Application Note

# Cisco Unified CallManager 4.0-PBX Interoperability: Mitel 3300 ICP Release 4.1 PBX to a Cisco 6608 Gateway using T1 QSIG with MGCP

## Introduction

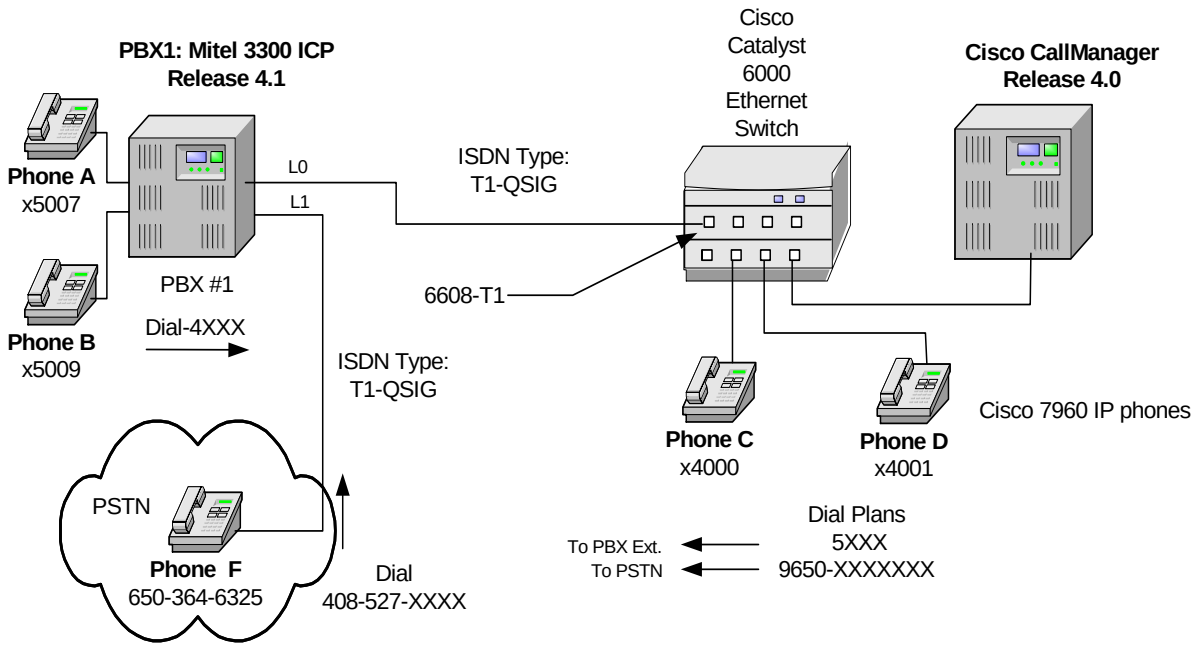
This is an application note for connectivity of Mitel 3300 ICP Release 4.1 PBX with Cisco Unified CallManager Release 4.0 using Cisco 6608-T1 QSIG as MGCP gateway.

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

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. A Mitel 3300 ICP PBX was connected via an ISDN T1 PRI QSIG link to a Cisco 6608-T1 gateway, which in turn was connected to an Ethernet switch. The interoperability testing involved Layers 1, 2, and 3 on the ISDN PRI QSIG link between a Cisco 6608-T1 and the PBX.

**Basic Call Setup End-to-End Configuration**

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## Limitations

### Calling Name and Number Features

When calling from Mitel digital phone to Cisco 7960 IP phone, the Cisco IP phone displays Calling Name and Number after the call is answered. Mitel phone however displays Connected Name only even though the Cisco Unified CallManager Q.SIG 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 after the call is answered. The Cisco IP phone displays Called Number.

The Mitel Q.SIG trunk does not support sending Connected Name or Connected Number information in the connect message back to CallManager.

## System Components

### Hardware Requirements

Cisco Catalyst 6000 switch with 6608-T1 gateway

Cisco Unified CallManager server

Mitel 3300 ICP PBX:

- 3300 Controller, part number 56004538
- 3300 Universal NSU, part number 56002115
- SX2000 Expansion Chassis, part number 144236601

### Software Requirements

PBX Software Release 4.1

Cisco Unified CallManager Release 4.0

## 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 CallManager 4.0 (not tested [1])_

### Features Not Supported

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

[1] MWI is supported on CallManager 4.0 but was not tested because CallManager 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.

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

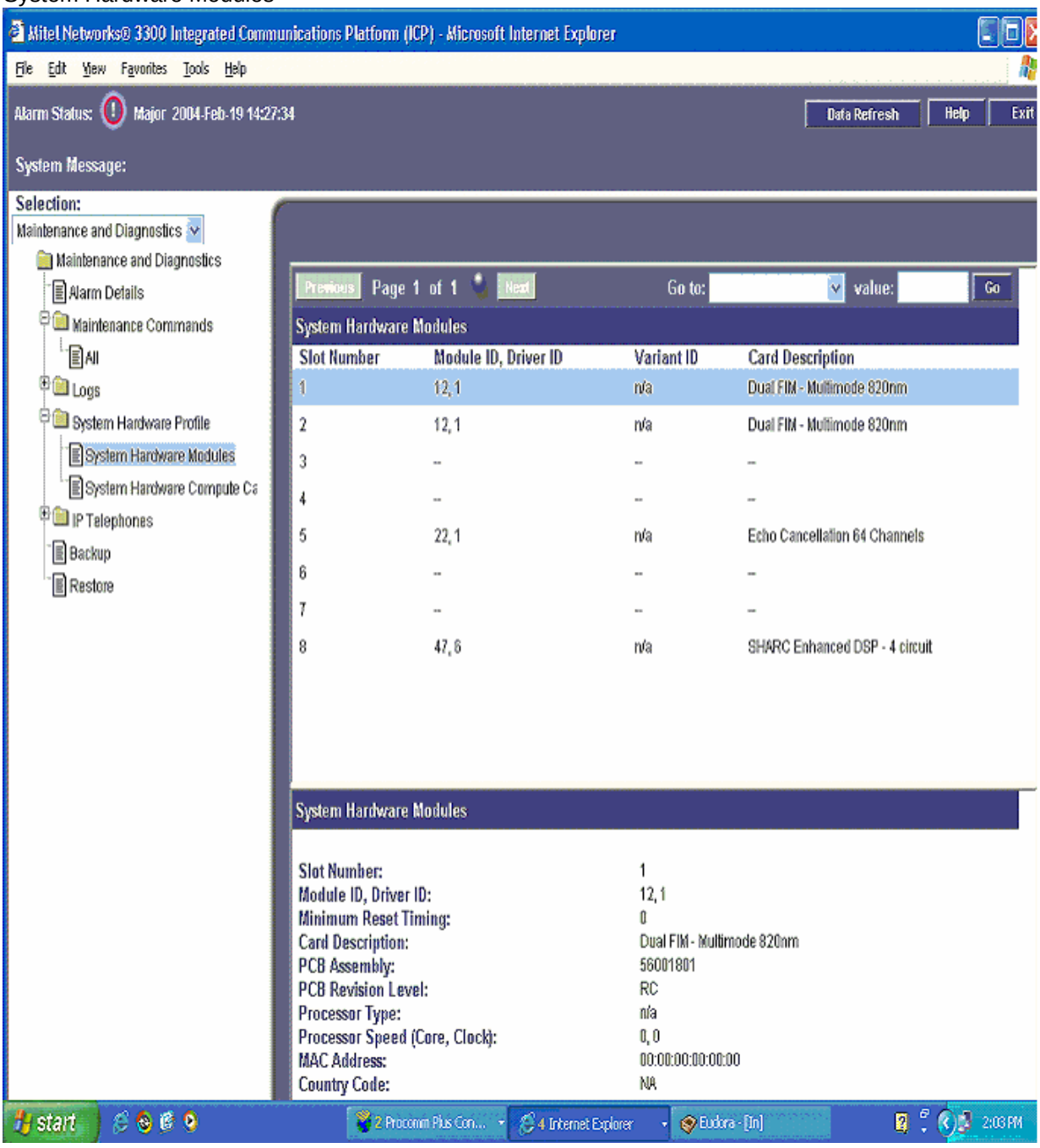
CONP-Connected Name Identification Presentation not supported by Mitel

CONR- Connected Name Identification Restriction not supported by Mitel

## Configuration

**Configuring the Mitel 3300 ICP PBX**

System Hardware Modules

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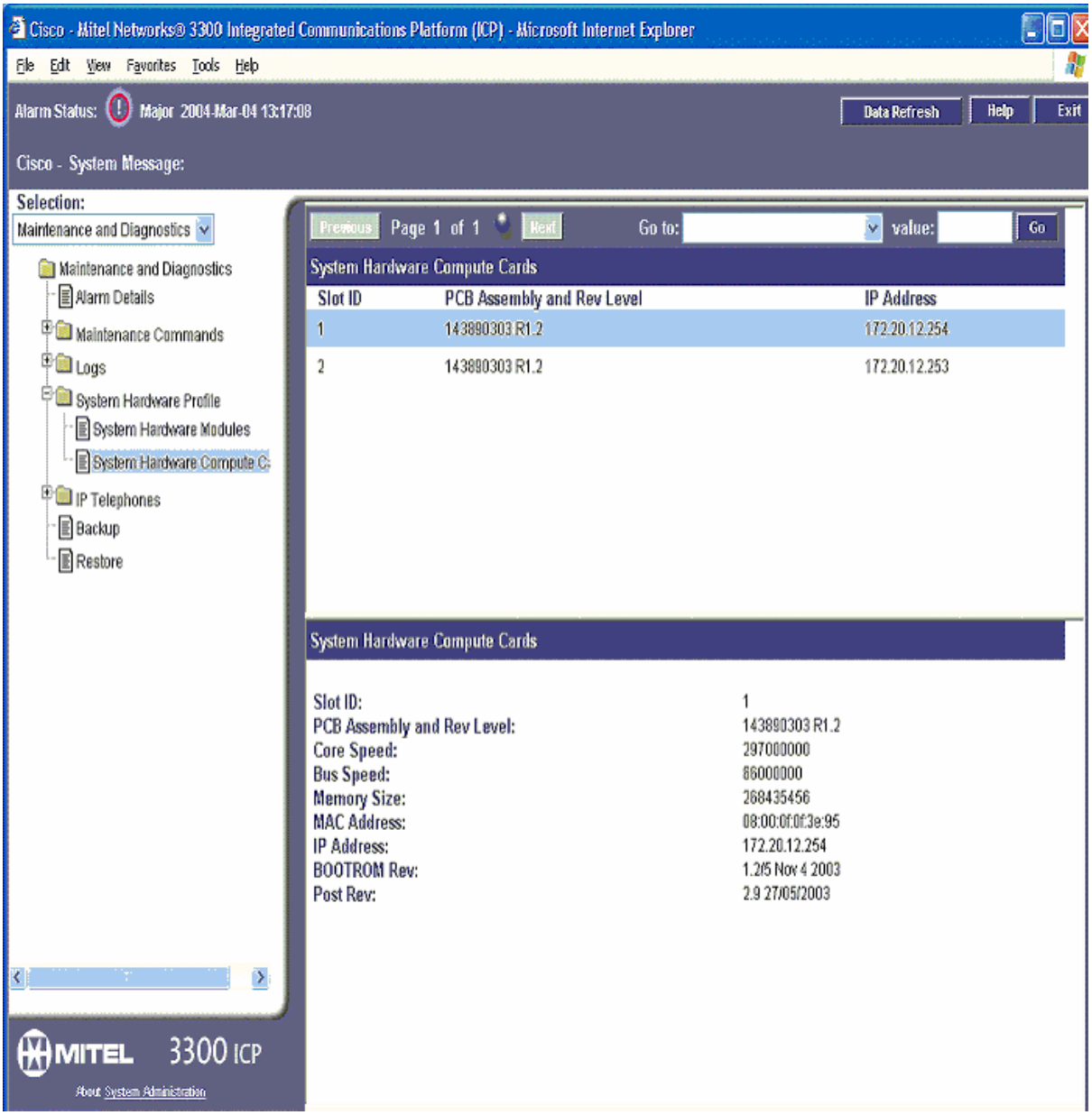
System Software Version 4.1.6

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## 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** |

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**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:
```

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```
 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
```

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```
  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:
```

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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:

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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:

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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:

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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:

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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:

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CPN97:

DID98:

CPN98:

DID99:

CPN99:

DID100:

CPN100:

==========

Outgoing Call Characteristics

| 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) |

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```
                    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:
```

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```
================================================================================
          PBX Trunk Range Assignments
              Starting    Ending
TRA Id       Link Trunk Link Trunk AssocTRLs    TRA Description       Protocol
--------------------------------------------------------------------------------


