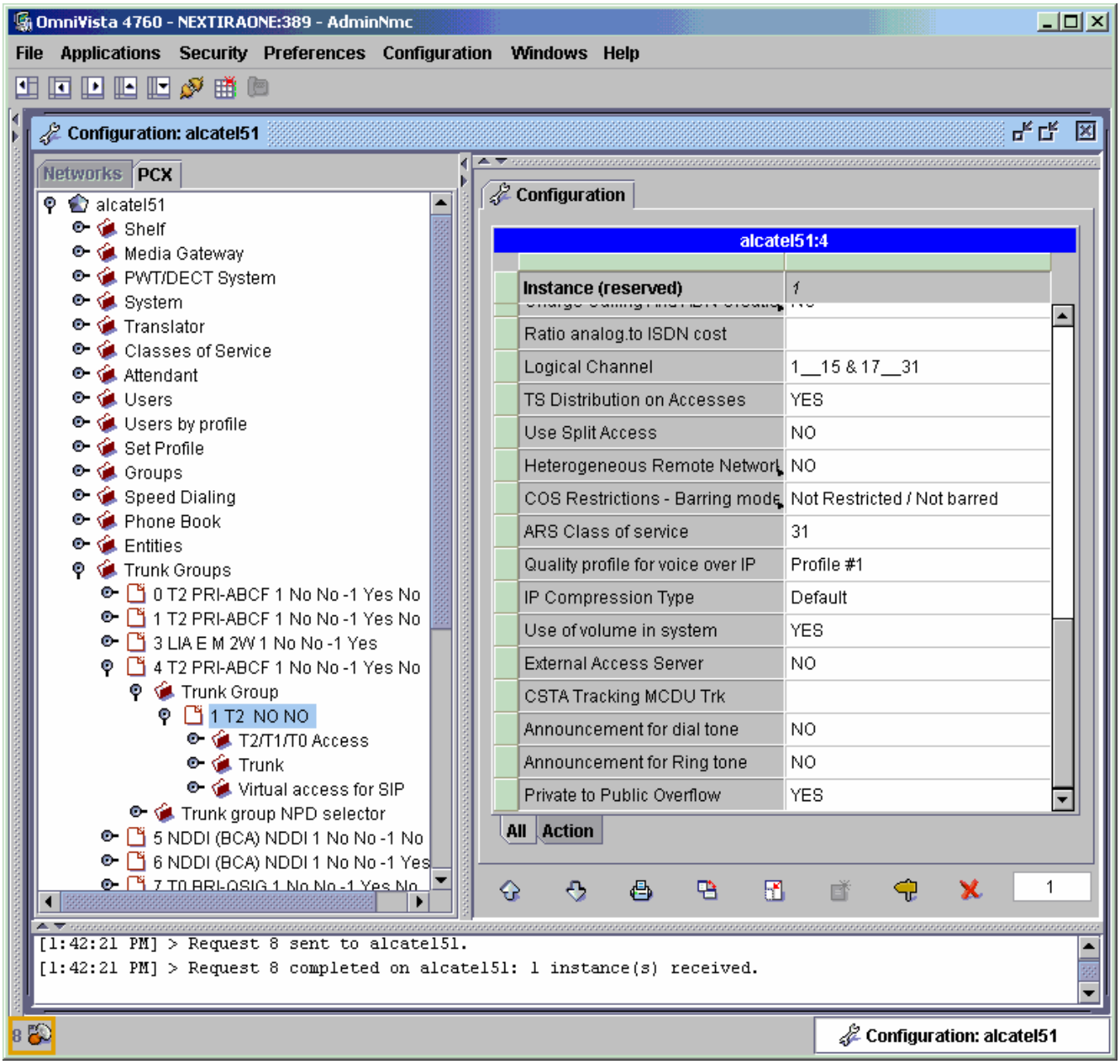

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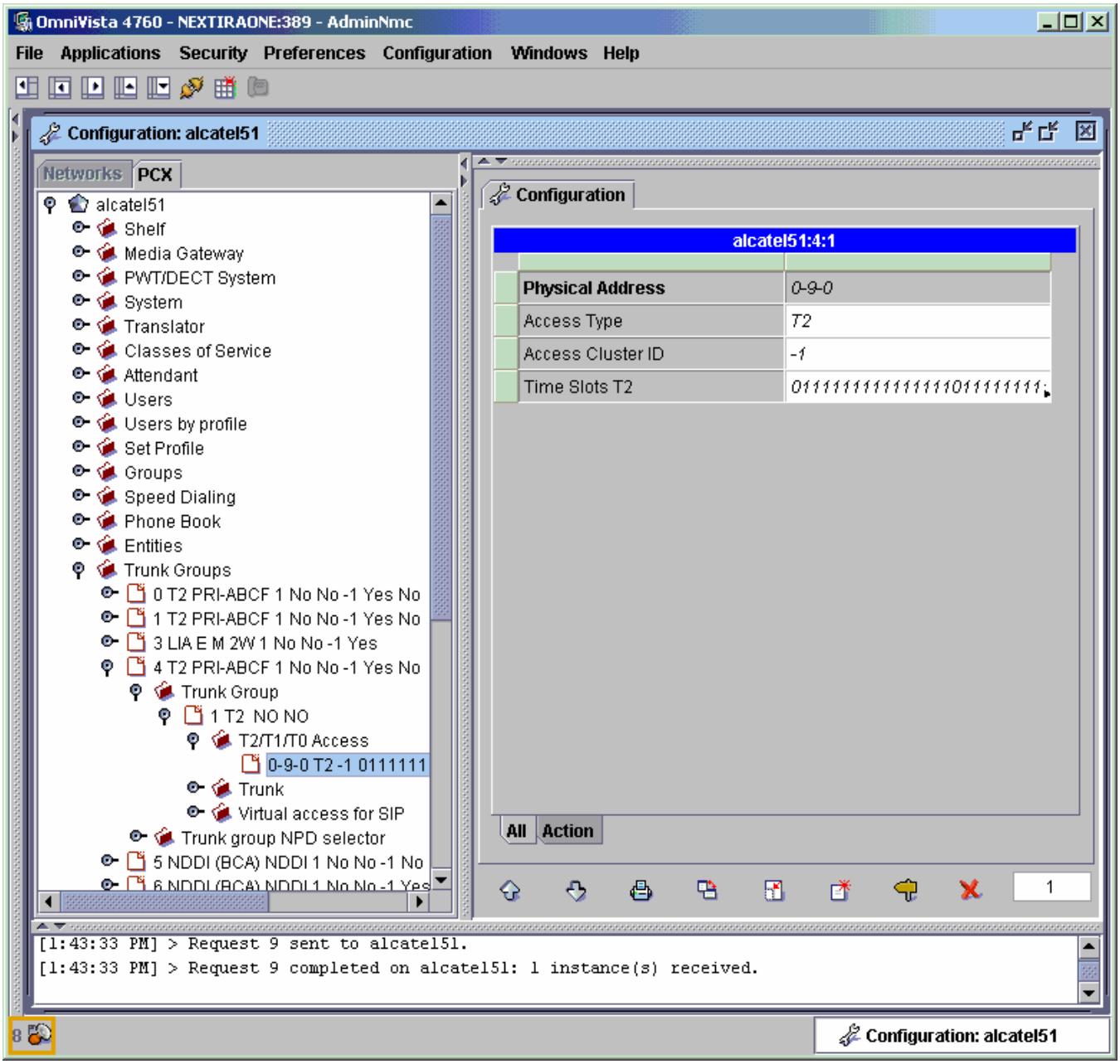

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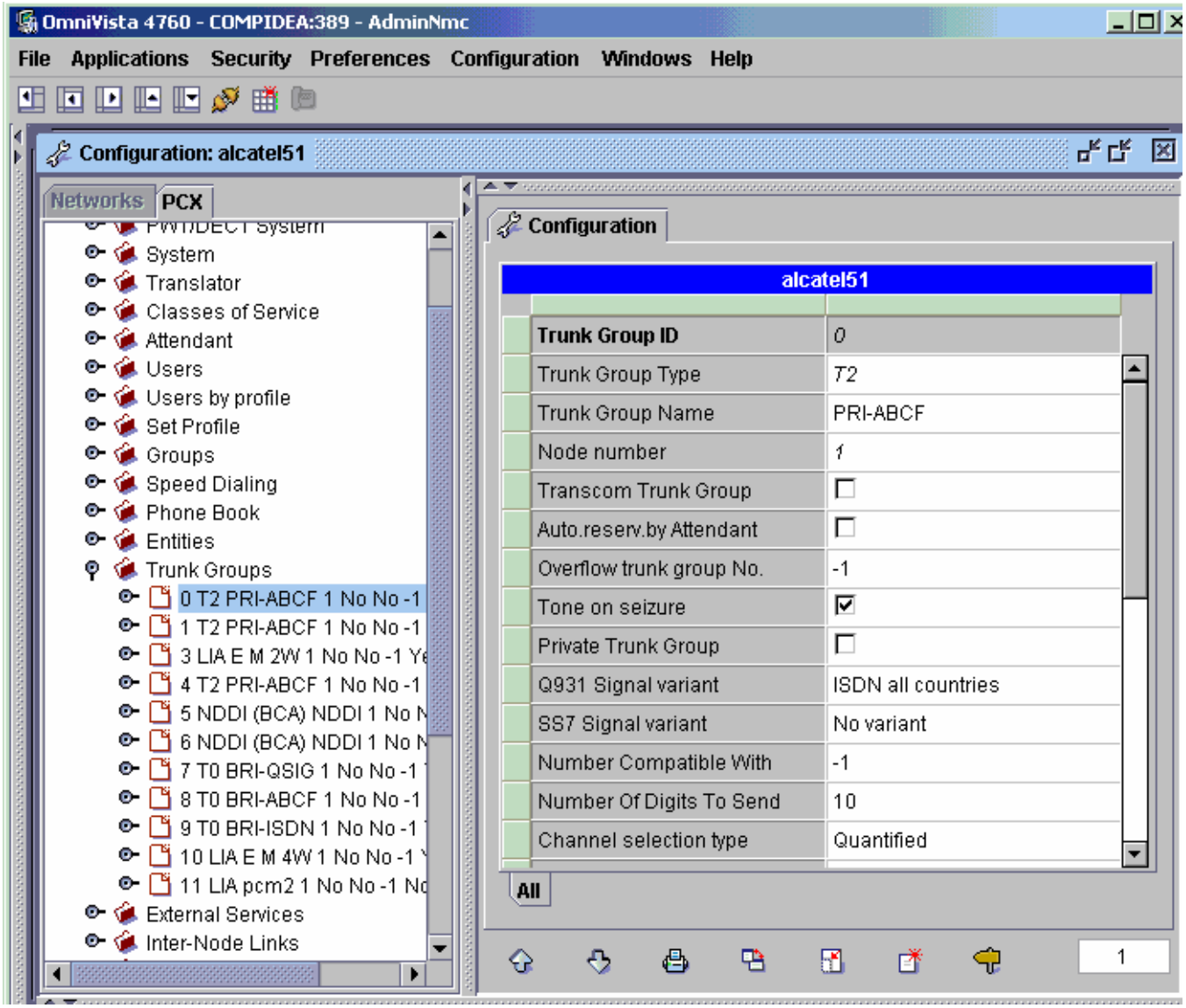
Configure PSTN Trunk Group



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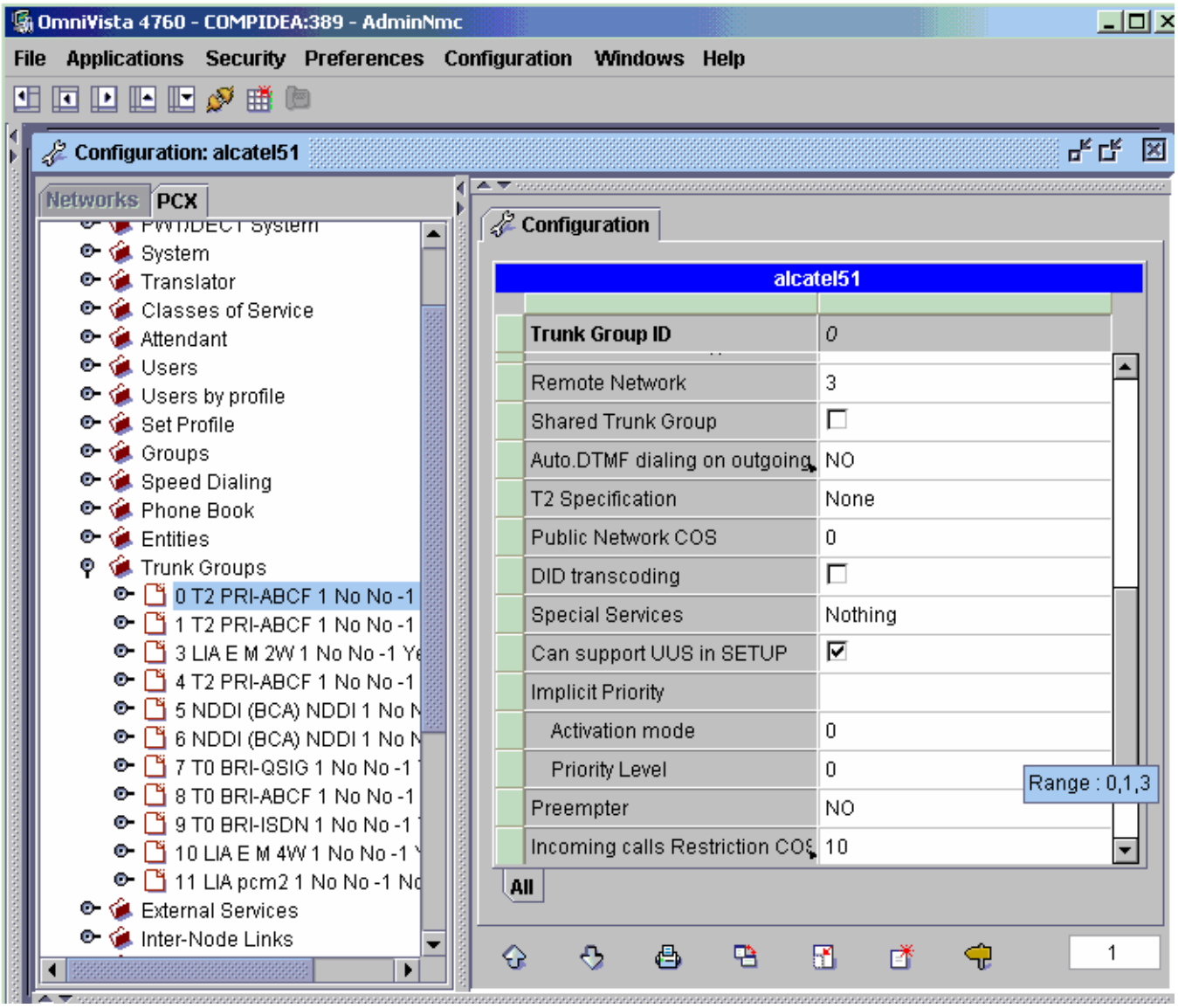

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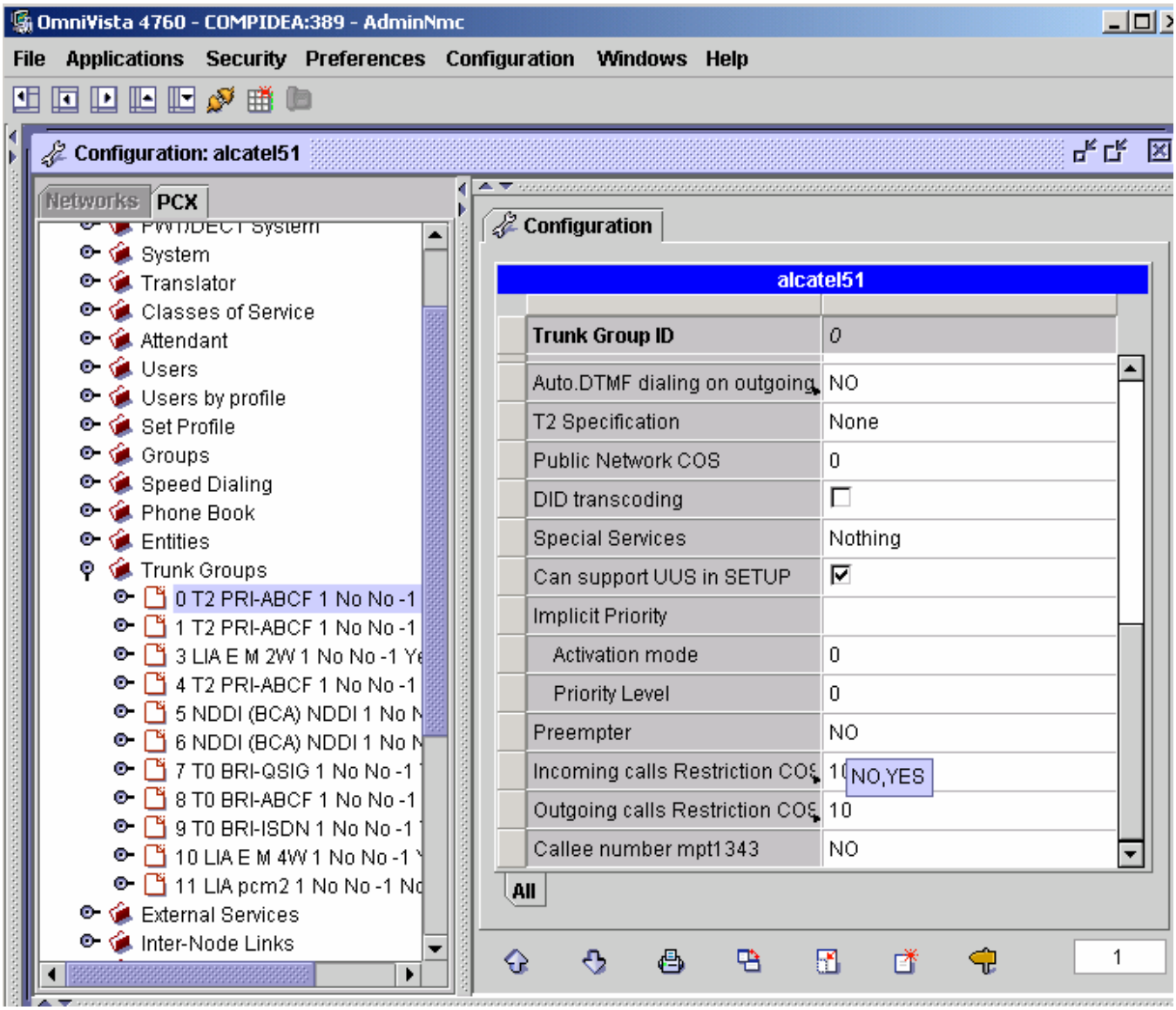

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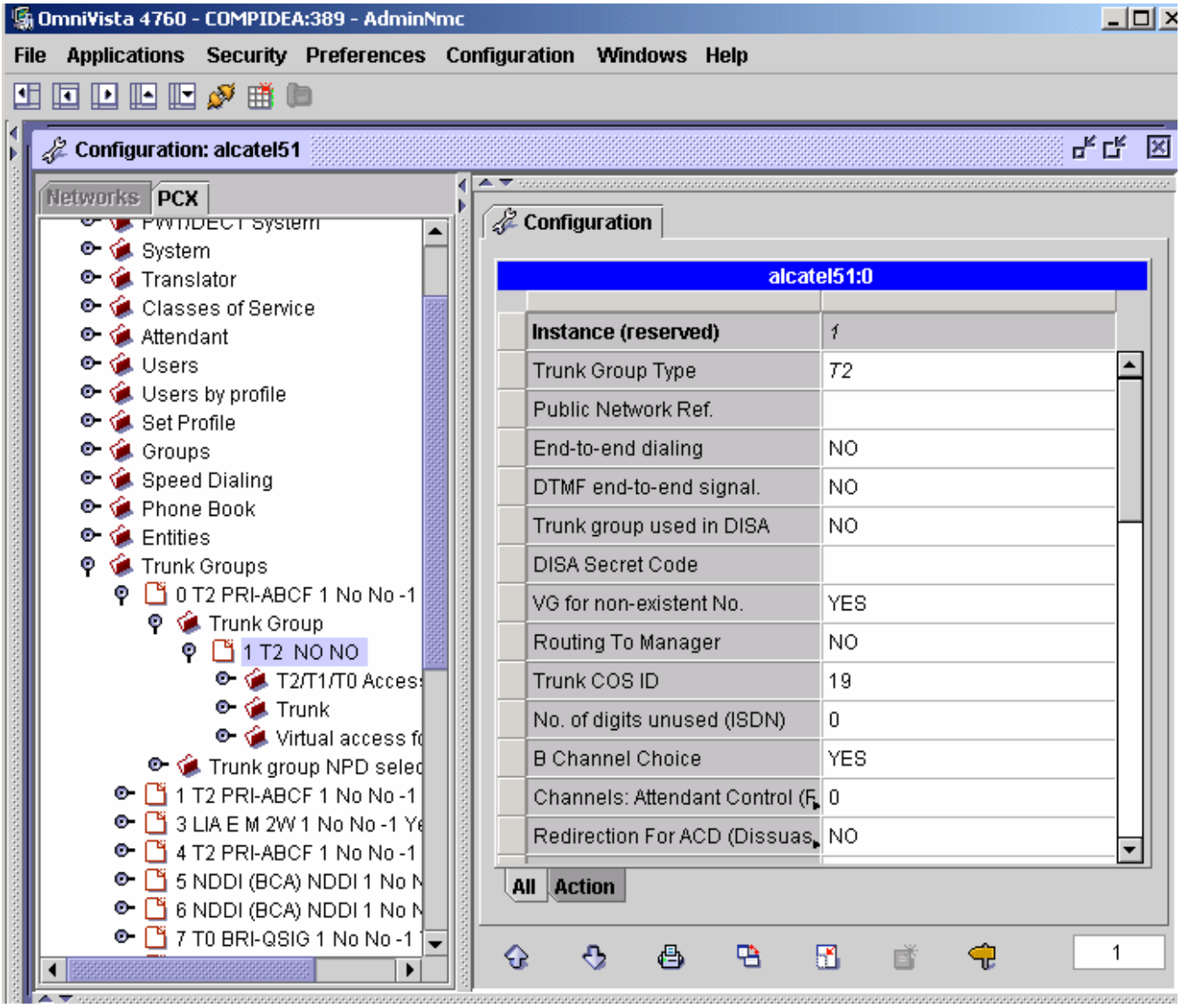

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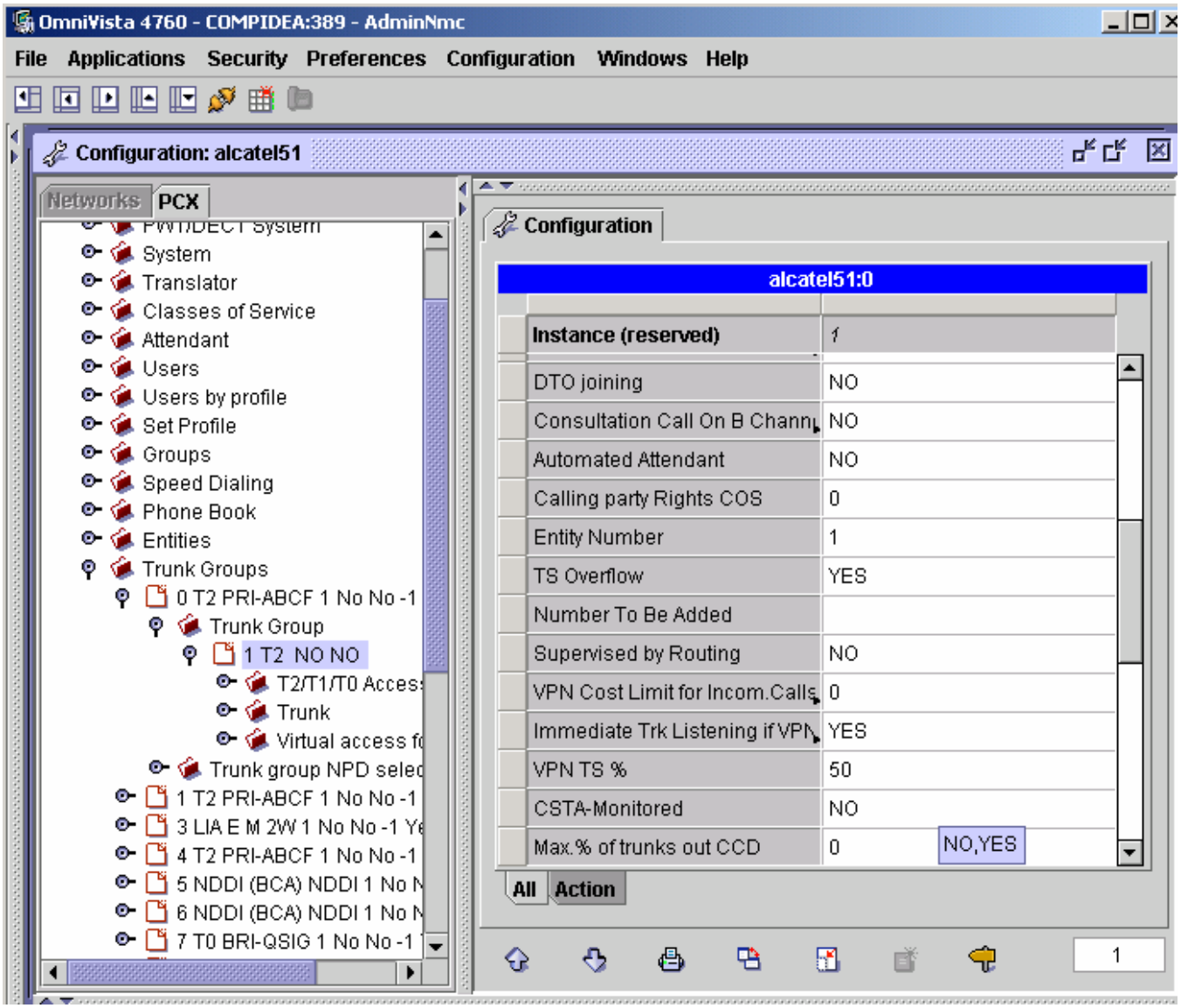

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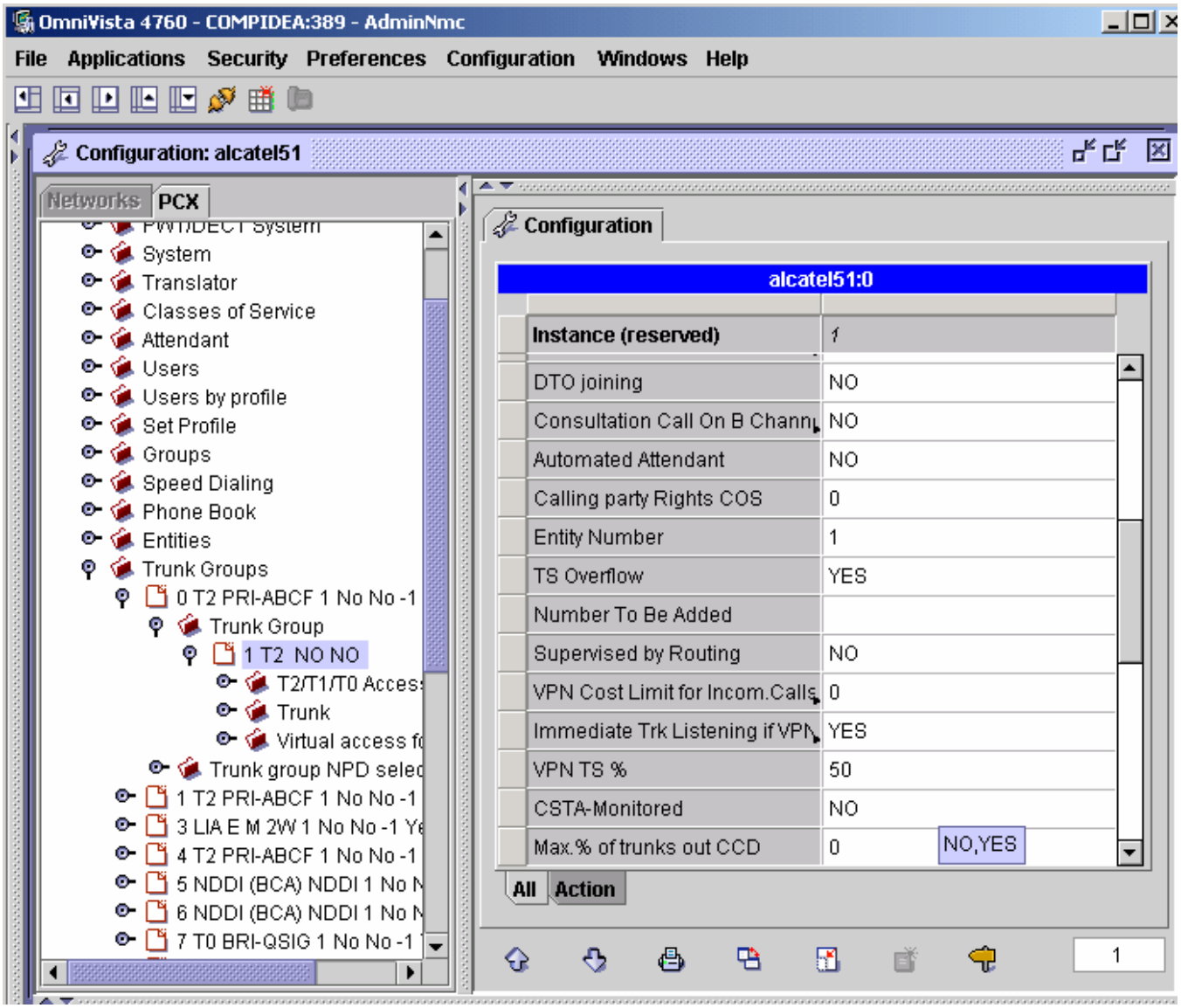

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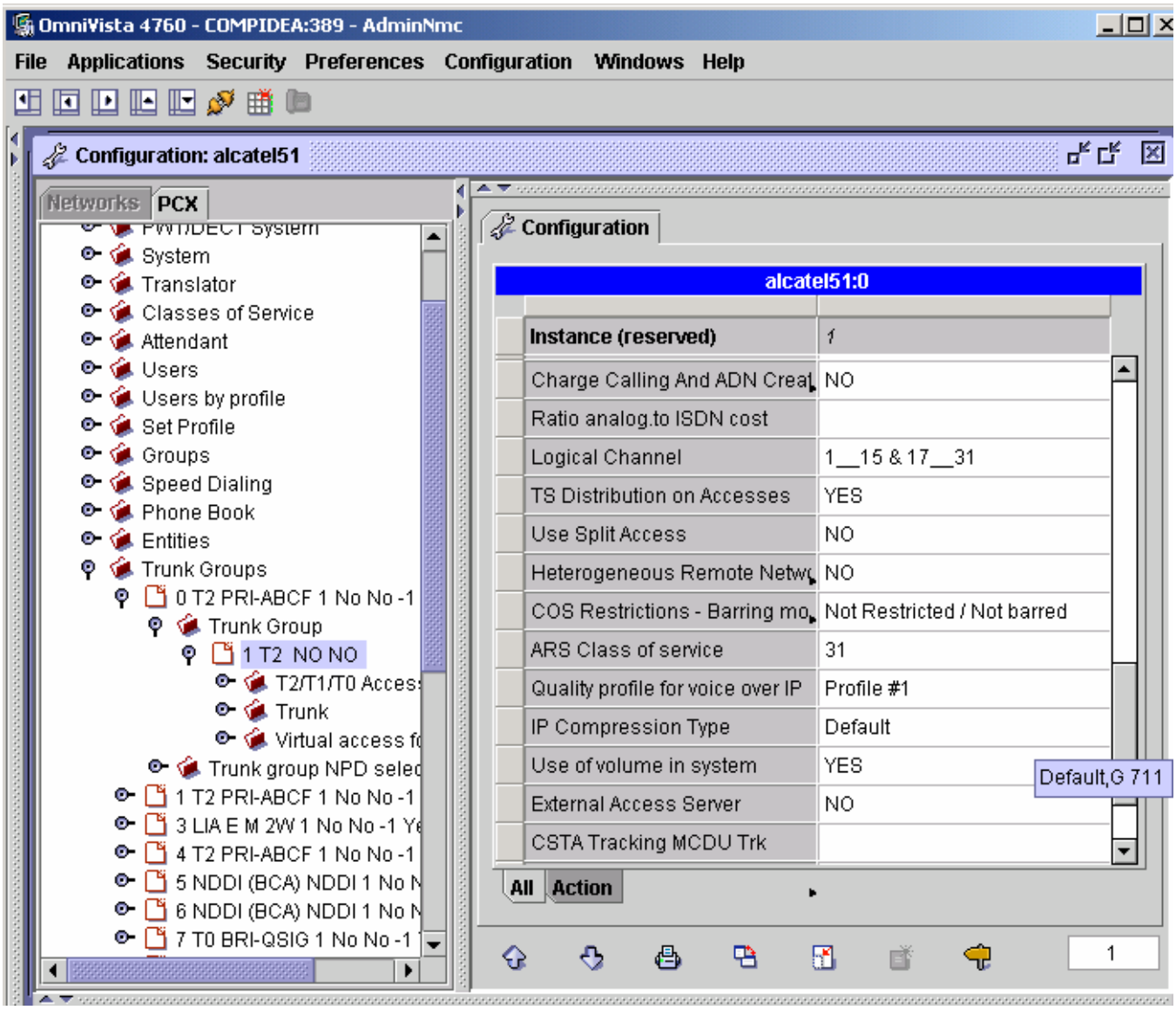

