Application Note

Lucent/Avaya Definity G3si V9 PBX with CallManager using the Cisco VG200-T1 CAS as an MGCP Gateway

This application note discusses the integration of the Lucent/Avaya Definity G3si V9 PBX with CallManager using the Cisco VG200-T1 CAS as an MGCP Gateway.

Integration Description

?Connectivity is achieved by using the T1-CAS signaling protocol type on the MGCP gateway and the Lucent/Avaya PBX. The figure below shows the general network layout for the integration.

Network Layout

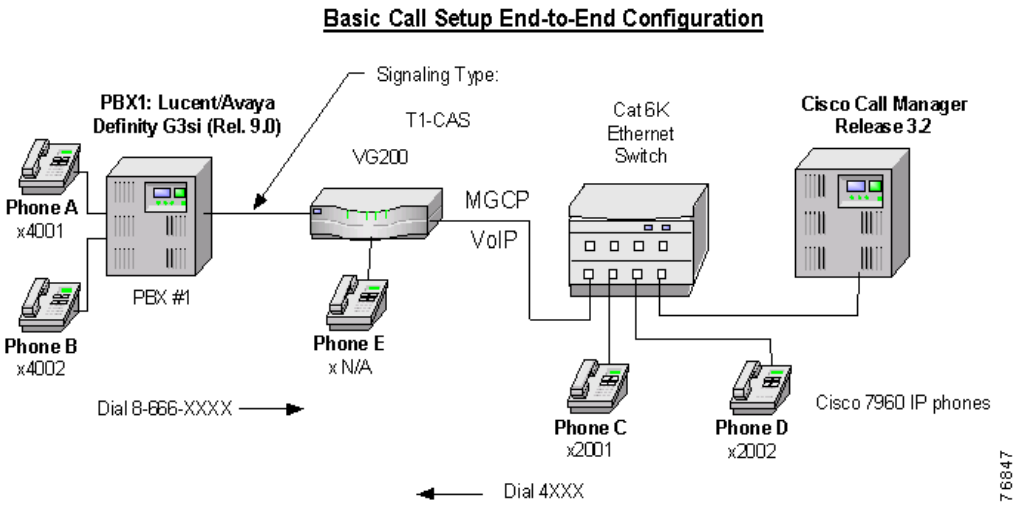
Features

Key features supported:

- E&M Wink-Start signaling
- E&M Delay-Dial signaling

Key features not supported:

- E&M Immediate-Start signaling not supported on CCM



Cisco Systems Equipment Needed

- Hardware (Gateway): Cisco VG200 Gateway with 2MFT T1 Port
- Software: CallManager Release 3.2, Cisco IOS image vg200-i6s-mz.122-2.XN

PBX Hardware and Software Requirements

- Hardware: TN464F, DS1 INTFC 24/32
- Software: Version V9

Configuring the Lucent/Avaya Definity G3si PBX

To configure the Lucent/Avaya Definity G3si PBX, do the following:

Step 1. Add the new circuit pack.

Step 2. Add the new signaling group.

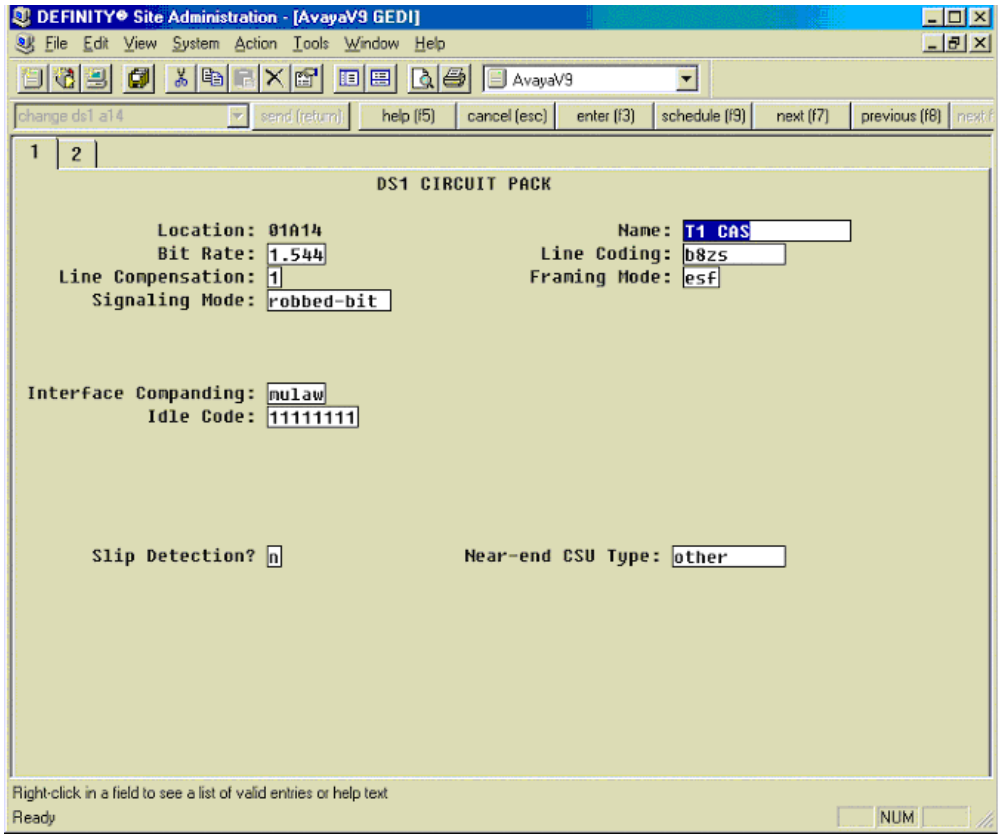
Step 3. Add the new trunk group.