================================================================================

                   Min/Max Limits Definitions

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

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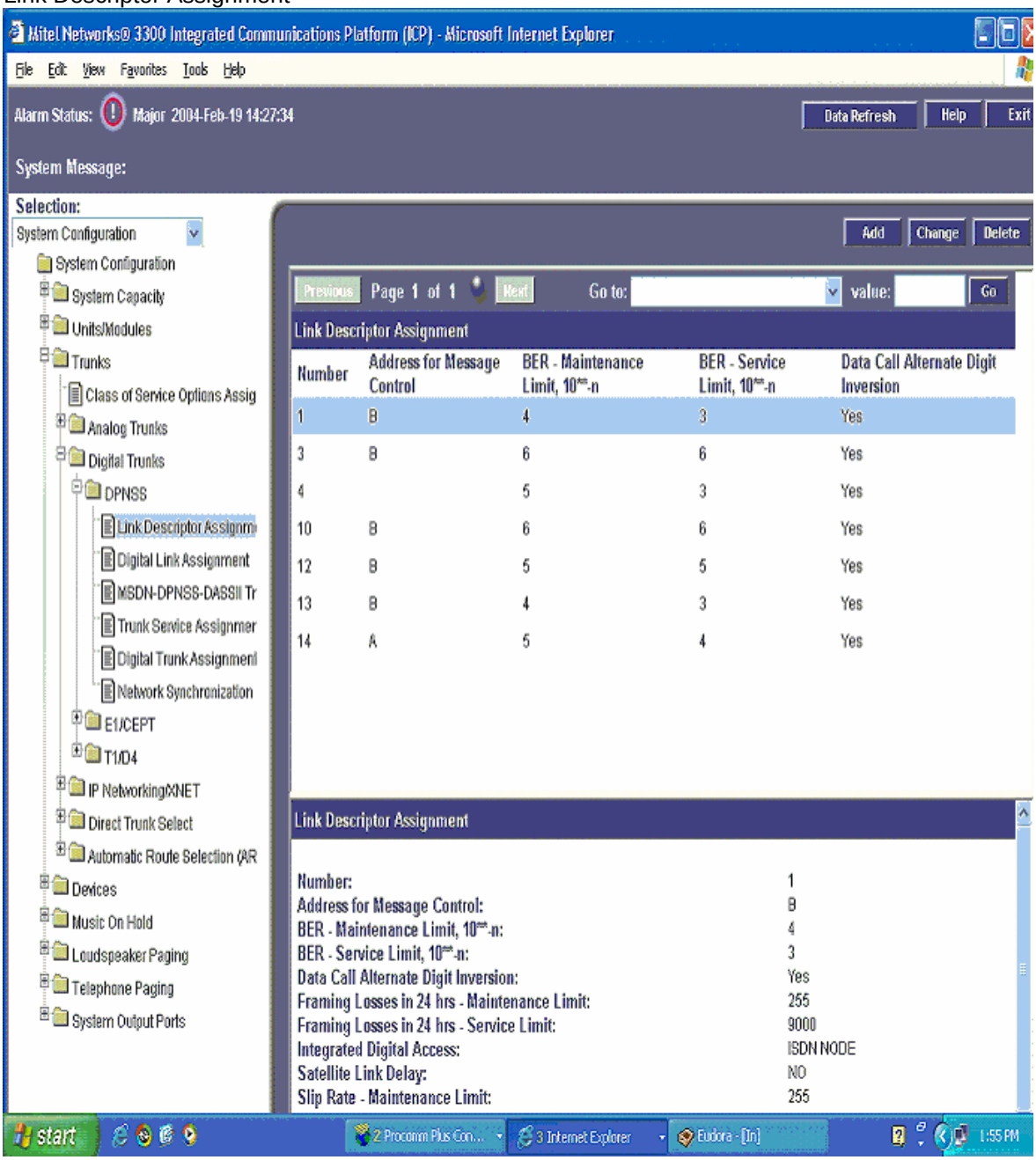
Link Descriptor Assignment

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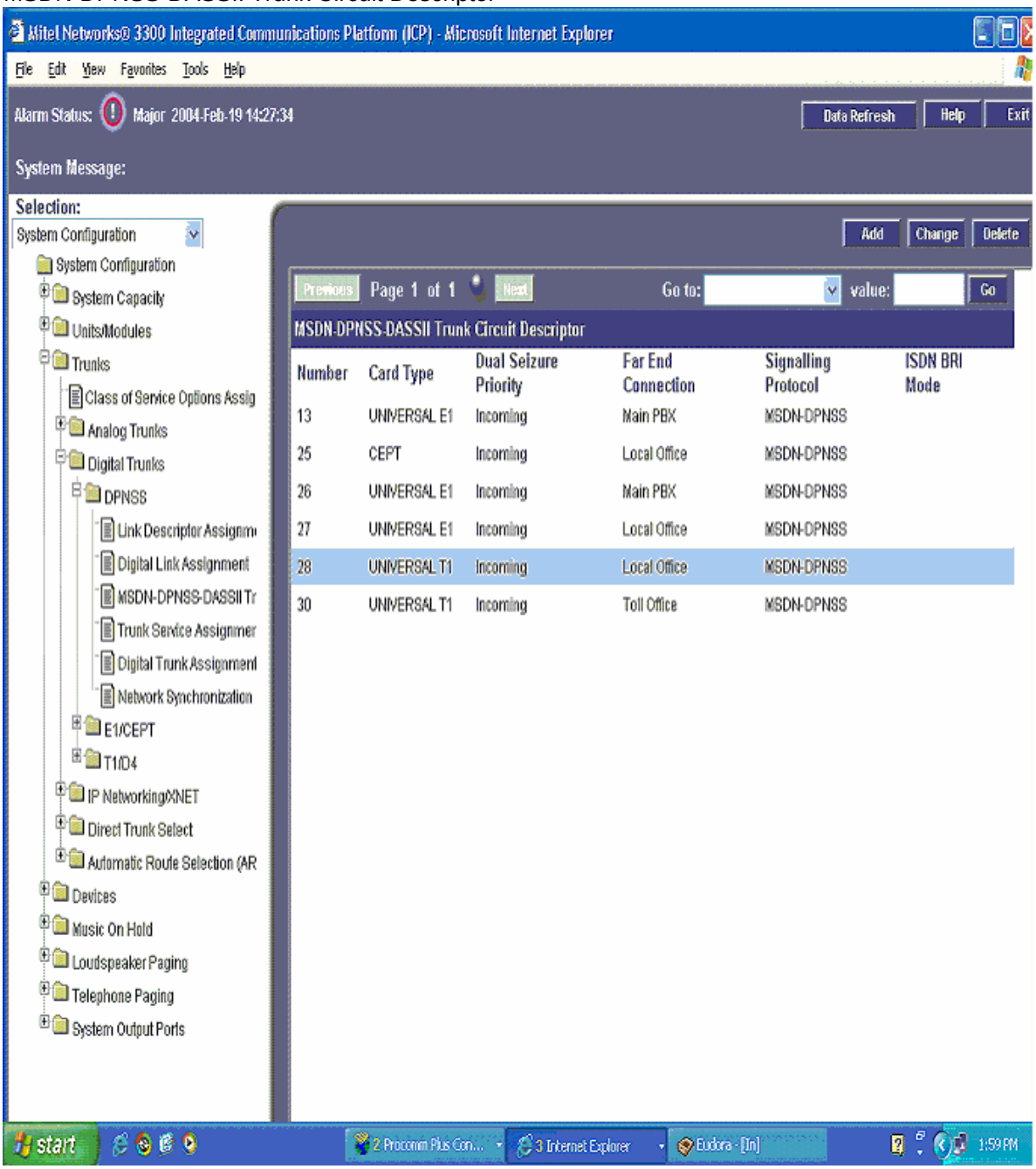
MSDN-DPNSS-DASSII Trunk Circuit Descriptor

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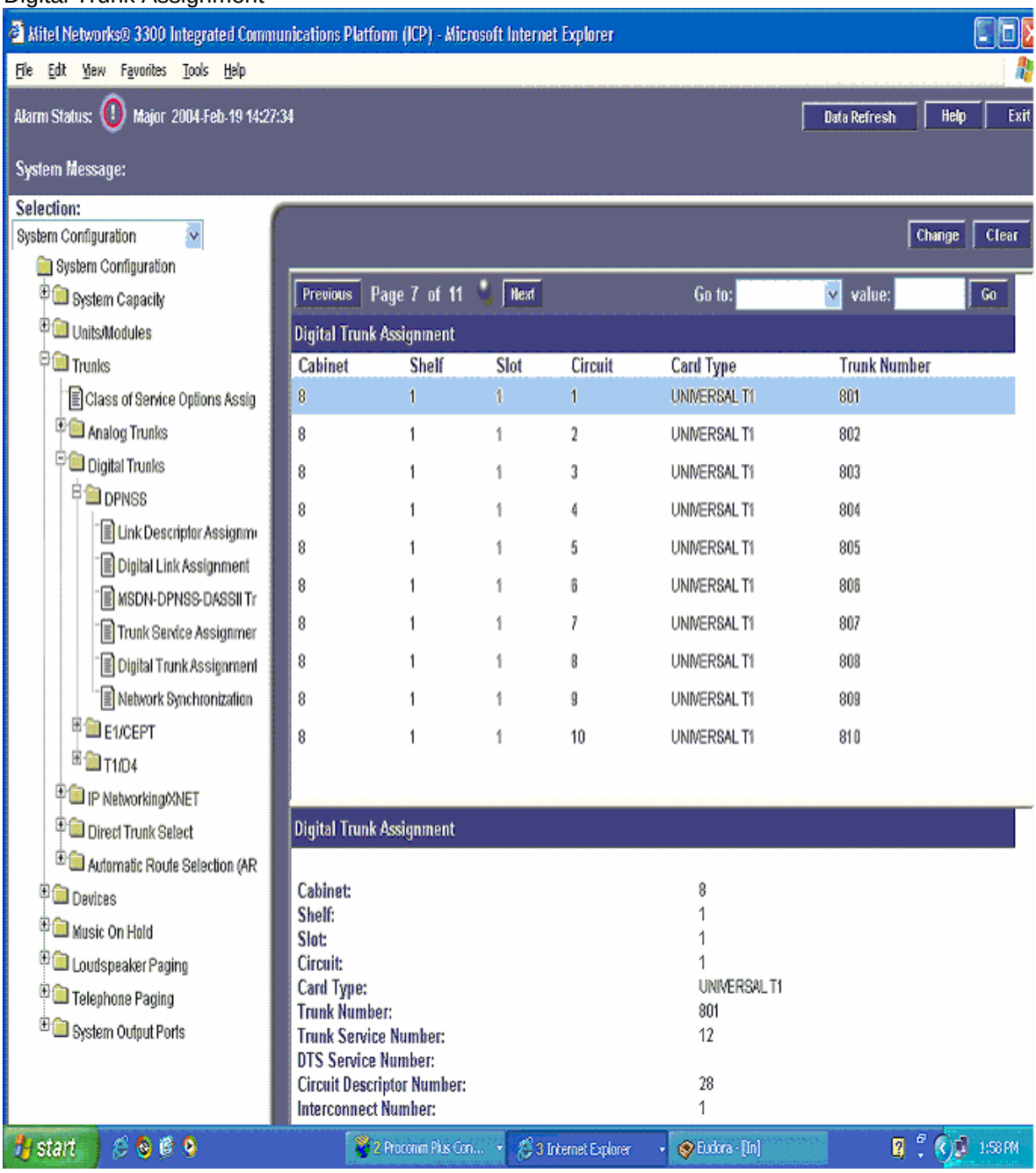
Digital Trunk Assignment