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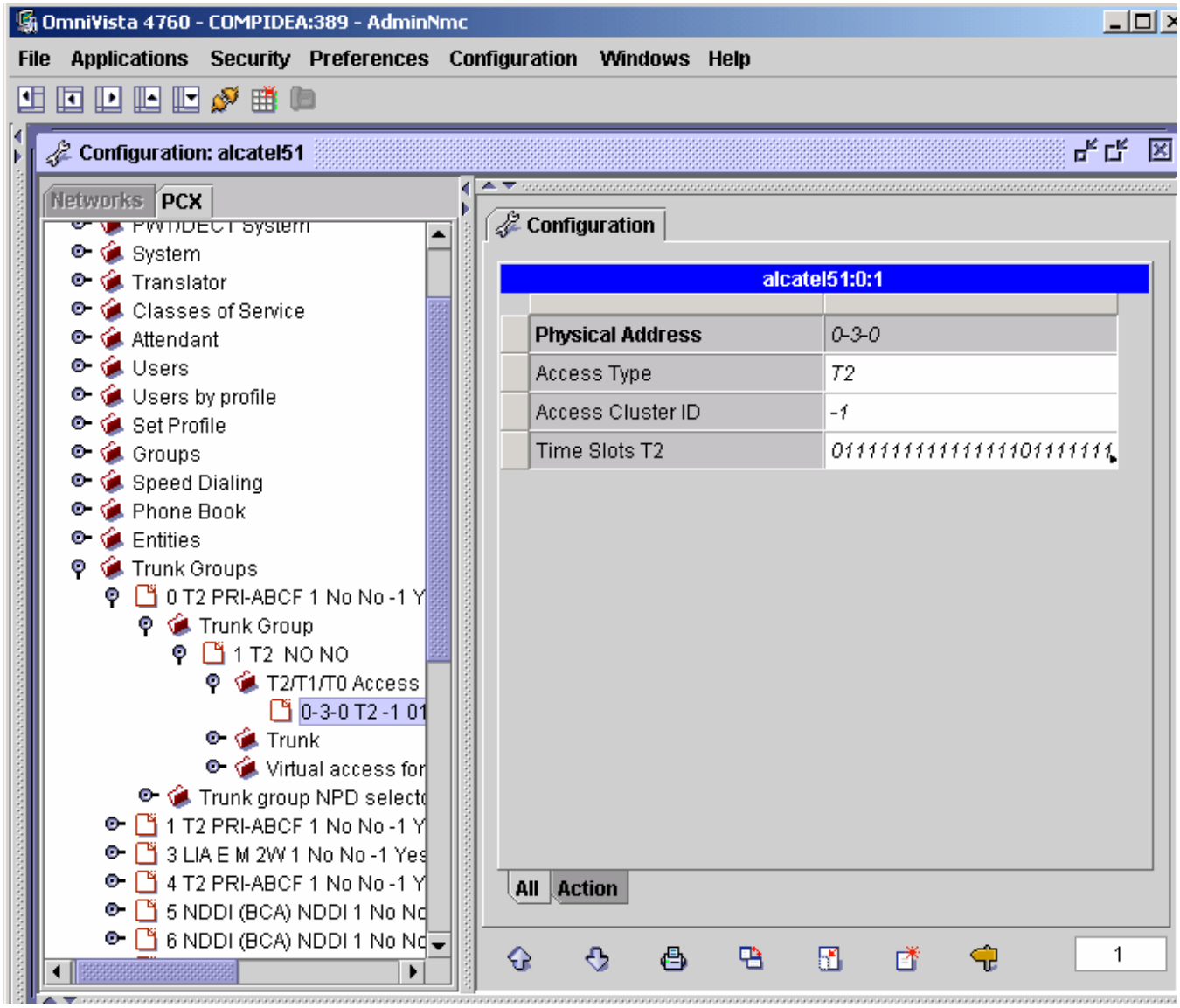

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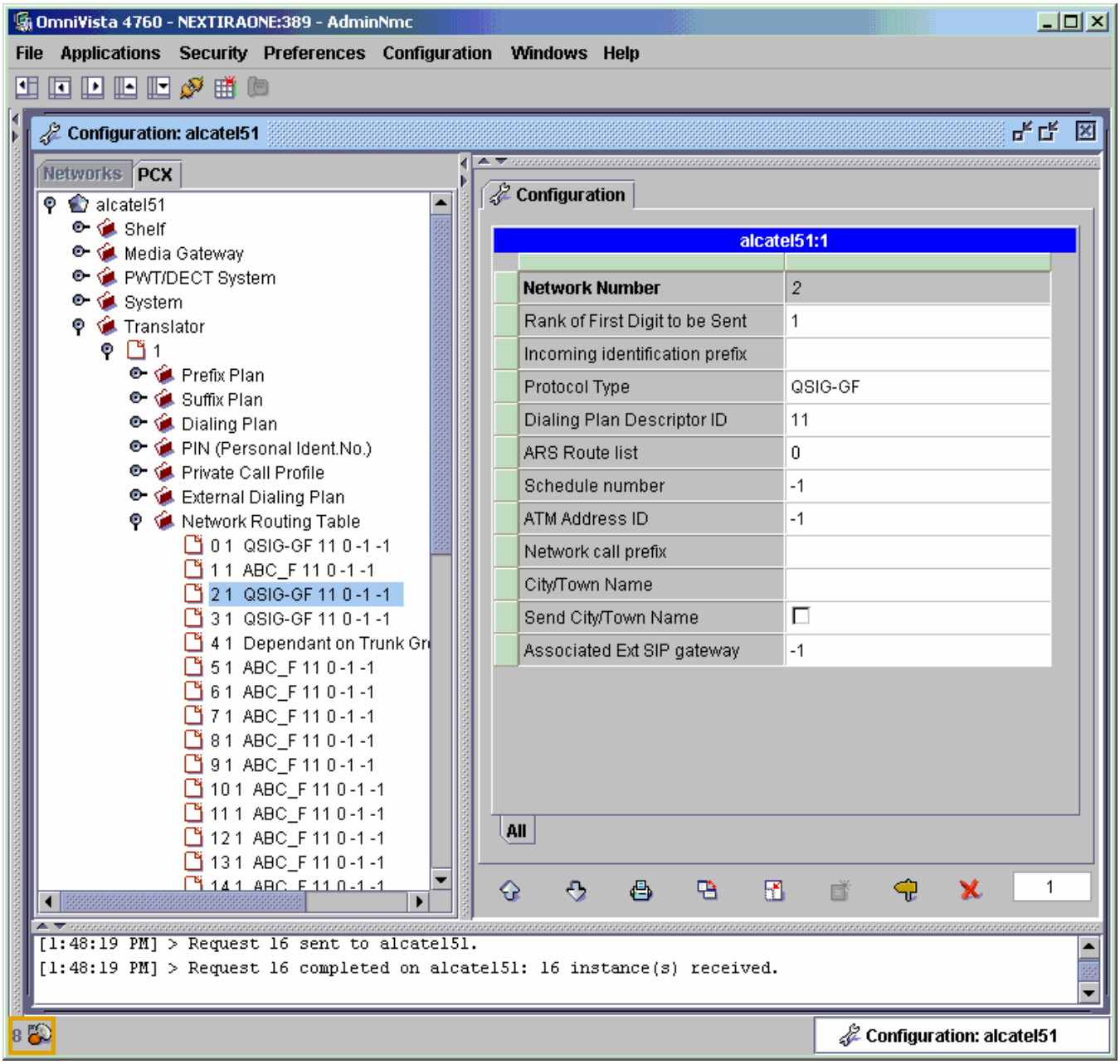
Configure Network Routing



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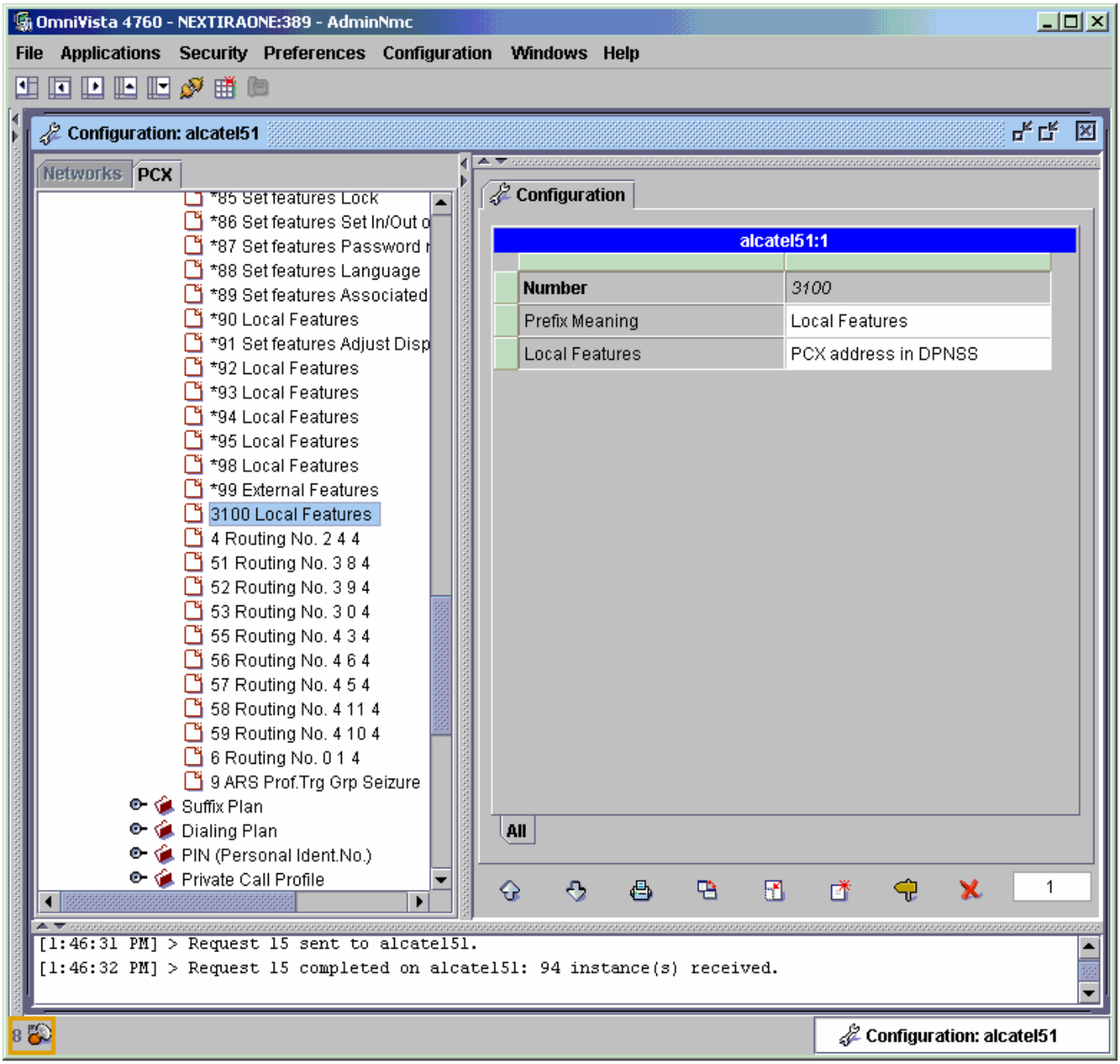
Configure Network Routing Own Node



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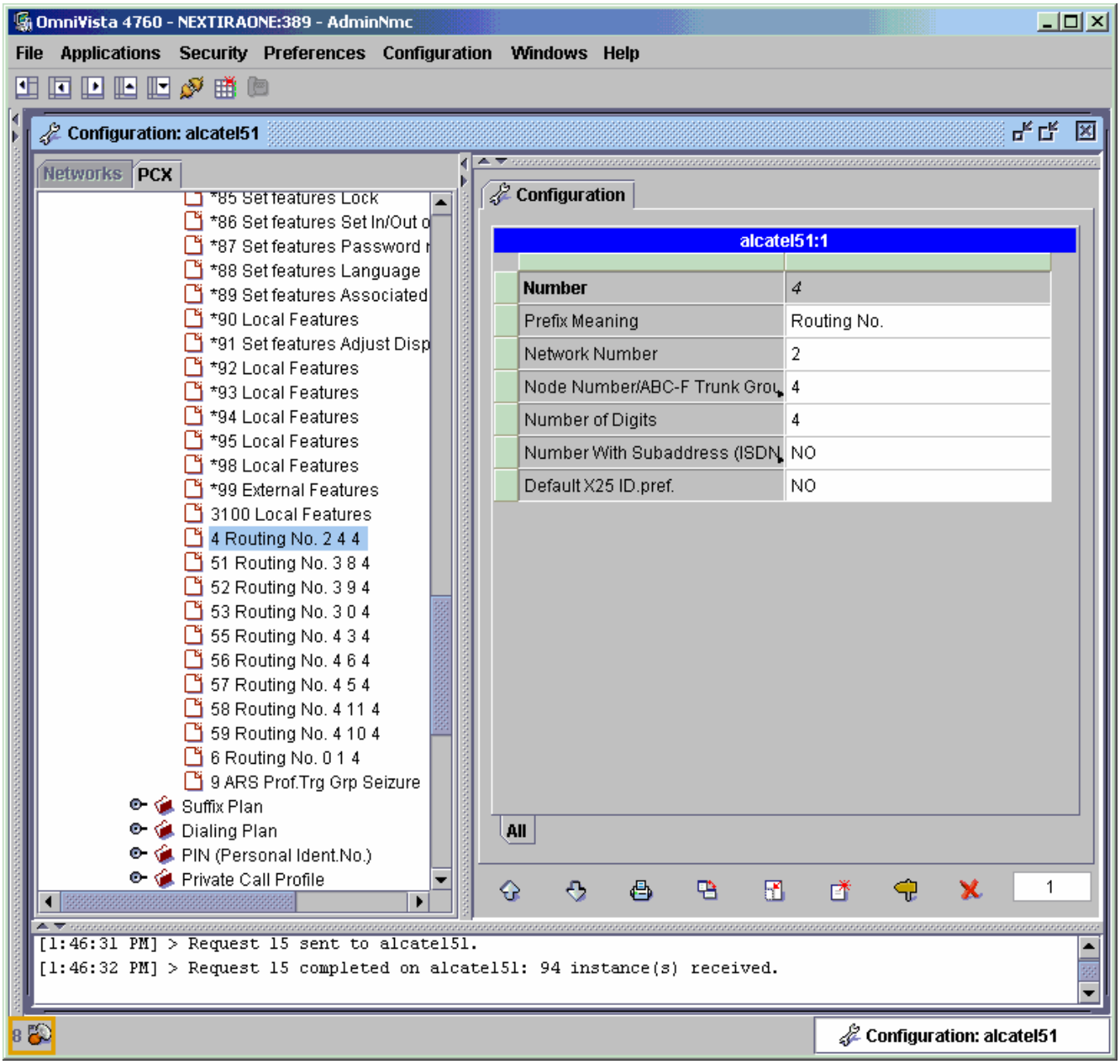
Configure Routing Prefix



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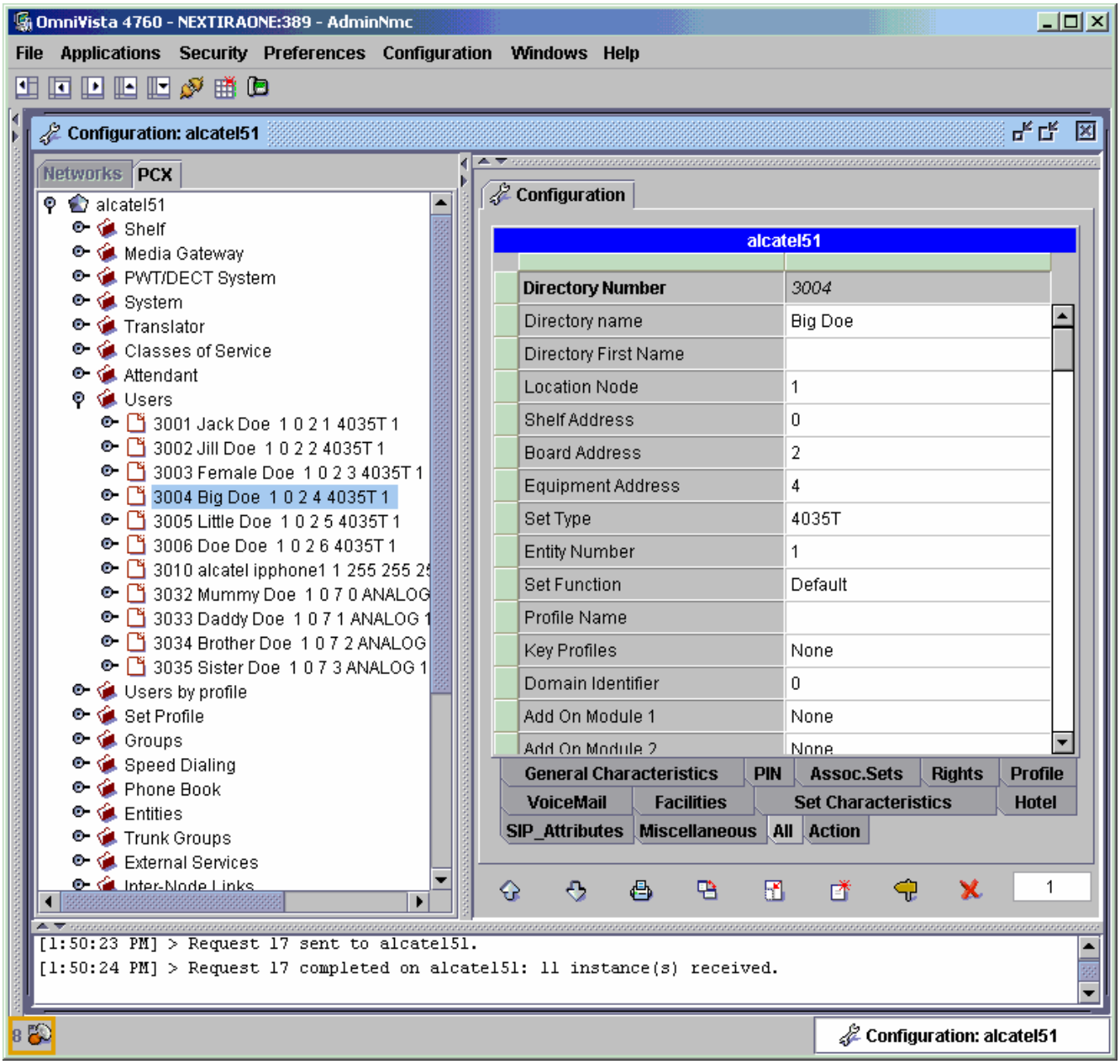
Configure Digital Station



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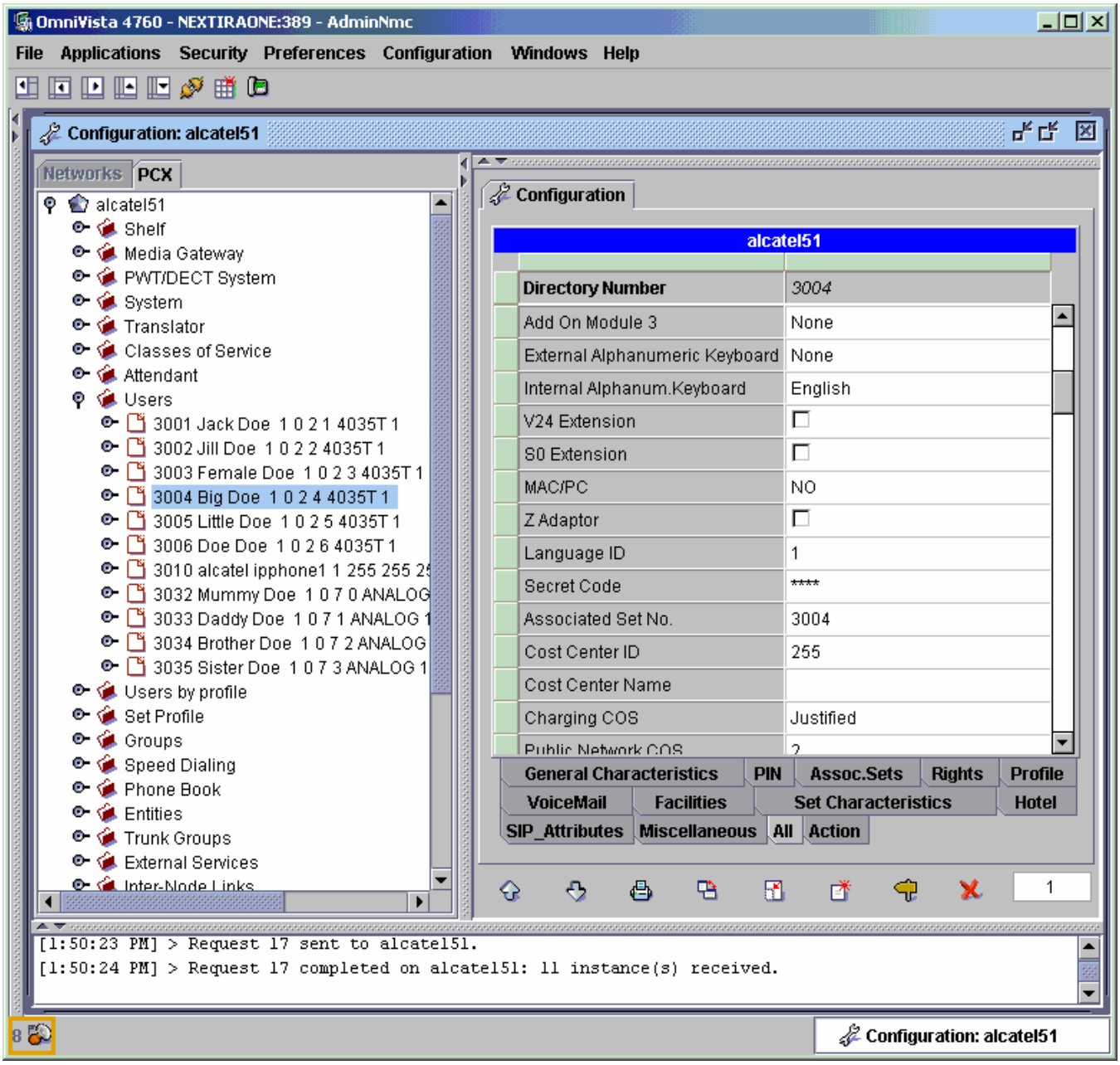

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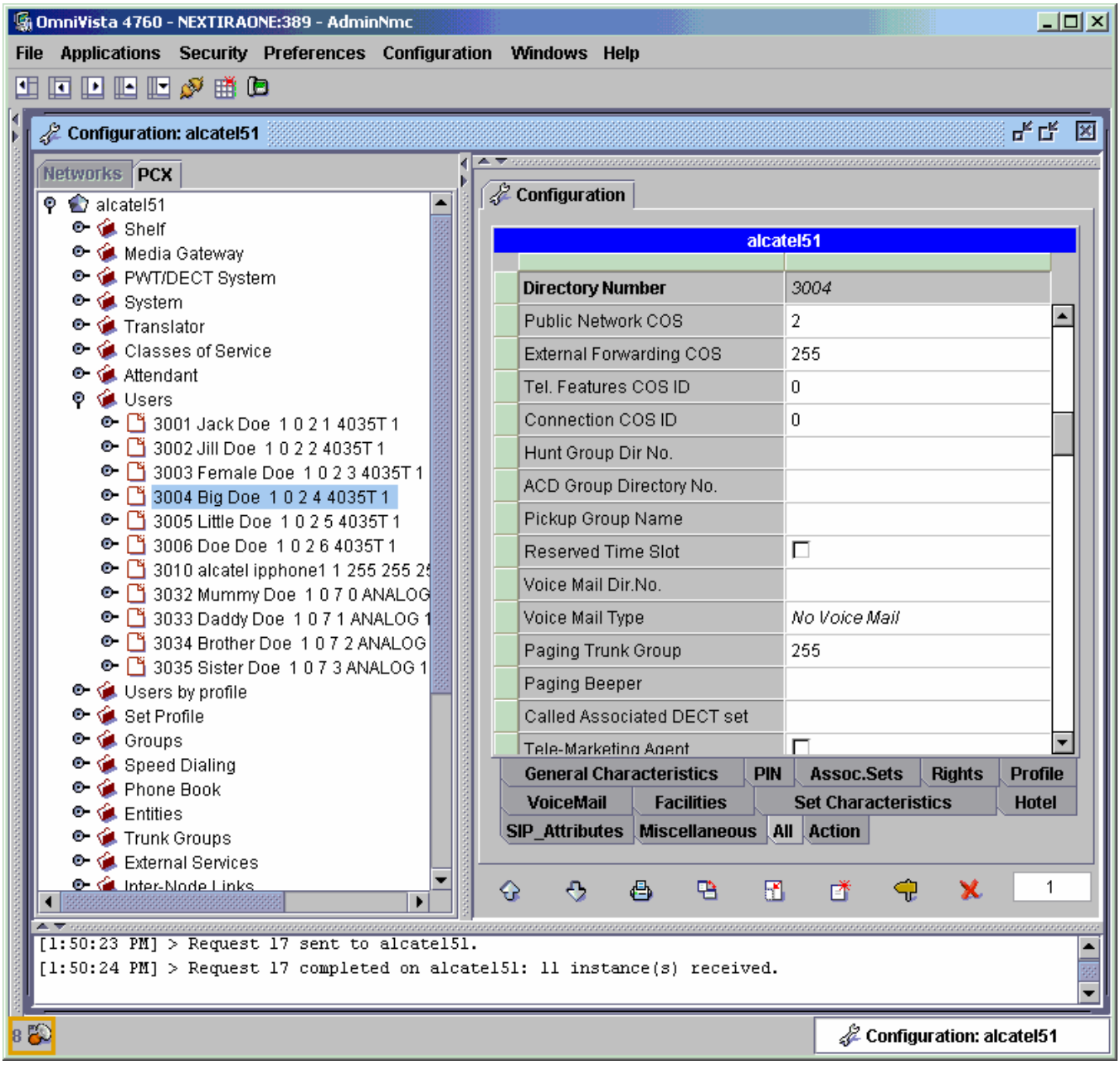

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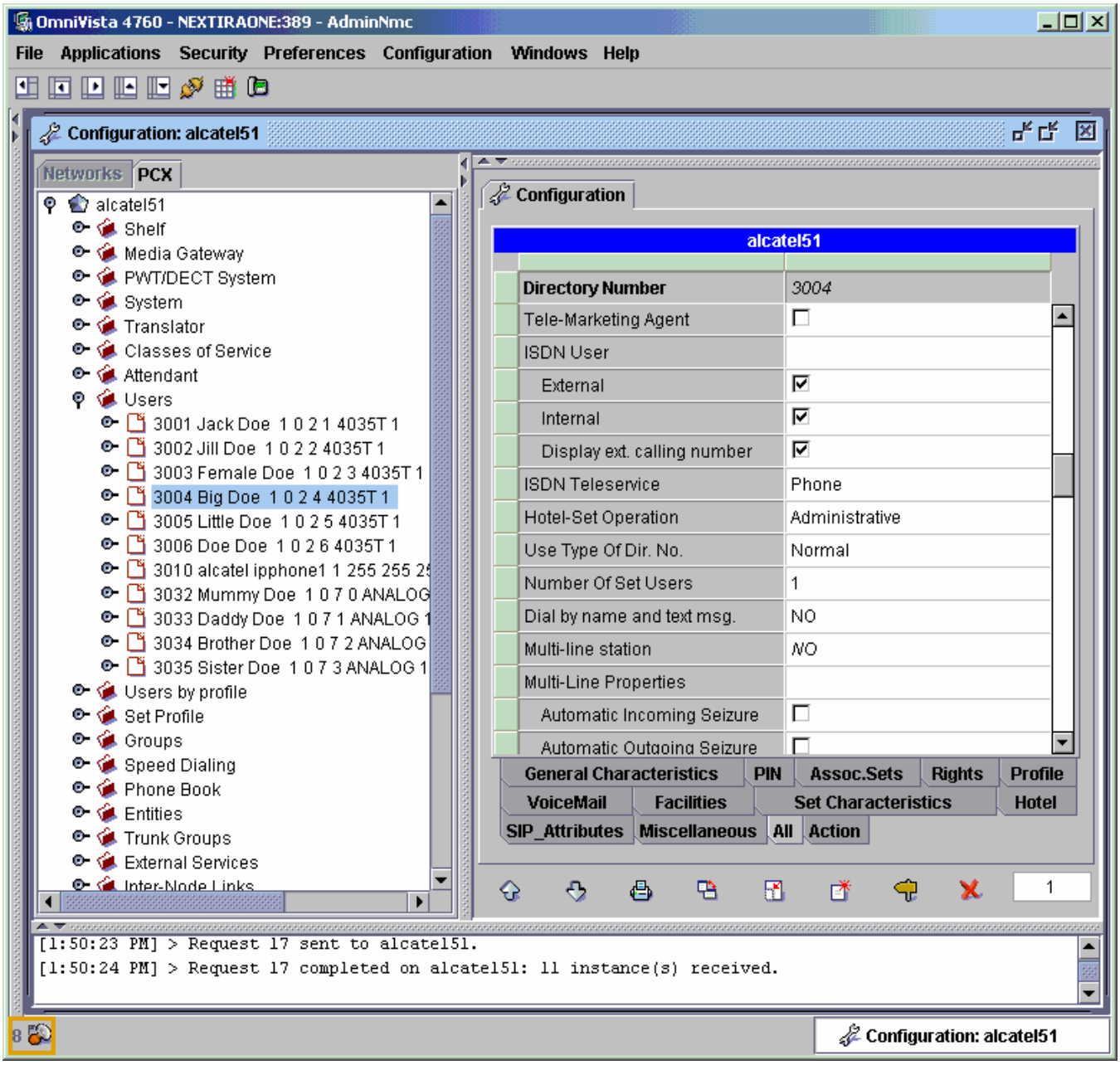

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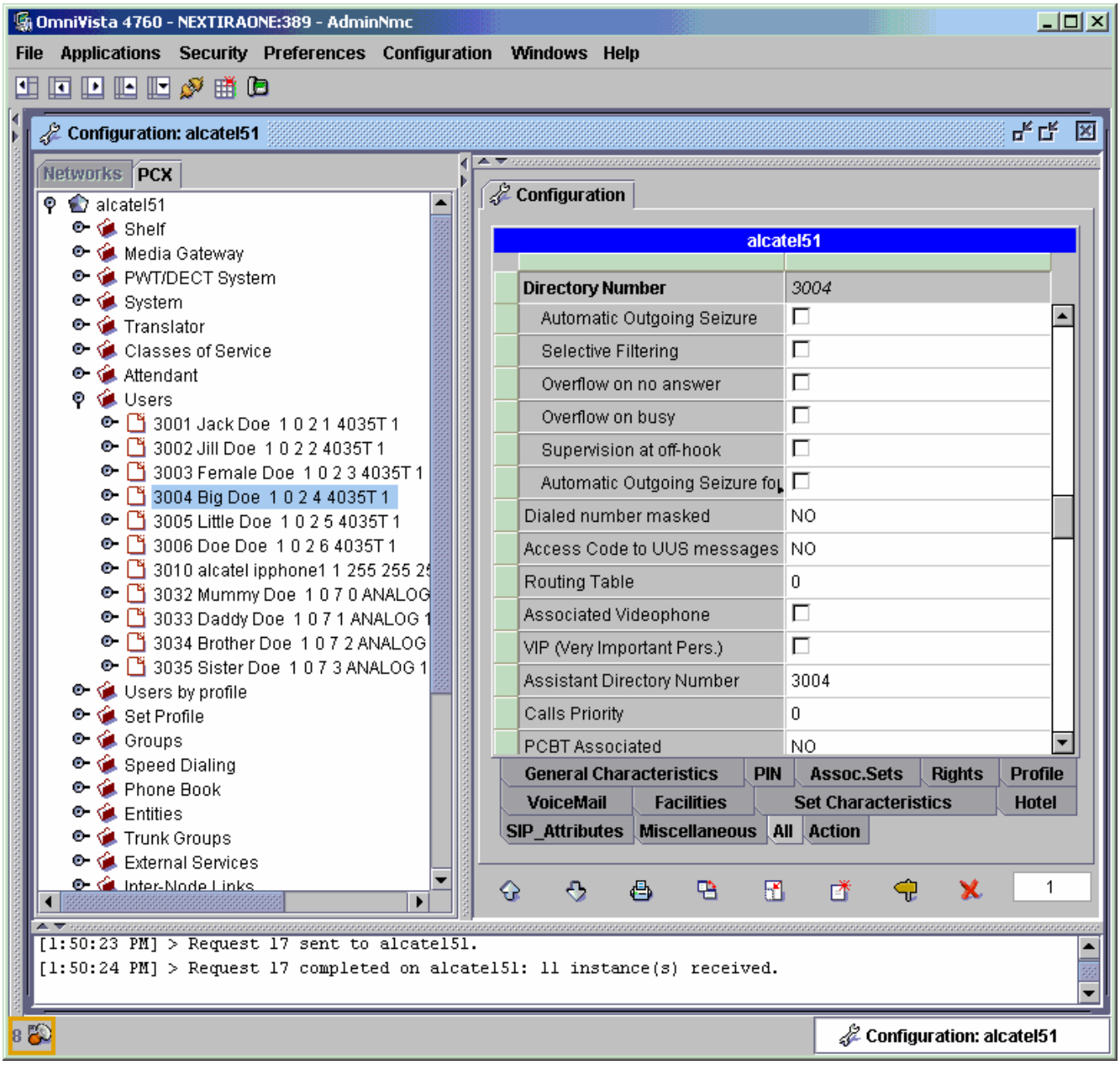