Step 4. Add the Uniform Dialing Plan.

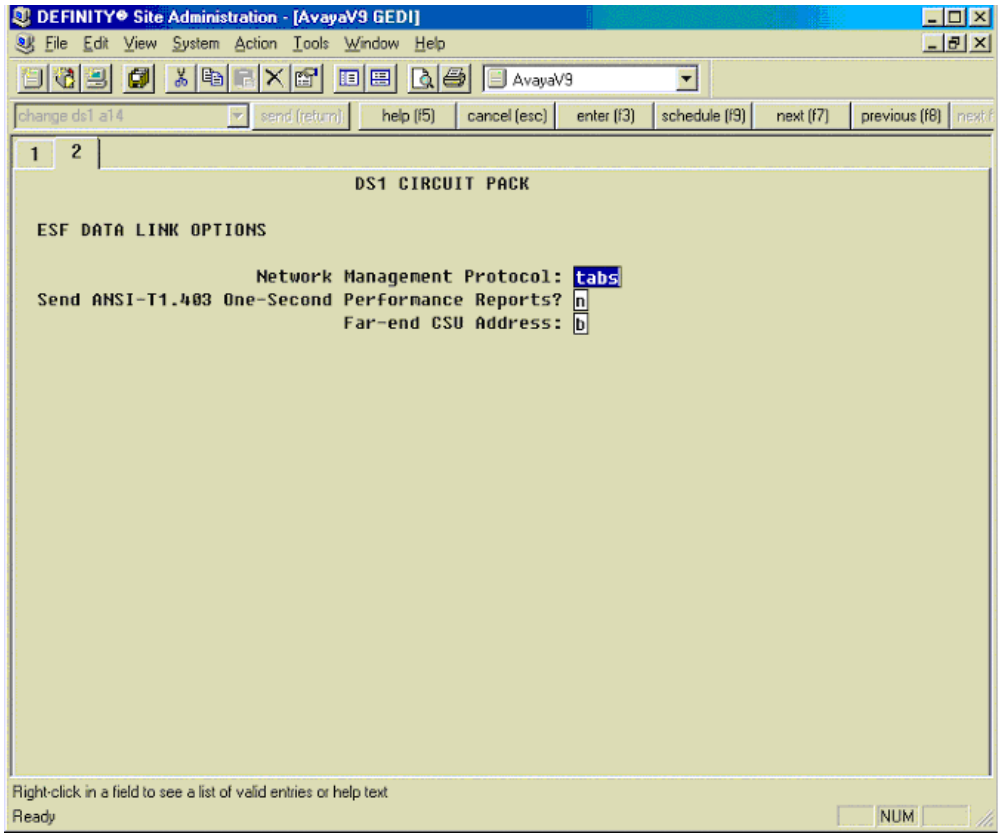
Circuit Pack

The following figures show the configuration of the DS1 circuit pack.