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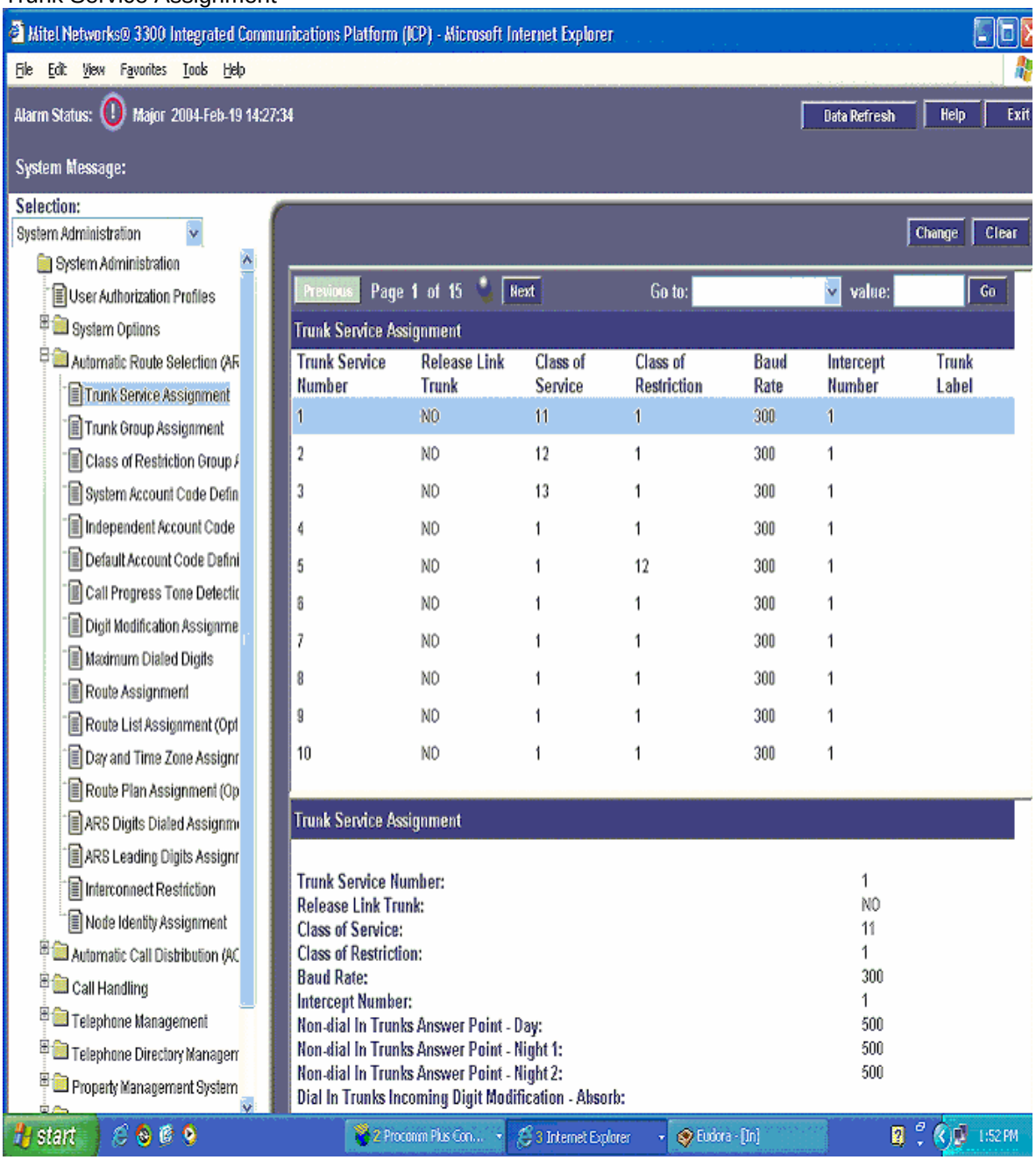
Trunk Service Assignment

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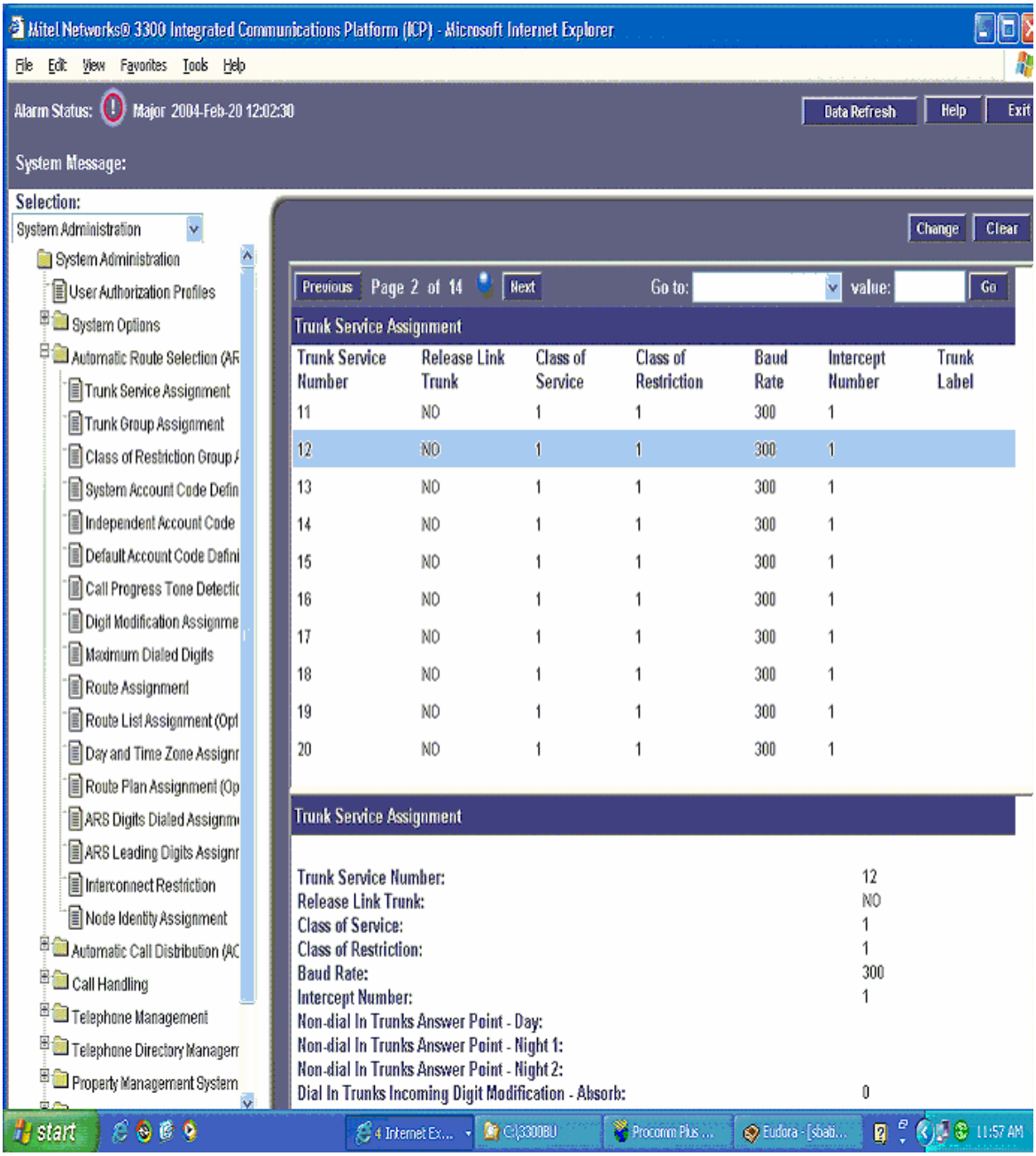


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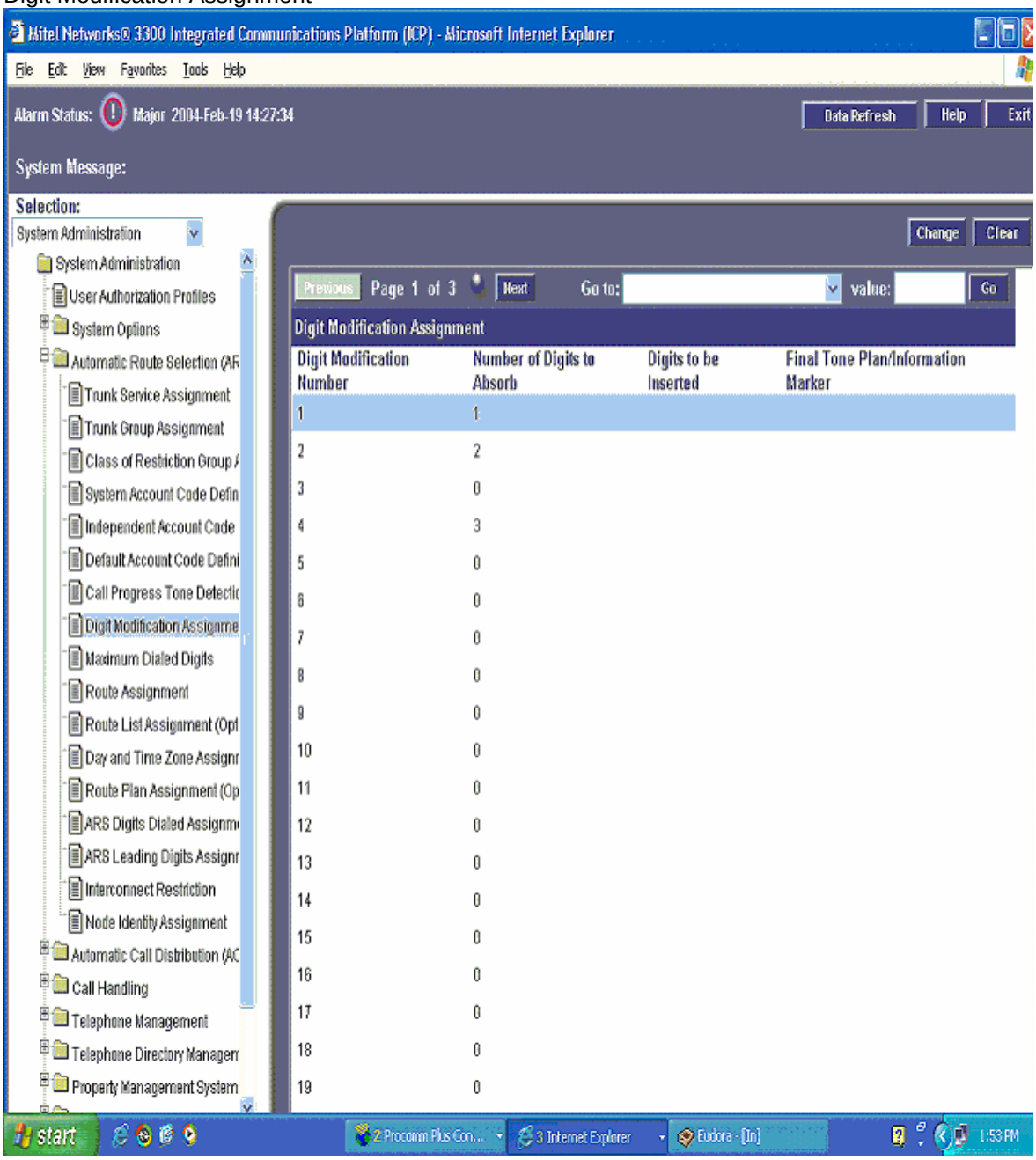
Digit Modification Assignment

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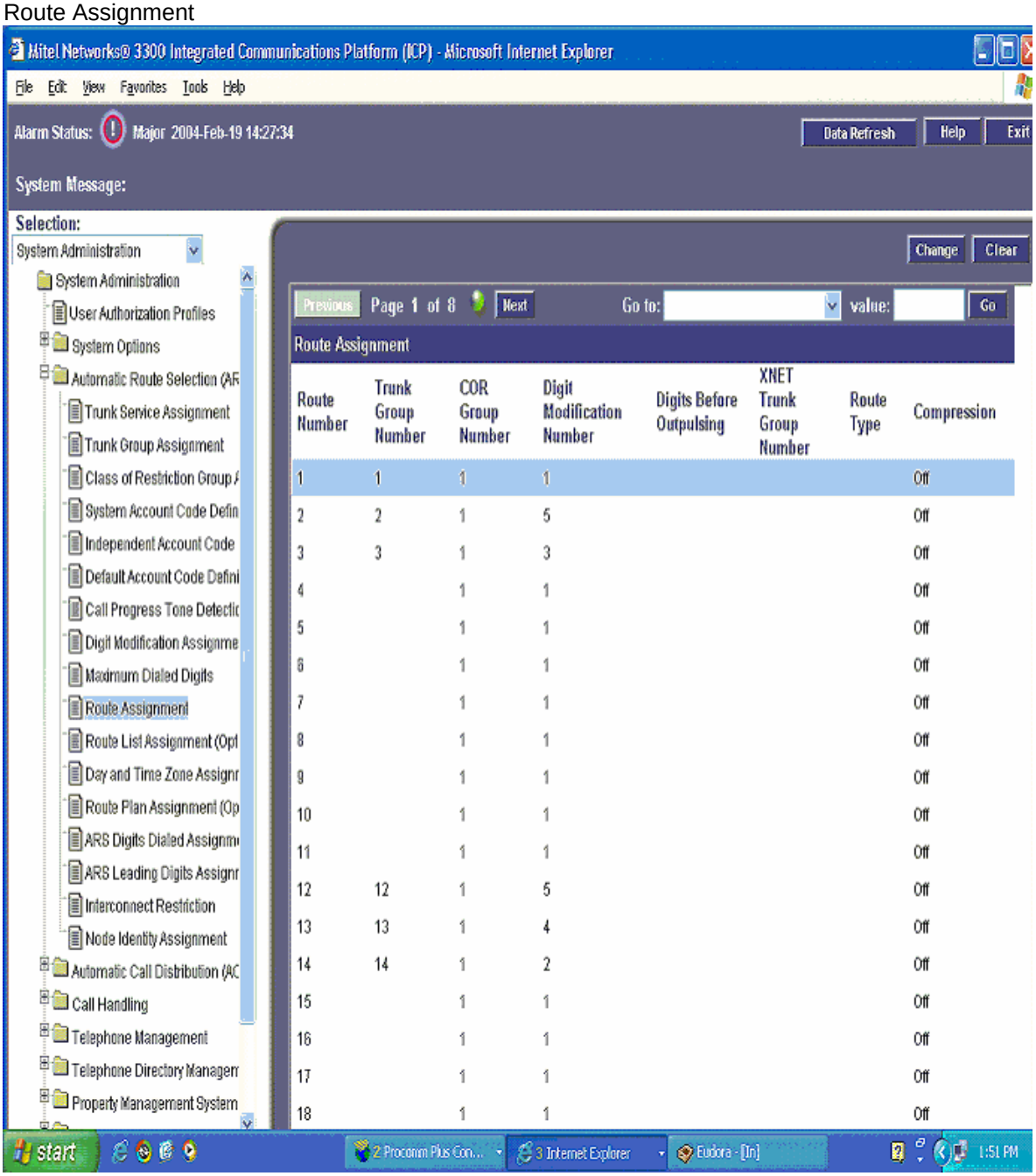
Route Assignment