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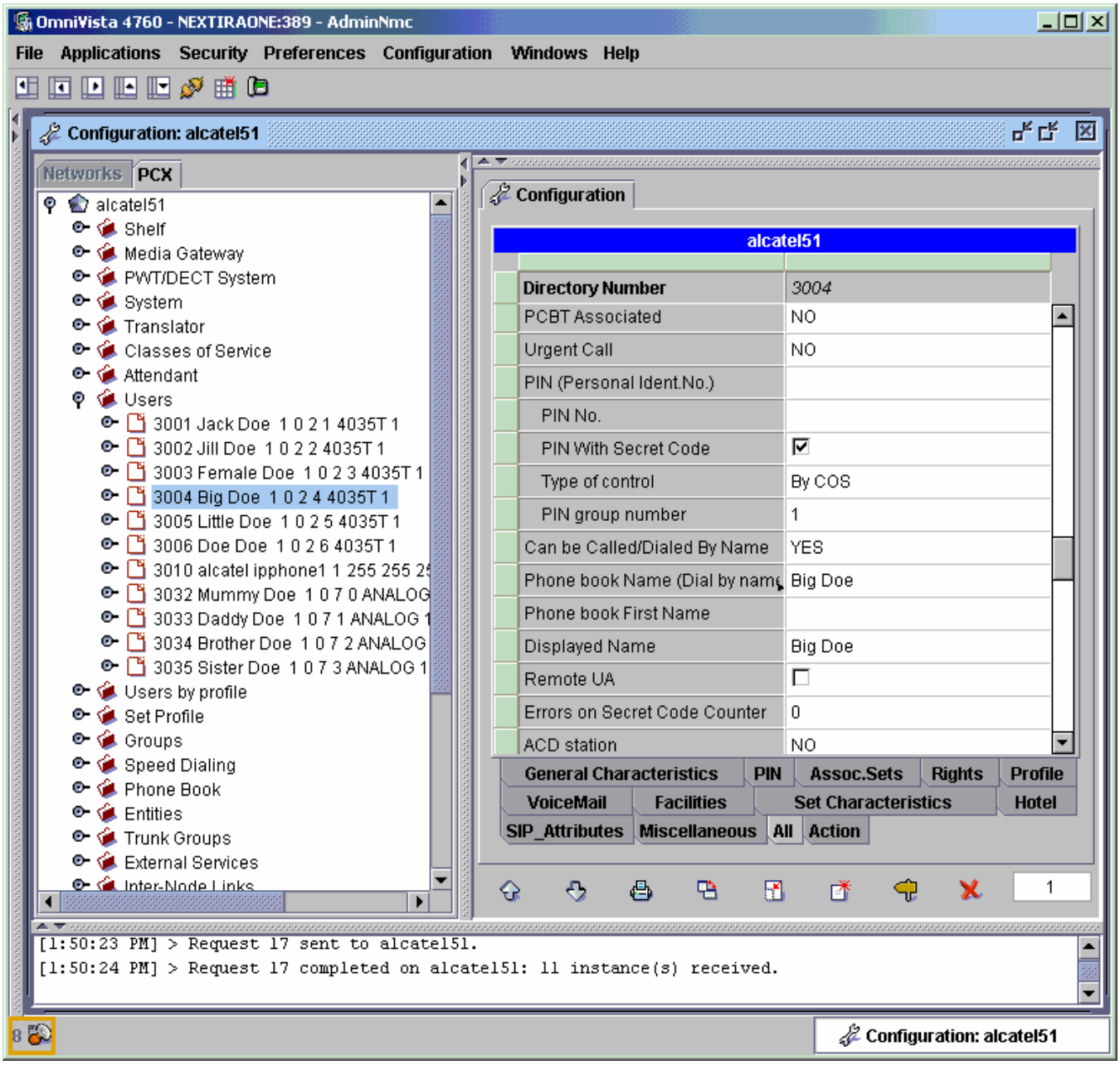

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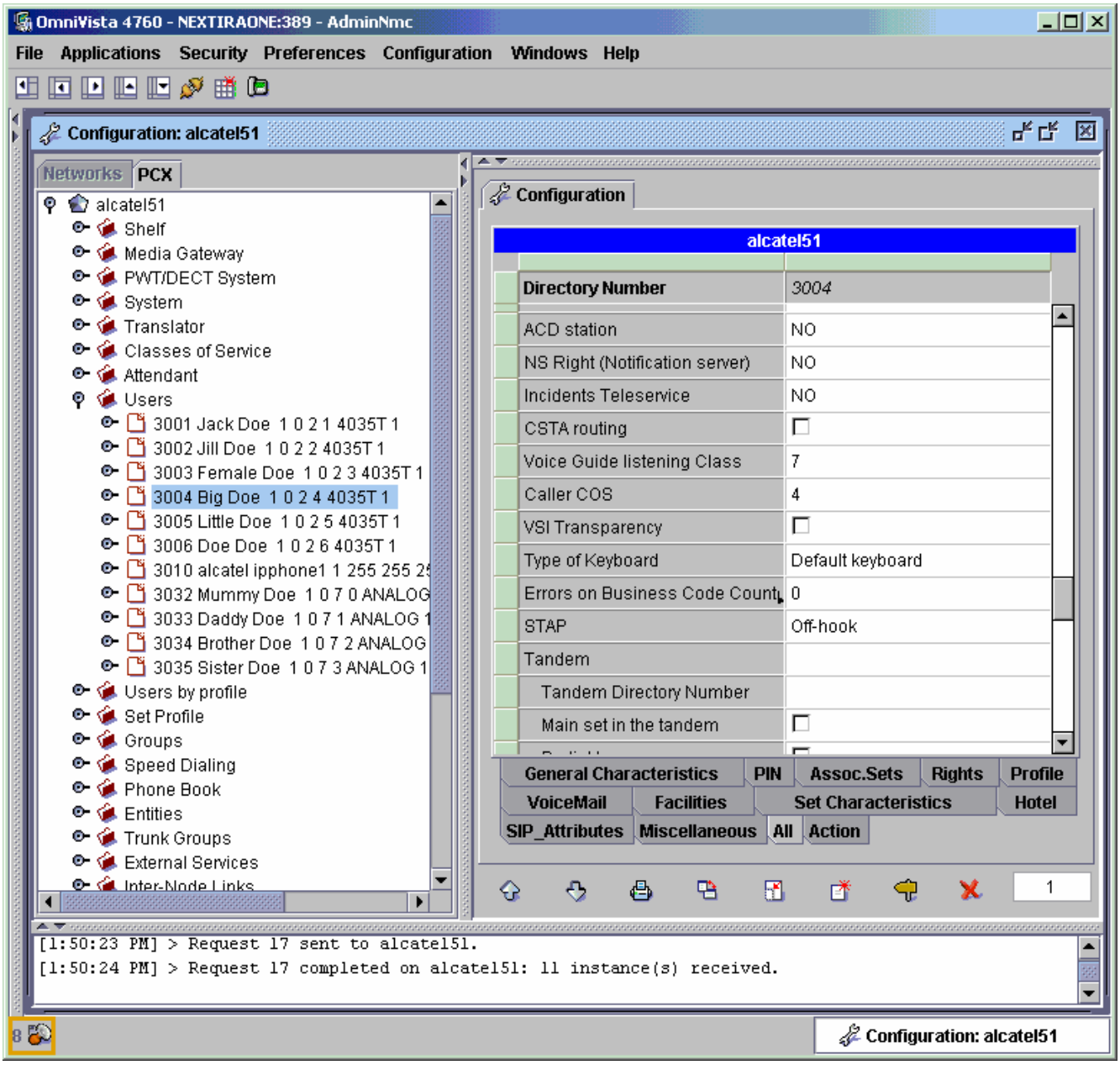

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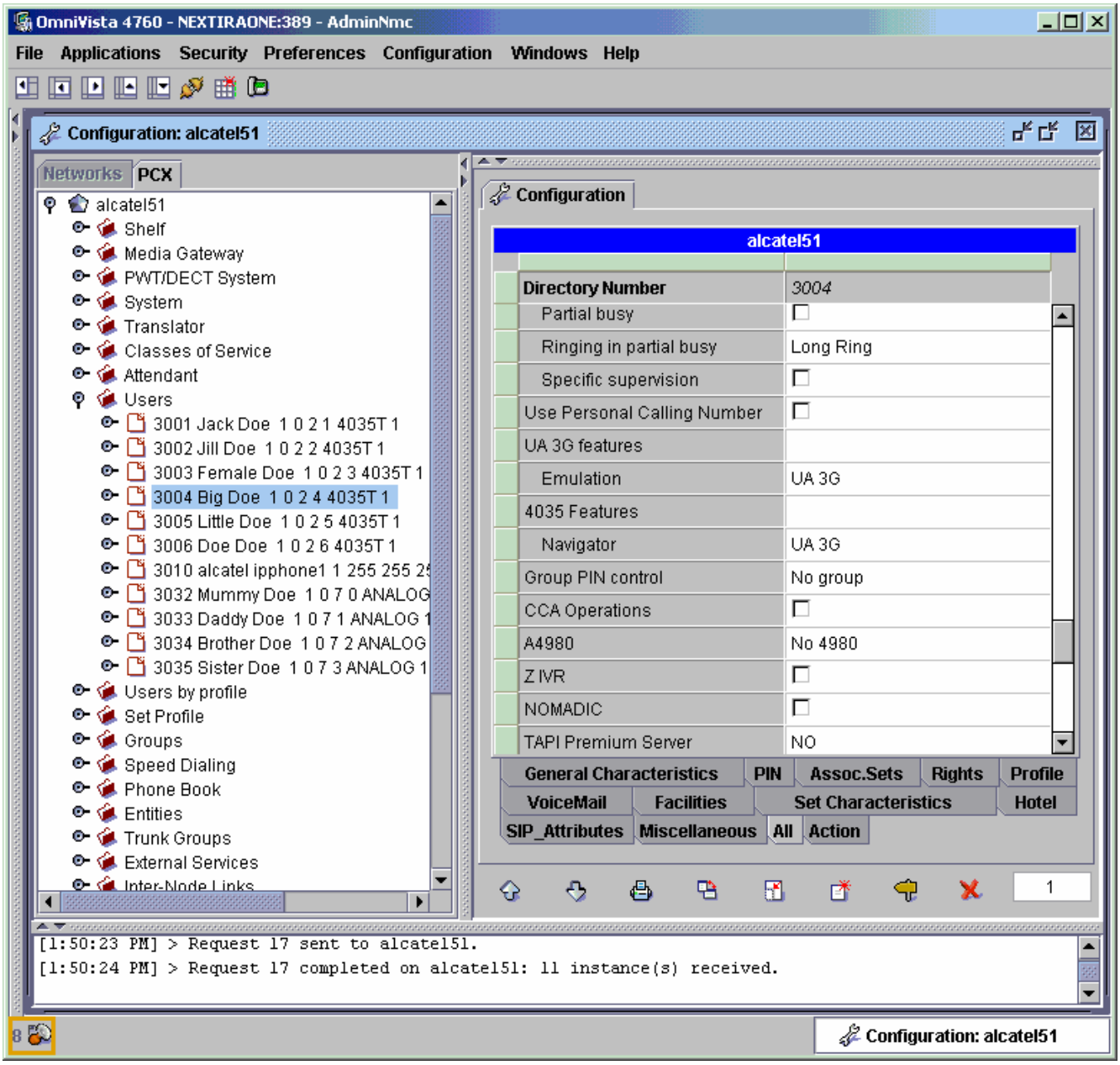

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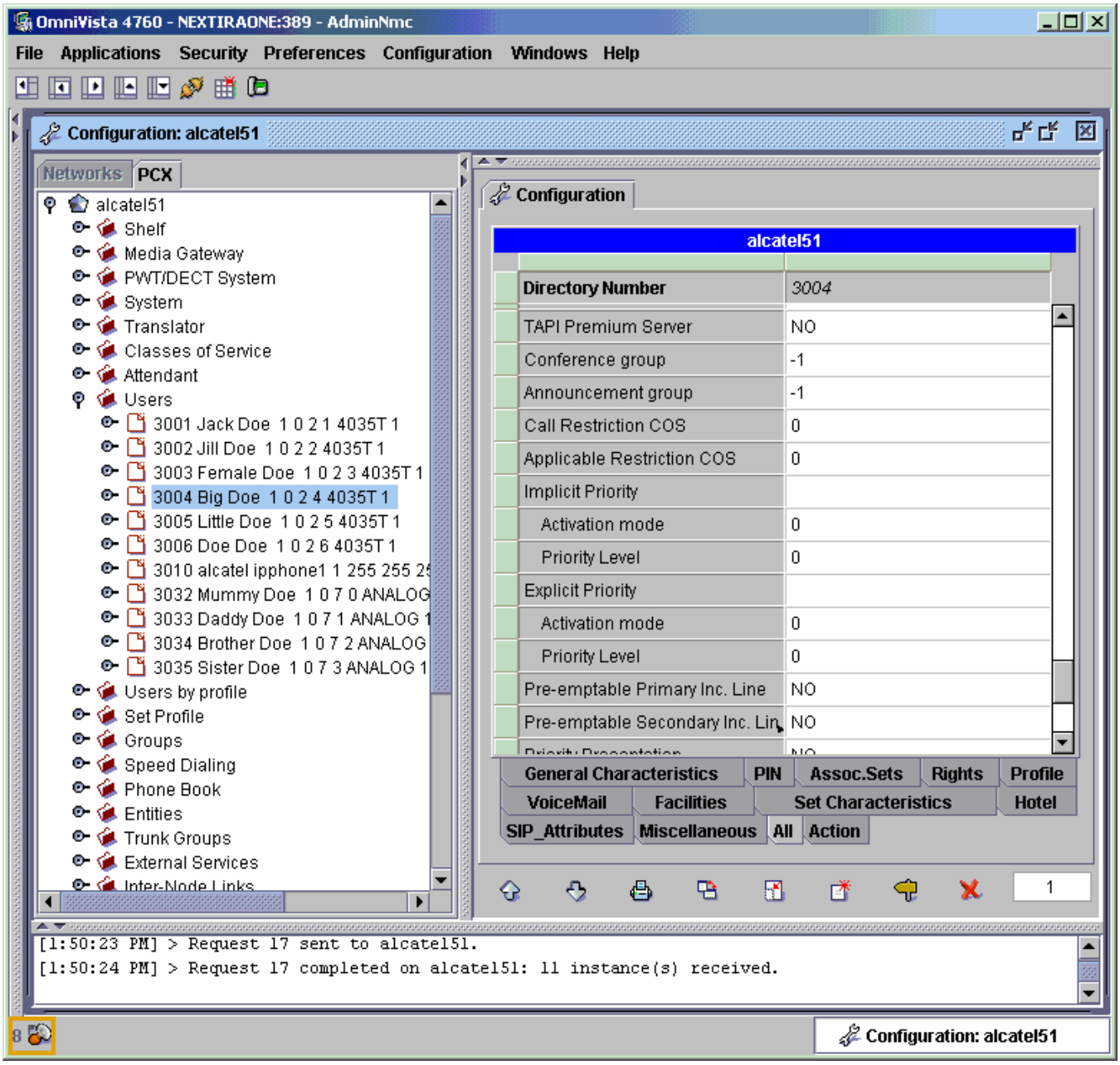

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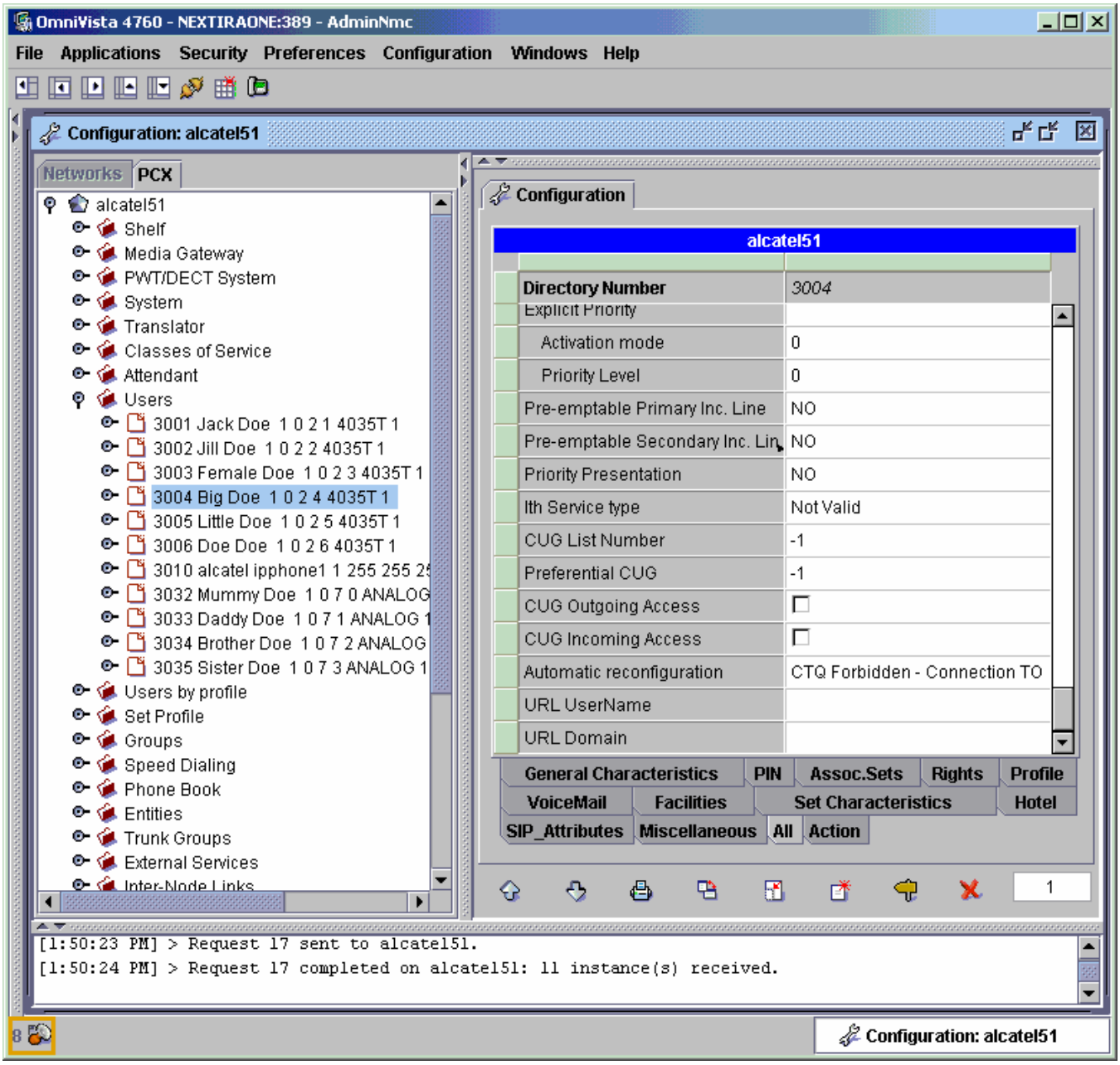

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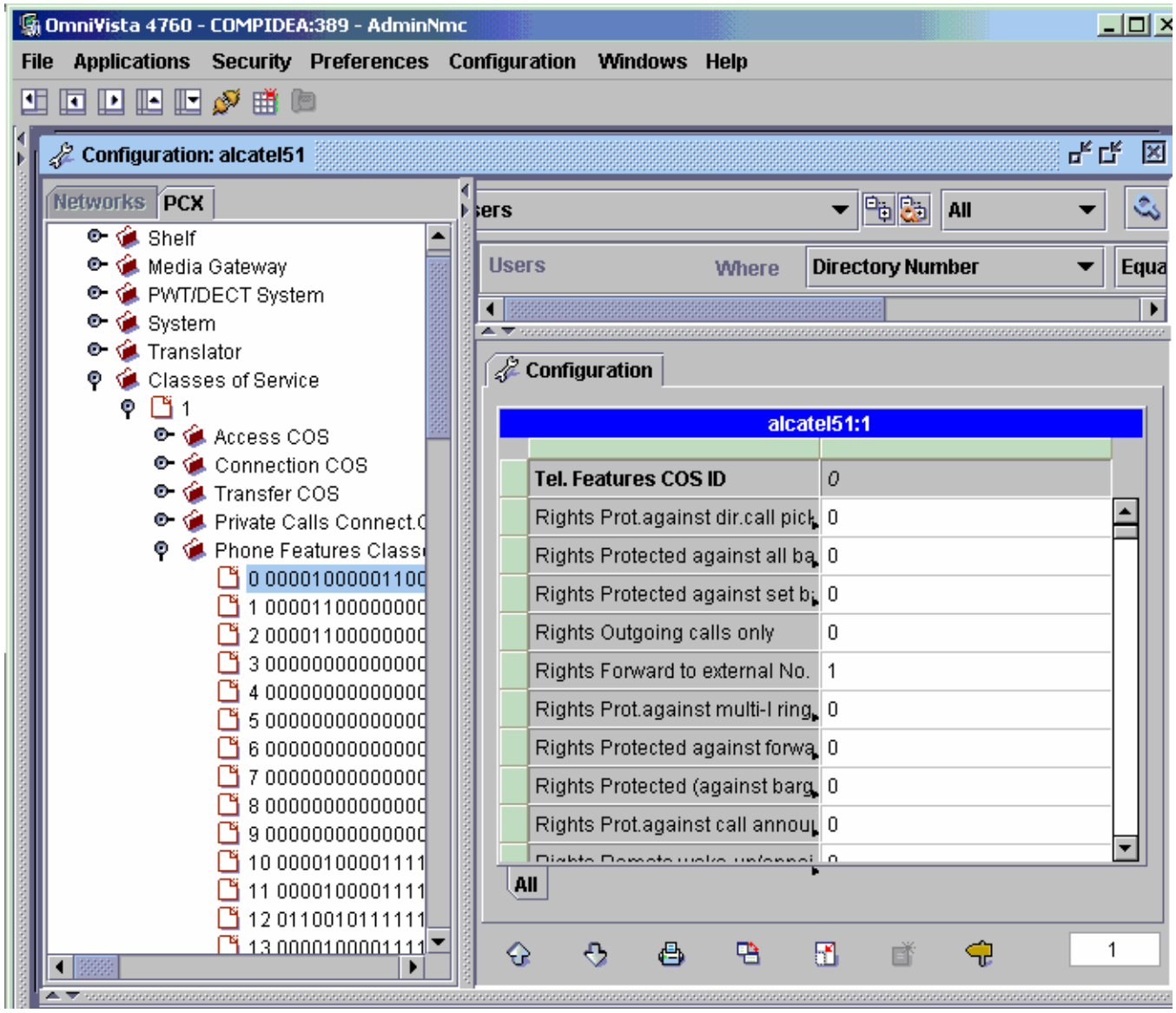
Configure Digital Station Phone Facilities



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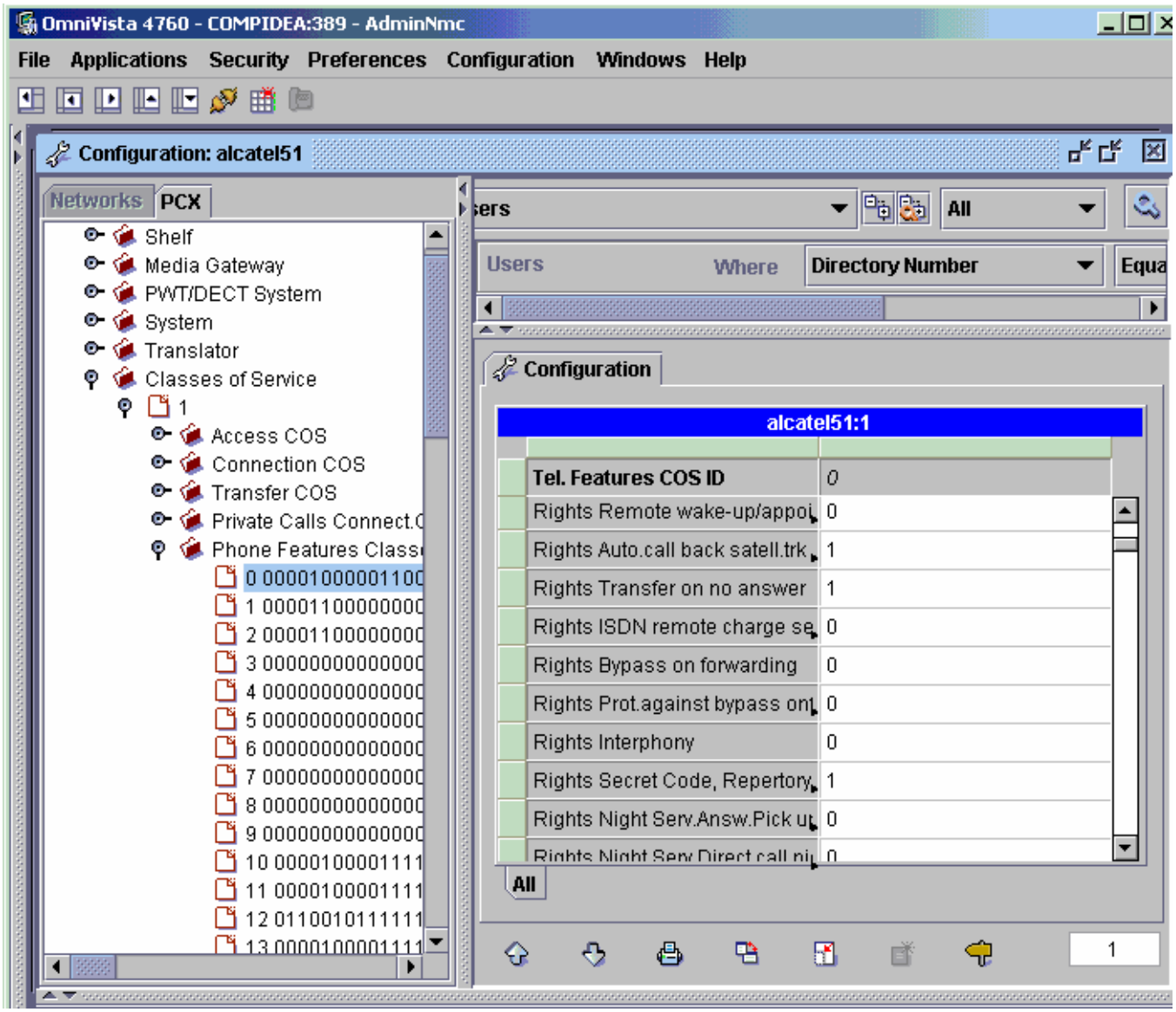

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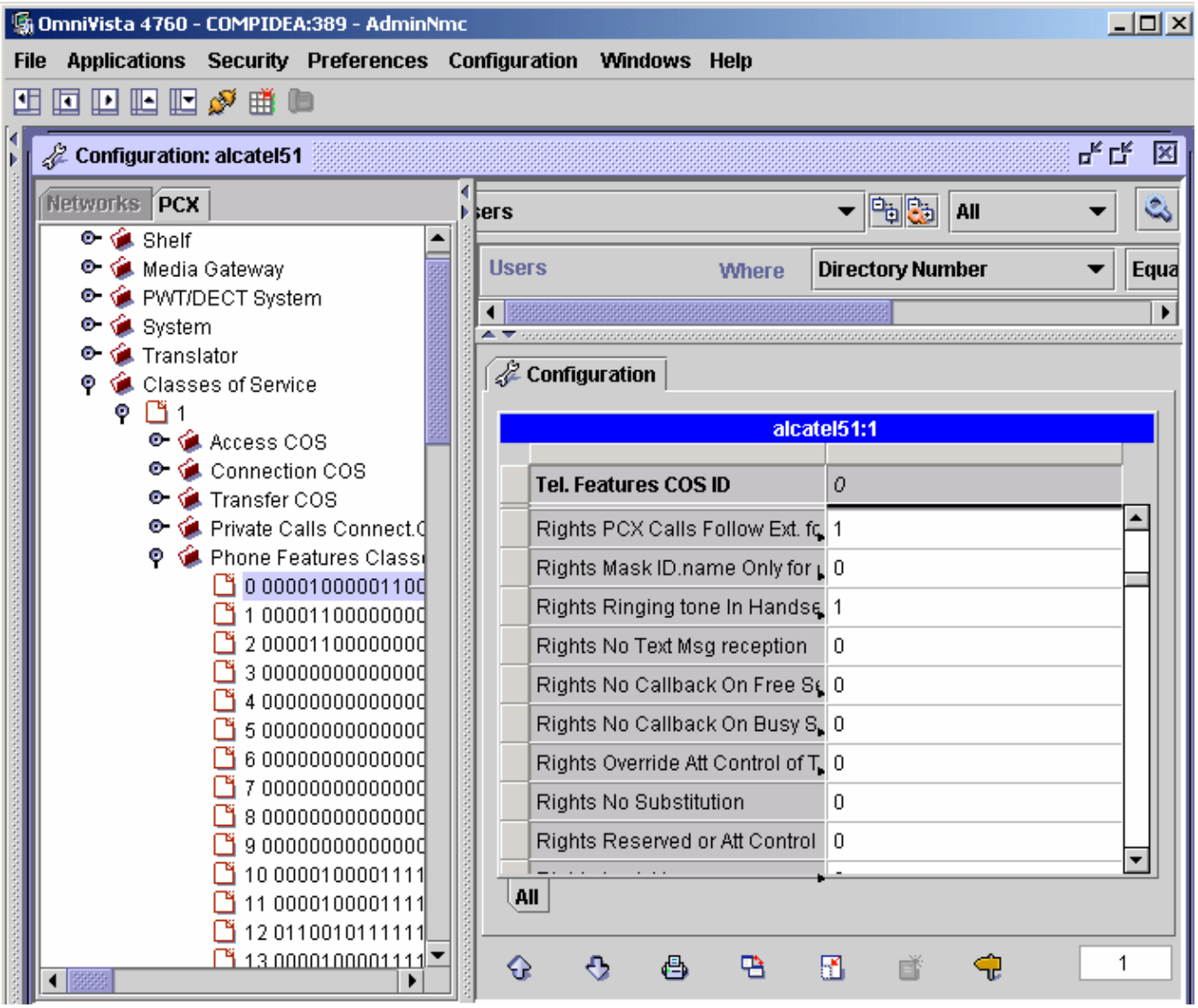

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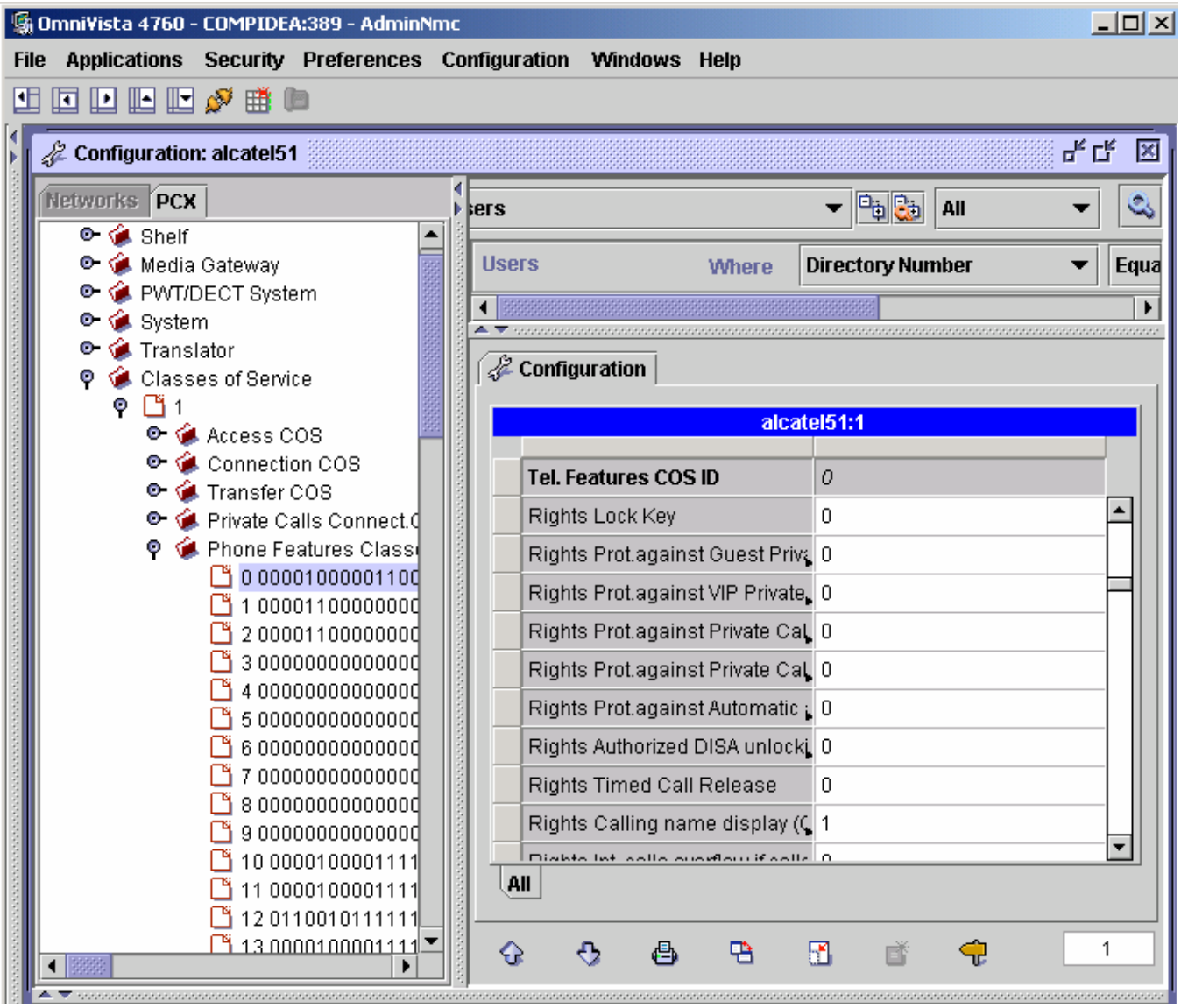

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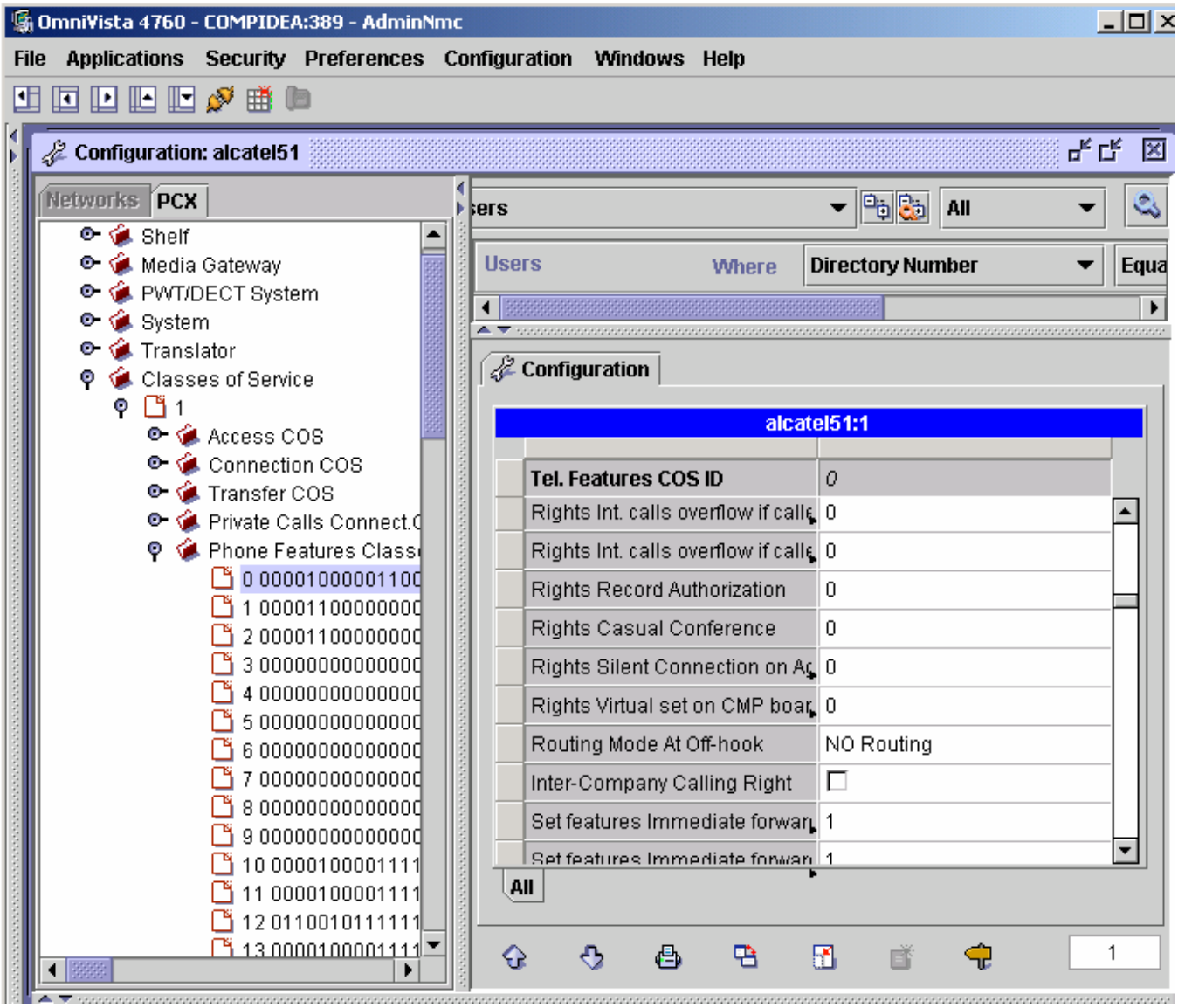

