Cisco 2621 Gateway-PBX Interoperability: Lucent/Avaya Definity G3si with E1 PRI NET5 Signaling

This document describes the interoperability and configuration of a Cisco 2621 voice gateway with a Lucent/Avaya Definity G3si PBX using E1 PRI NET5 signaling. It includes the following sections:

- System Components
- Configuration Tasks
- Caveats

System Components

PBX Model	Lucent/Avaya Definity G3si
PBX Release	7.0
Telephony Signaling	E1 PRI
Voice Gateway	Cisco 2621 with 2MFT E1 Port
Gateway Release	Cisco IOS Release 12.2(3.5)T
Call Manager Release	3.1
VoX Protocol	H.323

Configuration Tasks

See the following sections for configuration tasks for this feature:

- Set Up command.
- Lucent/Avaya PBX Configuration
- Call Manager Configuration

Set Up

This section includes the following information:

- Connectivity Diagrams
- Set Up Notes

Connectivity Diagrams

Figure 1: Test Configuration

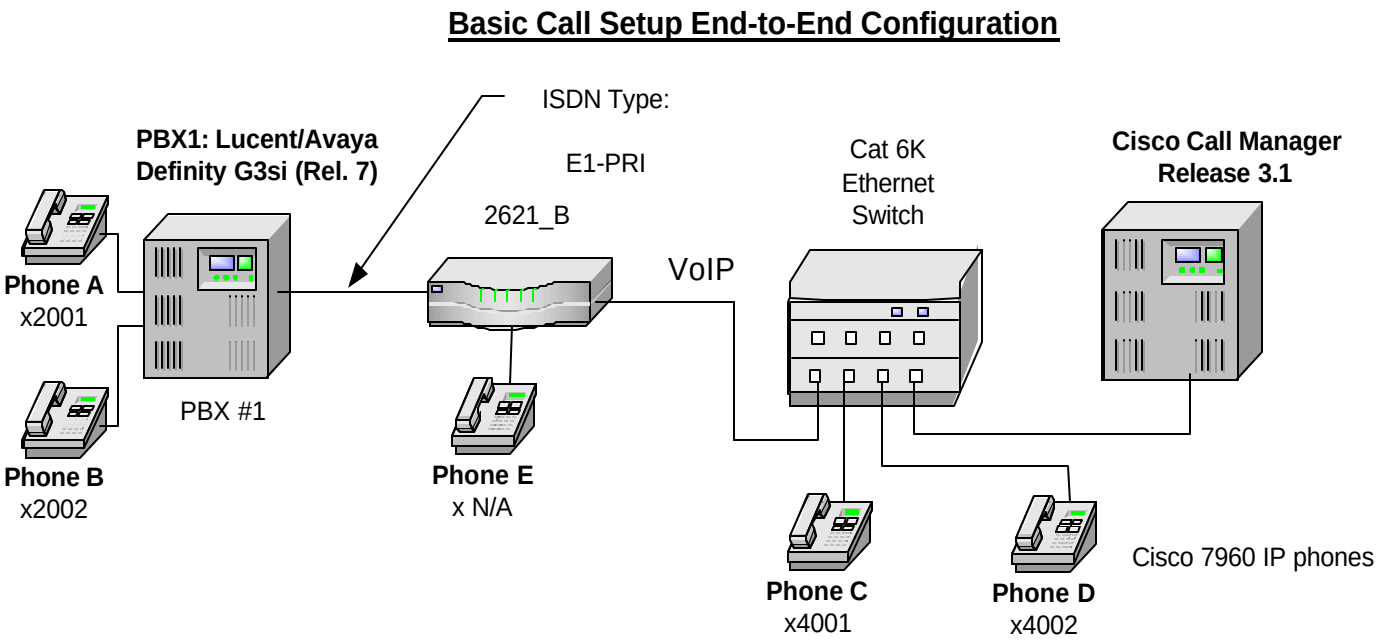


Figure 1 represents the configuration used for testing: an Lucent/Avaya Definity G3si PBX connected to a Cisco 2621 voice gateway via an E1 PRI connection.

Set Up Notes

The Cisco 2621 Gateway with ISDN protocol type setting of **primary-net5** supports both protocol sides by using the **isdn protocol-emulate network/user** command.

The Lucent/Avaya Definity G3si PBX supports both "USER" and "NETWORK" protocol sides by using **change ds1 a12** command.