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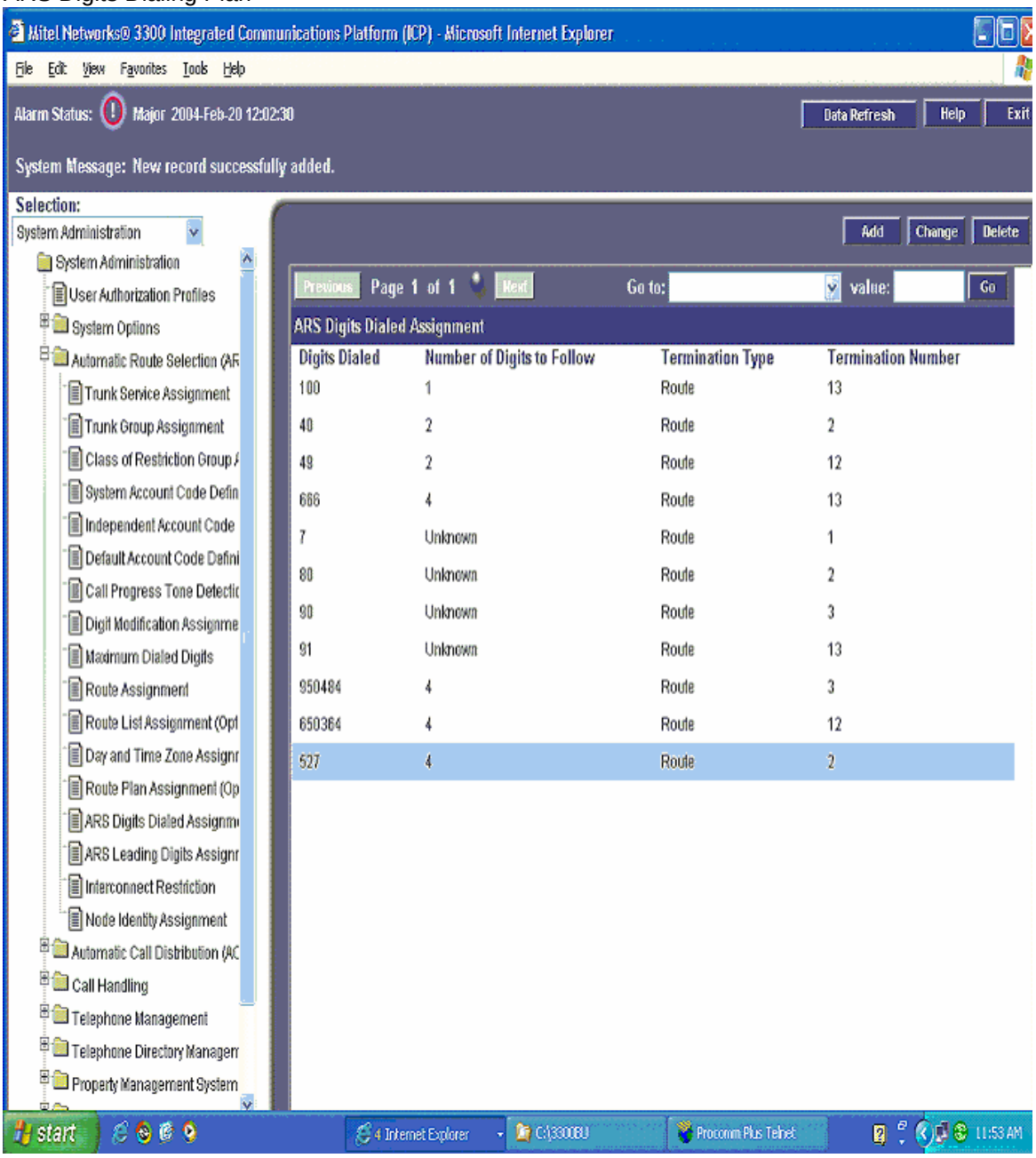
ARS Digits Dialing Plan

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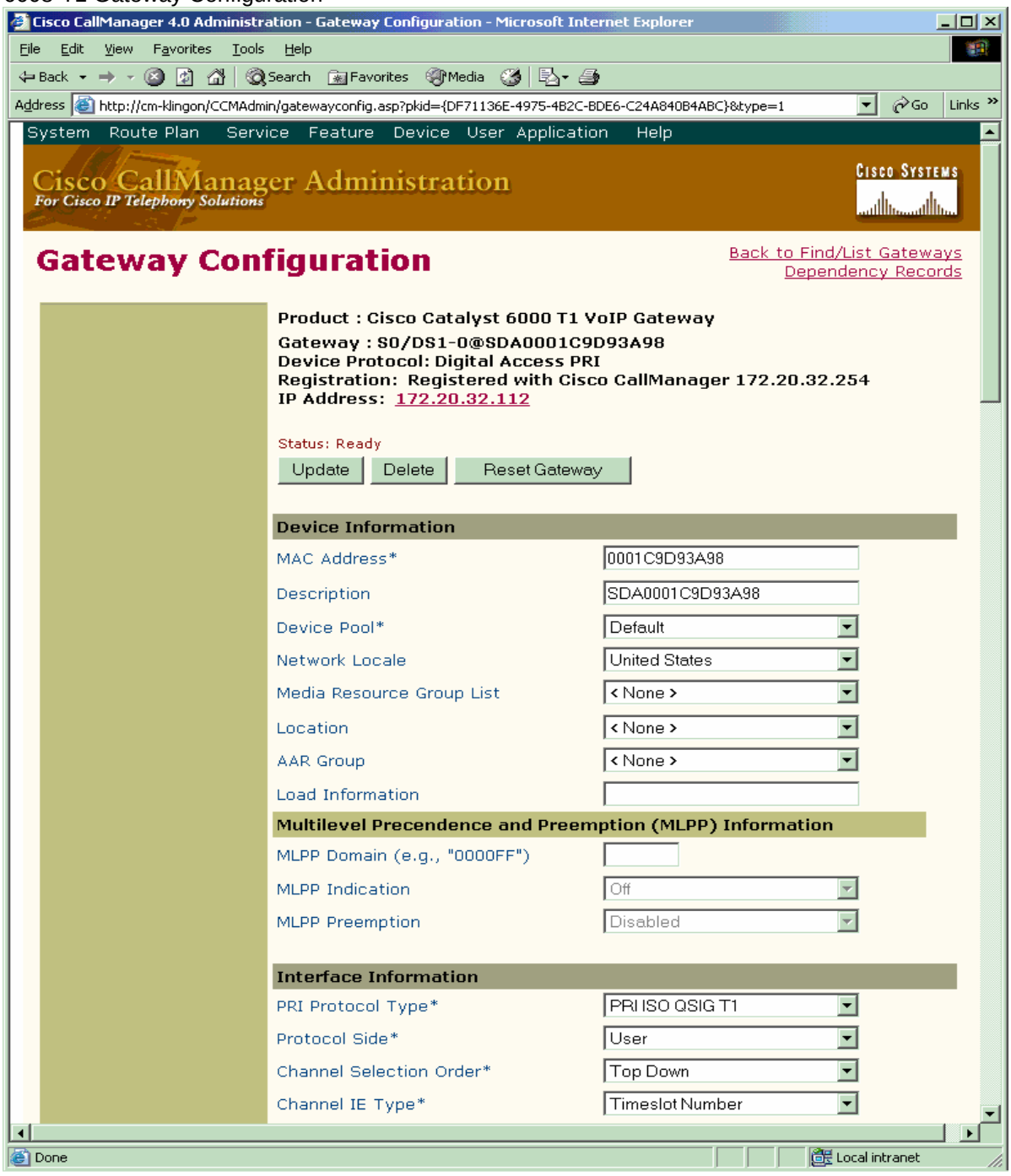
6608-T1 Gateway Configuration

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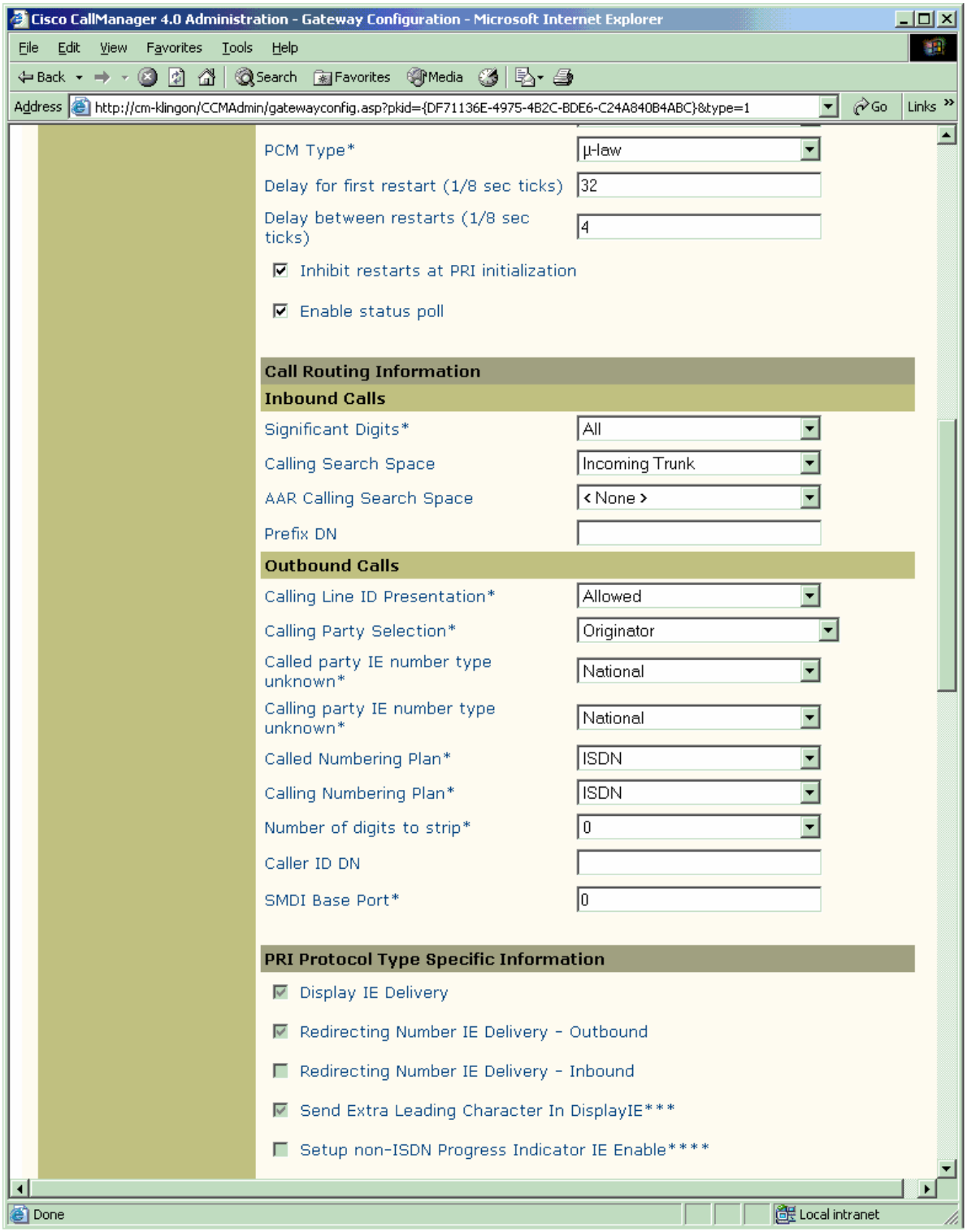