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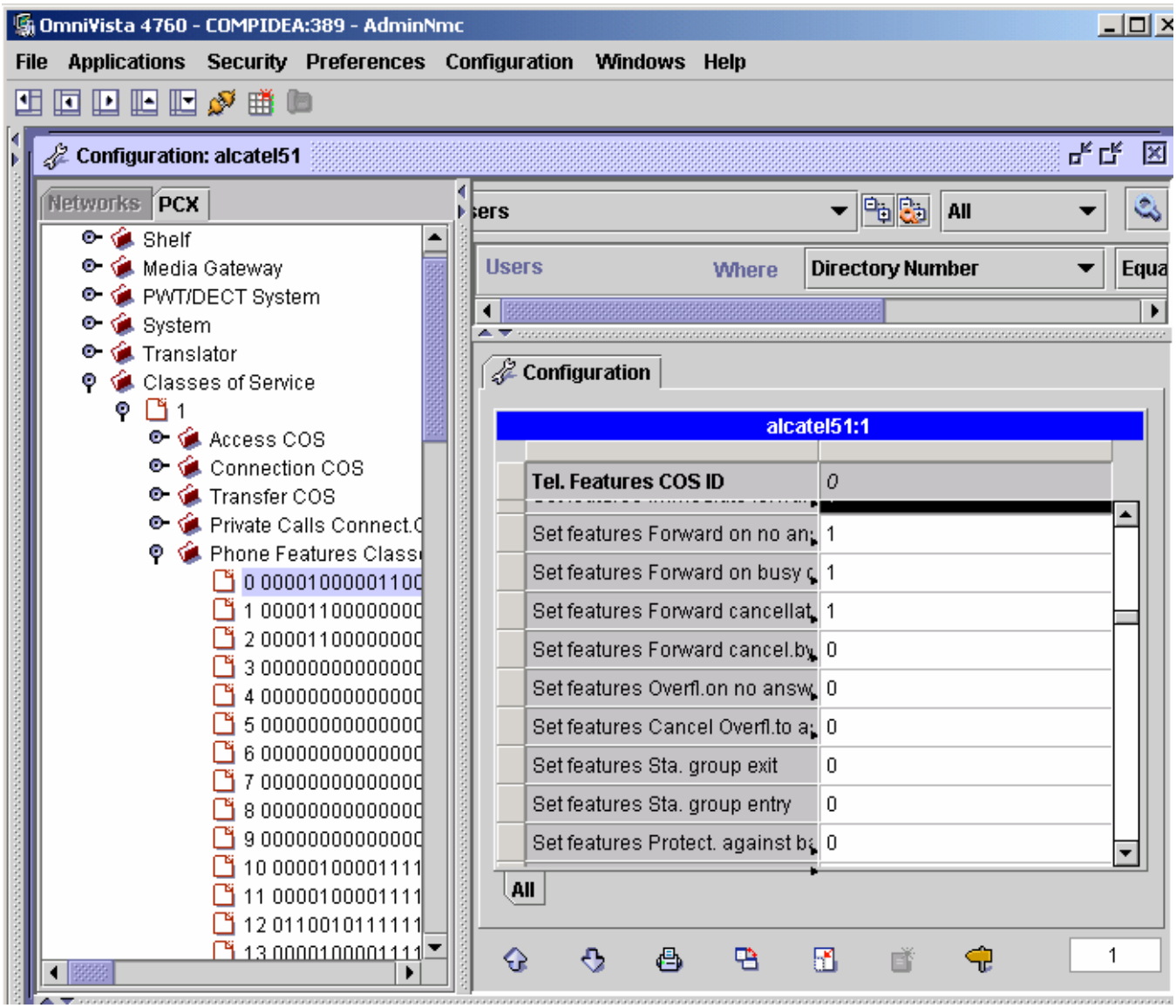

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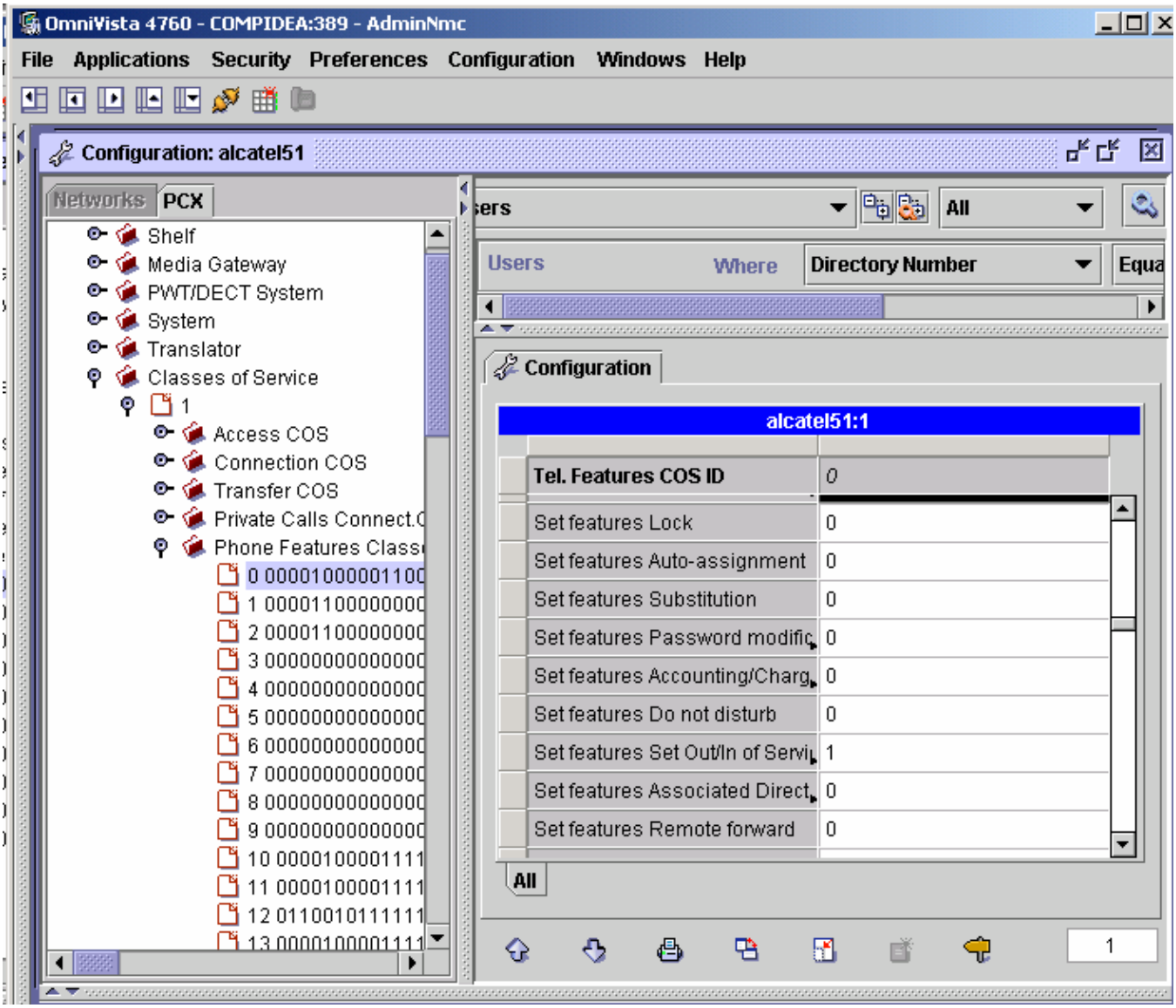

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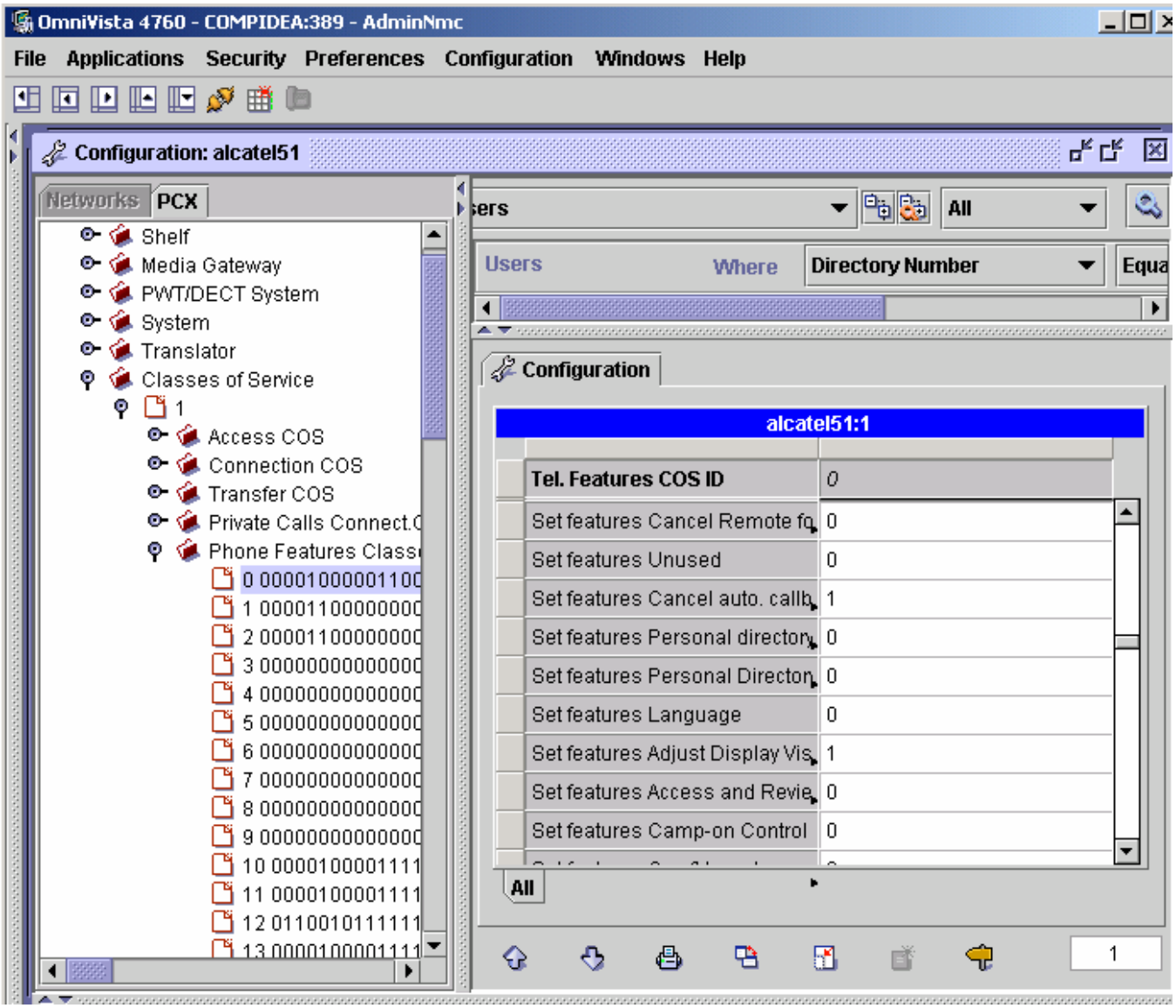

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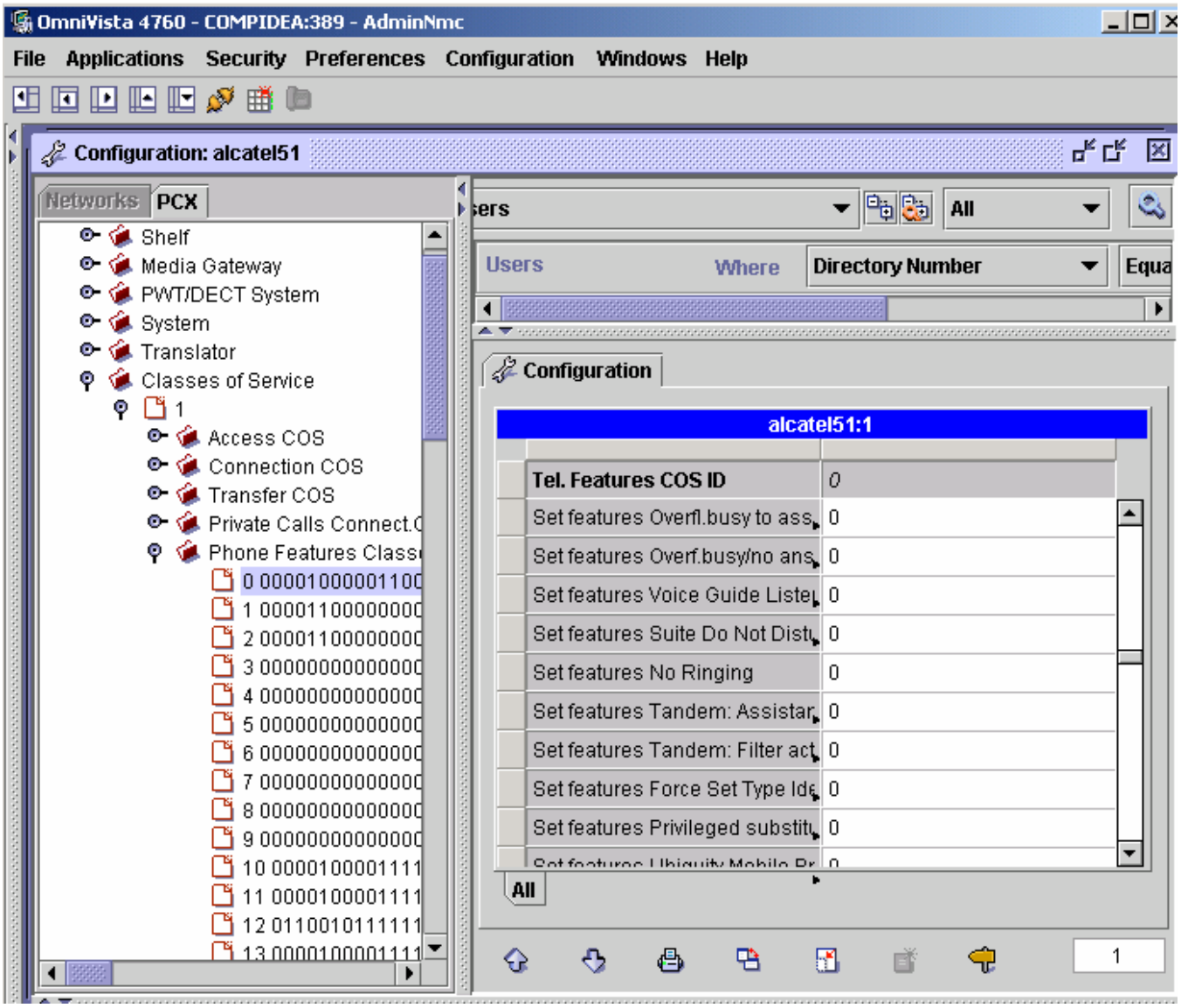

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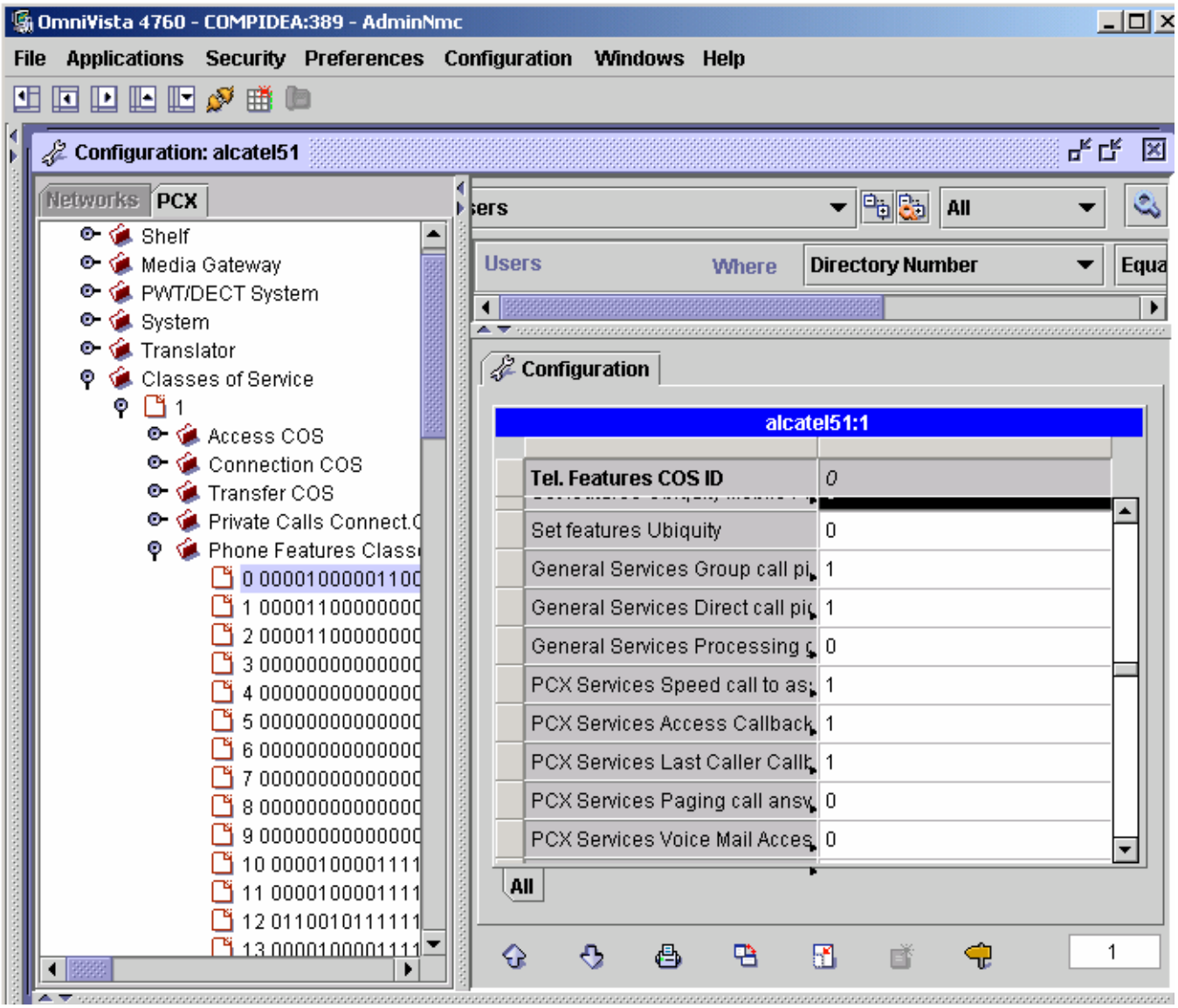

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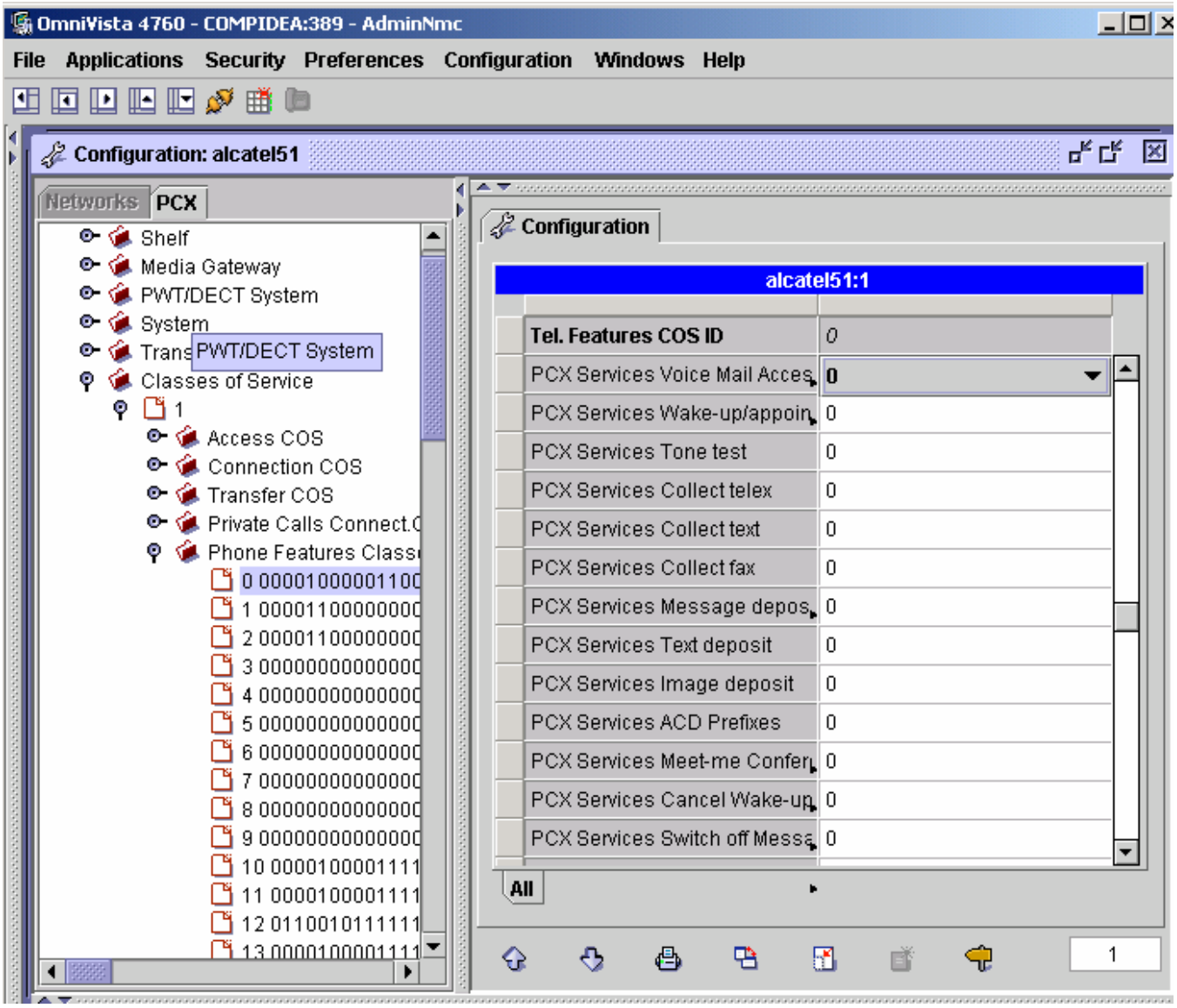

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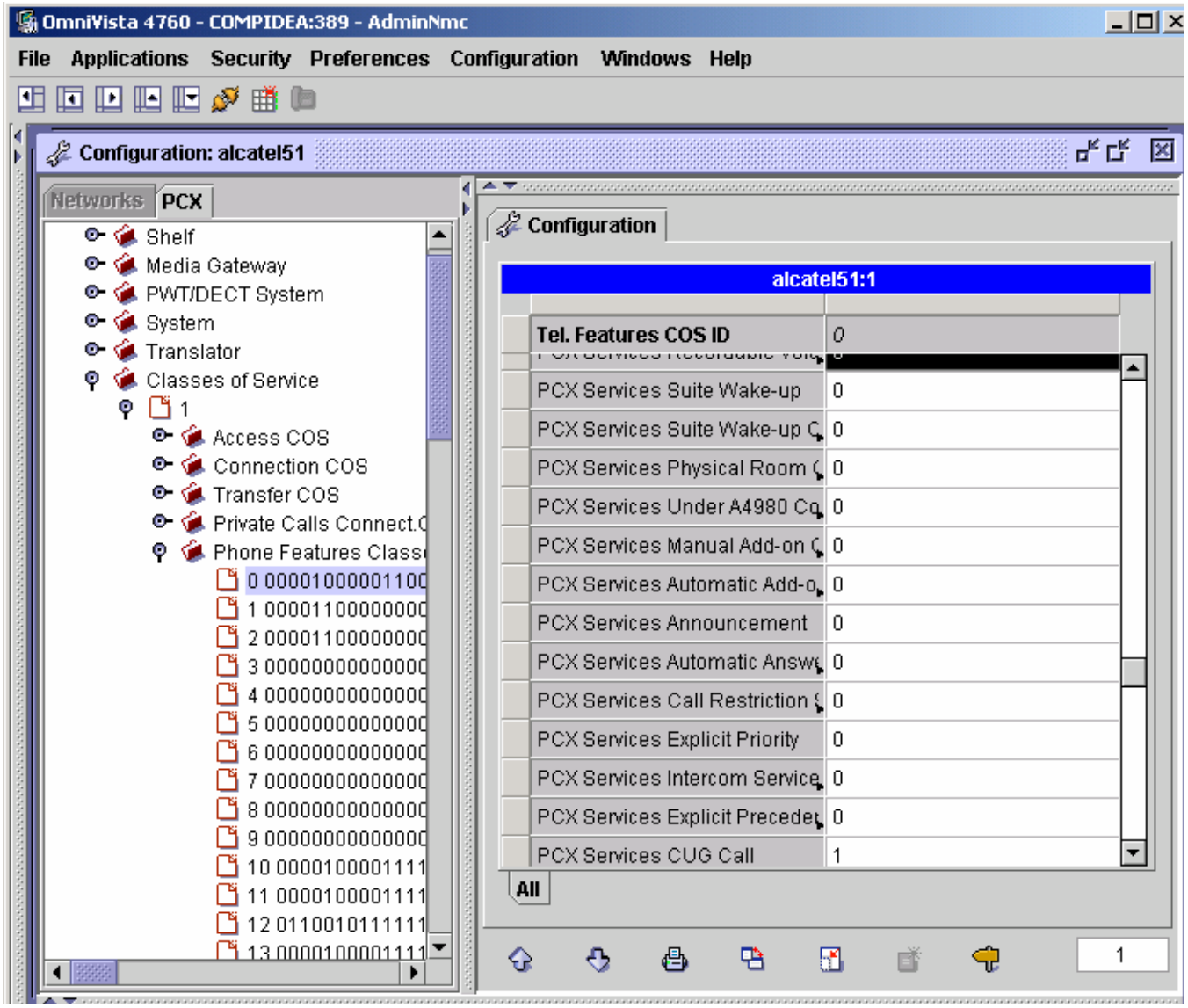

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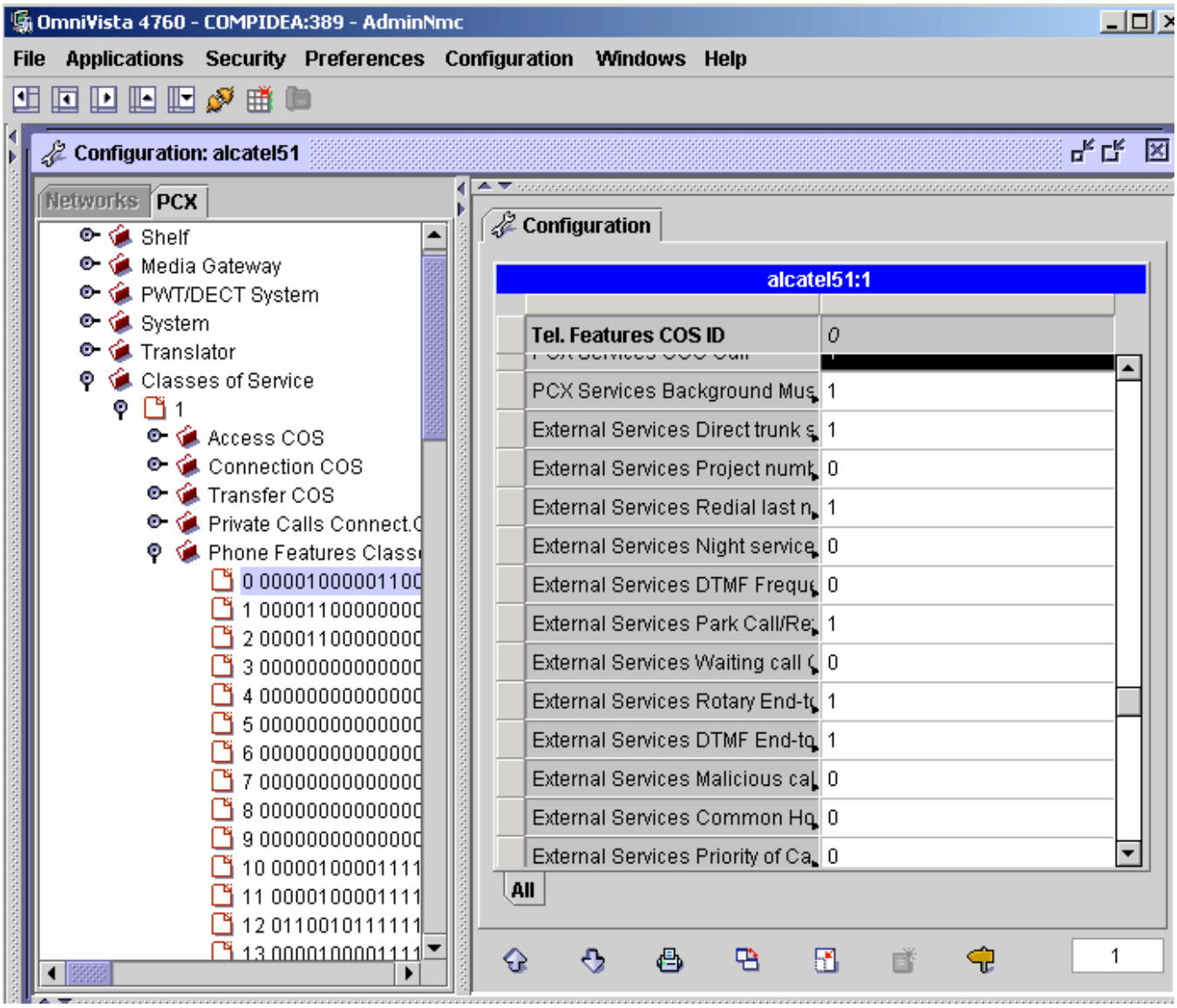

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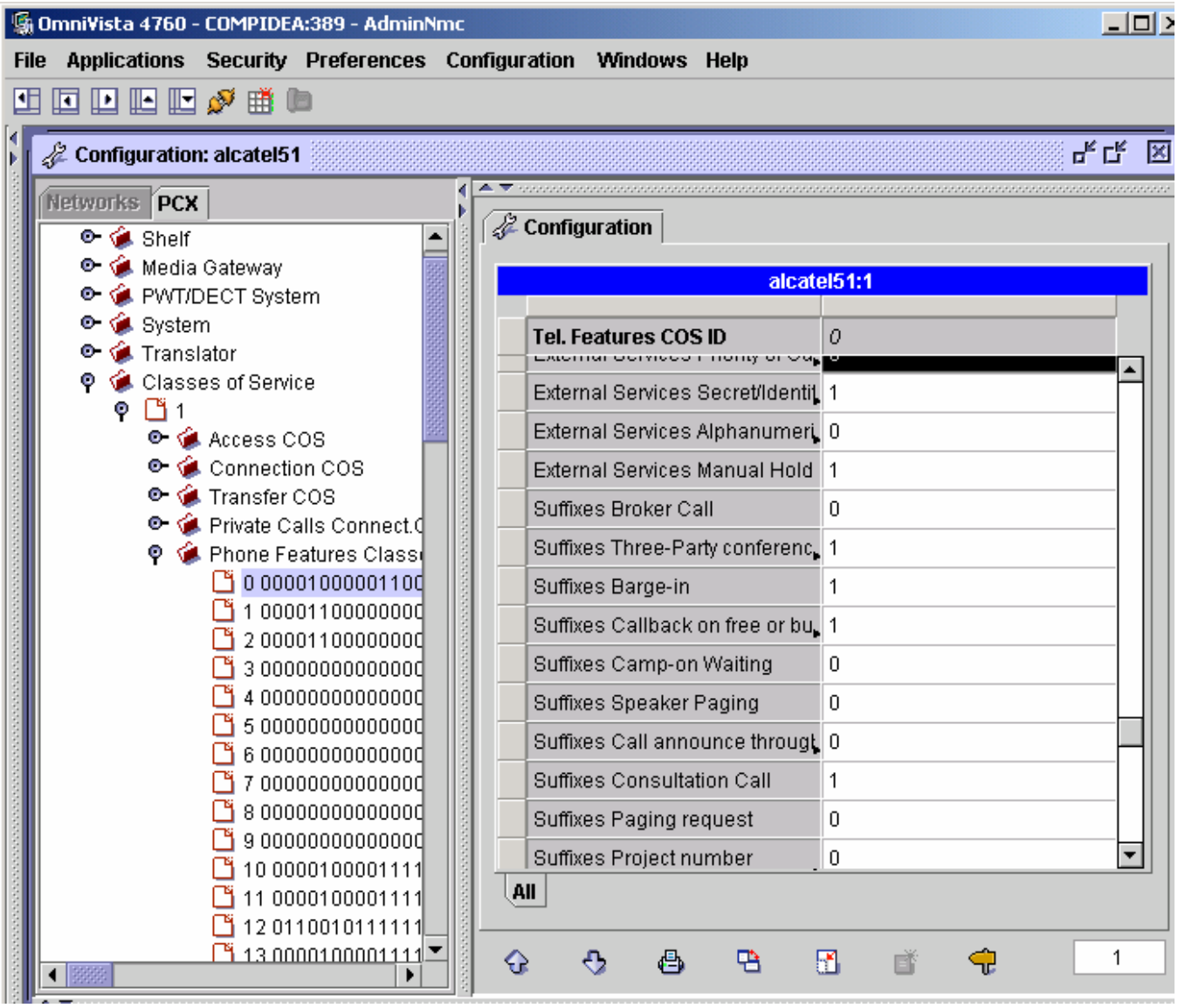