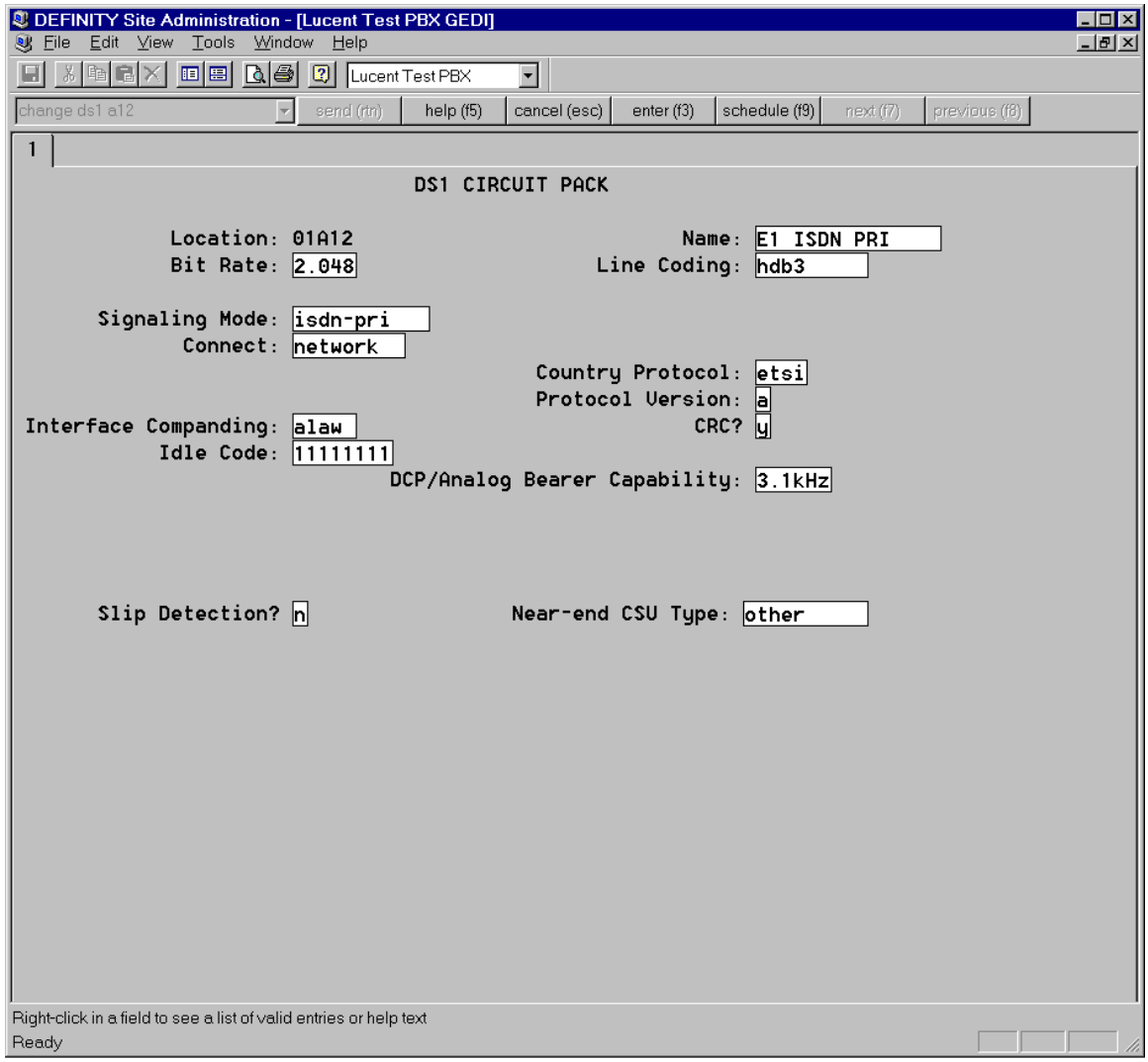
Lucent/Avaya PBX Configuration

Lucent/Avaya PBX Version Information

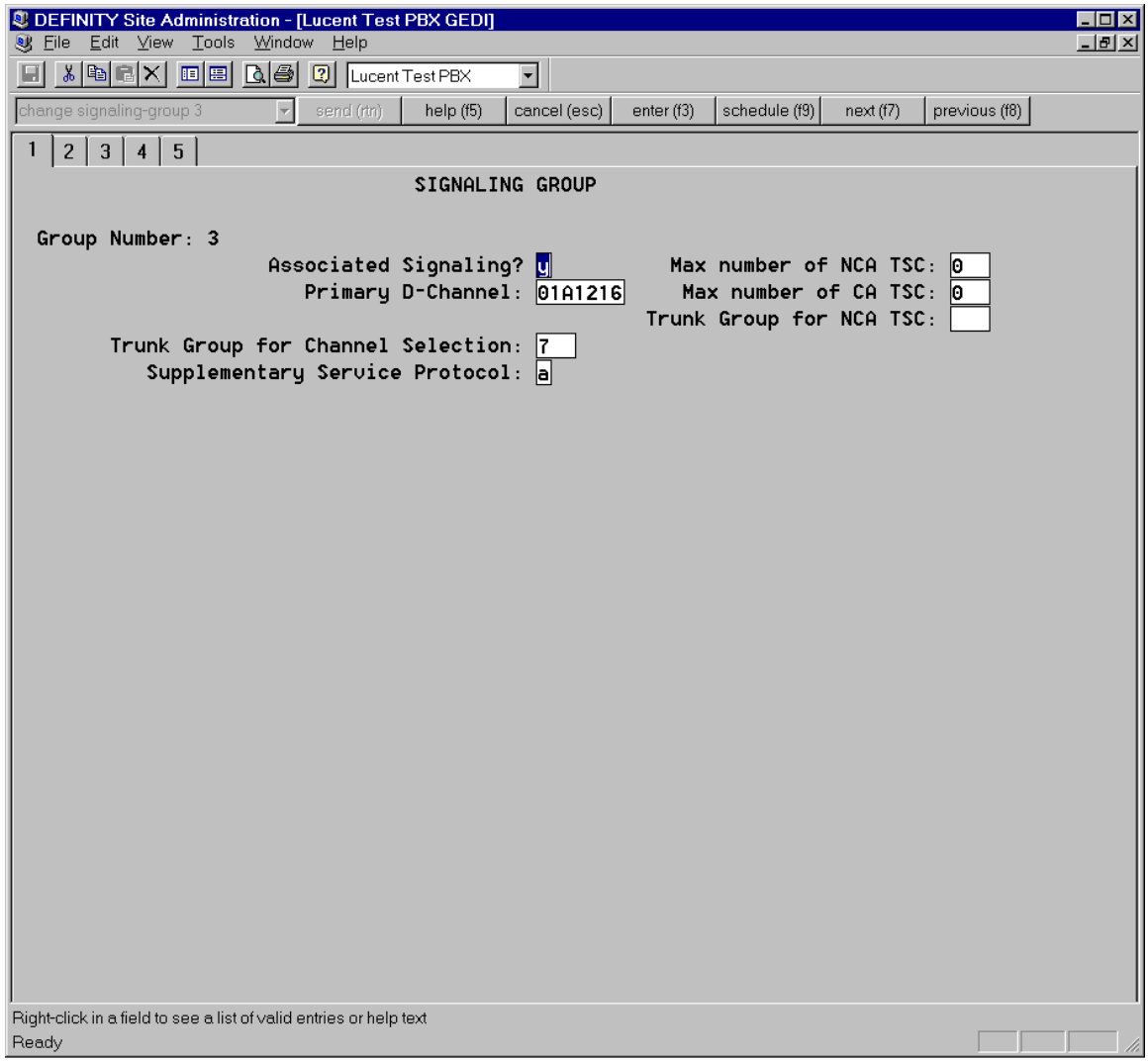
- Software: Version 7.0
- Hardware: TN464F, DS1 INTFC 24/32