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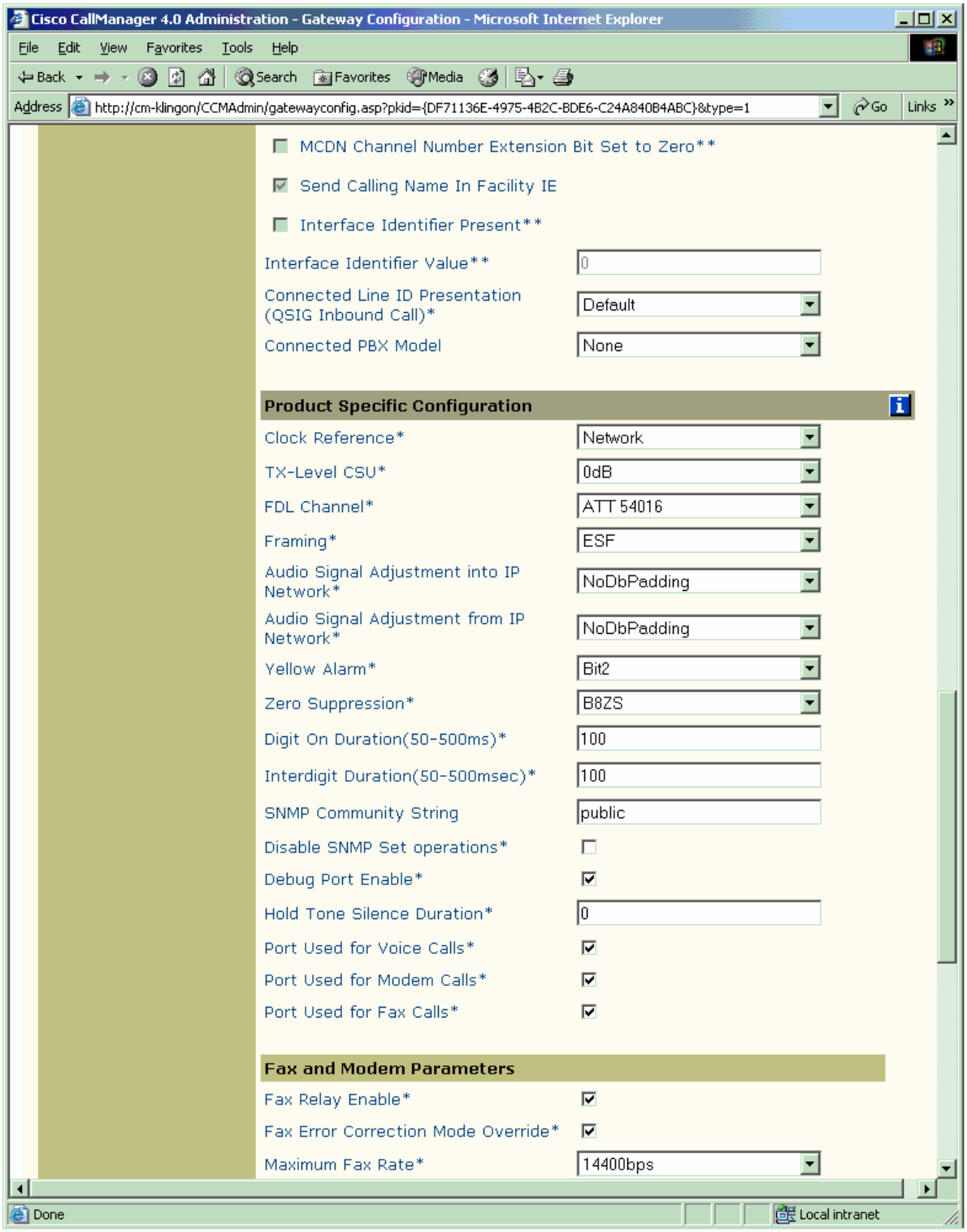


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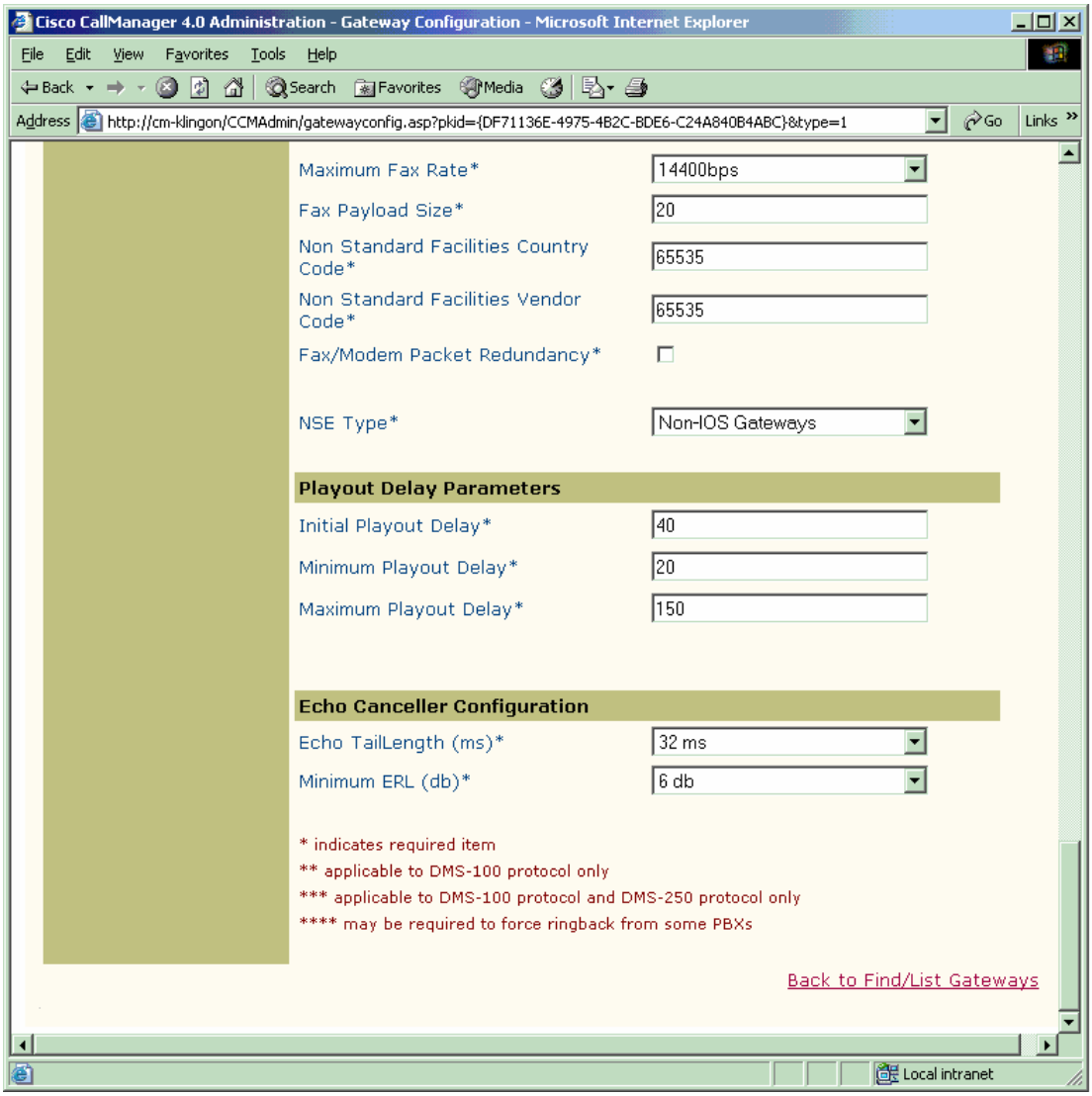


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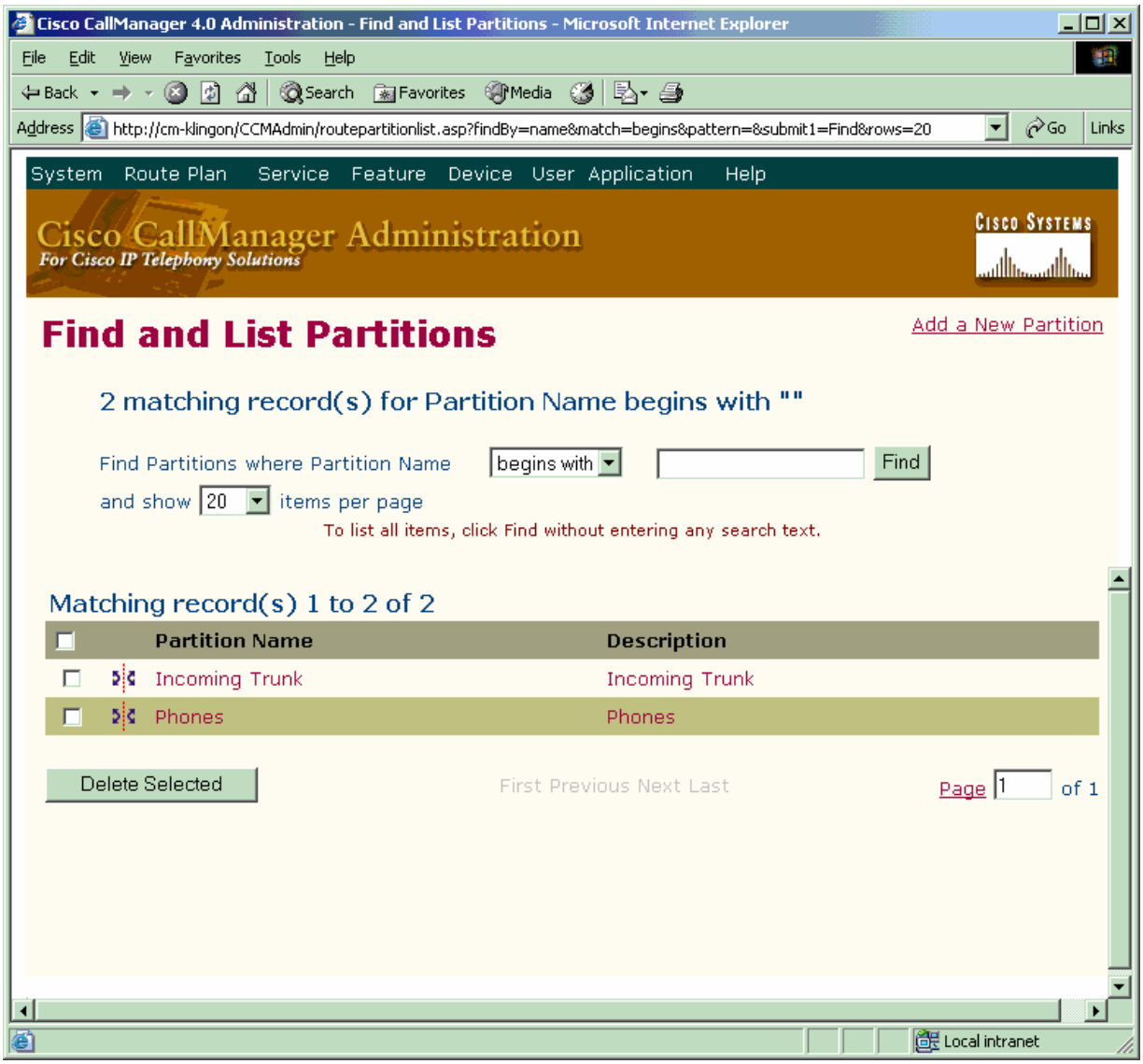
Partitions Configuration

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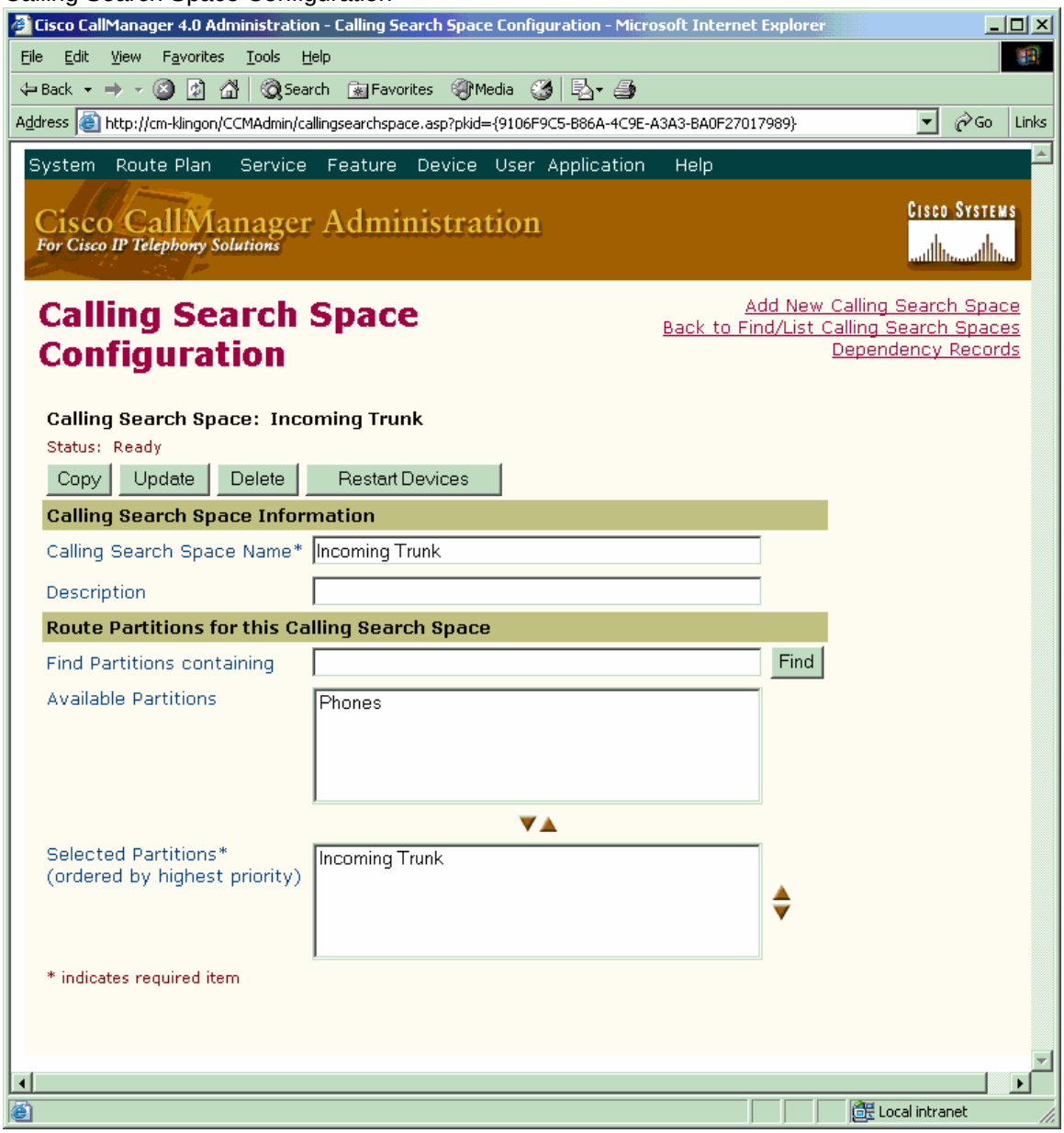
Calling Search Space Configuration