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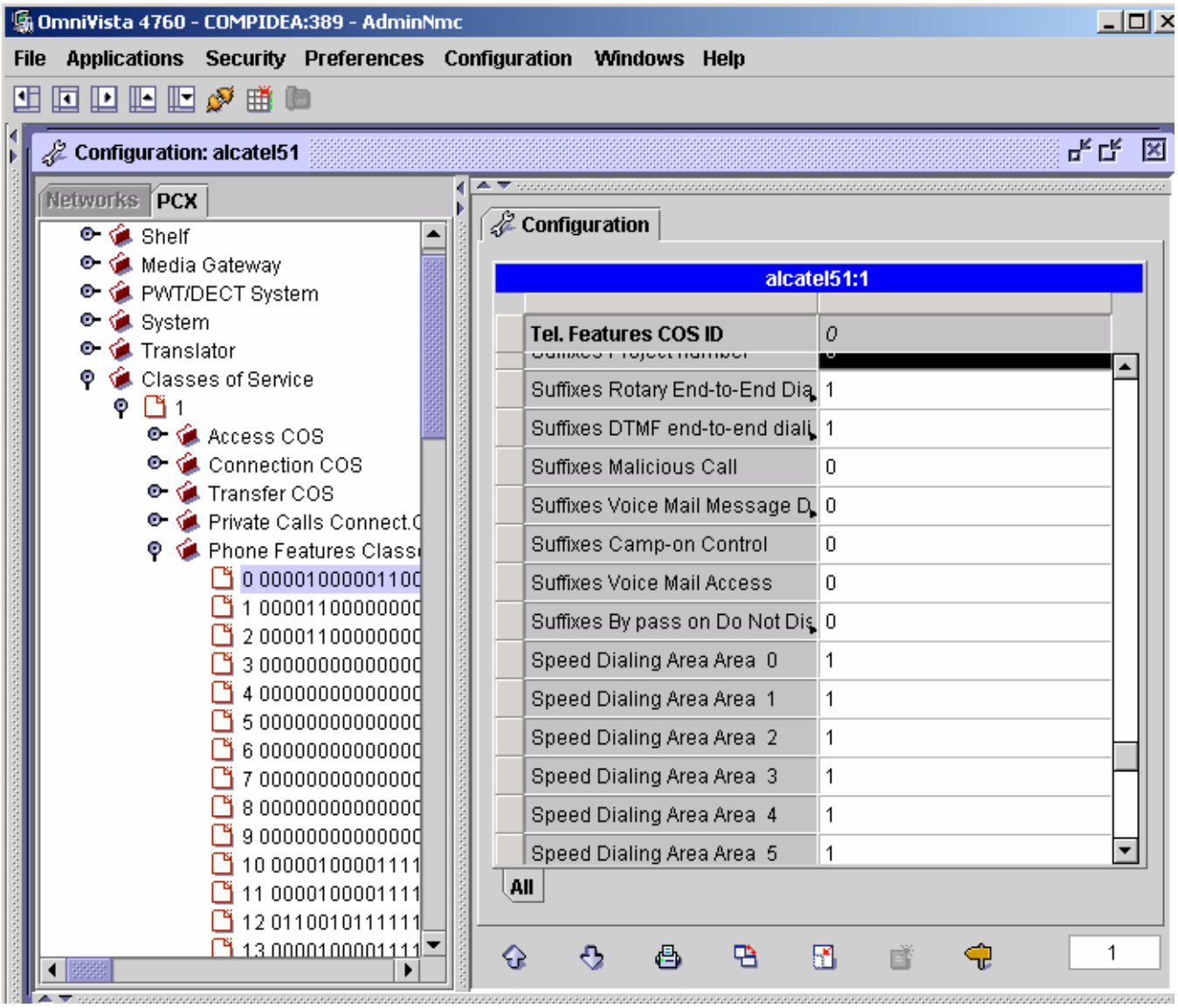

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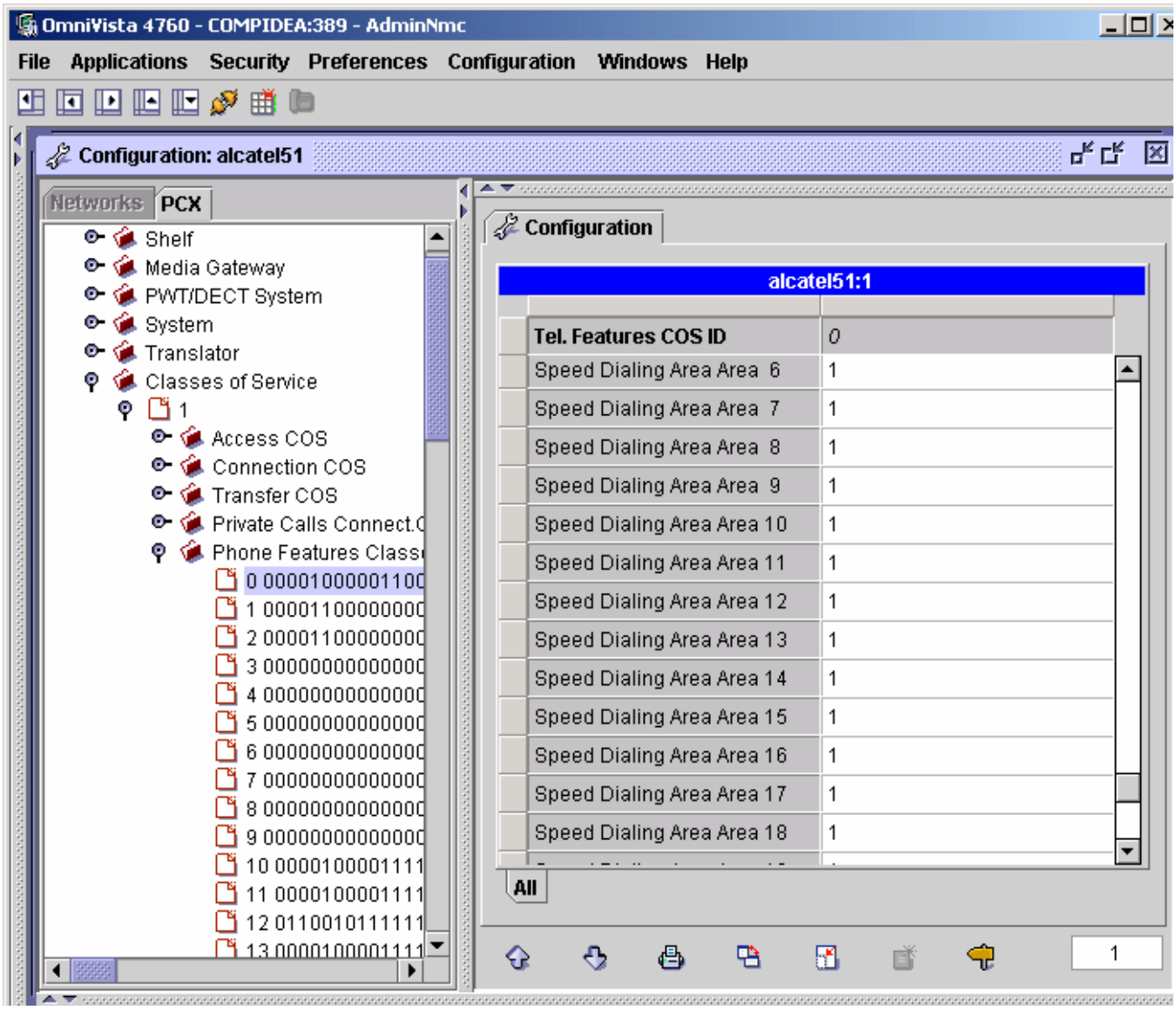

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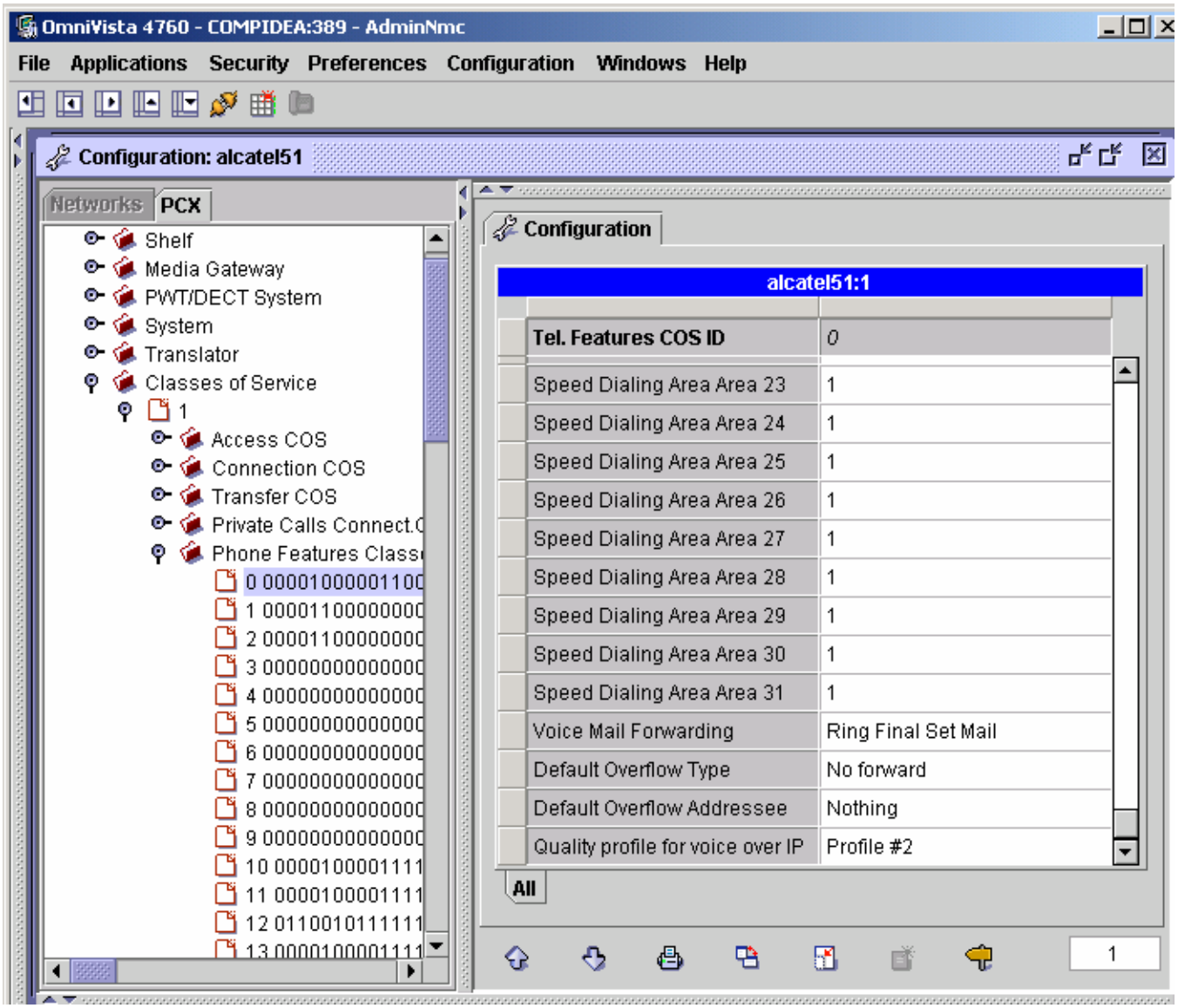

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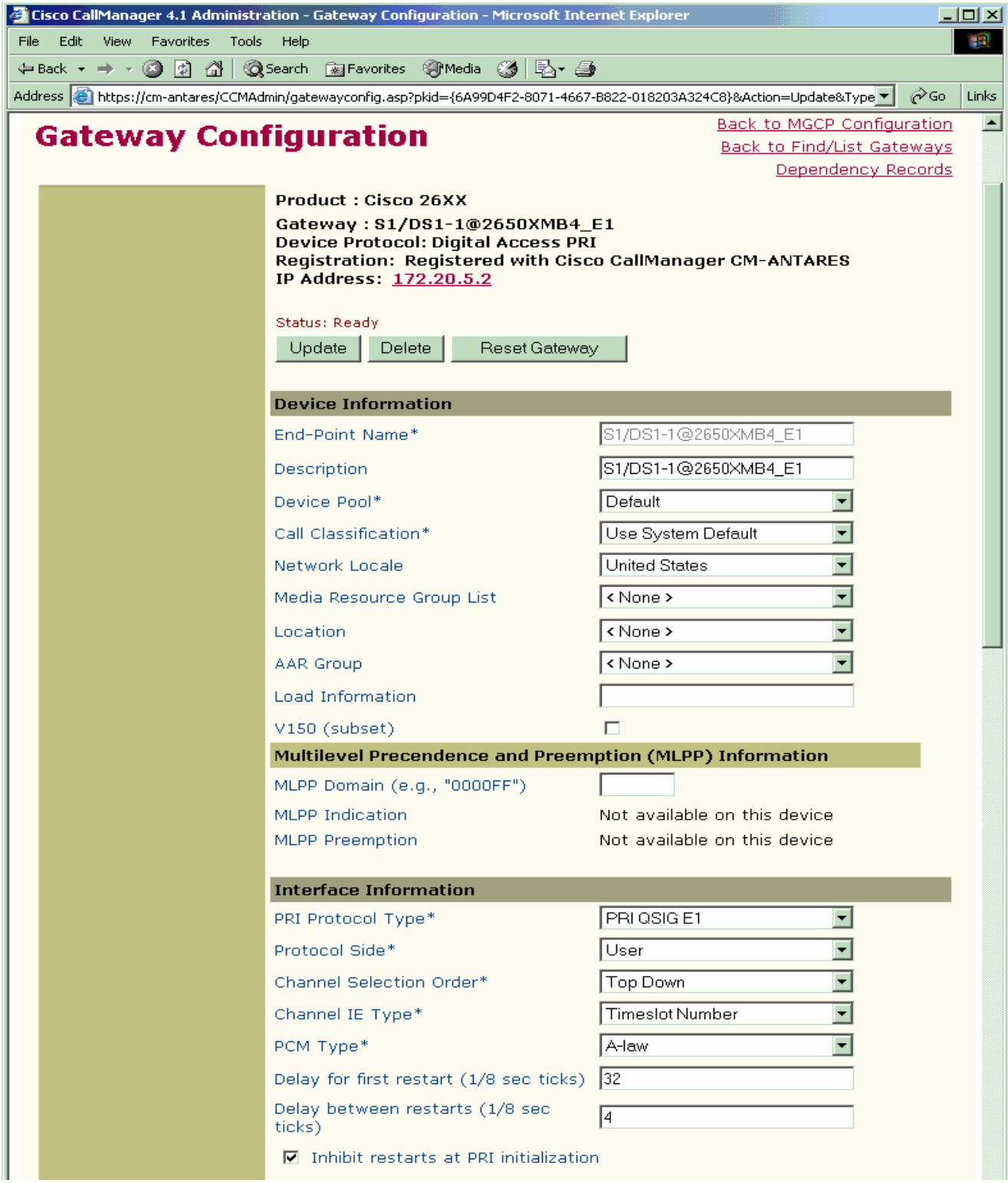
Configuring Cisco Unified CallManager

2650XM_E1 Gateway Configuration



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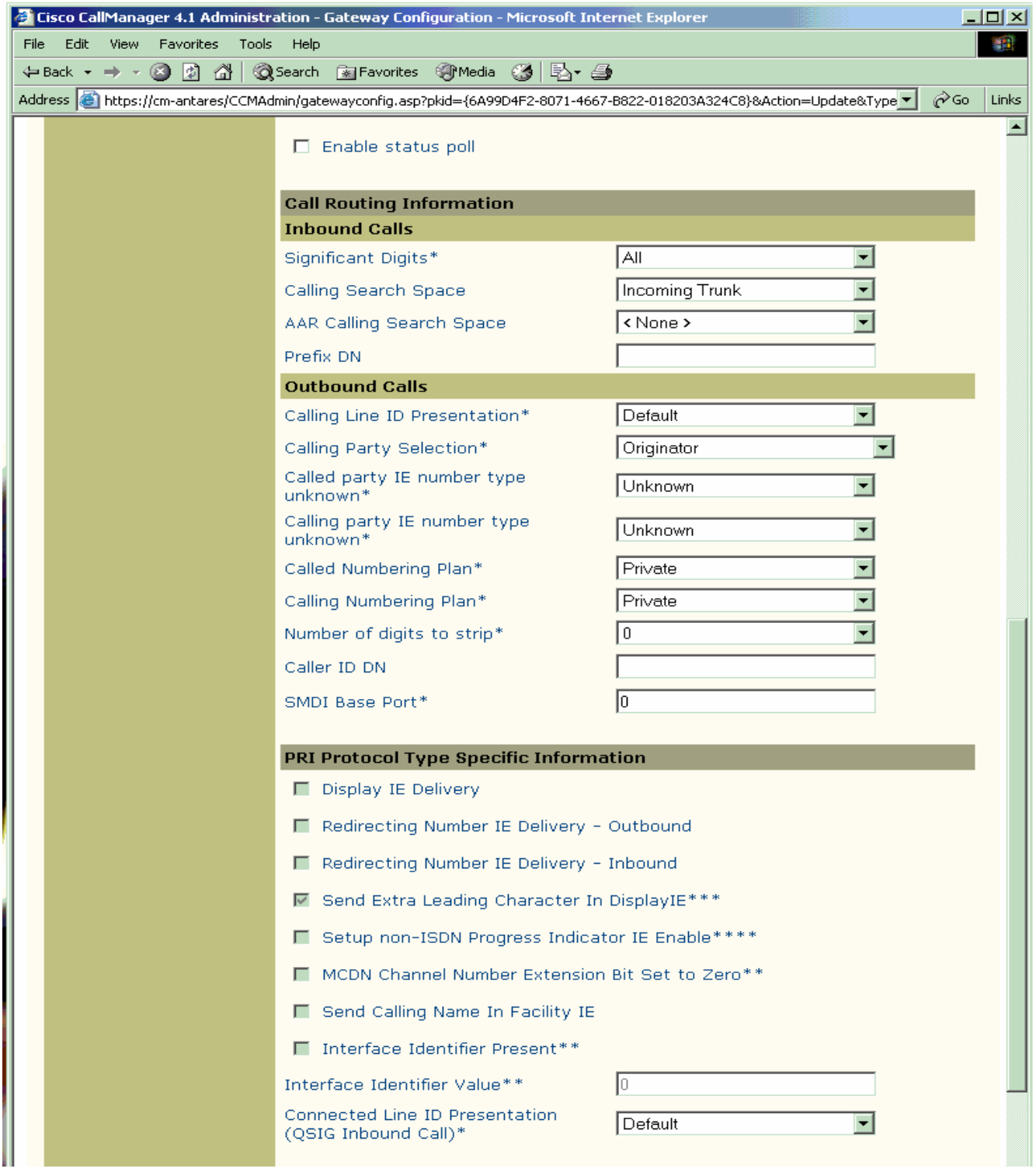

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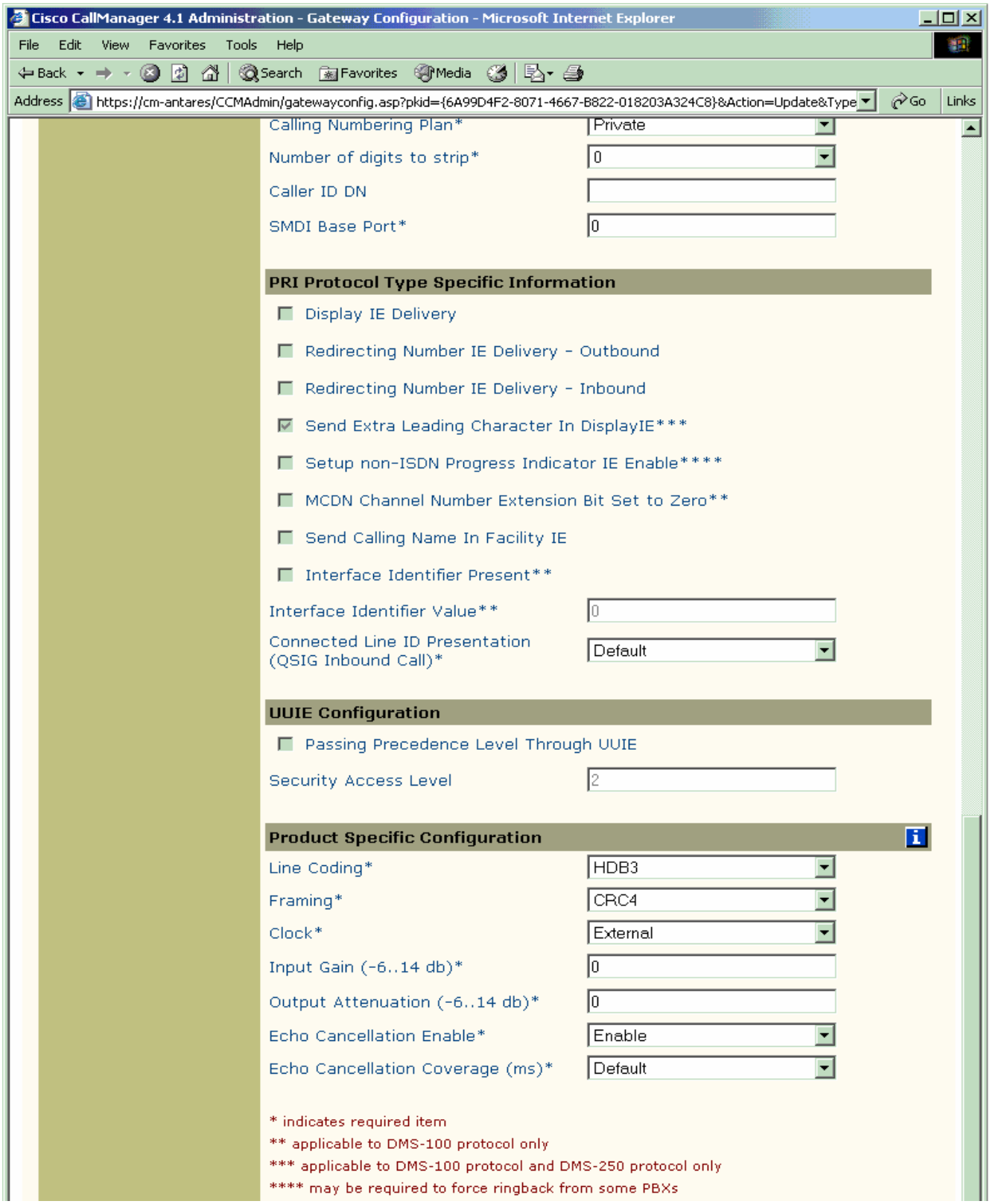

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Partitions Configuration

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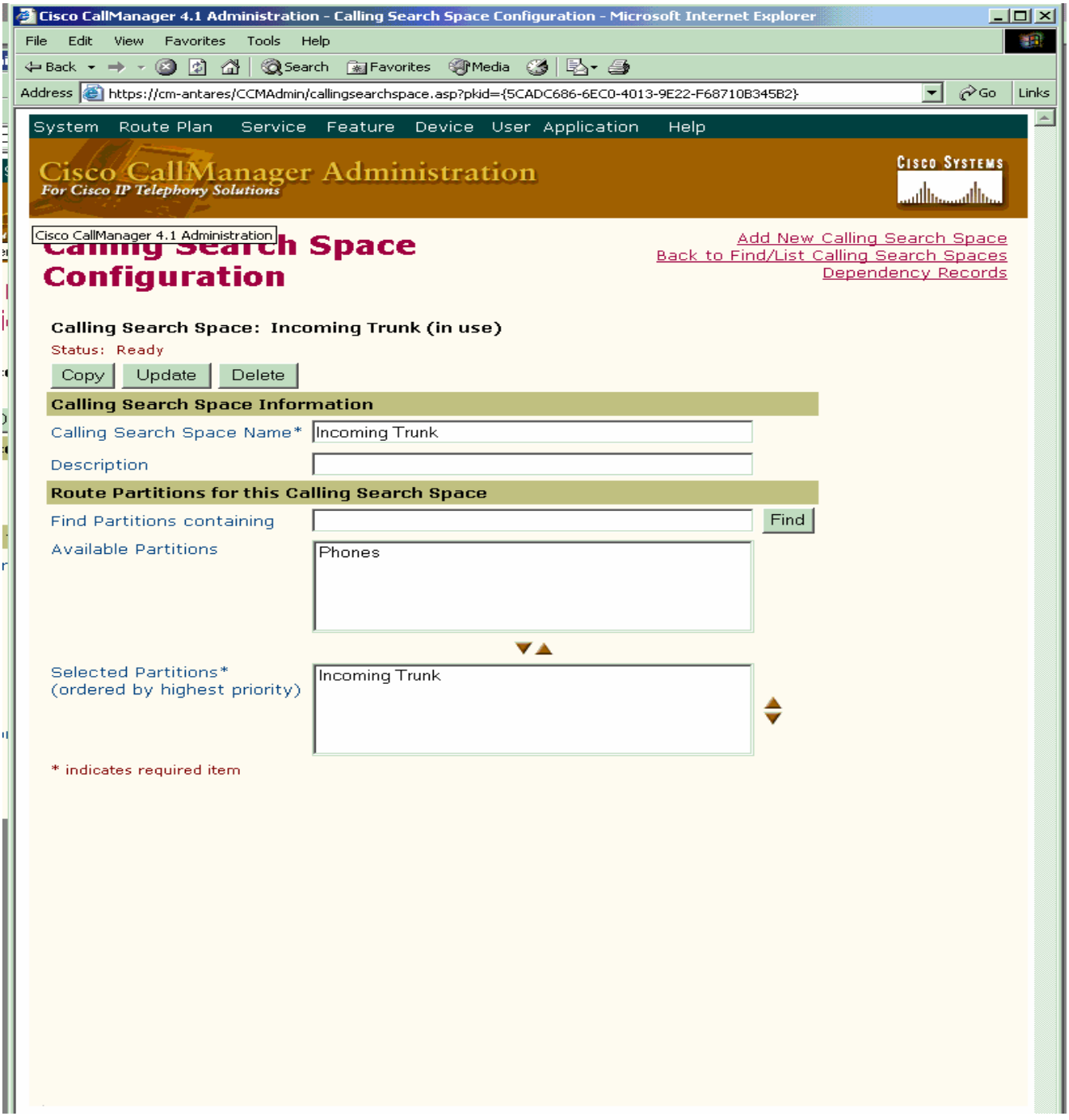
Calling Search Space Configuration



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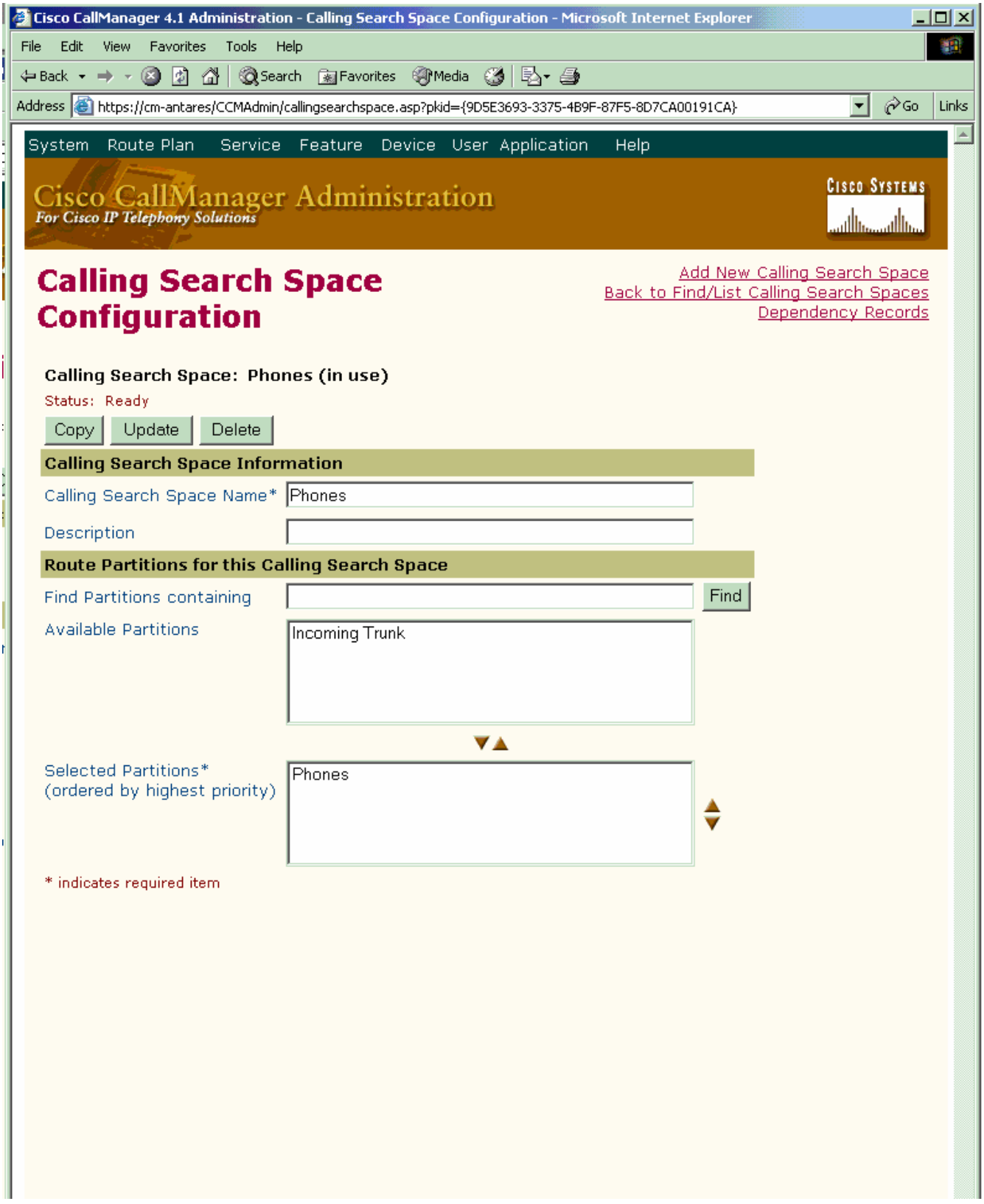

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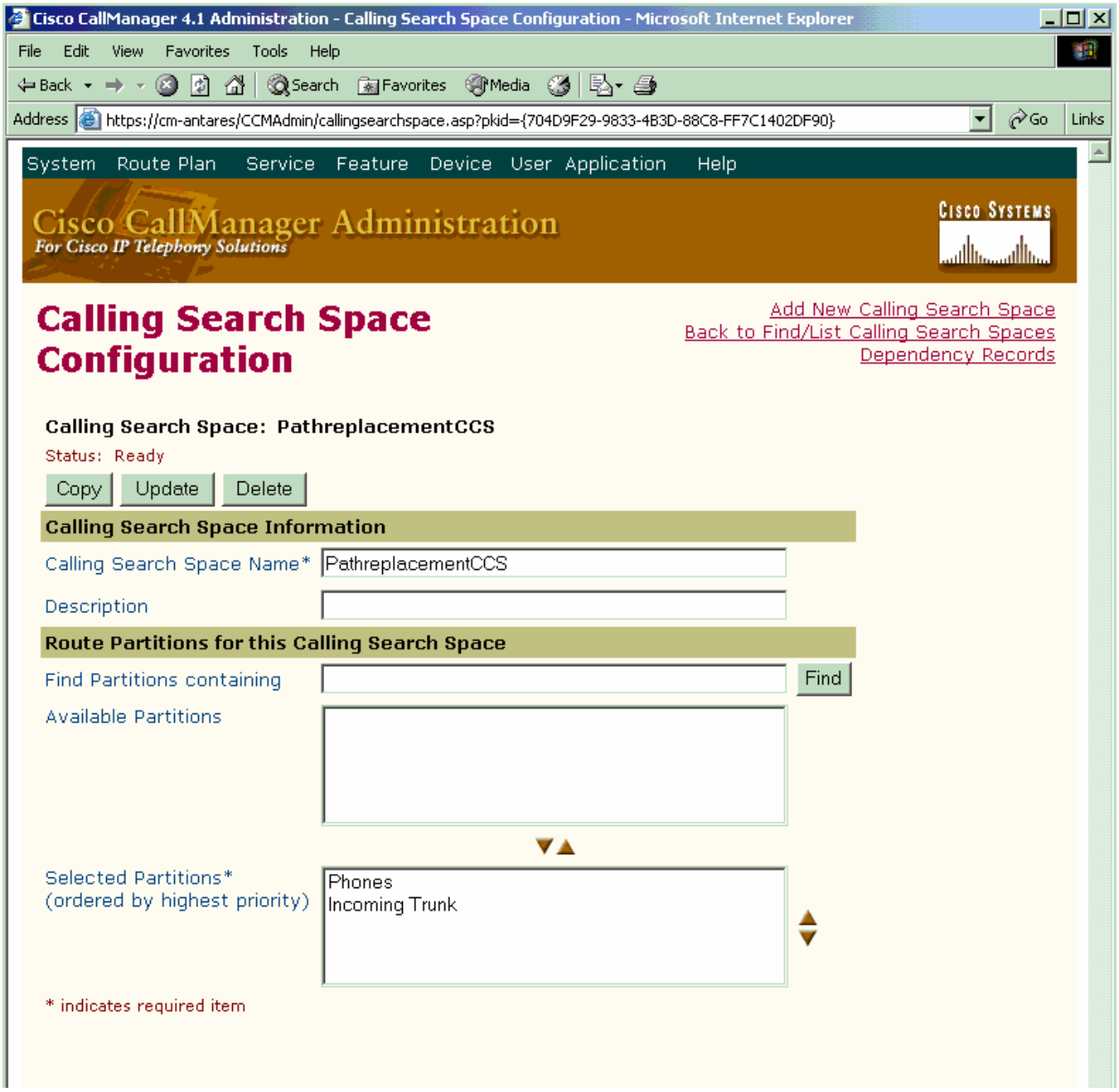

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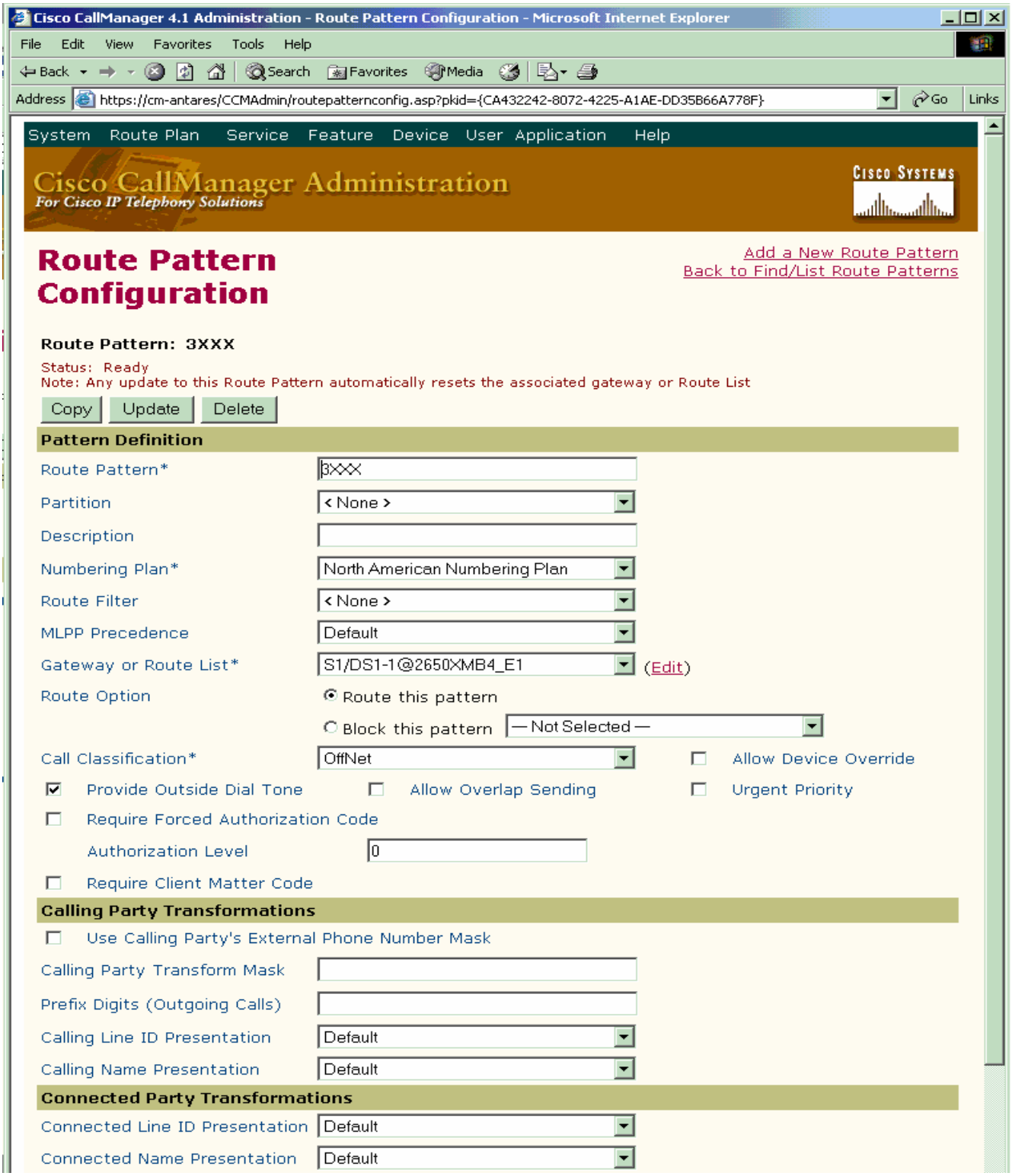
Enbloc Route Pattern Configuration



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Connected Party Transformations

Connected Line ID Presentation: Default

Connected Name Presentation: Default

Called Party Transformations

Discard Digits: < None >

Called Party Transform Mask:

Prefix Digits (Outgoing Calls):

ISDN Network-Specific Facilities Information Element

Carrier Identification Code:

Network Service Protocol: — Not Selected —

Network Service	Service Parameter Name	Service Parameter Value
— Not Selected —	< Not Exist >	

* indicates required item.