Lucent/Avaya PBX Sample Configuration

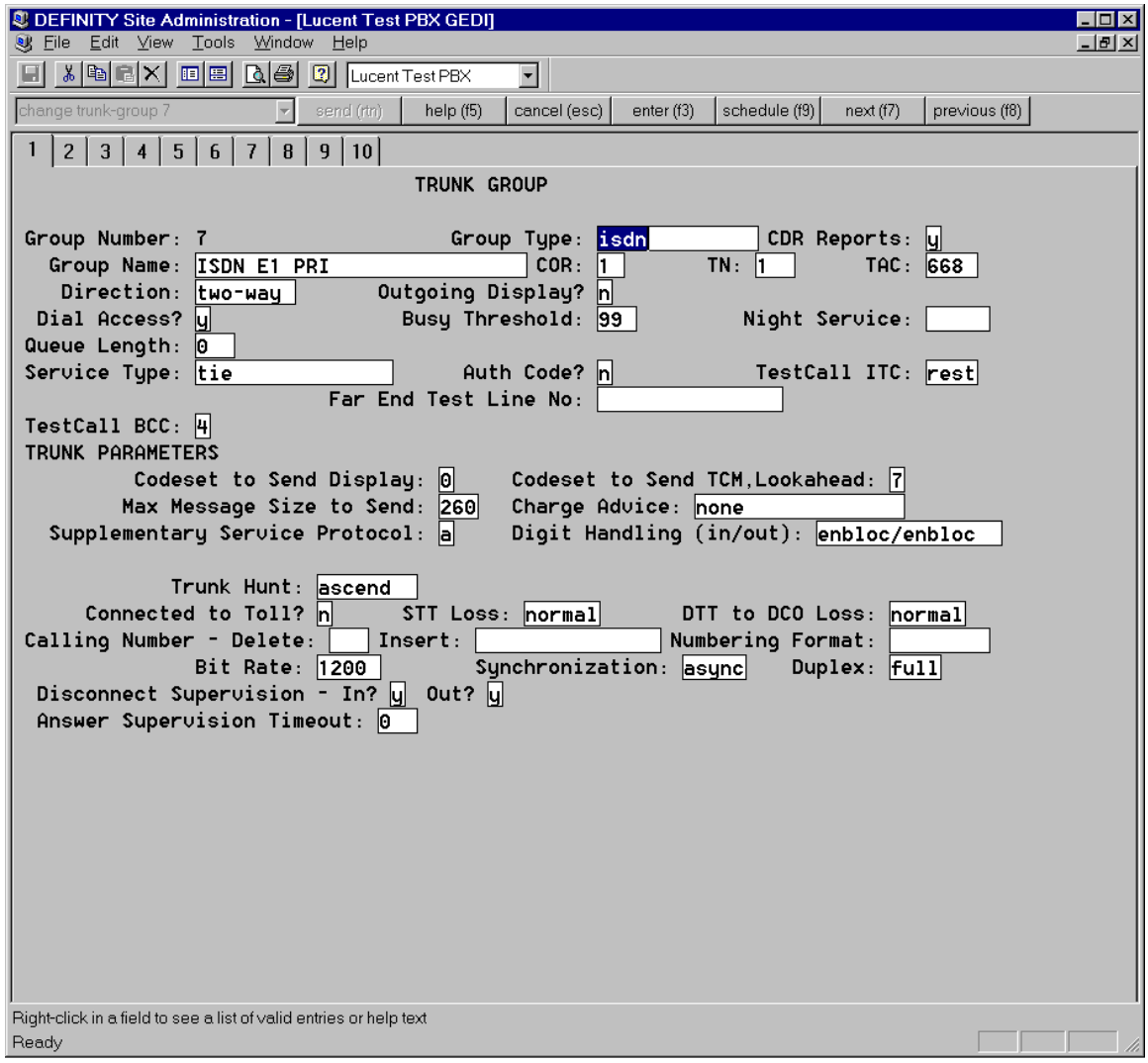
DS1 CIRCUIT PACK

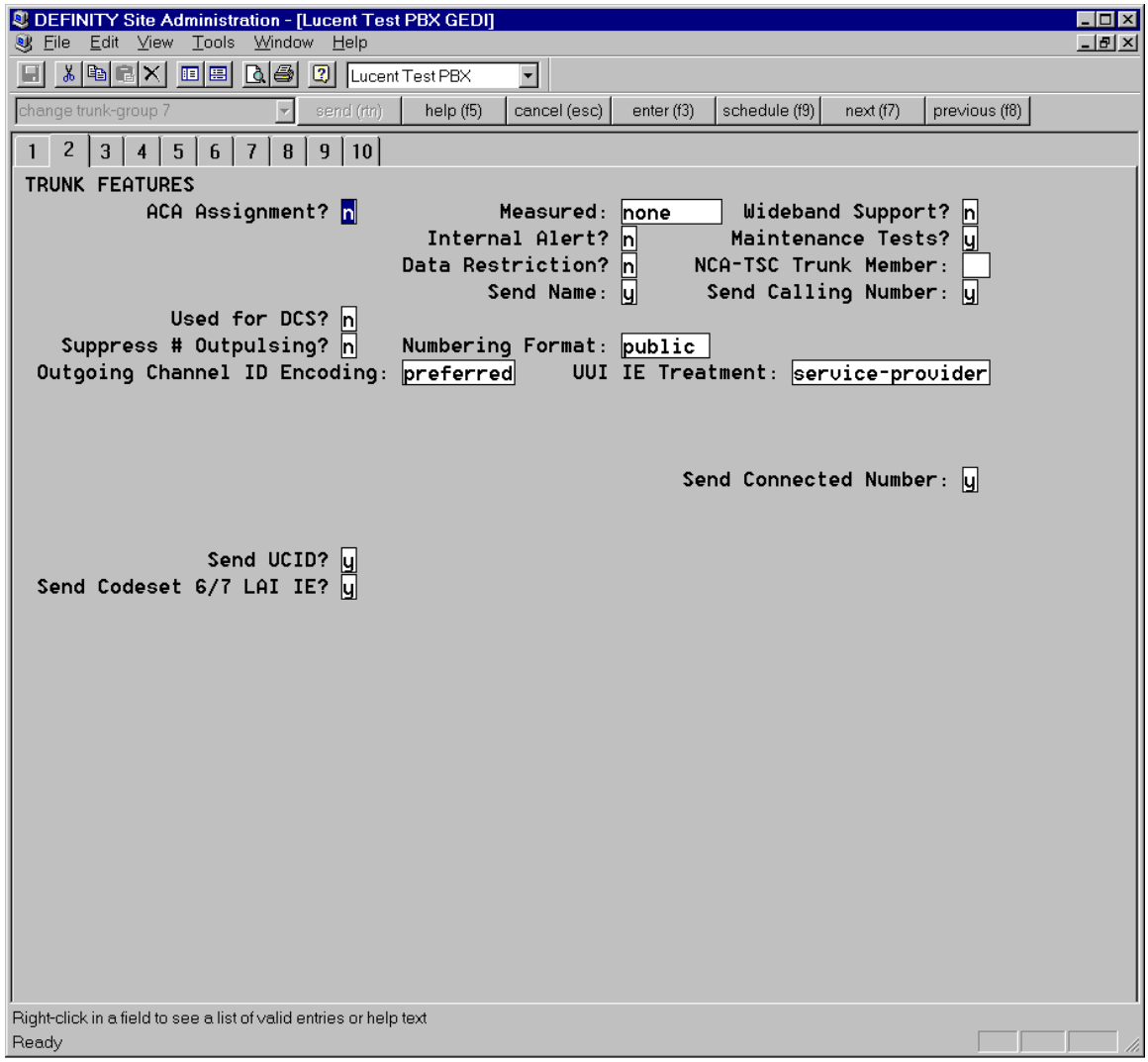


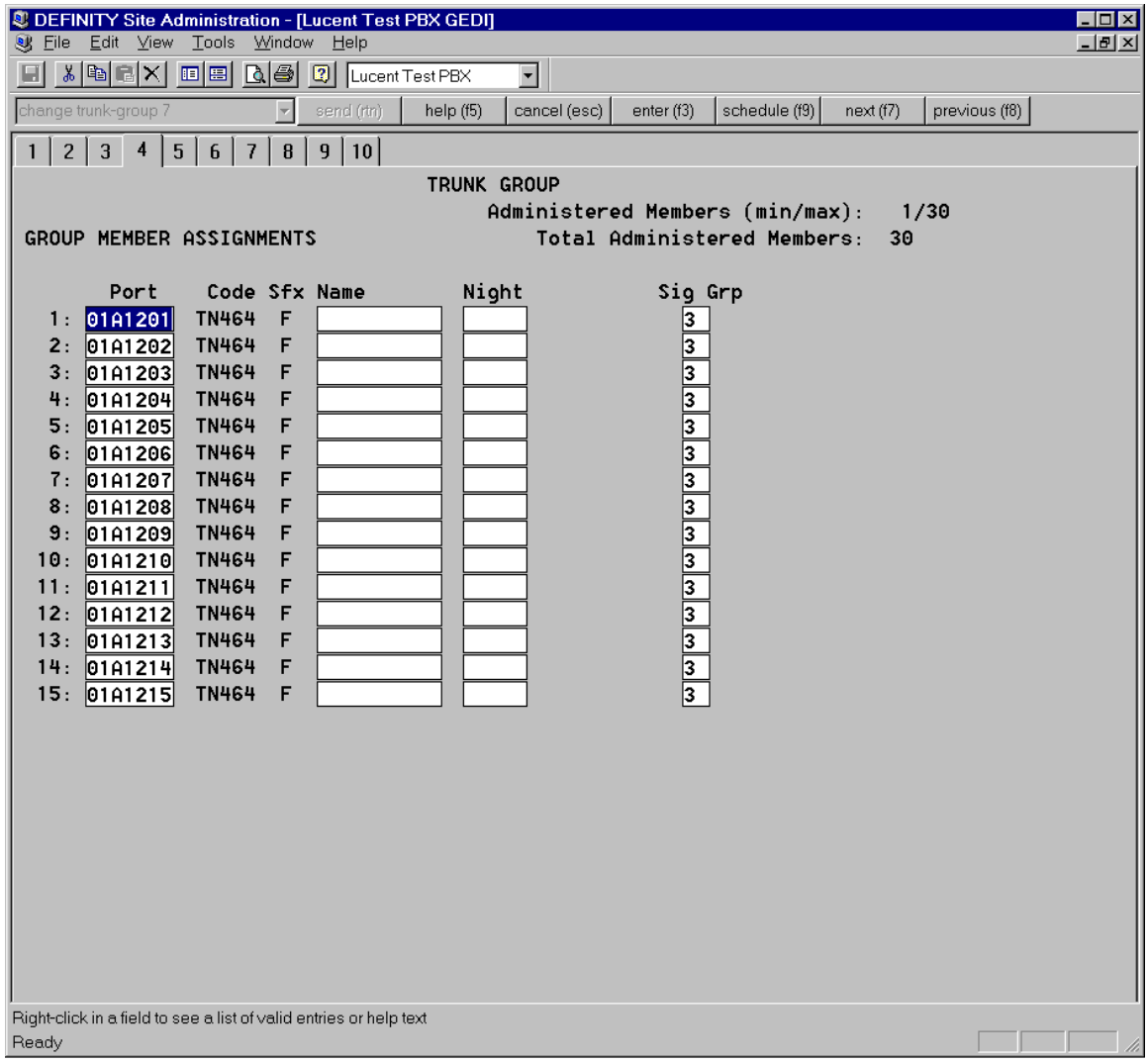
Signaling Group

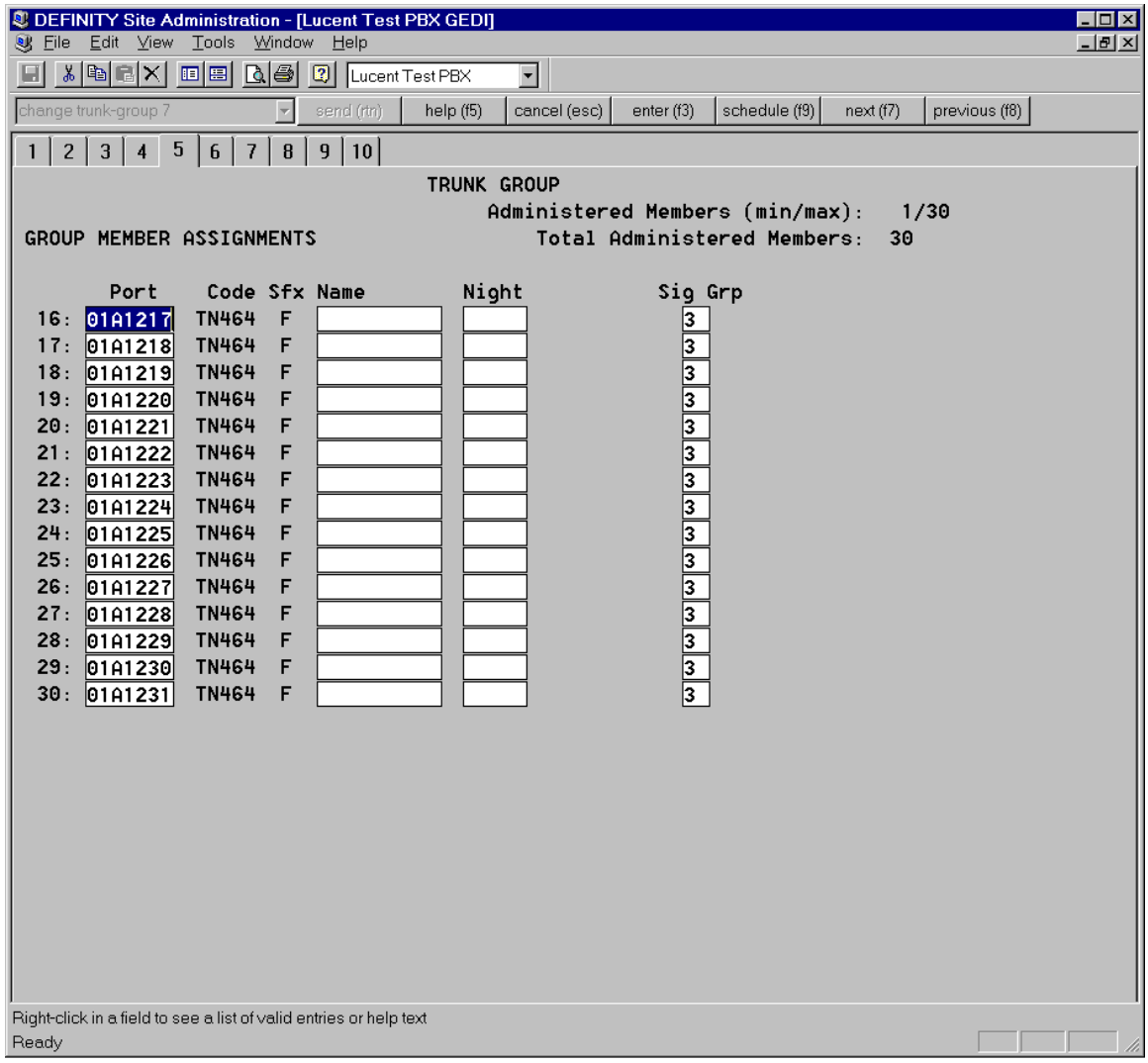


Trunk Group

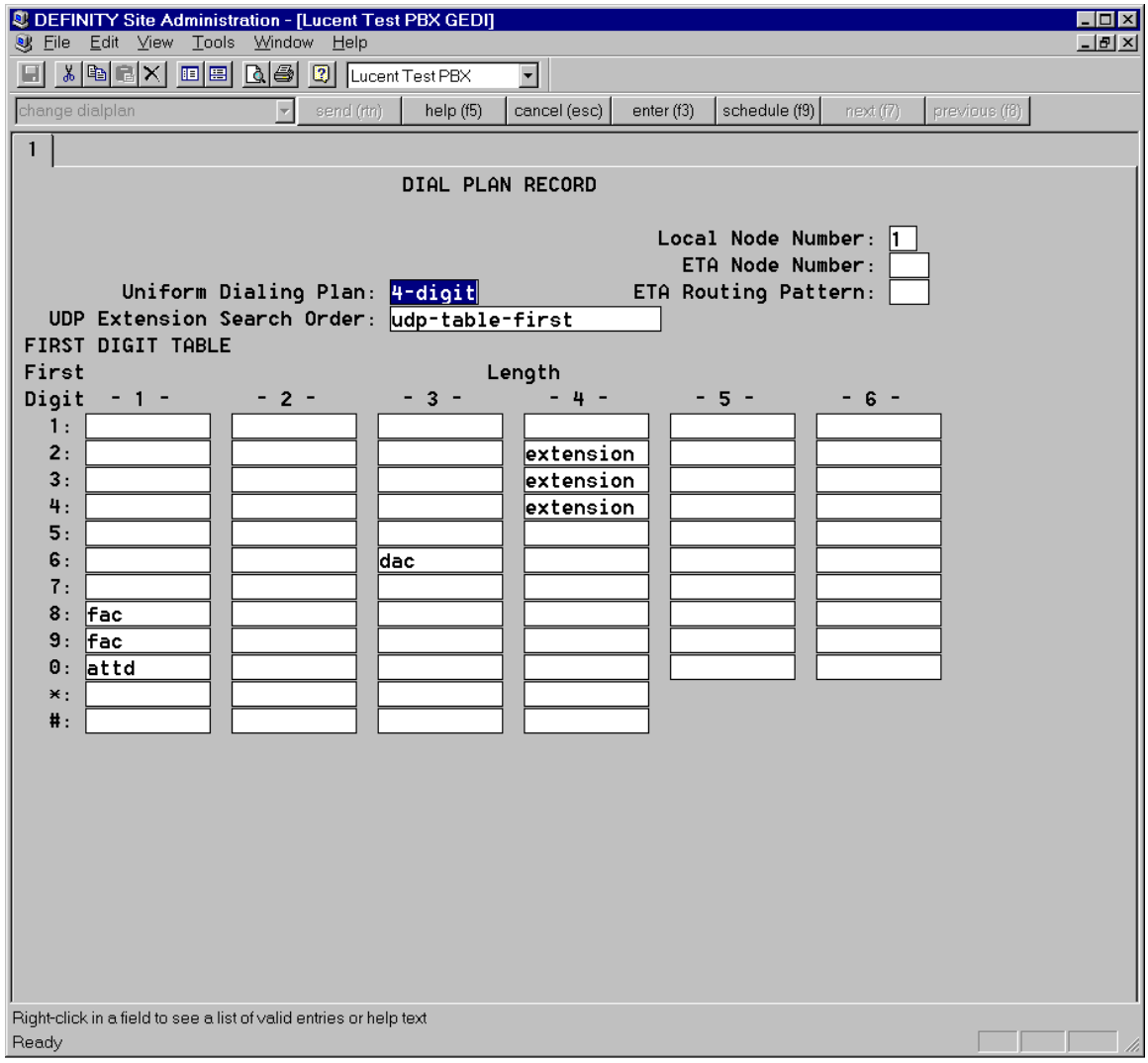

DEFINITY Site Administration - [Lucent Test PBX GEDI]
File Edit View Tools Window Help
Lucent Test PBX
change trunk-group 7
send (ctrl)
help (f5)
cancel (esc)
enter (f3)
schedule (f9)
next (f7)
previous (f8)
1 2 3 4 5 6 7 8 9 10
TRUNK GROUP
Group Number: 7 Group Type: isdn CDR Reports: y
Group Name: ISDN E1 PRI COR: 1 TN: 1 TAC: 668
Direction: two-way Outgoing Display? n
Dial Access? y 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 TCM,Lookahead: 7
Max Message Size to Send: 260 Charge Advice: none