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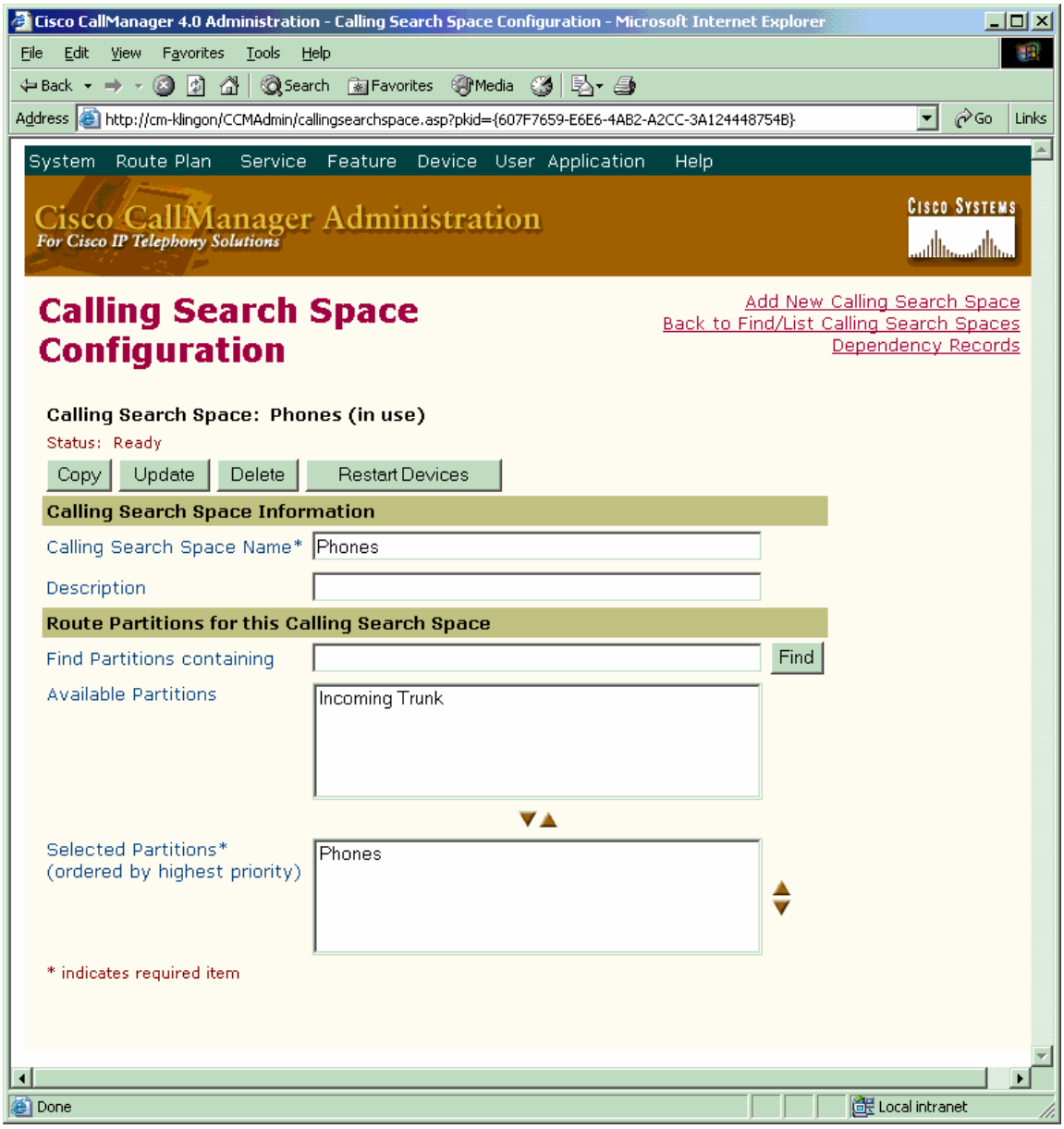


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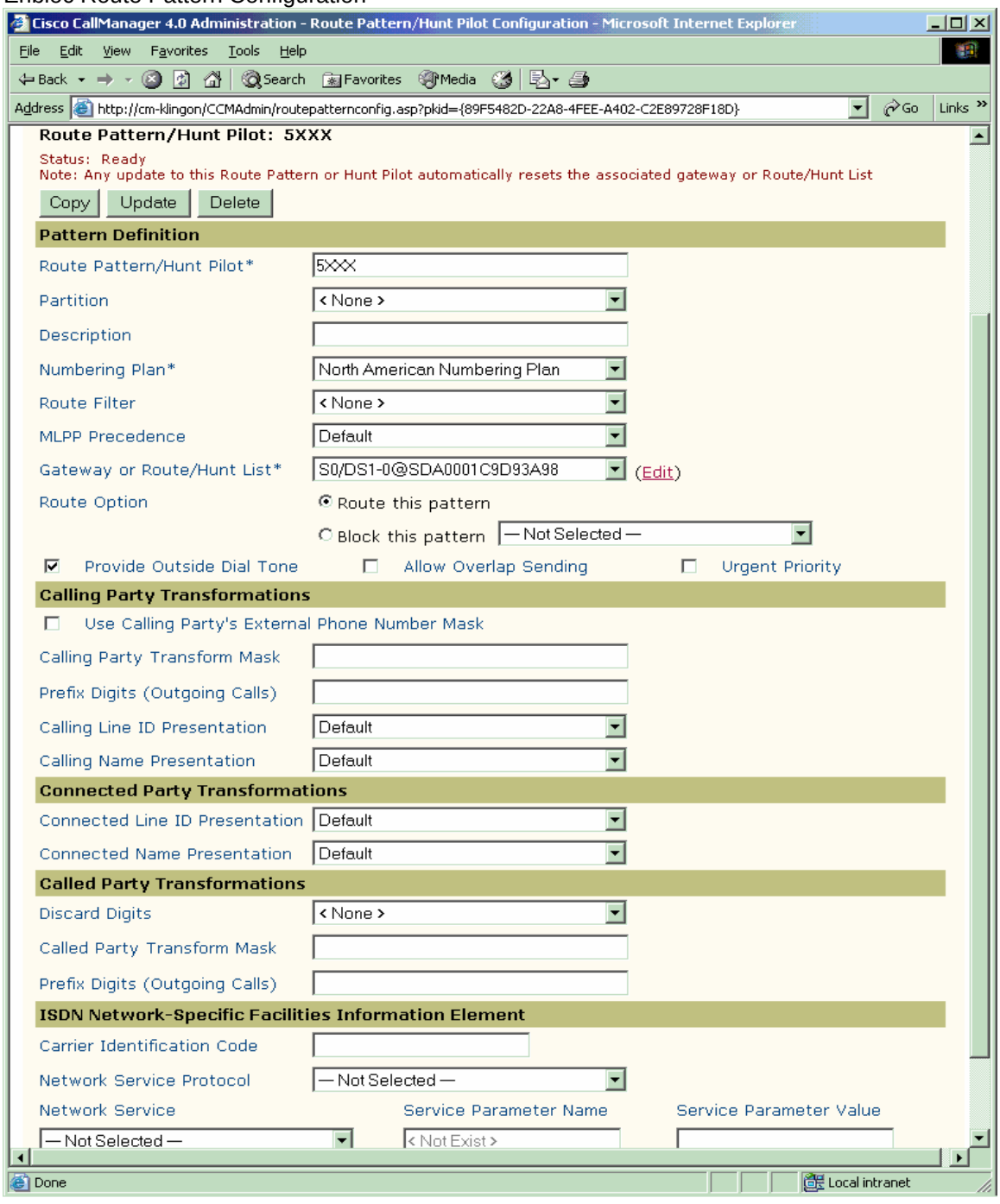
Enbloc Route Pattern Configuration

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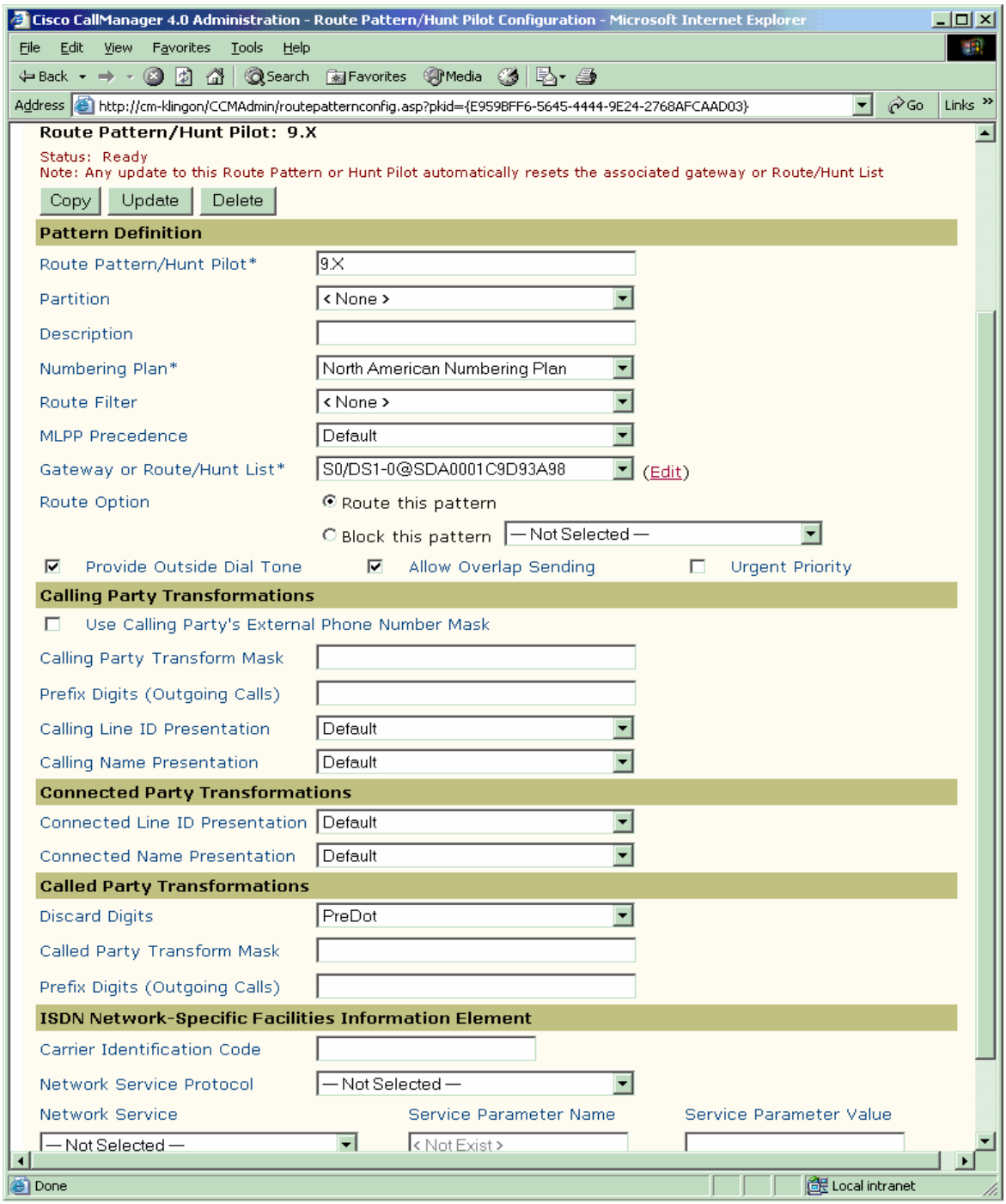
Overlap Sending Route Pattern Configuration