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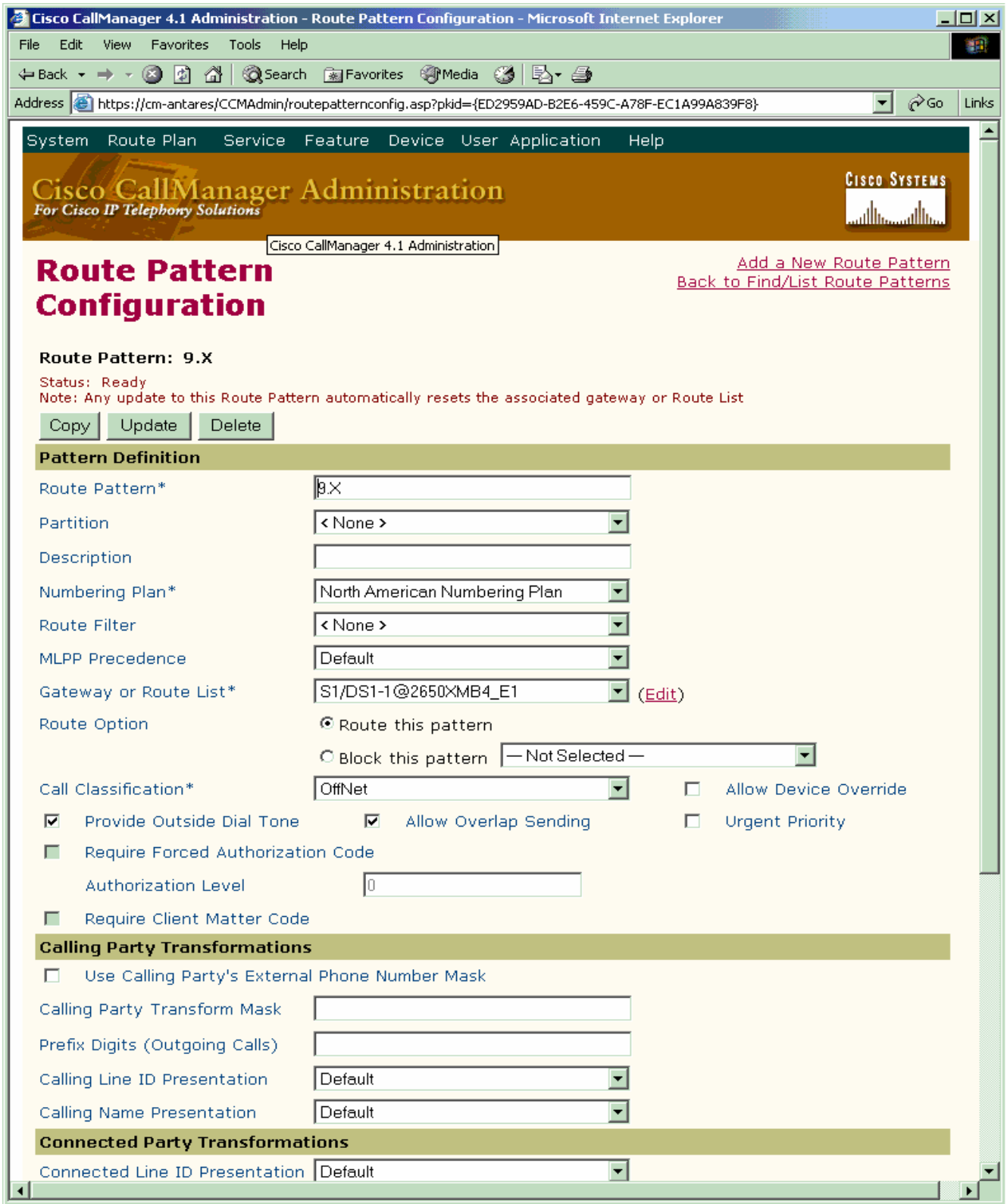
Overlap Sending Route Pattern Configuration



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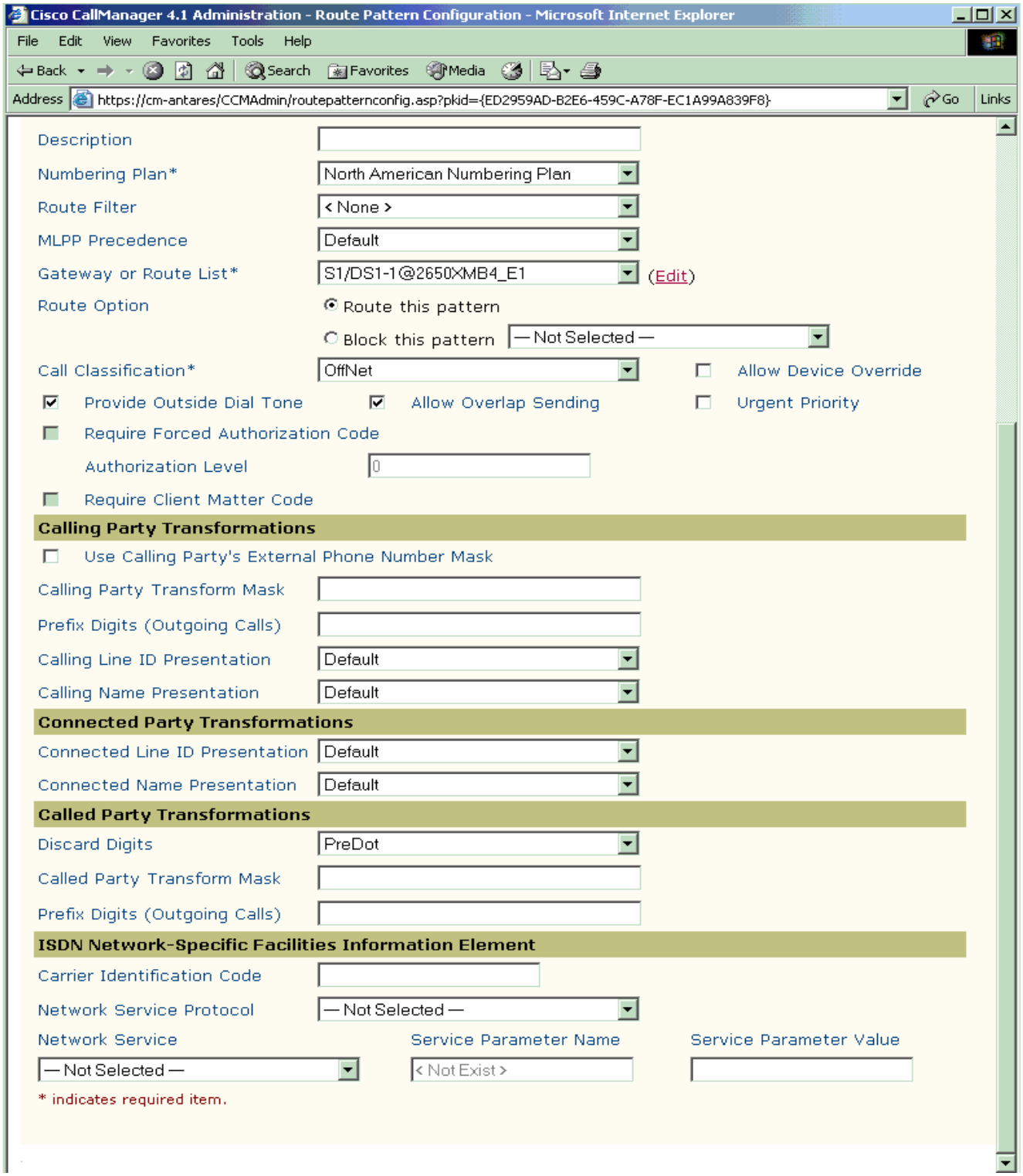

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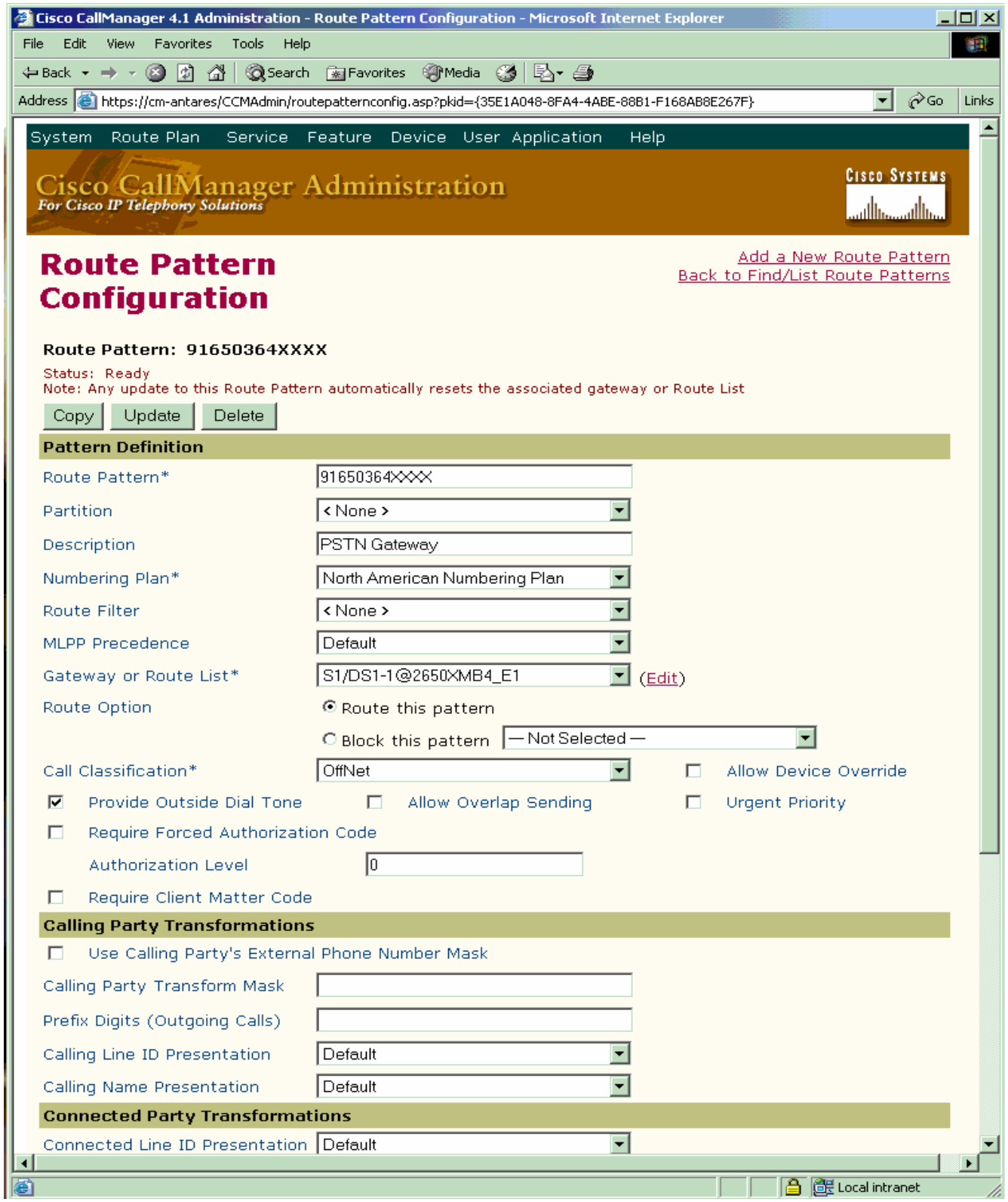
PSTN Route Pattern Configuration



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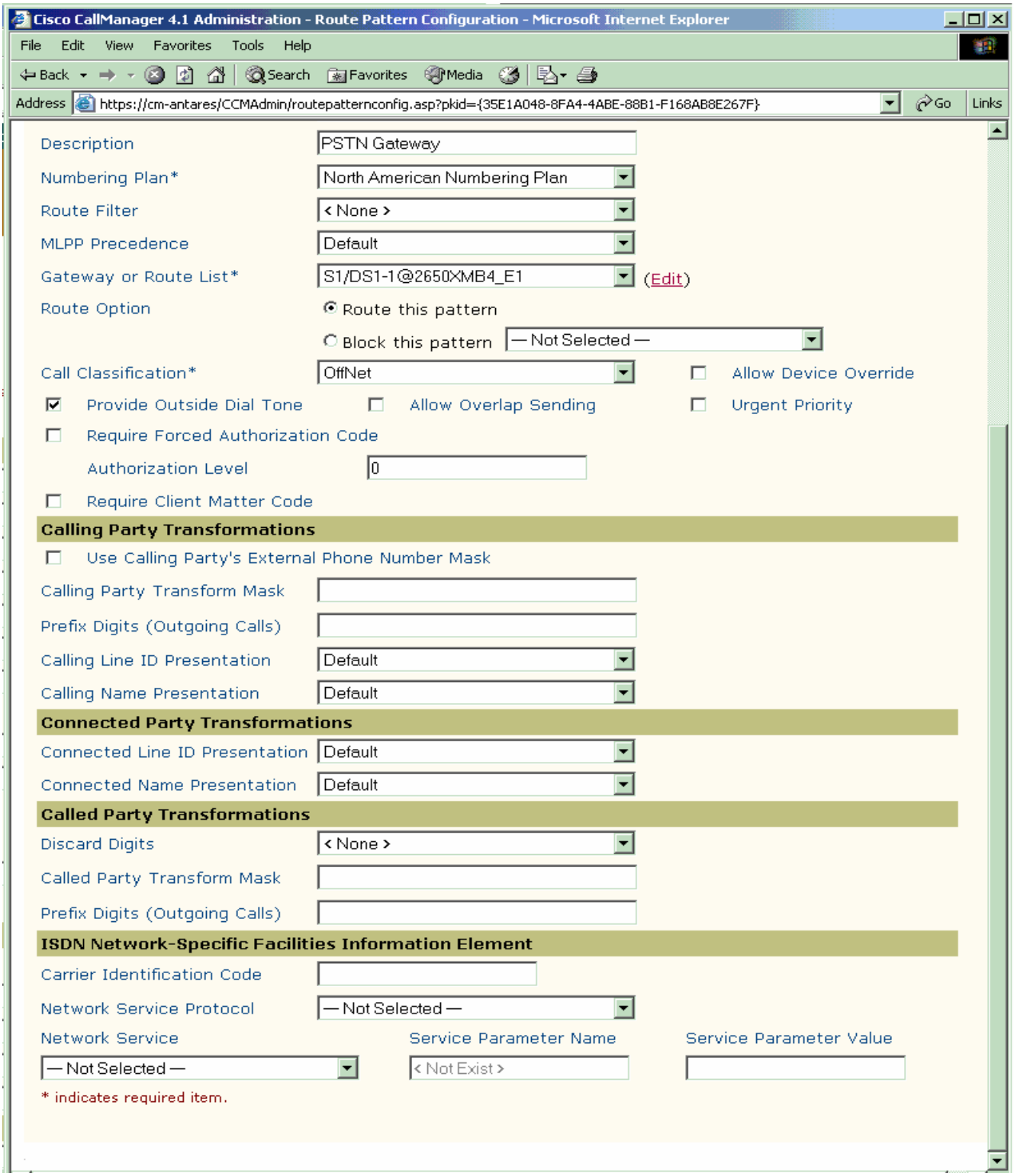

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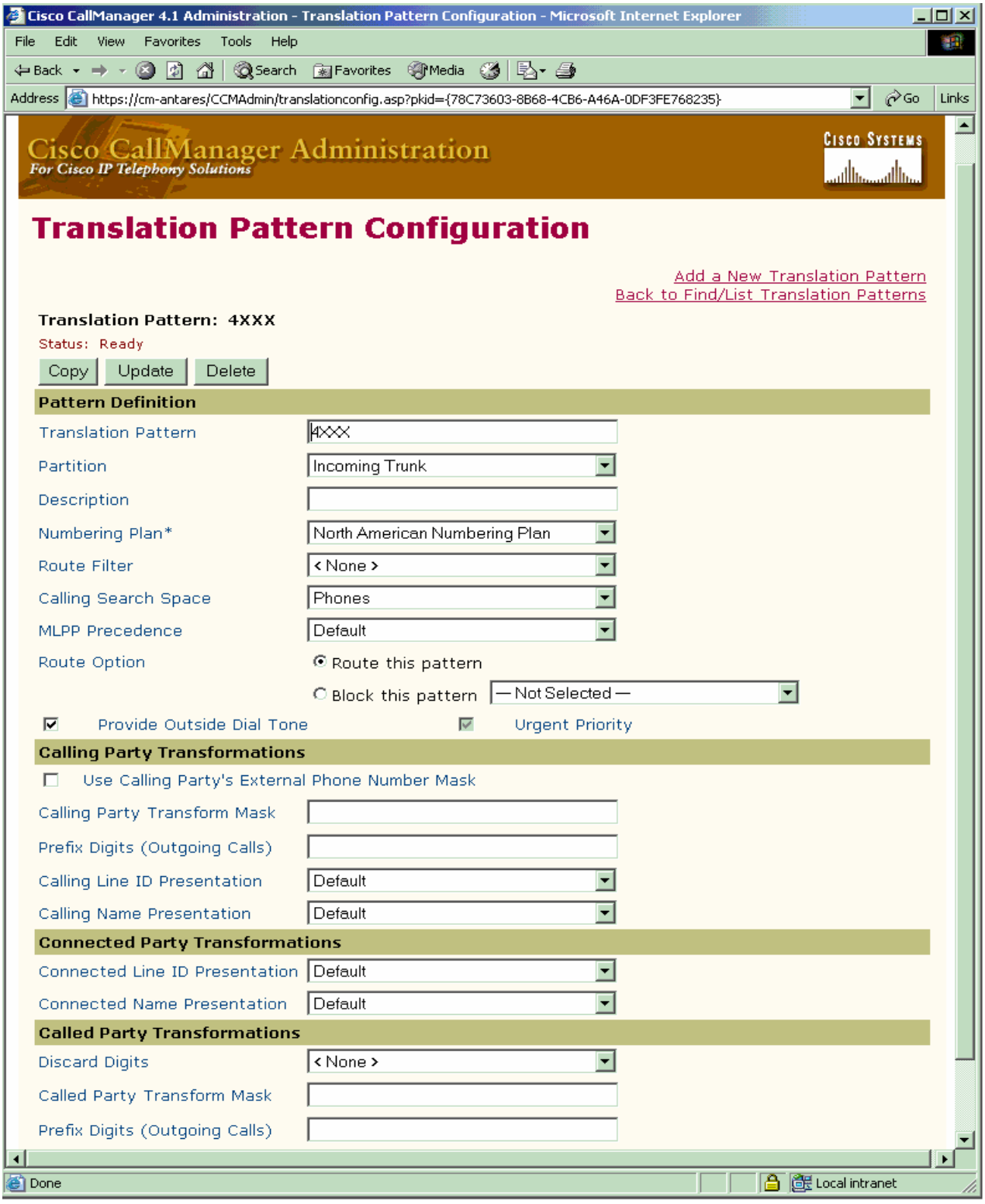
Translation Pattern for Incoming Calls



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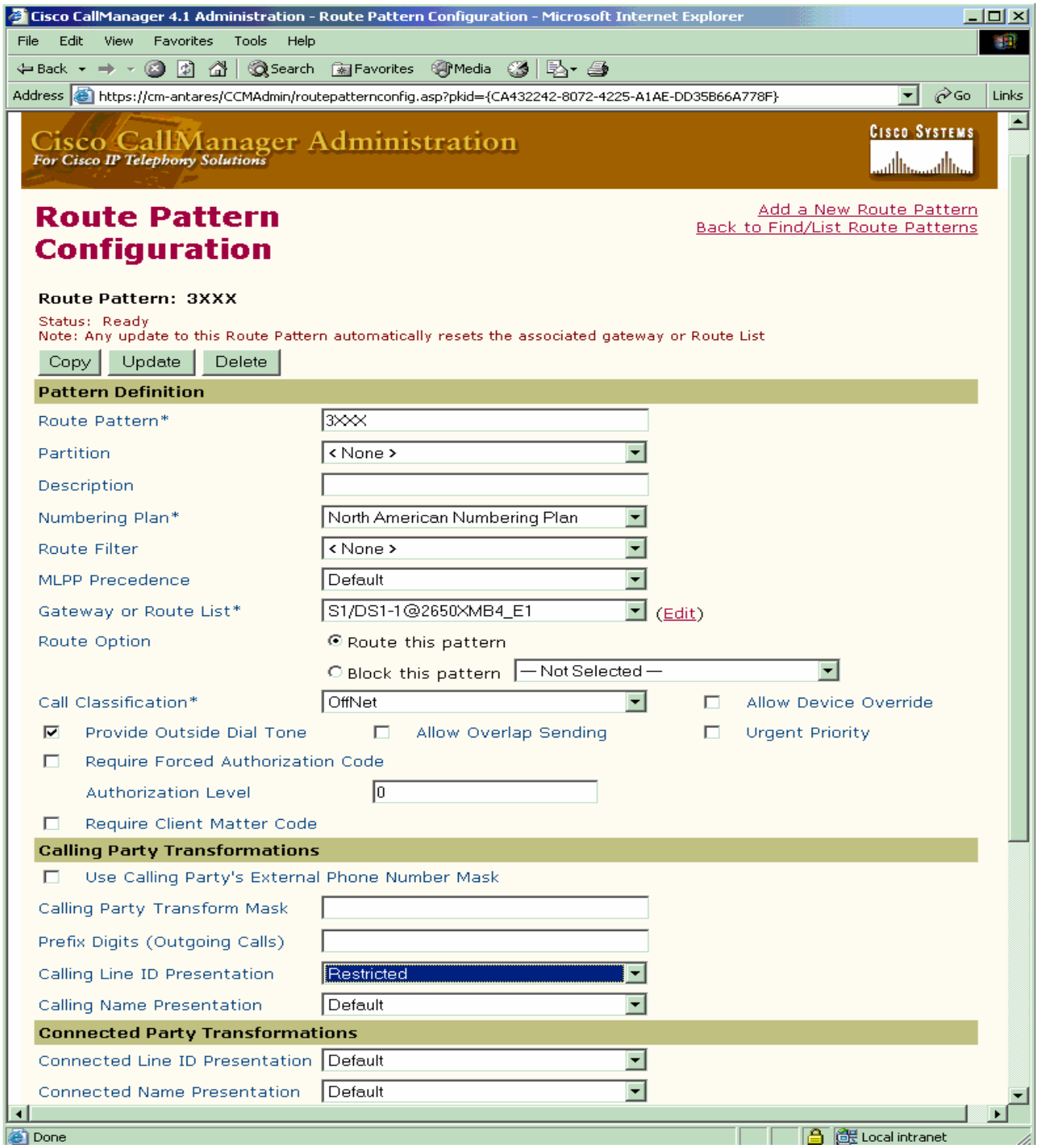
CLIR Route Pattern Configuration



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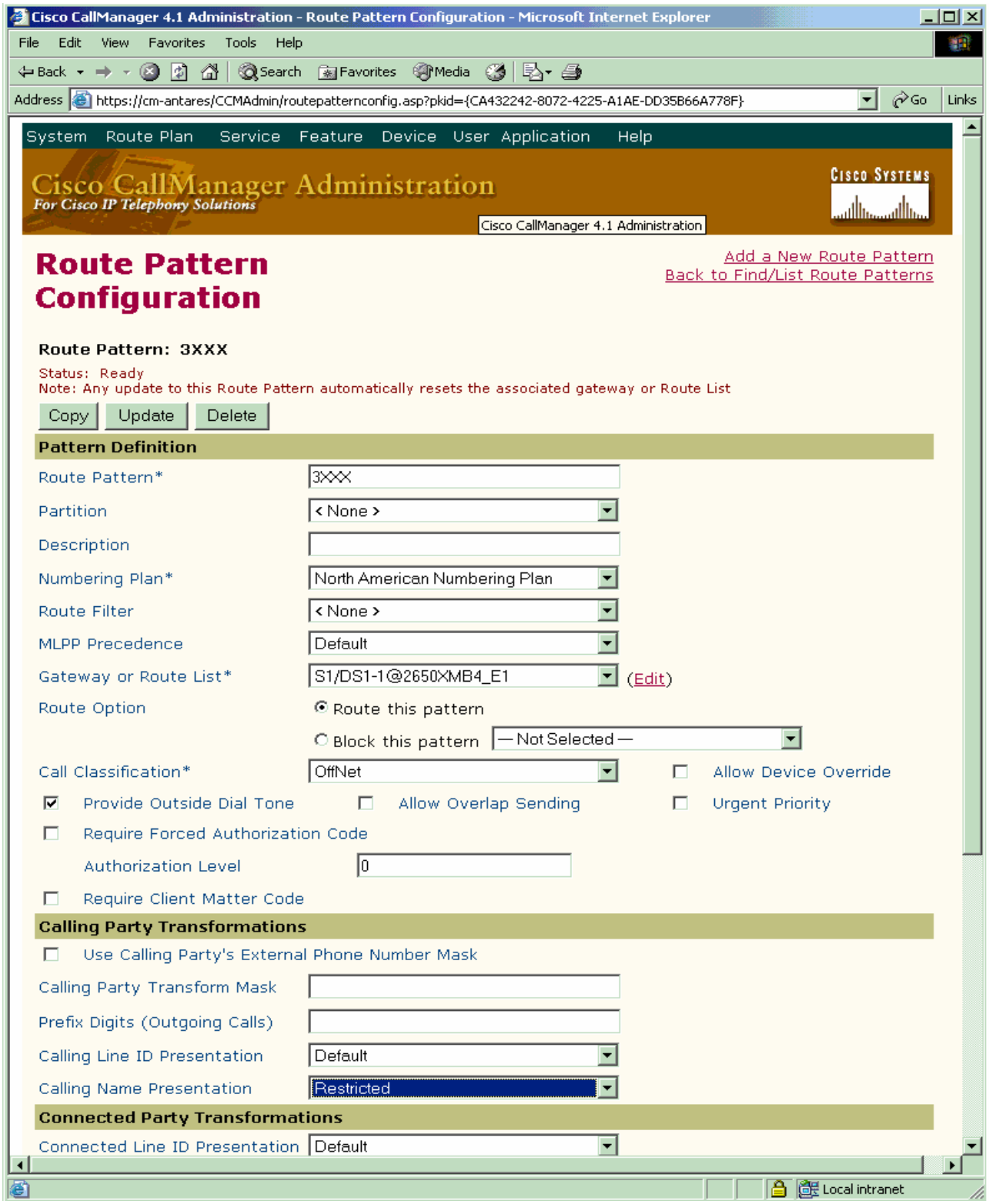
CNIR Route Pattern Configuration



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COLR Translation Pattern Configuration

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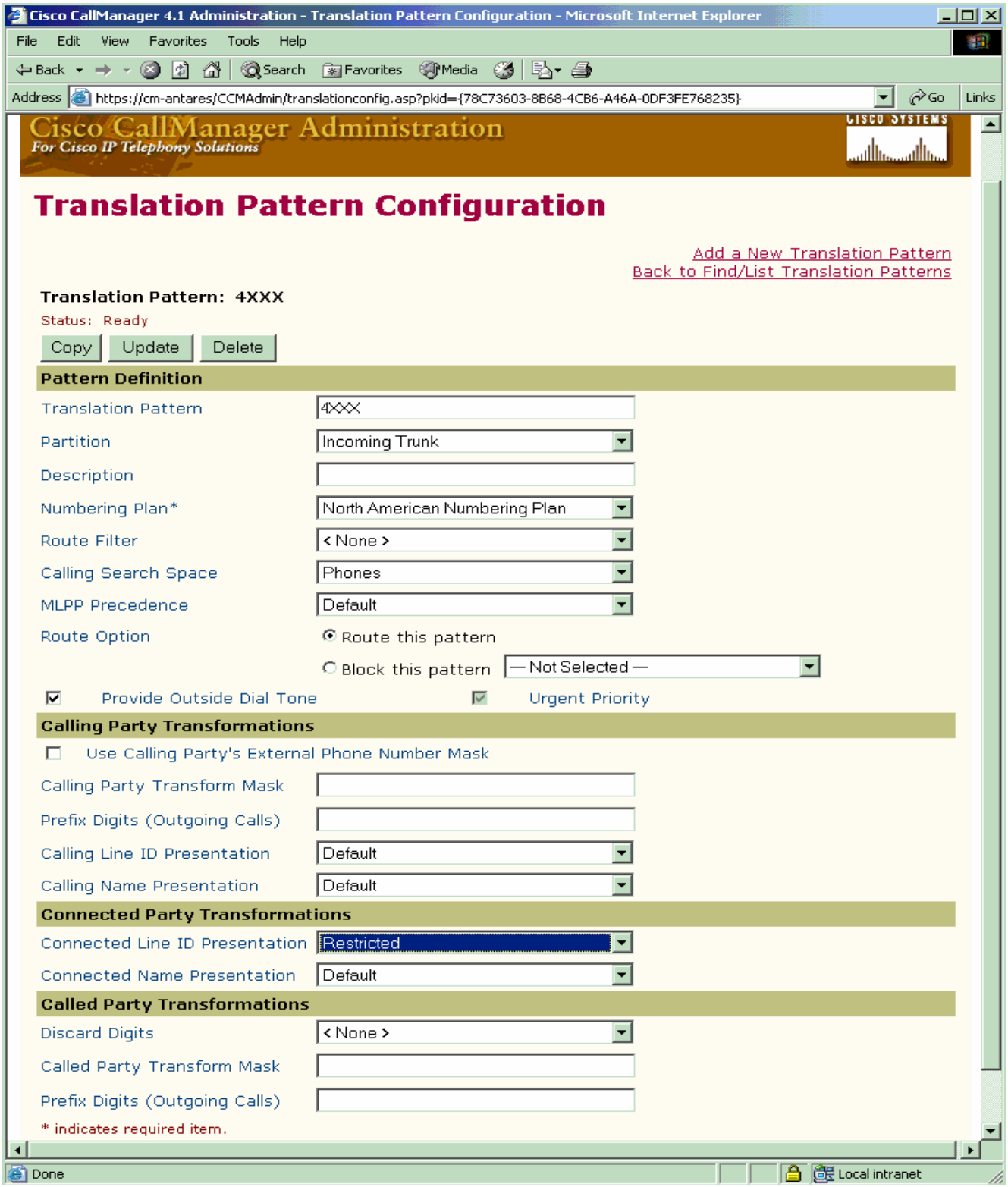