Supplementary Service Protocol: a Digit Handling (in/out): enbloc/enbloc
Trunk Hunt: ascend
Connected to Toll? n STT Loss: normal DTT to DCO Loss: normal
Calling Number - Delete: Insert: Numbering Format:
Bit Rate: 1200 Synchronization: async Duplex: full
Disconnect Supervision - In? y Out? y
Answer Supervision Timeout: 0
Right-click in a field to see a list of valid entries or help text
Ready

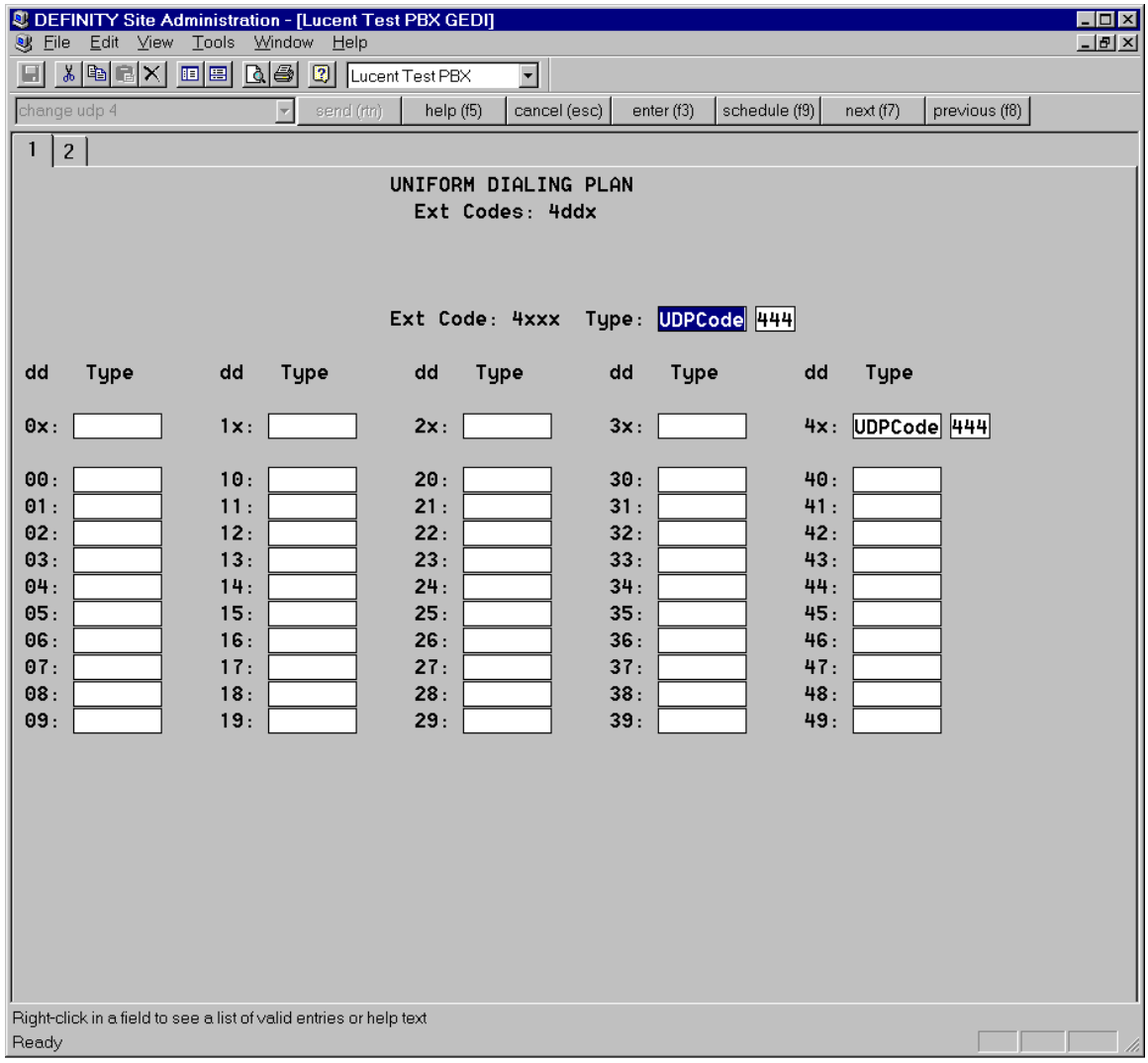

DEFINITY Site Administration - [Lucent Test PBX GEDI]
File Edit View Tools Window Help
Lucent Test PBX
change trunk-group 7
send (ctrl)
help (f5)
cancel (esc)
enter (f3)
schedule (f9)
next (f7)
previous (f8)
1 2 3 4 5 6 7 8 9 10
TRUNK FEATURES
ACA Assignment? n
Measured: none
Wideband Support? n
Internal Alert? n
Maintenance Tests? y
Data Restriction? n
NCA-TSC Trunk Member:
Send Name: y
Send Calling Number: y
Used for DCS? n
Suppress # Outpulsing? n
Numbering Format: public
Outgoing Channel ID Encoding: preferred
UUI IE Treatment: service-provider
Send Connected Number: y
Send UCID? y
Send Codeset 6/7 LAI IE? y
Right-click in a field to see a list of valid entries or help text
Ready


DEFINITY Site Administration - [Lucent Test PBX GEDI]
File Edit View Tools Window Help
Lucent Test PBX
change trunk-group 7
send (ctrl)
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
GROUP MEMBER ASSIGNMENTS
Total Administered Members: 30
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 GEDI]
File Edit View Tools Window Help
Lucent Test PBX
change trunk-group 7
send (ctrl)
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
GROUP MEMBER ASSIGNMENTS
Total Administered Members: 30
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
Ready