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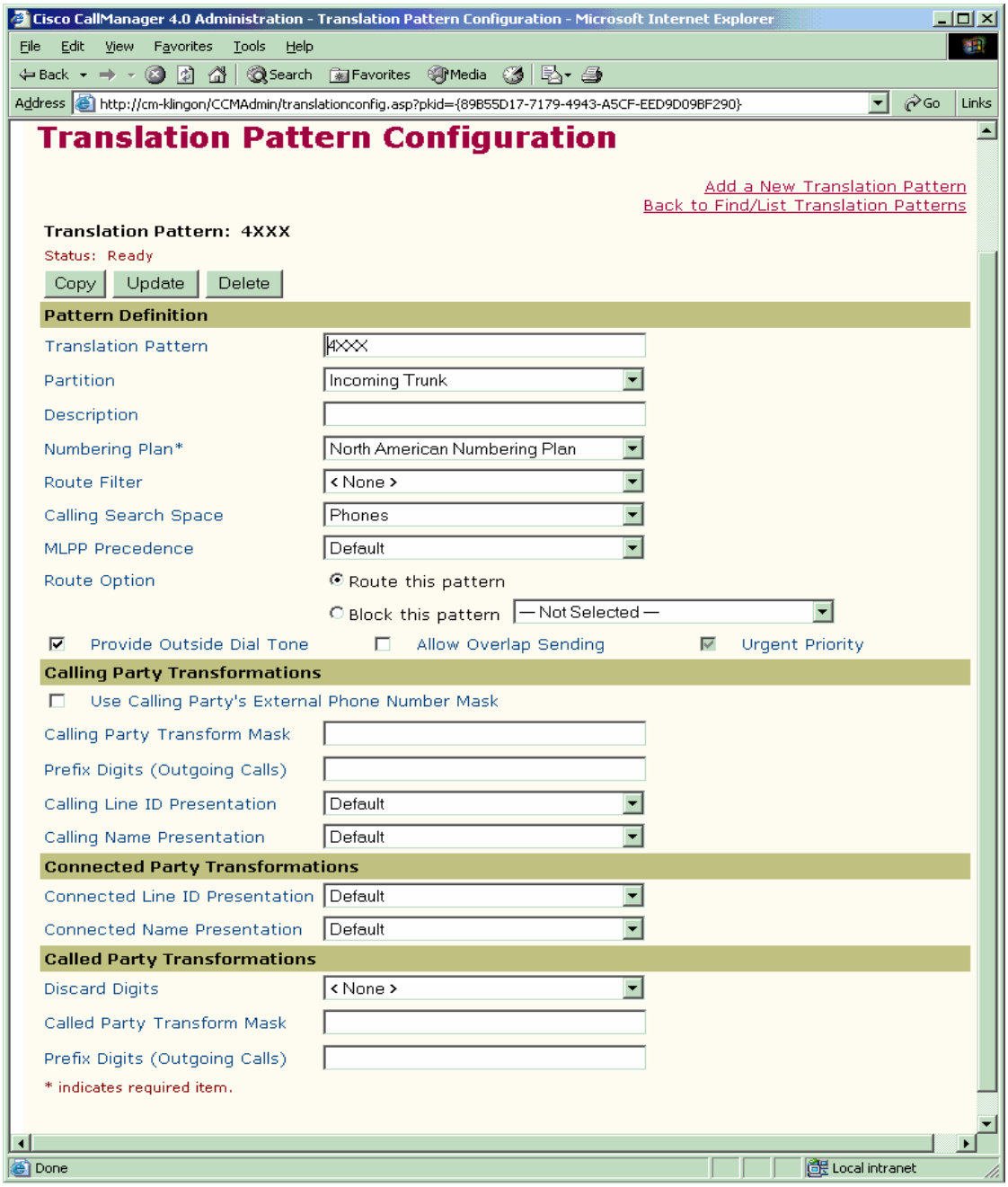
Translation Pattern Configuration

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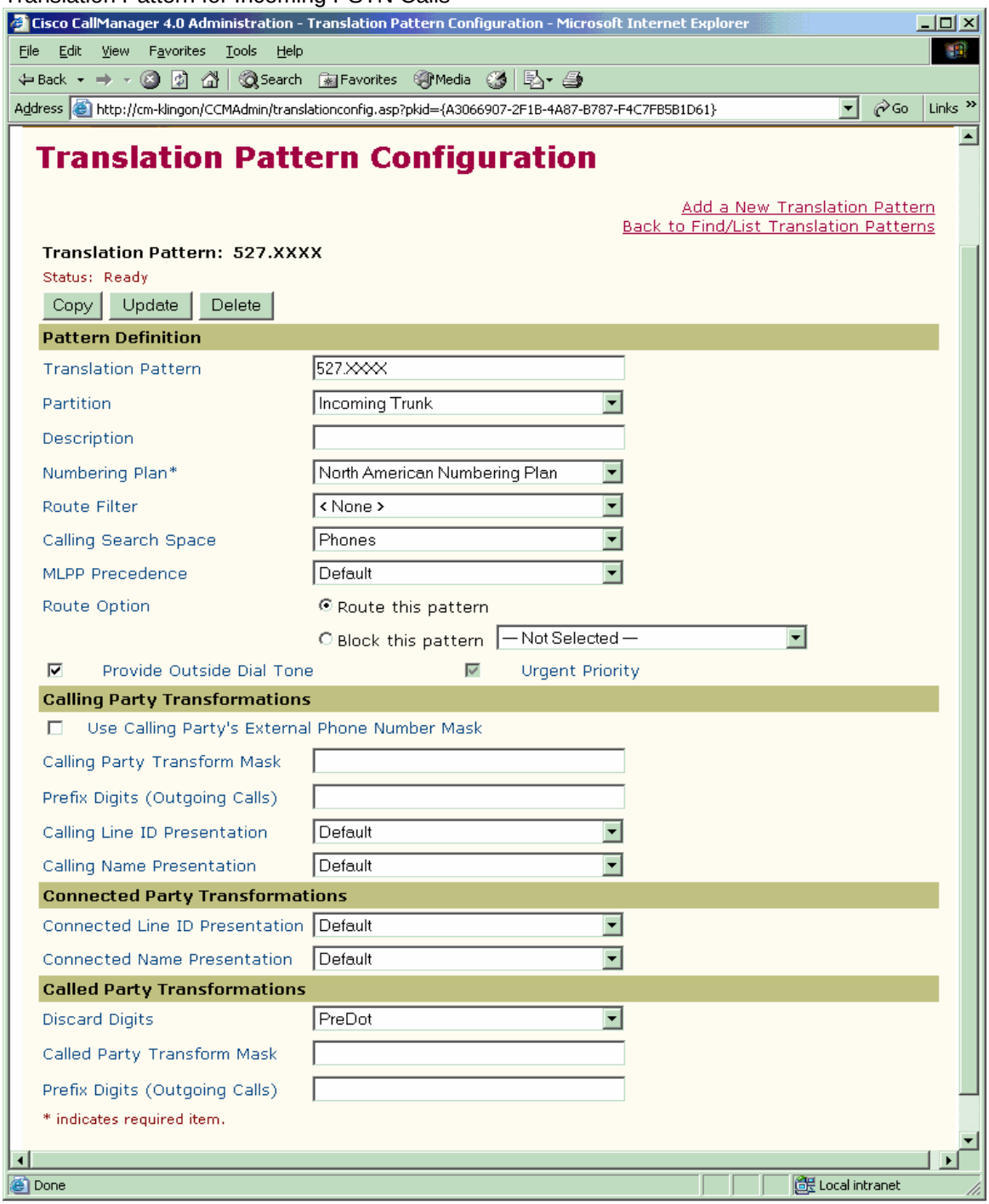
Translation Pattern for Incoming PSTN Calls

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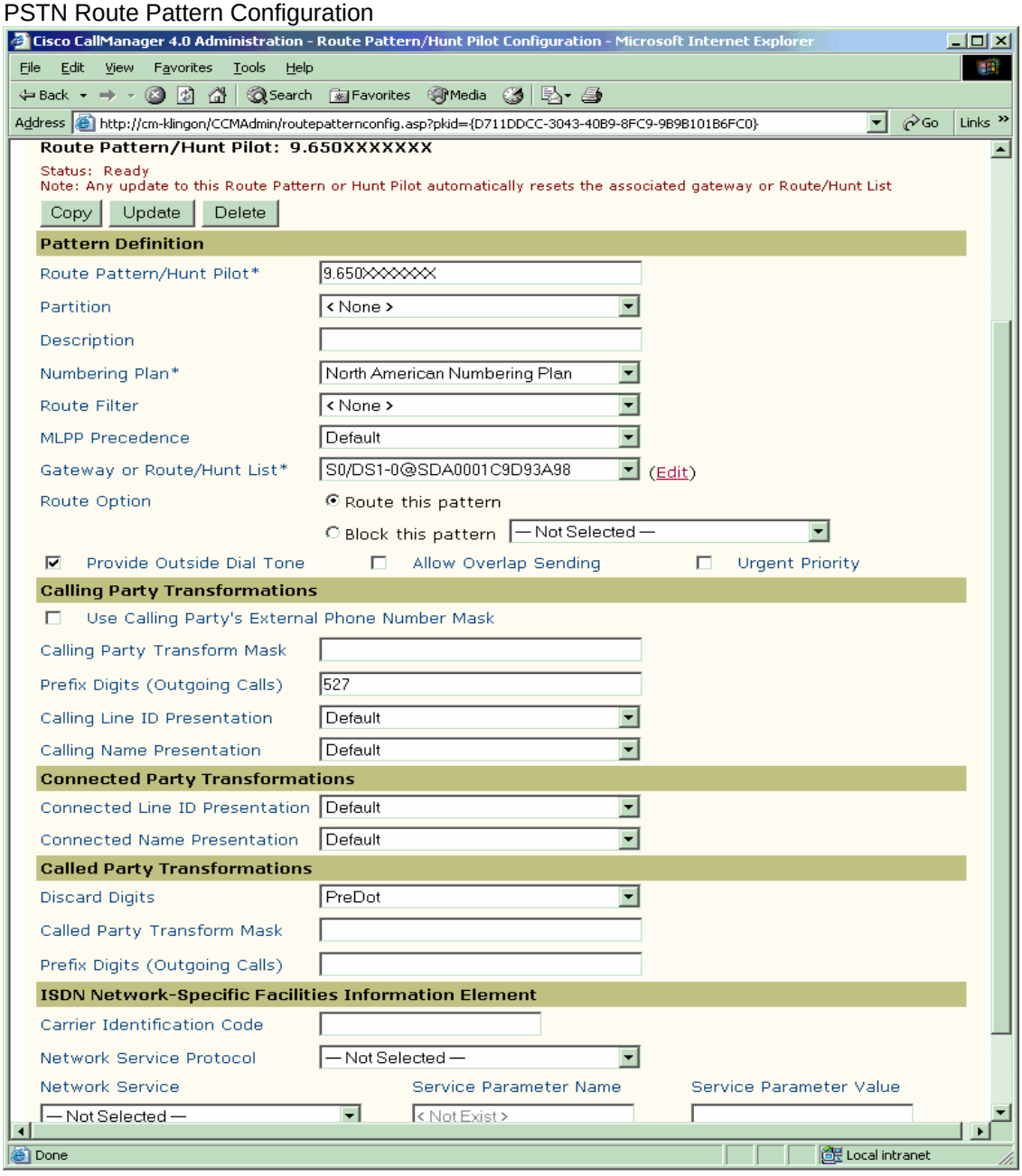
PSTN Route Pattern Configuration