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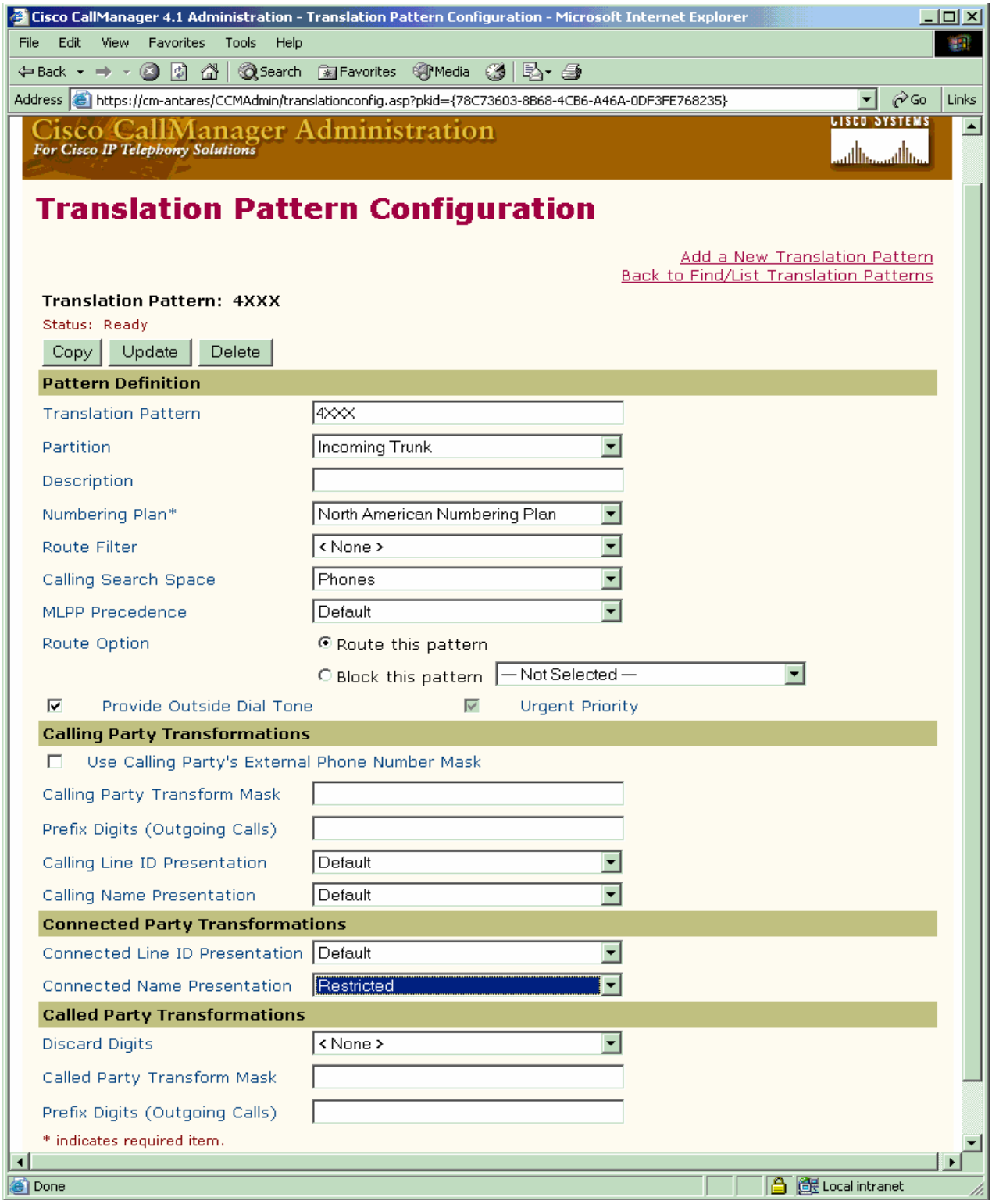
CONR Translation Pattern Configuration



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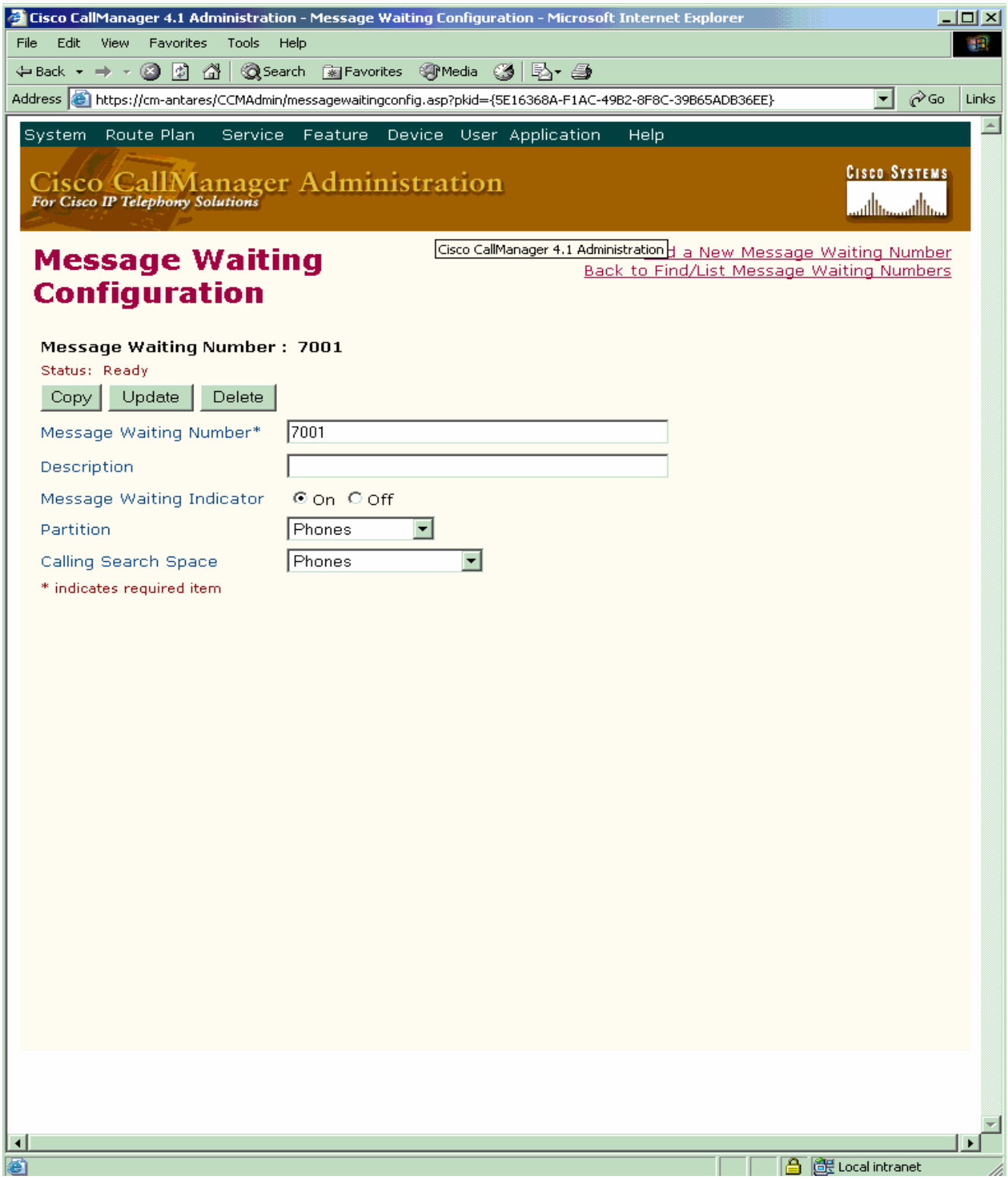
MWI lamp On/Off Configuration



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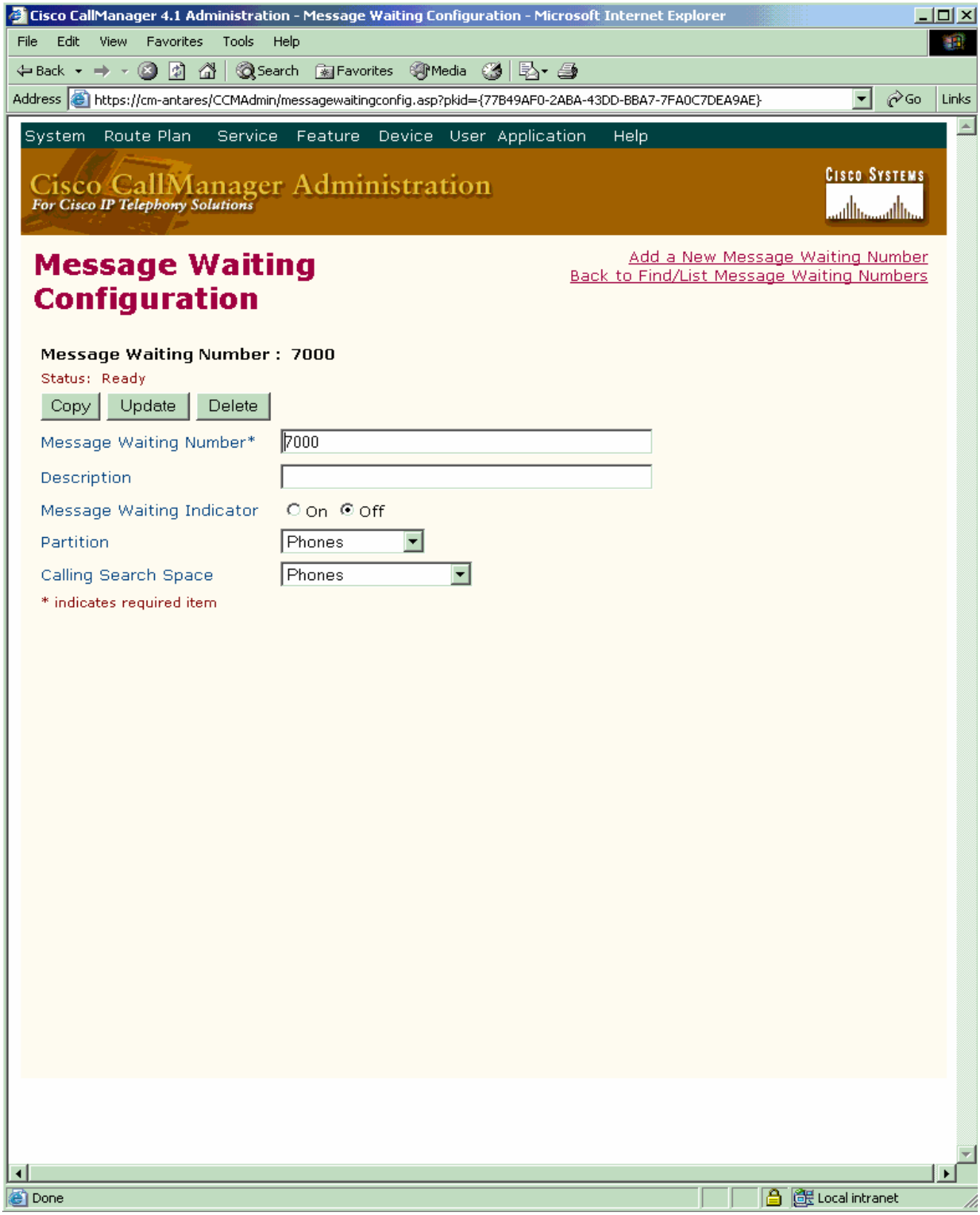

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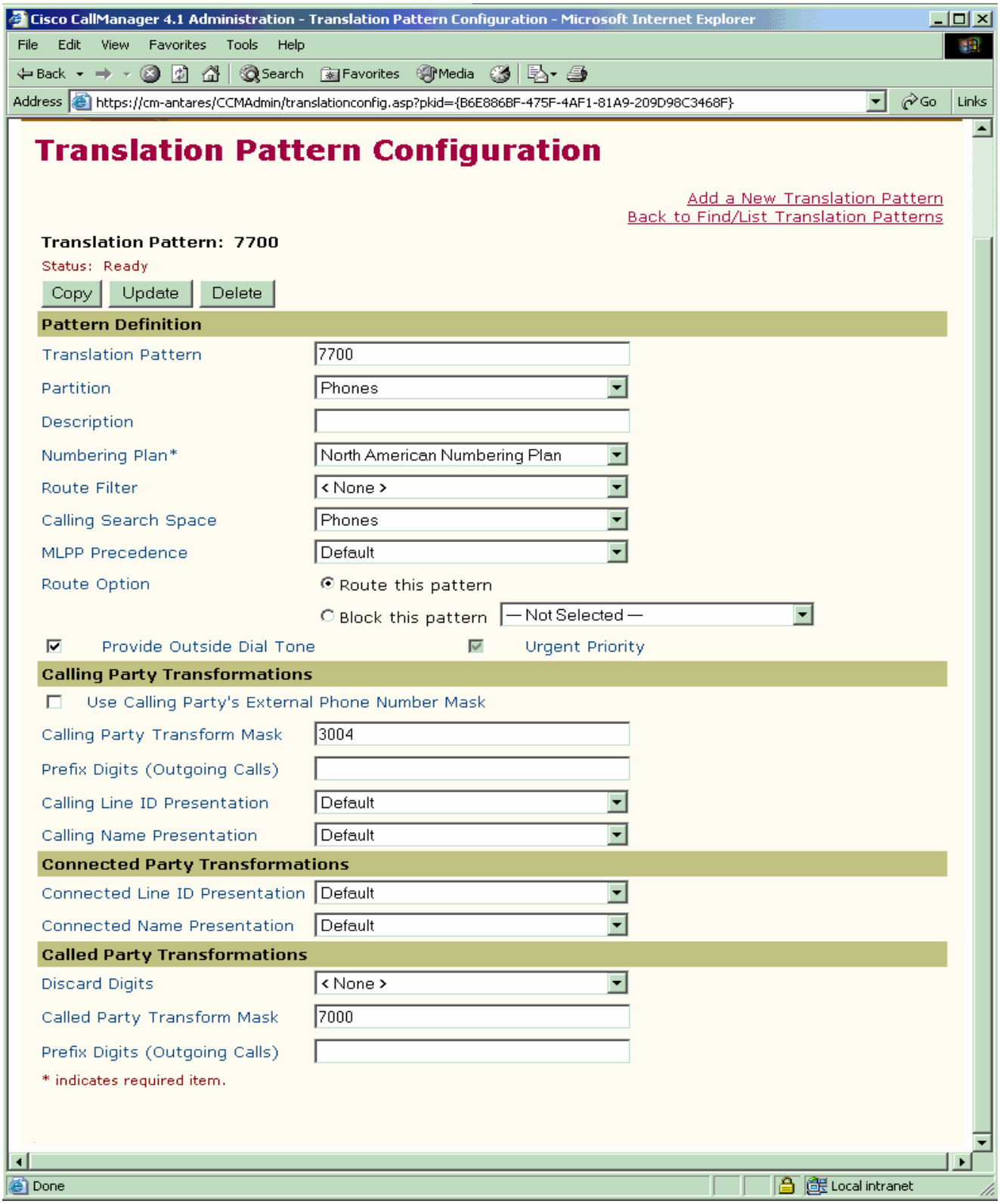
MWI DeActivate Translation Pattern Configuration



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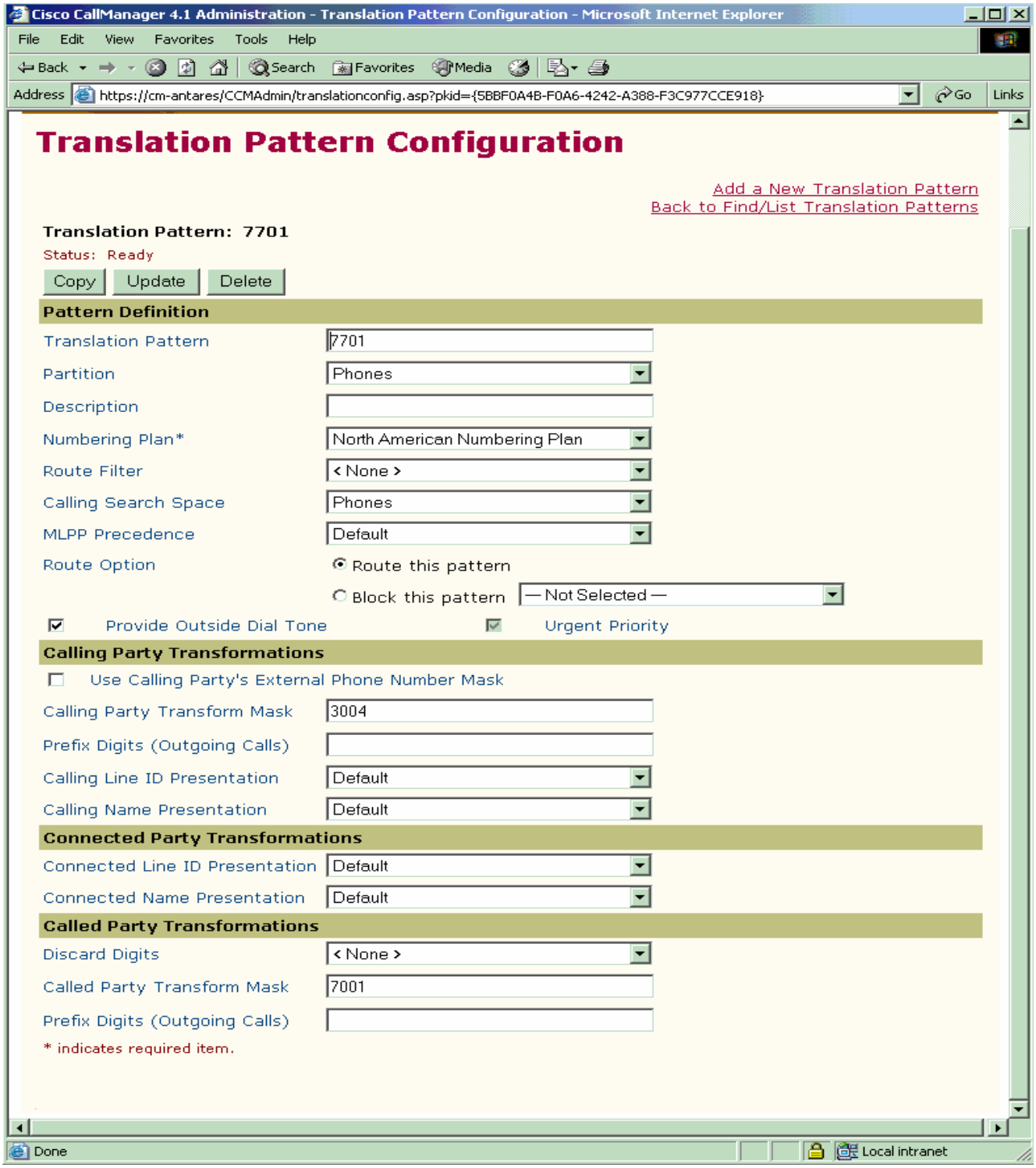
MWI Activate Translation Pattern Configuration



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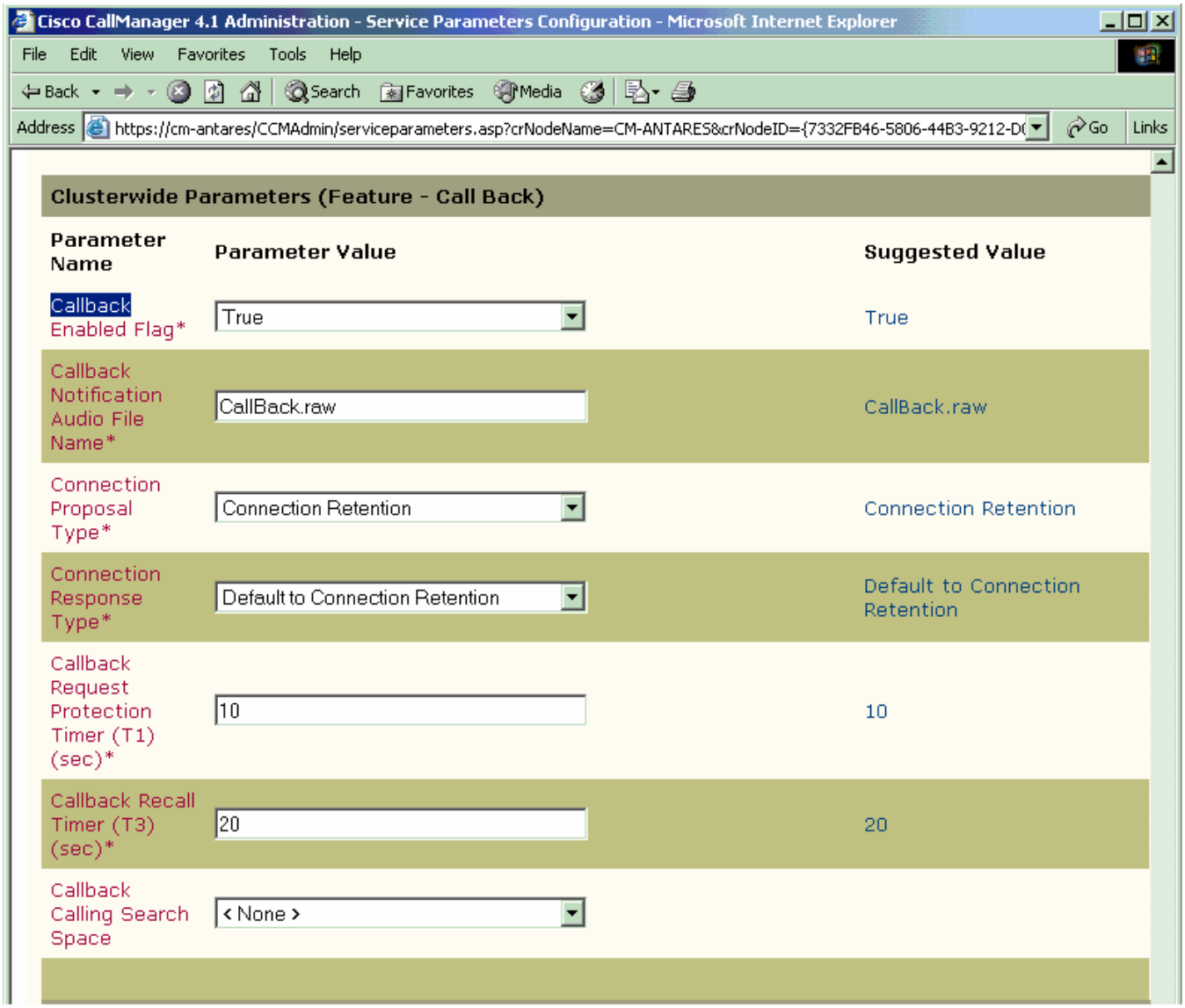
CallBack Service Parameters



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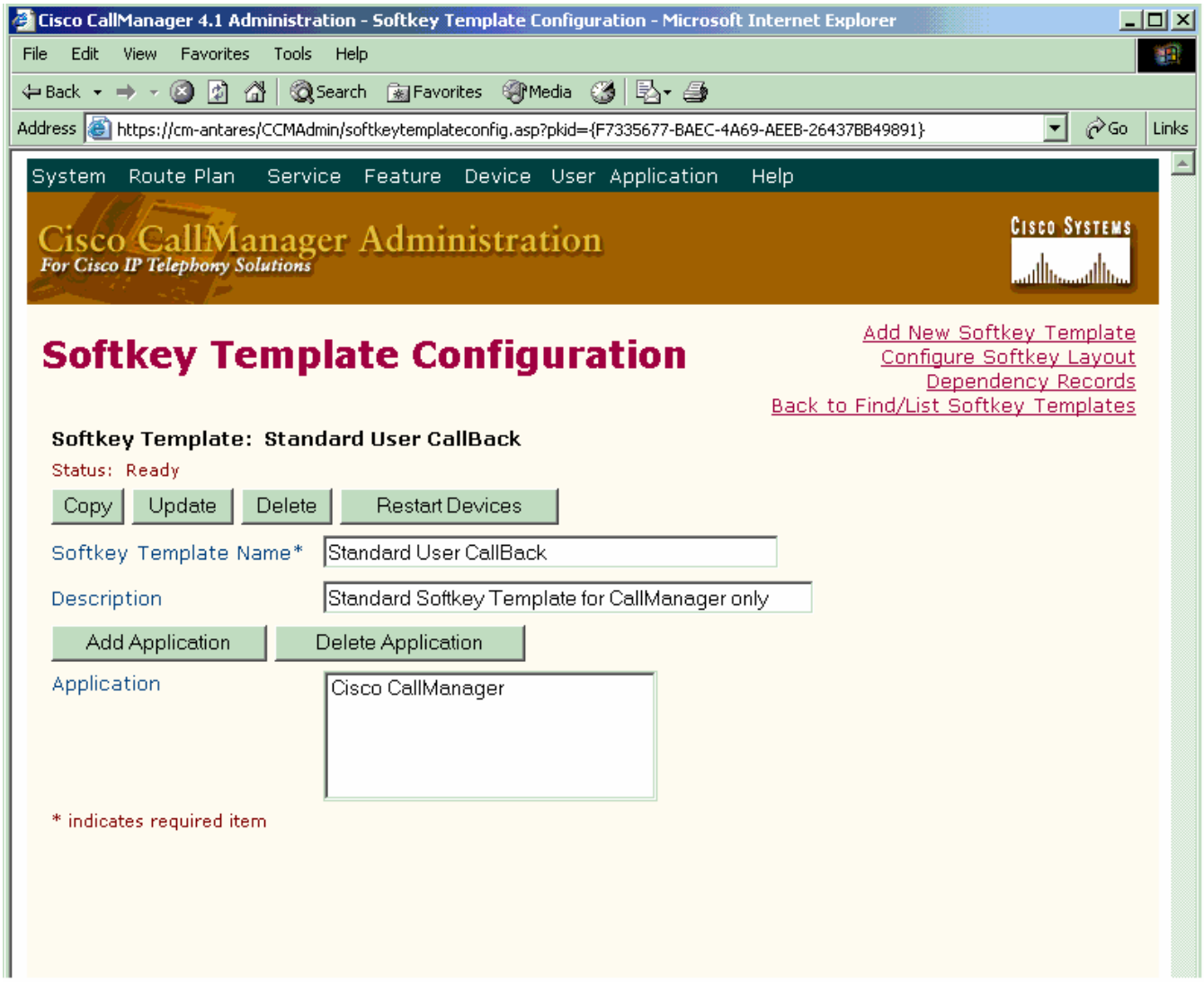
CallBack Softkey Configuration



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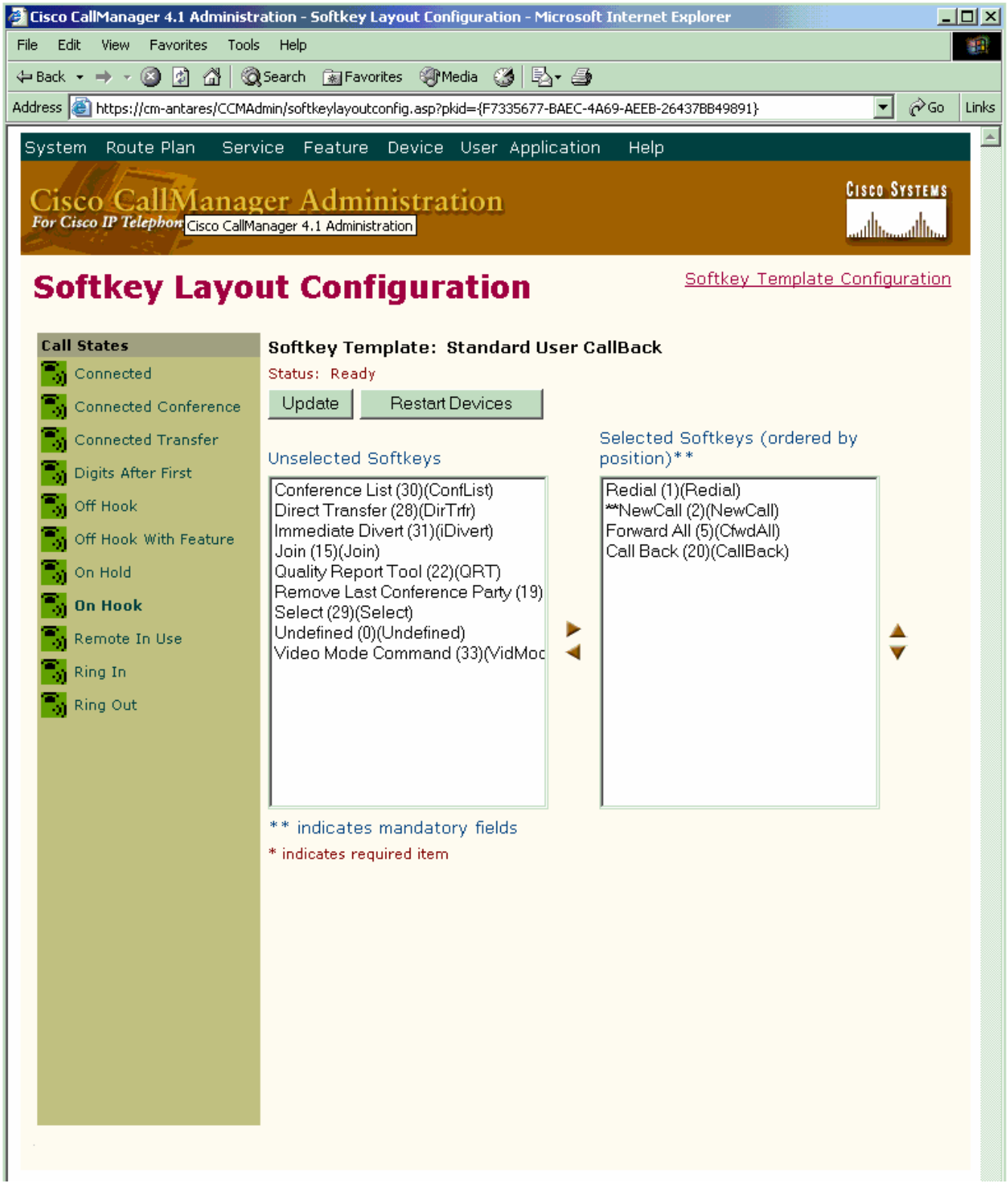

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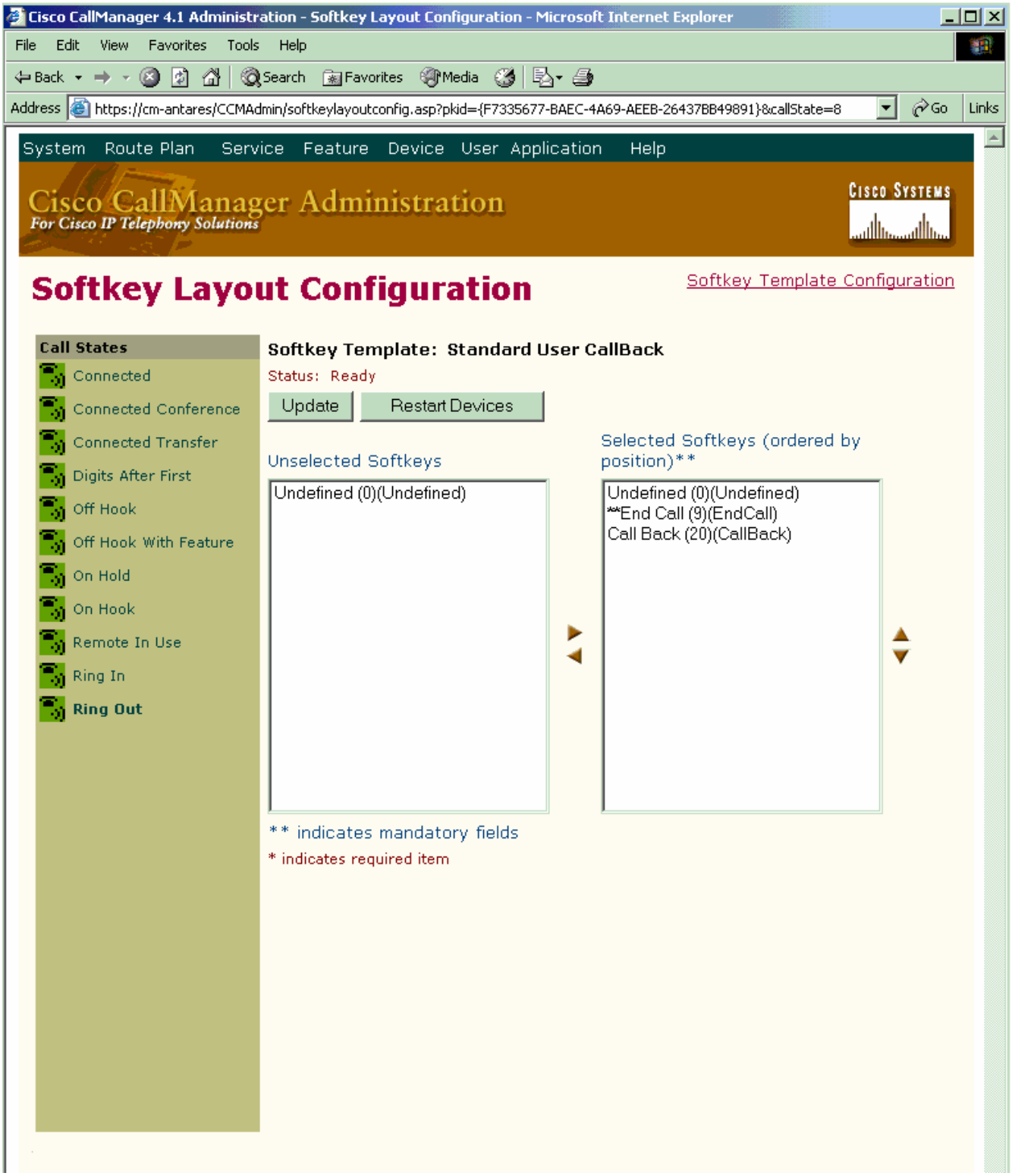