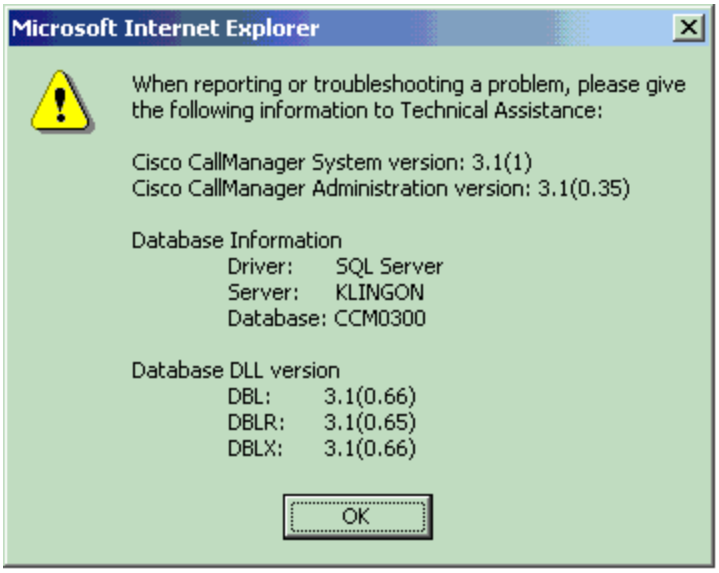
Uniform Dialing Plan



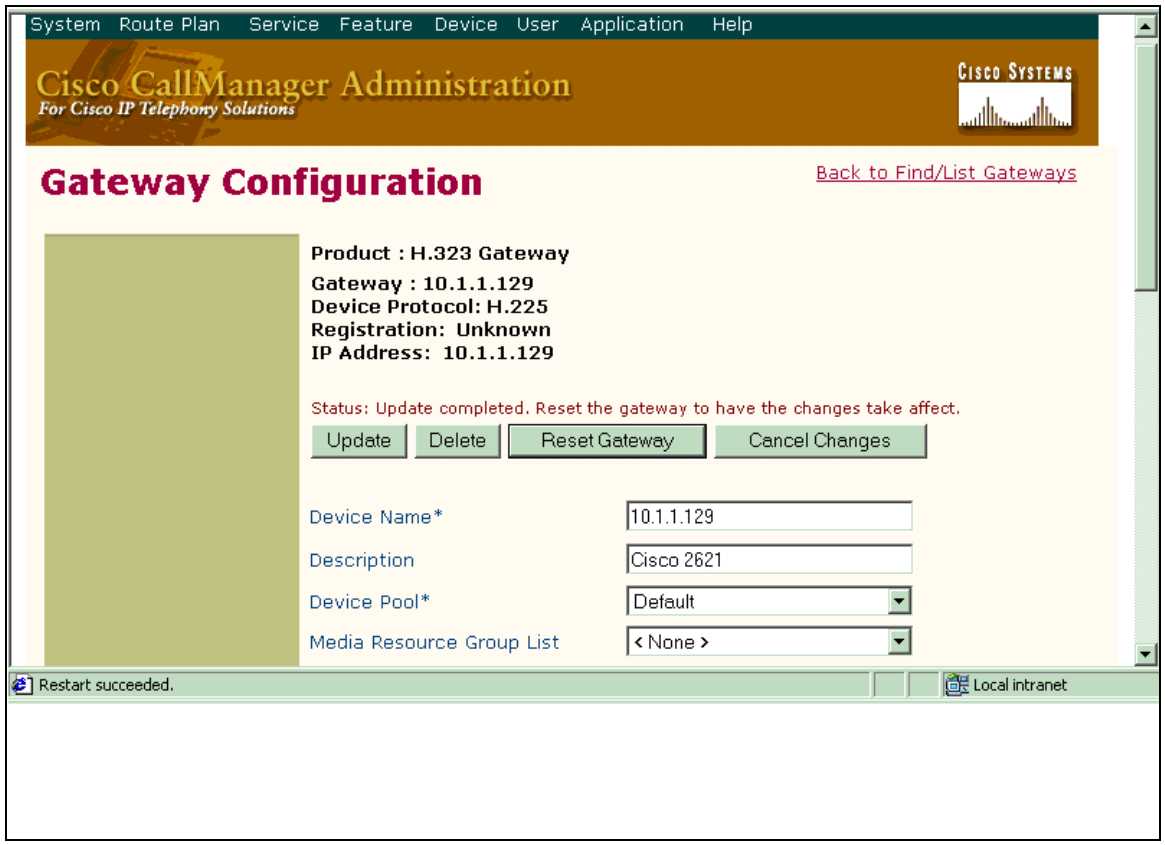

DEFINITY Site Administration - [Lucent Test PBX GEDI]
File Edit View Tools Window Help
Lucent Test PBX
change udp 4
send (ctrl)
help (f5)
cancel (esc)
enter (f3)
schedule (f9)
next (f7)
previous (f8)
1
2
UNIFORM DIALING PLAN
Ext Codes: 4ddx
Ext Code: 4xxx Type: UDPCode 444
dd Type dd Type dd Type dd Type dd Type
0x: 1x: 2x: 3x: 4x: UDPCode 444
00: 10: 20: 30: 40:
01: 11: 21: 31: 41:
02: 12: 22: 32: 42:
03: 13: 23: 33: 43:
04: 14: 24: 34: 44:
05: 15: 25: 35: 45:
06: 16: 26: 36: 46:
07: 17: 27: 37: 47:
08: 18: 28: 38: 48:
09: 19: 29: 39: 49:
Right-click in a field to see a list of valid entries or help text
Ready