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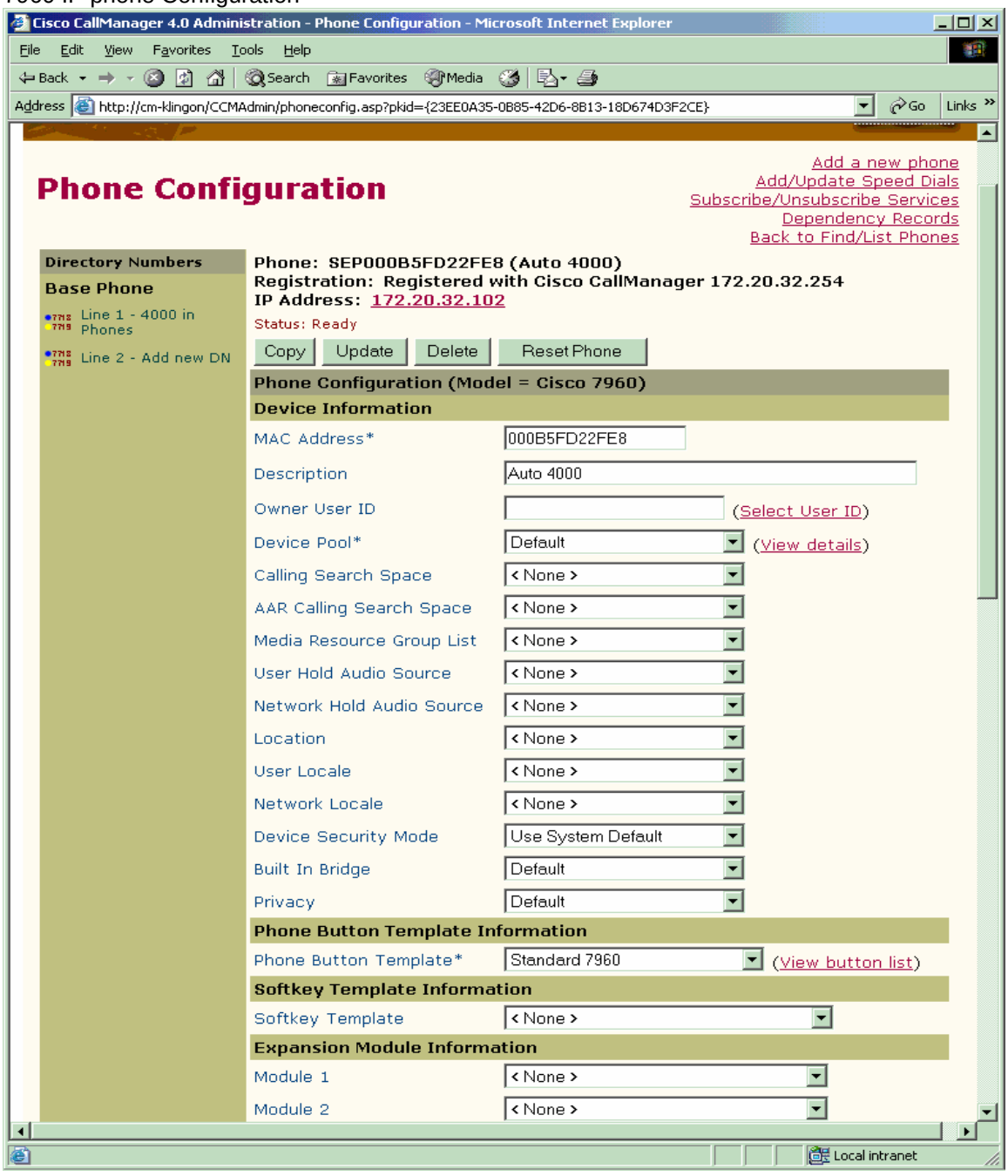
7960 IP phone Configuration

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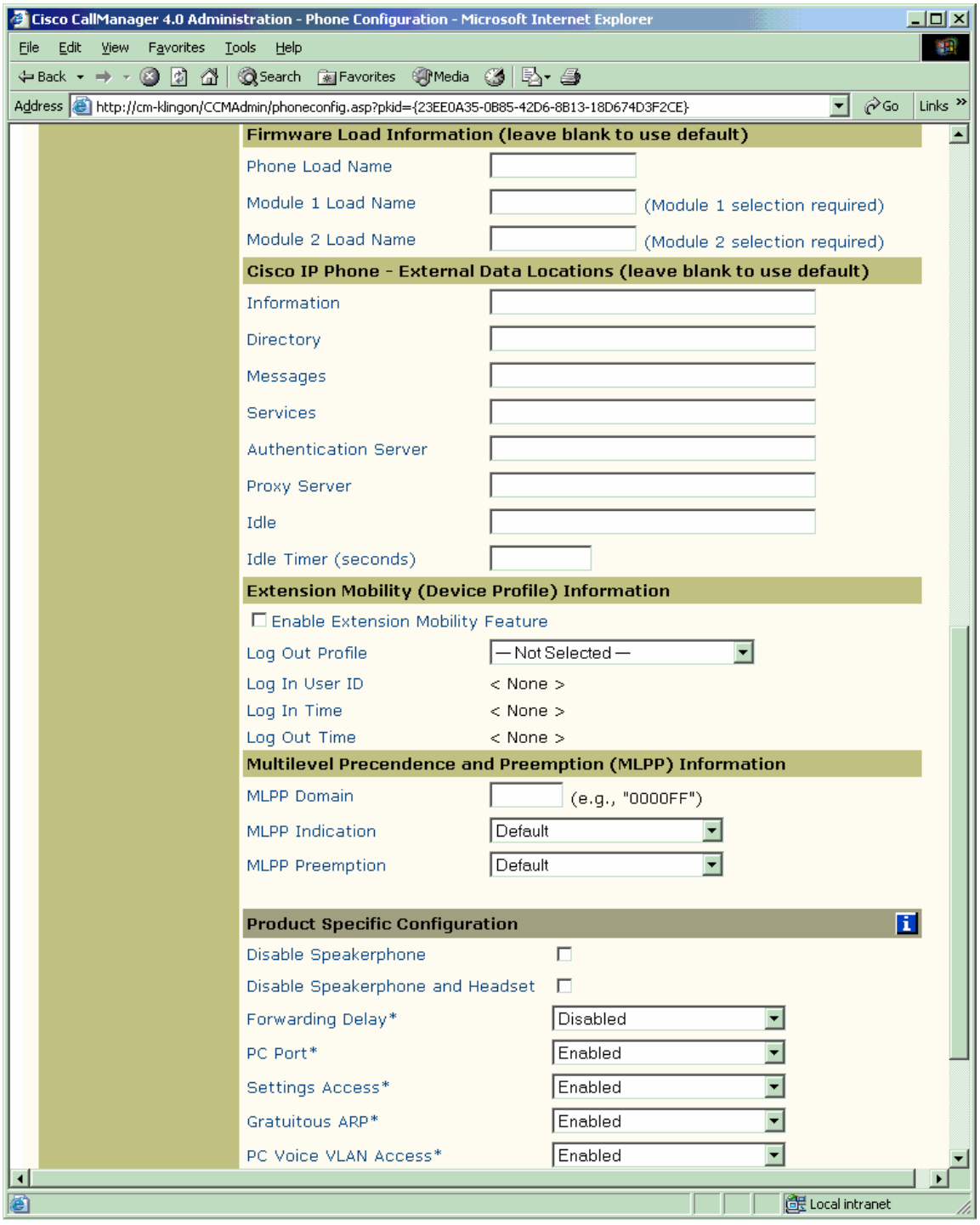


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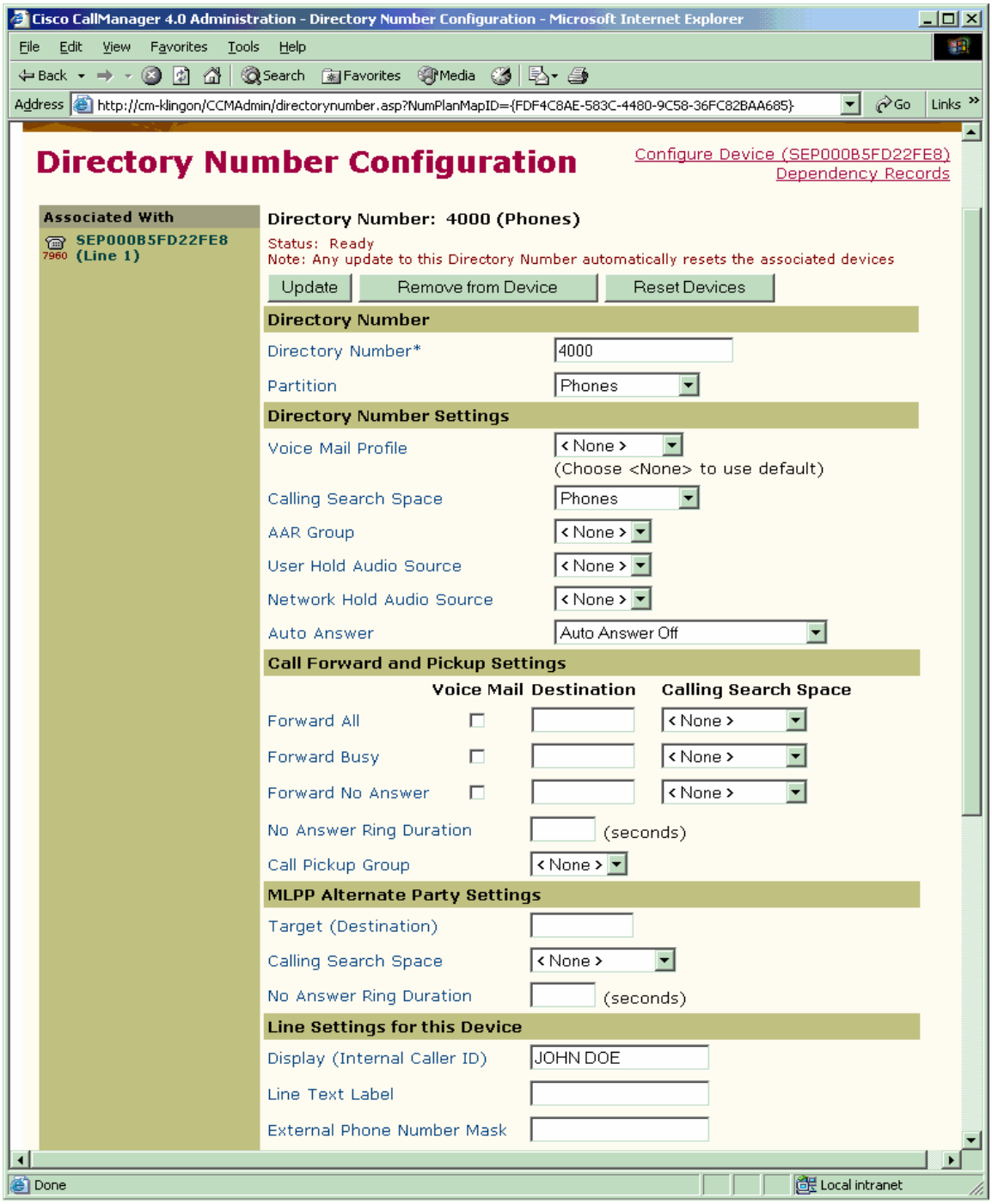


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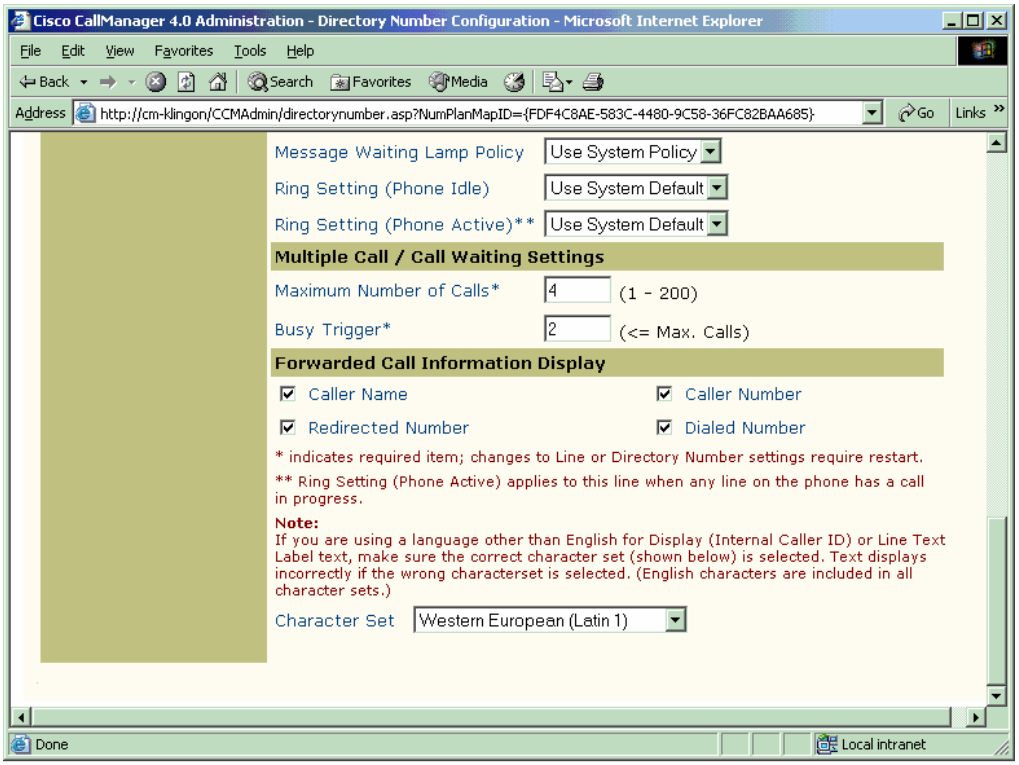


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