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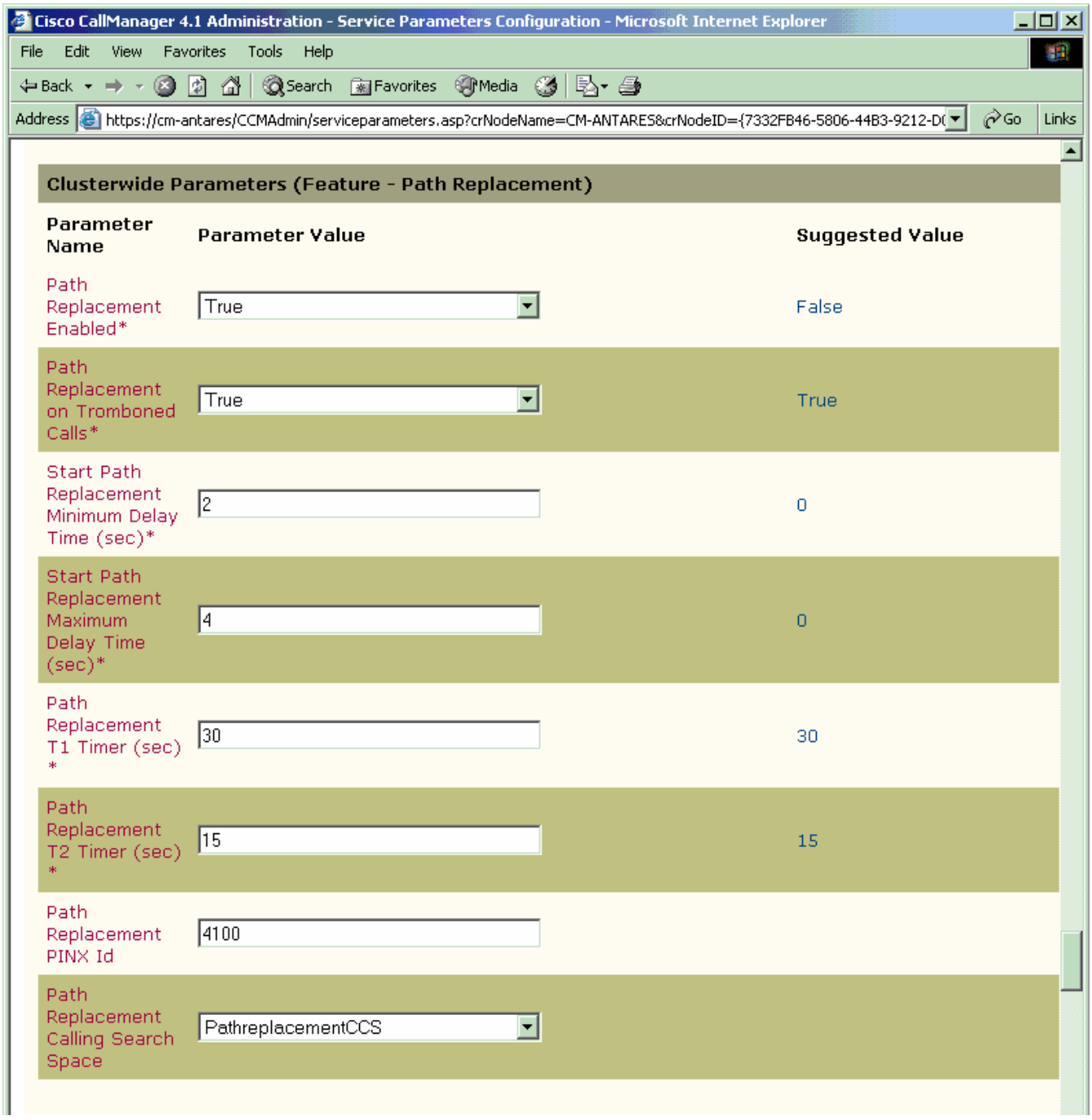
Path Replacement Service Parameters



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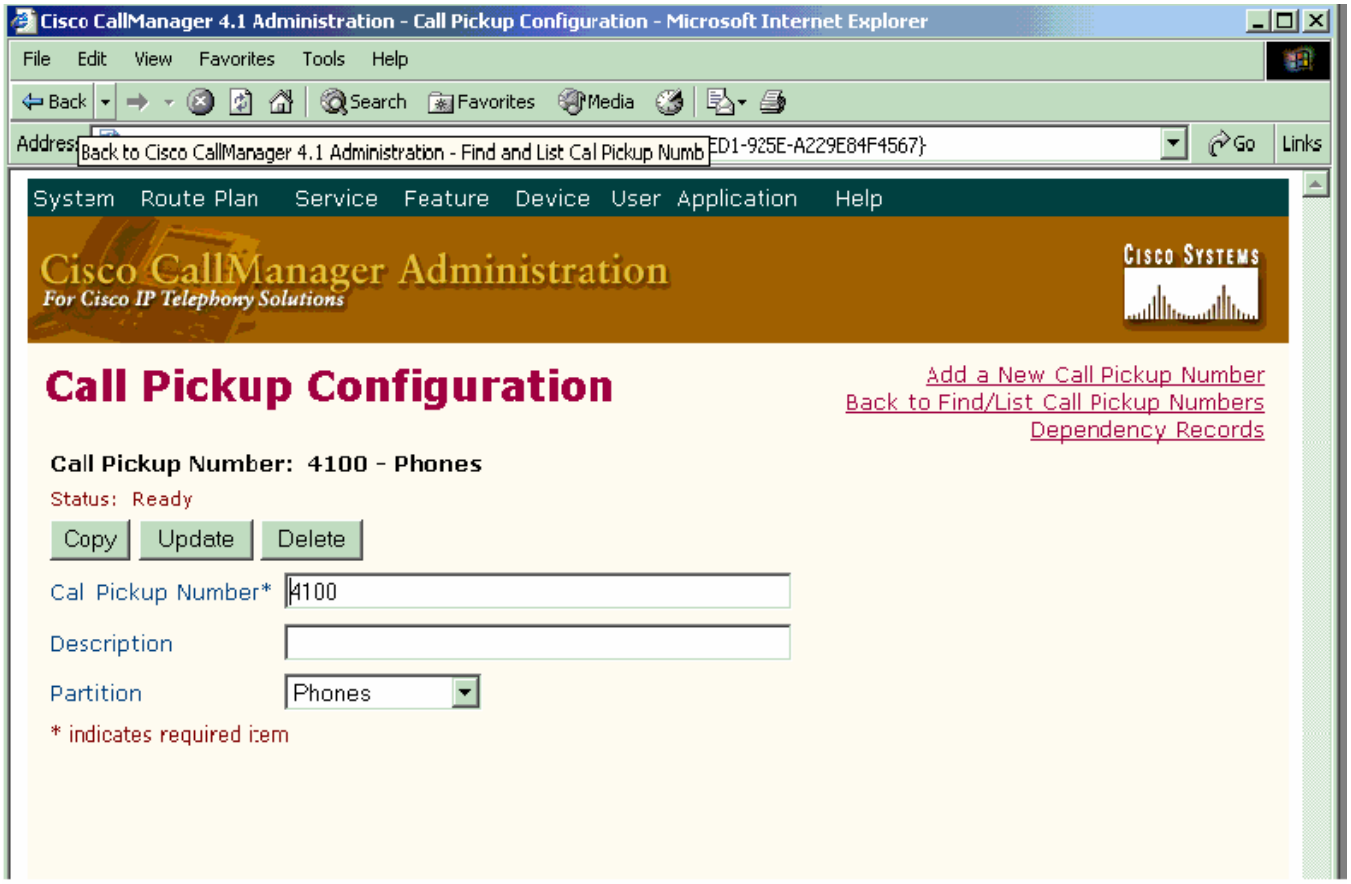

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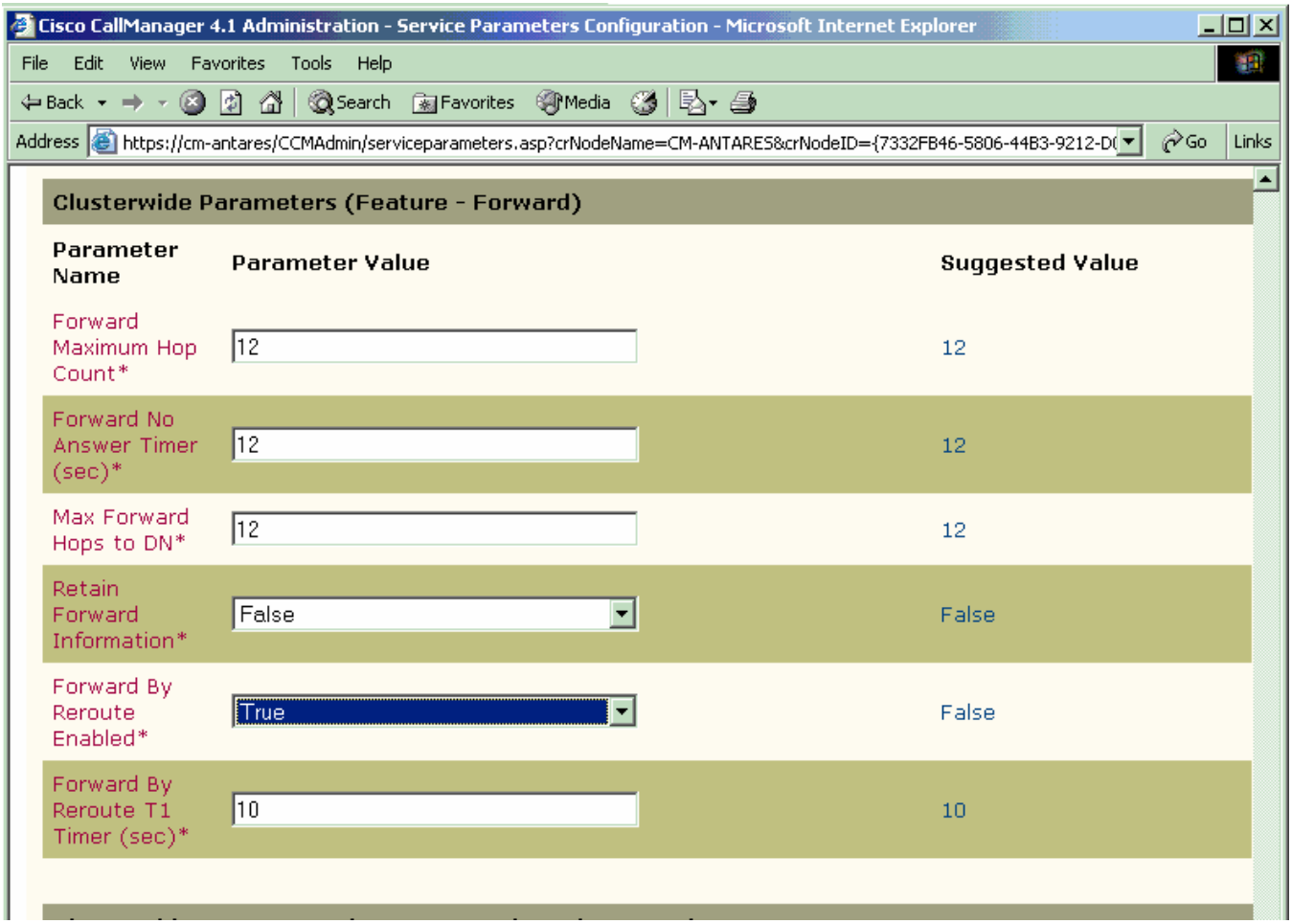
Forward by Reroute Service Parameter



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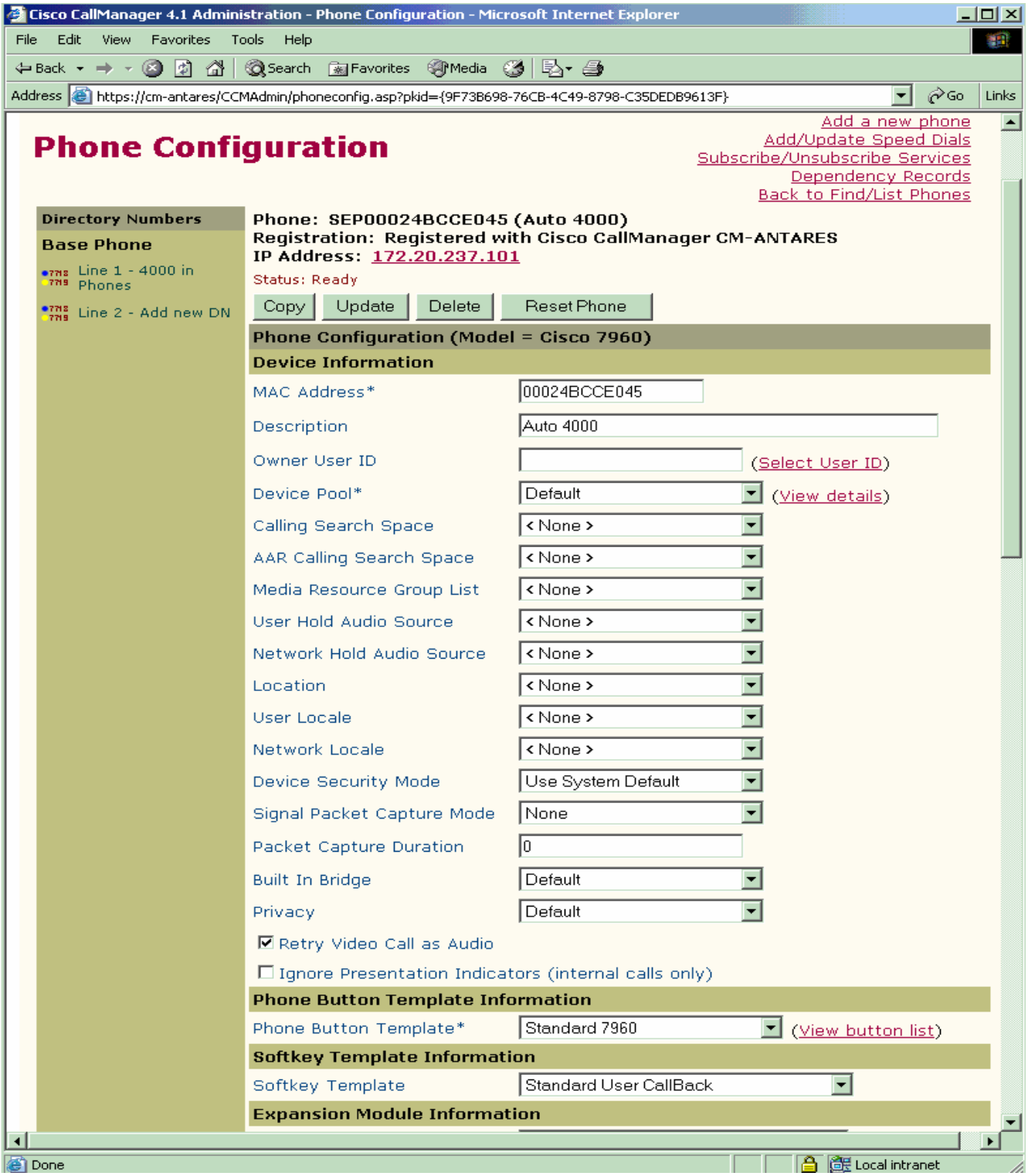
IP phone Configuration



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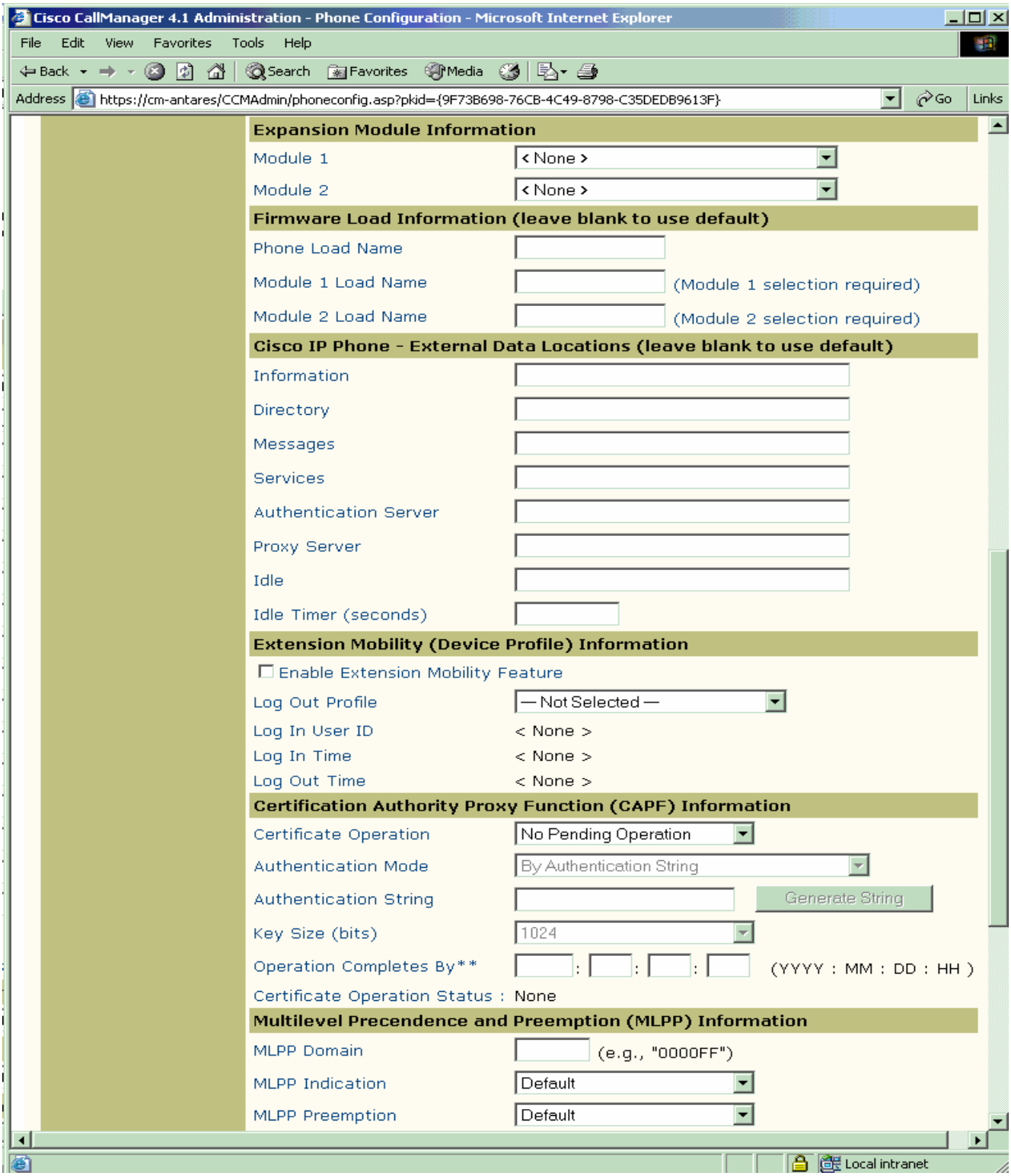

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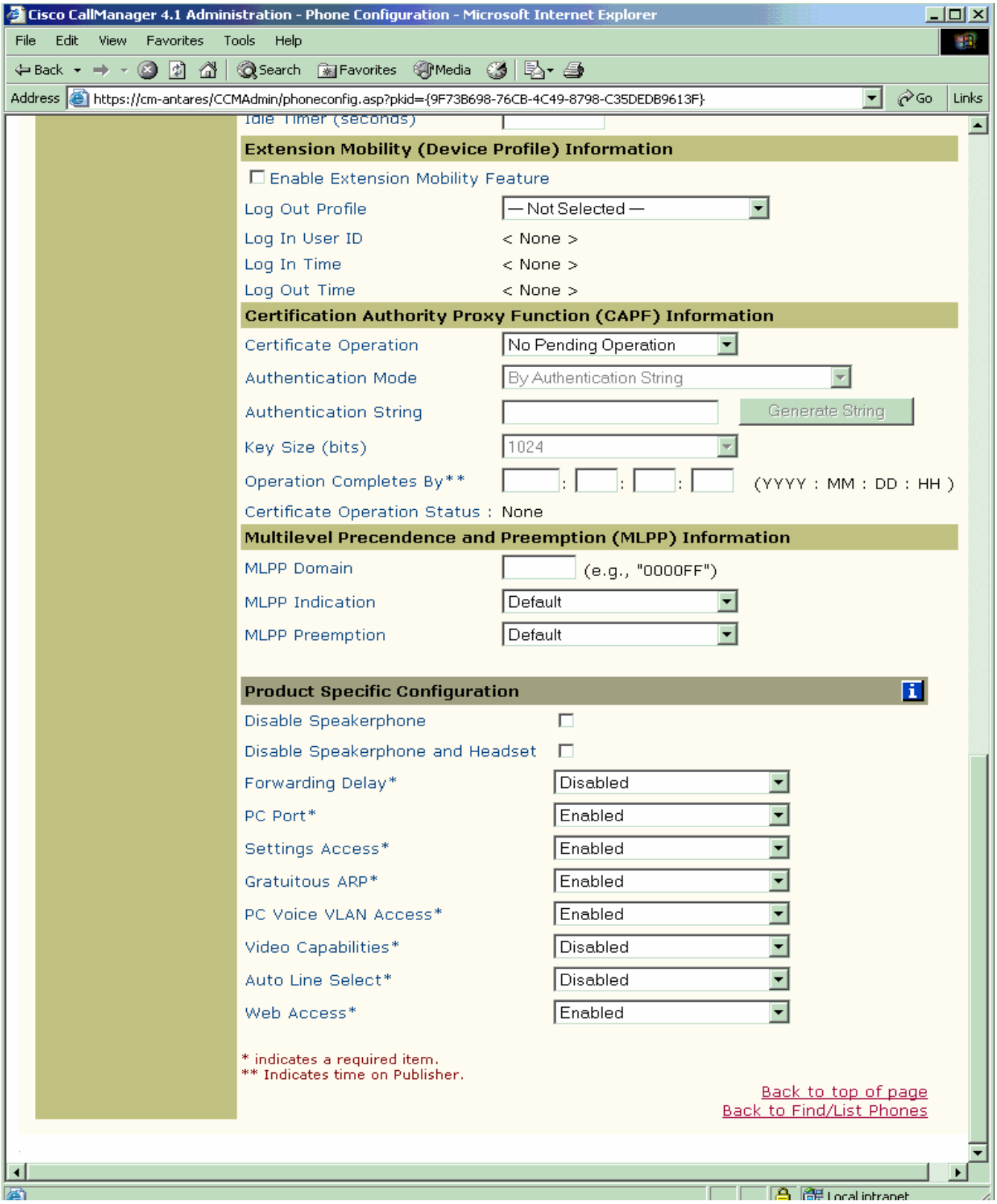

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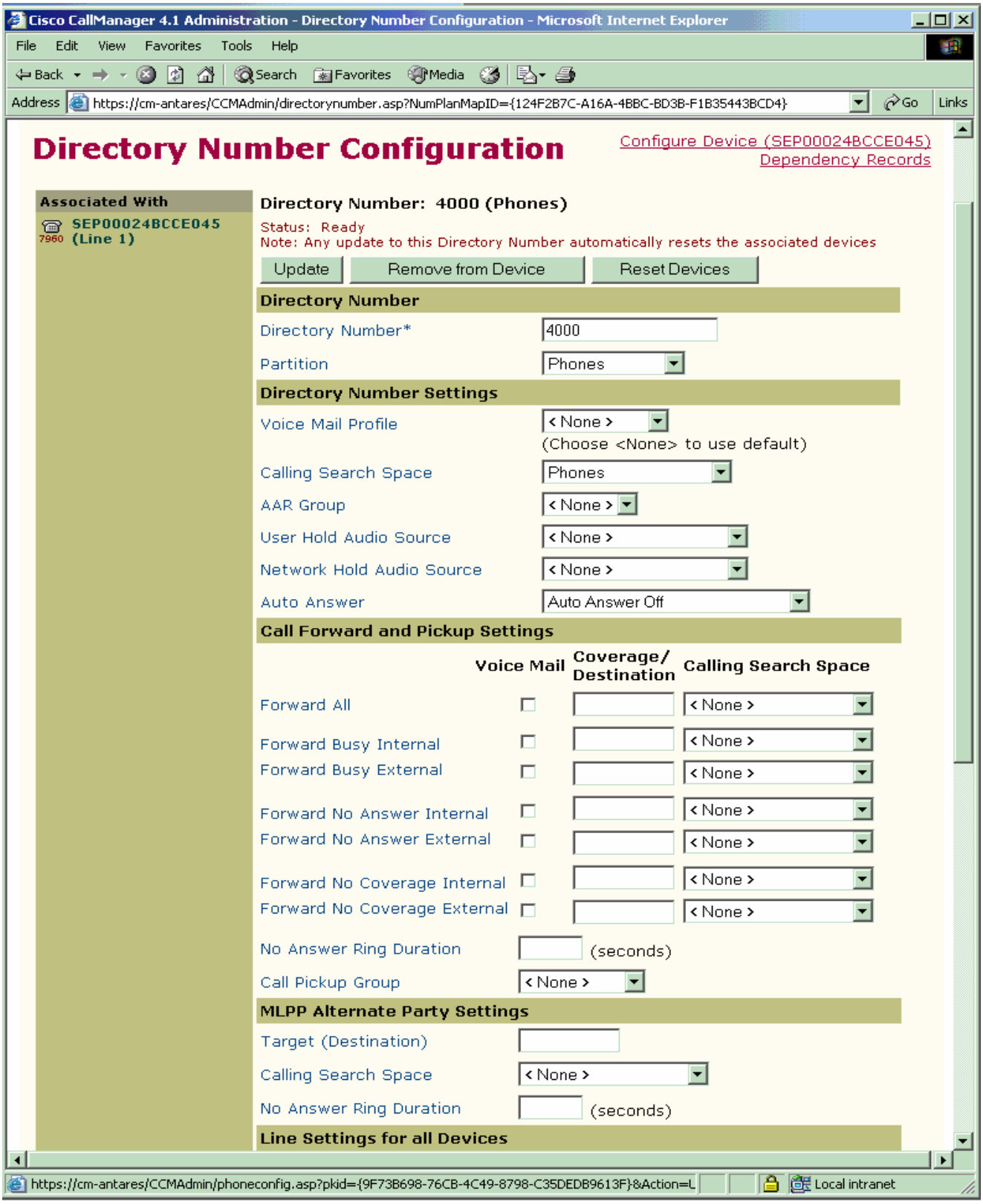

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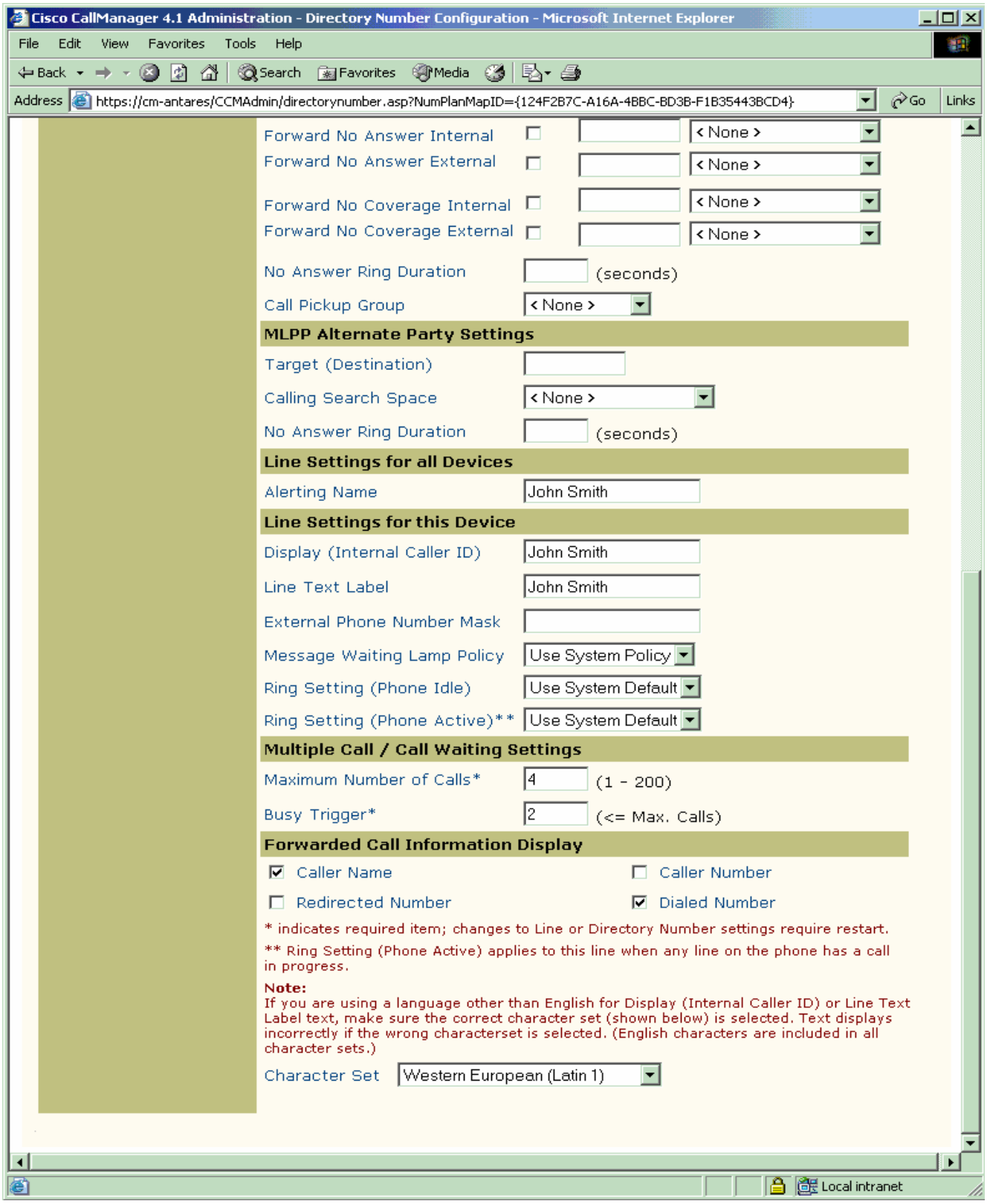

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Configuring the 2650XM_E1 MGCP Router Configuration (delete if Cisco Catalyst)

```
2650XMB4_E1#show runing-config
Building configuration...

Current configuration : 2217 bytes
!
version 12.3
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname 2650XMB4_E1
!
boot-start-marker
boot-end-marker
!
!
voice-card 1
!
no aaa new-model
ip subnet-zero
ip tcp synwait-time 13
!
!
no ip domain lookup
ip host whiz 171.69.1.162
ip host dirt 171.69.1.129
ip host danube 171.69.17.14
ip host CM-ANTARES 172.20.237.254
ip name-server 172.20.237.254
!
ip cef
isdn switch-type primary-qsig
!
!
voice call carrier capacity active
!
!
!
!
!
!
!
no voice hpi capture buffer
no voice hpi capture destination
!
!
ccm-manager mgcp
ccm-manager music-on-hold
ccm-manager config server CM-ANTARES
ccm-manager config
!
!
```

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```
controller E1 1/0
 pri-group timeslots 1-31 service mgcp
!
controller E1 1/1
 pri-group timeslots 1-31 service mgcp
!
!
!
interface FastEthernet0/0
 ip address 172.20.5.2 255.255.255.0
 duplex auto
 speed auto
!
interface Serial1/0:15
 no ip address
 no logging event link-status
 isdn switch-type primary-qsig
 isdn protocol-emulate network
 isdn incoming-voice voice
 isdn bind-l3 ccm-manager
 no cdp enable
!
interface Serial1/1:15
 no ip address
 no logging event link-status
 isdn switch-type primary-qsig
 isdn incoming-voice voice
 isdn bind-l3 ccm-manager
 isdn bchan-number-order ascending
 no cdp enable
!
ip http server
ip classless
ip route 0.0.0.0 0.0.0.0 FastEthernet0/0
ip route 0.0.0.0 0.0.0.0 172.20.31.1
ip route 0.0.0.0 0.0.0.0 172.20.33.1
ip route 0.0.0.0 0.0.0.0 172.20.237.1
!
!
dialer-list 1 protocol ip permit
!
!
!
voice-port 1/0:15
!
voice-port 1/1:15
!
mgcp
mgcp call-agent CM-ANTARES 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 package-capability rtp-package
no mgcp package-capability res-package
```

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```
mgcp package-capability sst-package
no mgcp package-capability fxr-package
no mgcp timer receive-rtcp
mgcp sdp simple
mgcp fax t38 inhibit
mgcp rtp payload-type g726r16 static
!
mgcp profile default
!
!
!
dial-peer cor custom
!
!
!
dial-peer voice 1 pots
 application mgcpapp
 port 1/0:15
!
dial-peer voice 2 pots
 application mgcpapp
 port 1/1:15
!
!
line con 0
line aux 0
line vty 0 4
 login
line vty 5 15
 login
!
!
!
end

2650XMB4_E1#
2650XMB4_E1#
2650XMB4_E1#
2650XMB4_E1#
2650XMB4_E1#
```

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Acronyms

Acronym	Definitions
ANF-PR	Additional Network Feature Path Replacement
AOC	Advice-of-charge. Information element is sent with the connection setup information for incoming Euro-ISDN connections. The AOC IE is used for call charge calculation.
CCM	Cisco Unified CallManager
CCBS	Call Completion to Busy Subscriber
CCNR	Call Completion on No Reply
CFB	Call Forwarding on Busy
CFNR	Call Forwarding No Reply
CFU	Call Forwarding Unconditional
CLIP	Calling Line (Number) Identification Presentation
CLIR	Calling Line (Number) Identification Restriction
CMM	Communication Media Module (CMM) is a Cisco Catalyst® 6500 Series and Cisco 7600 Series line card that provides flexible and high-density T1/E1 gateways
CNIP	Calling Name Identification Presentation
CNIR	Calling Name Identification Restriction
COLP	Connected Line (Number) Identification Presentation
COLR	Connected Line (Number) Identification Restriction
CONP	Connected Name Identification Presentation
CONR	Connected Name Identification Restriction
CT	Call Transfer
MWI	Message Waiting Indicator
PSTN	Public Switched Telephone Network

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