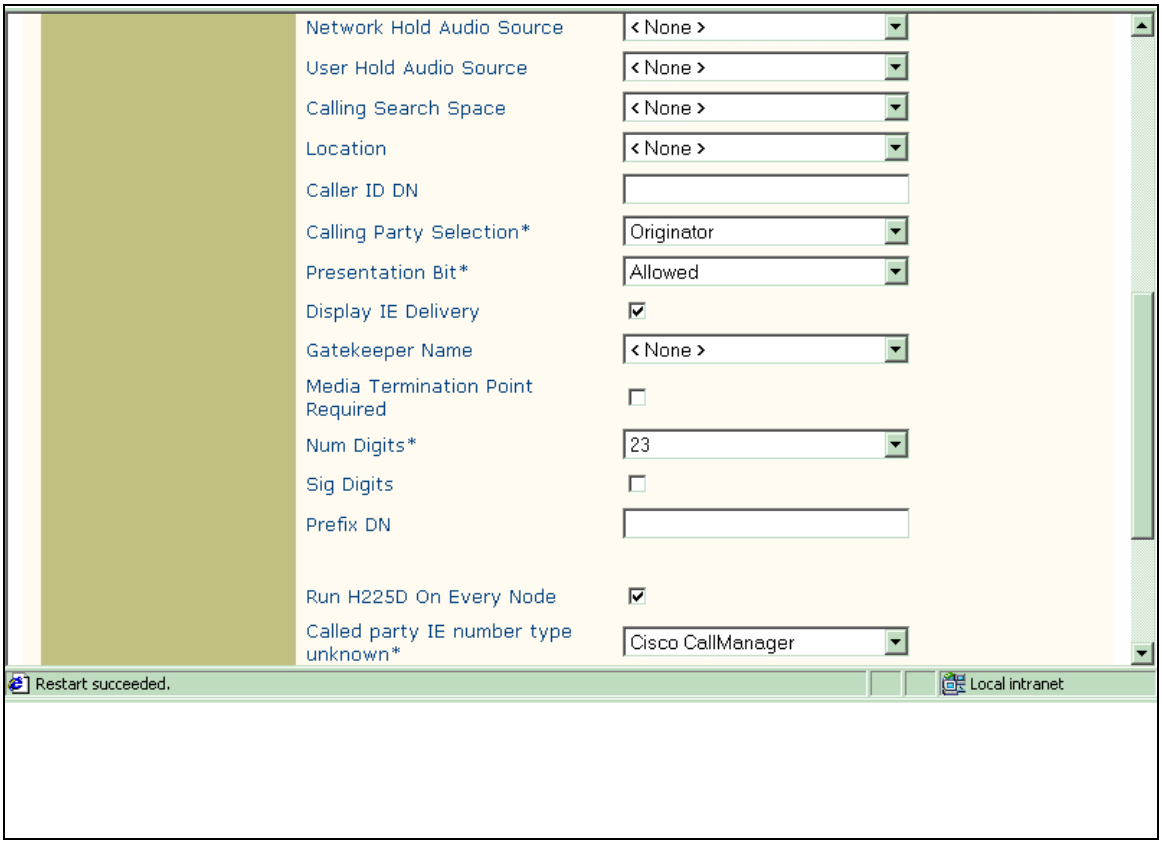
Call Manager Configuration

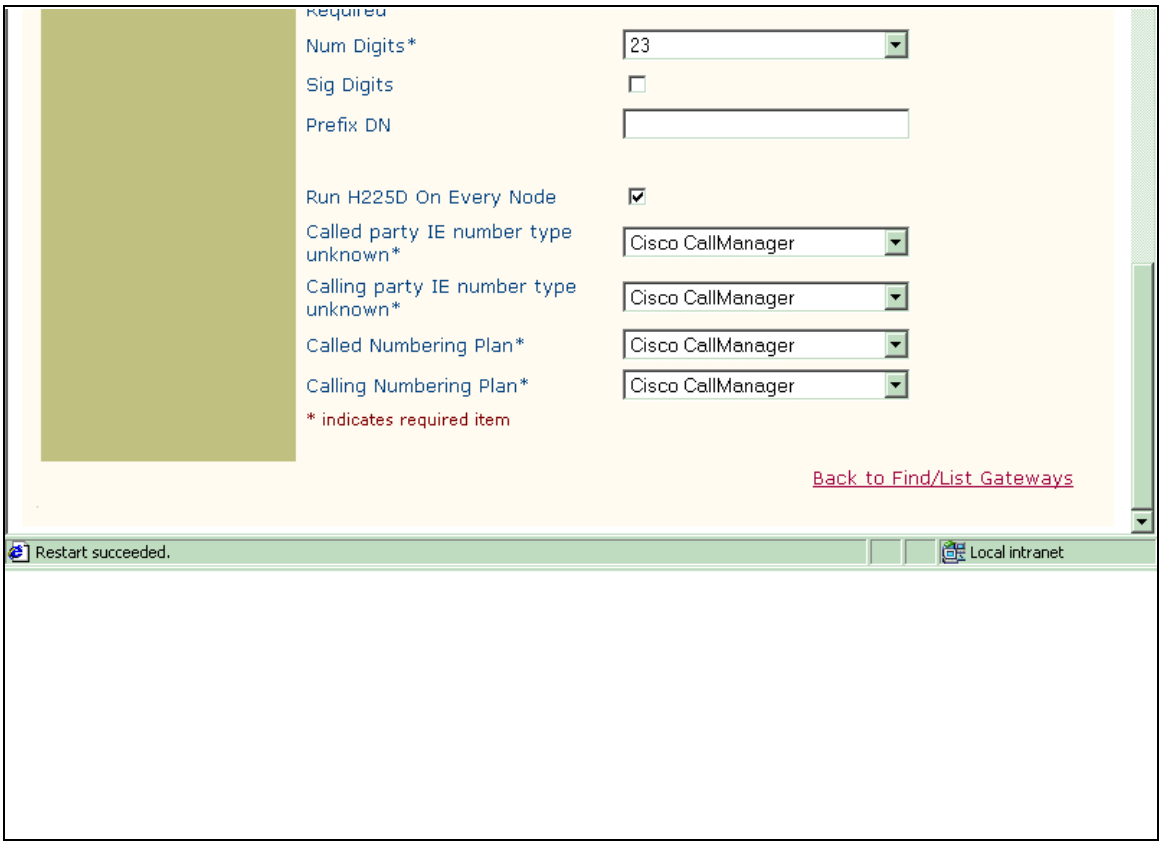
Call Manager Version Information



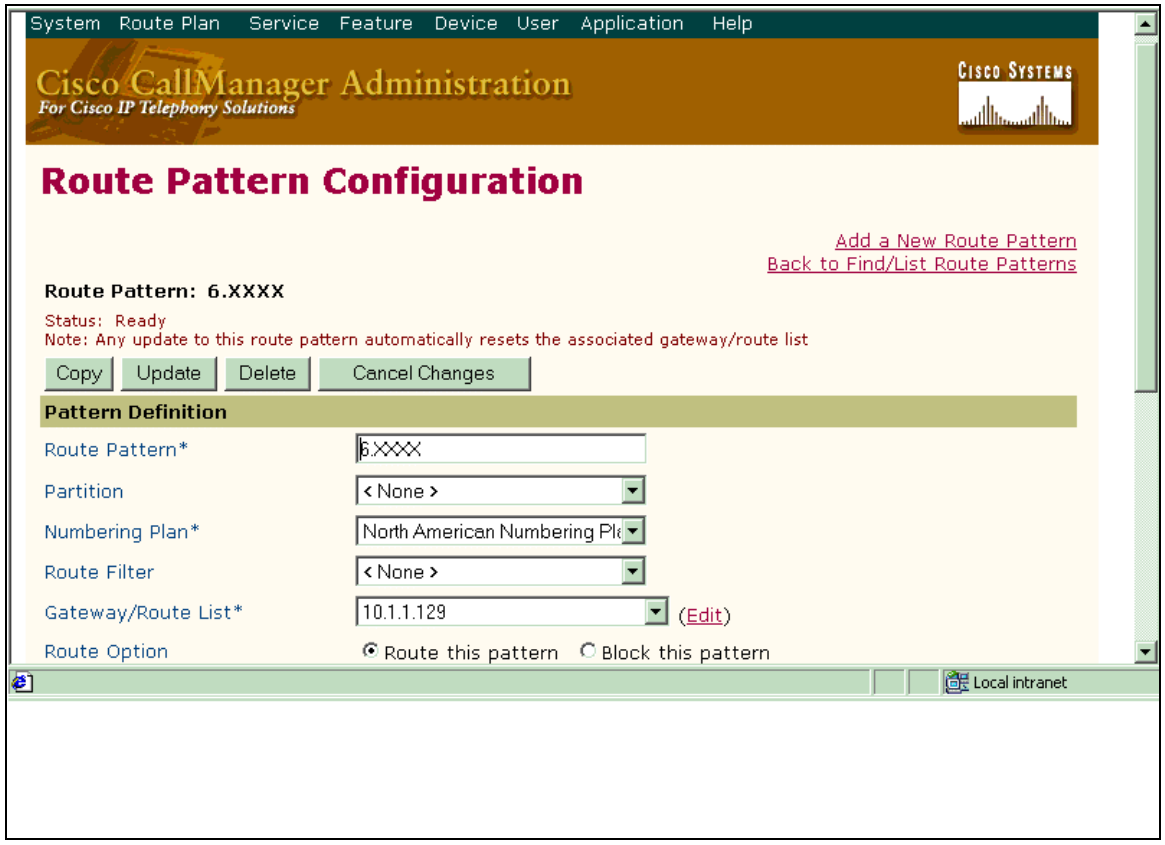
H.323 (Cisco 2621) Gateway Configuration

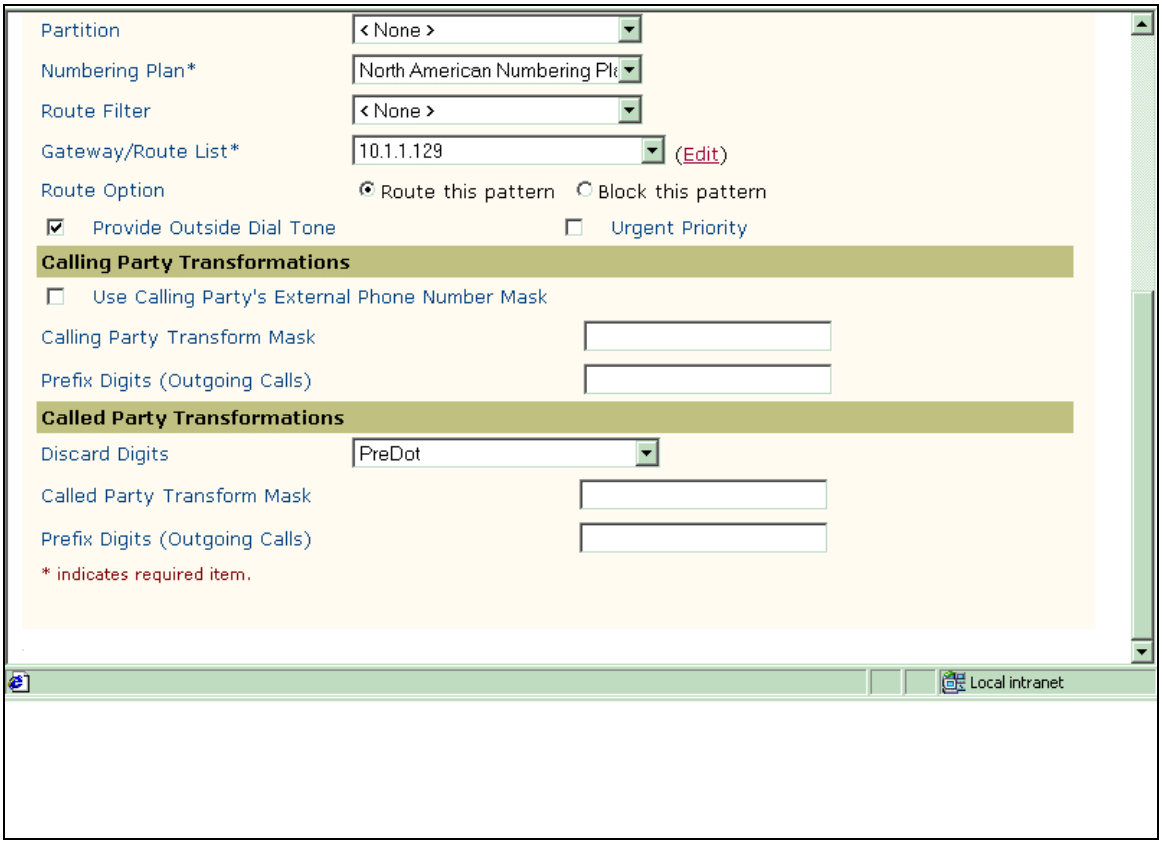



Network Hold Audio Source
< None >
User Hold Audio Source
< None >
Calling Search Space
< None >
Location
< None >
Caller ID DN
Calling Party Selection*
Originator
Presentation Bit*
Allowed
Display IE Delivery
Gatekeeper Name
< None >
Media Termination Point Required
Num Digits*
23
Sig Digits
Prefix DN
Run H225D On Every Node
Called party IE number type unknown*
Cisco CallManager
Restart succeeded.
Local intranet


Num Digits*
23
Sig Digits
Prefix DN
Run H225D On Every Node
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
* indicates required item
Back to Find/List Gateways
Restart succeeded.
Local intranet

Route Pattern Configuration





Cisco 2621 Gateway Configuration

The following is the configuration of the Cisco 2621 voice gateway connected to the Lucent/Avaya Definity G3si PBX E1 PRI interface.

Cisco 2621 Voice Gateway Version Information

```
2621_B#sh version
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-JS-M), Version 12.2(3.5)T,  MAINTENANCE INTERIM S
OFTWARE
TAC Support: http://www.cisco.com/tac
Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled Fri 03-Aug-01 22:45 by ccai
Image text-base: 0x80008088, data-base: 0x81631DD8

ROM: System Bootstrap, Version 12.1(3r)T2, RELEASE SOFTWARE (fc1)

2621_B uptime is 4 minutes
System returned to ROM by power-on
System image file is "flash:c2600-js-mz.122-3.5.T"

cisco 2621 (MPC860) processor (revision 0x200) with 56320K/9216K bytes of memory
.
Processor board ID JAD051516TX (503811939)
M860 processor: part number 0, mask 49
```

```
Channelized E1, Version 1.0.
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
Primary Rate ISDN software, Version 1.1.
2 FastEthernet/IEEE 802.3 interface(s)
31 Serial network interface(s)
2 Channelized E1/PRI port(s)
32K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102
```

Cisco 2621 Voice Gateway Sample Configuration

```
2621_B#sh configuration
Using 1785 out of 29688 bytes
!
version 12.2
no parser cache
service timestamps debug datetime msec localtime show-timezone
service timestamps log uptime
no service password-encryption
!
hostname 2621_B
!
no logging buffered
enable password cisco
!
!
!
memory-size iomem 15
voice-card 1
 dspfarm
!
ip subnet-zero
!
!
no ip domain-lookup
!
isdn switch-type primary-net5
!
!
voice class codec 1
 codec preference 1 g729r8
 codec preference 2 g711ulaw
 codec preference 3 g711alaw
!
!
!
!
!
!
!
controller E1 1/0
 pri-group timeslots 1-31
!
controller E1 1/1
 shutdown
!
!
!
!
interface FastEthernet0/0
 ip address 192.168.100.2 255.255.255.0
 no ip mroute-cache
```

```
 load-interval 30
 no keepalive
 speed auto
 half-duplex
!
interface FastEthernet0/1
 ip address 10.1.1.129 255.255.255.0
 no ip mroute-cache
 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 T321 40000
 isdn T203 30000
 isdn bchan-number-order ascending
 no cdp enable
!
router rip
 network 1.0.0.0
 network 192.168.100.0
!
ip classless
no ip http server
ip pim bidir-enable
!
dialer-list 1 protocol ip permit
dialer-list 1 protocol ipx permit
!
!
snmp-server packetsize 4096
snmp-server manager
tftp-server nvram
call rsvp-sync
!
voice-port 1/0:15
!
!
mgcp profile default
!
dial-peer cor custom
!
!
!
dial-peer voice 1 pots
 destination-pattern 2...
 direct-inward-dial
 port 1/0:15
 prefix 2
!
dial-peer voice 3 voip
 destination-pattern 4...
 progress_ind setup enable 1
 voice-class codec 1
 session target ipv4:10.1.1.2
 dtmf-relay h245-alphanumeric
!
!
line con 0
 exec-timeout 0 0
line aux 0
 exec-timeout 0 0
line vty 0 4
```

```
 exec-timeout 0 0
 password cisco
 login
line vty 5 15
 exec-timeout 0 0
 login
!
scheduler allocate 3996 1000
!
end
```

Caveats

- When calling from Lucent/Avaya digital phone to Cisco 7960 IP phone, IP phone displays Connected Name and Number after the call is answered. Lucent/Avaya phone however does NOT get updated when the call is answered. It displays the numbers being dialed instead (e.g. Access Code + extension number). It was verified using ISDN protocol analyzer that the CallManager was not sending "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 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 2621 Gateway.