DS1 Circuit Pack



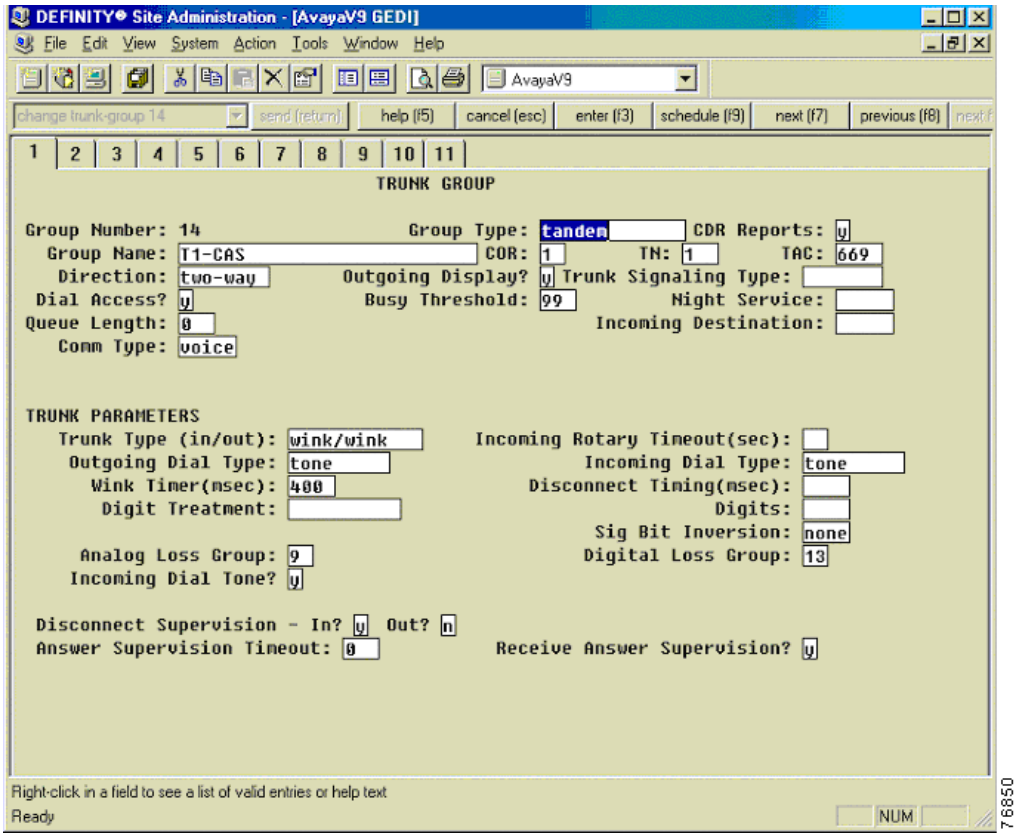
DS1 Circuit Pack—ESF Data Link Options



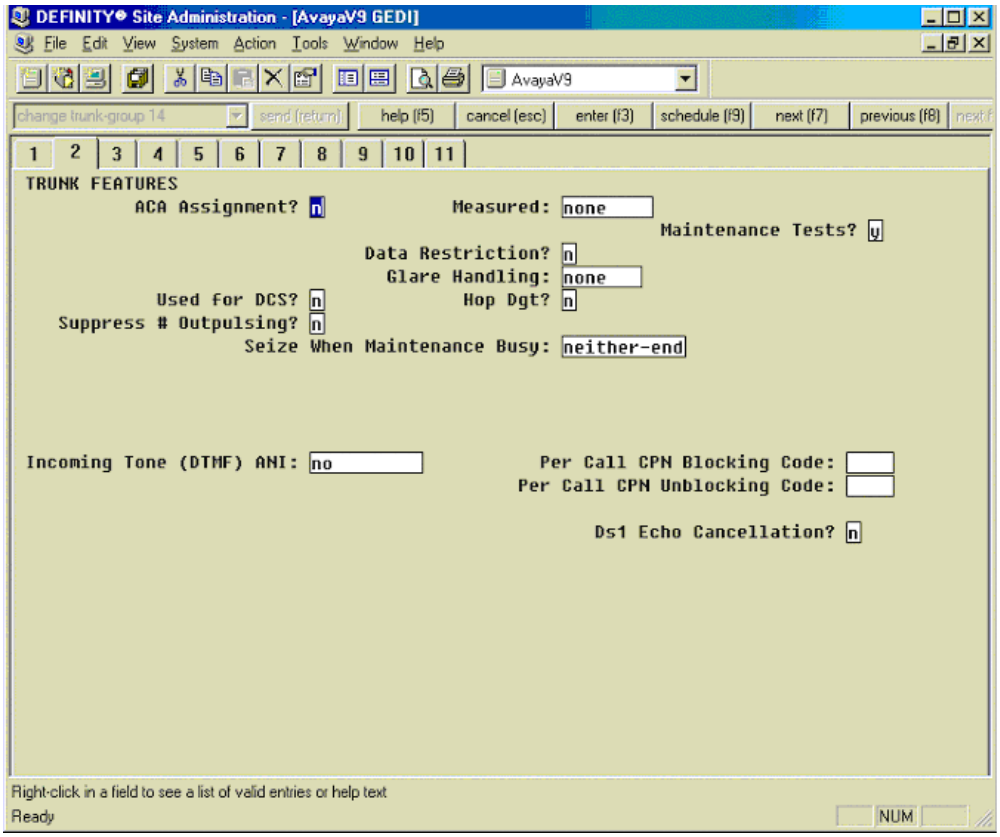
Trunk Group

The following figures show the configuration of the trunk group.

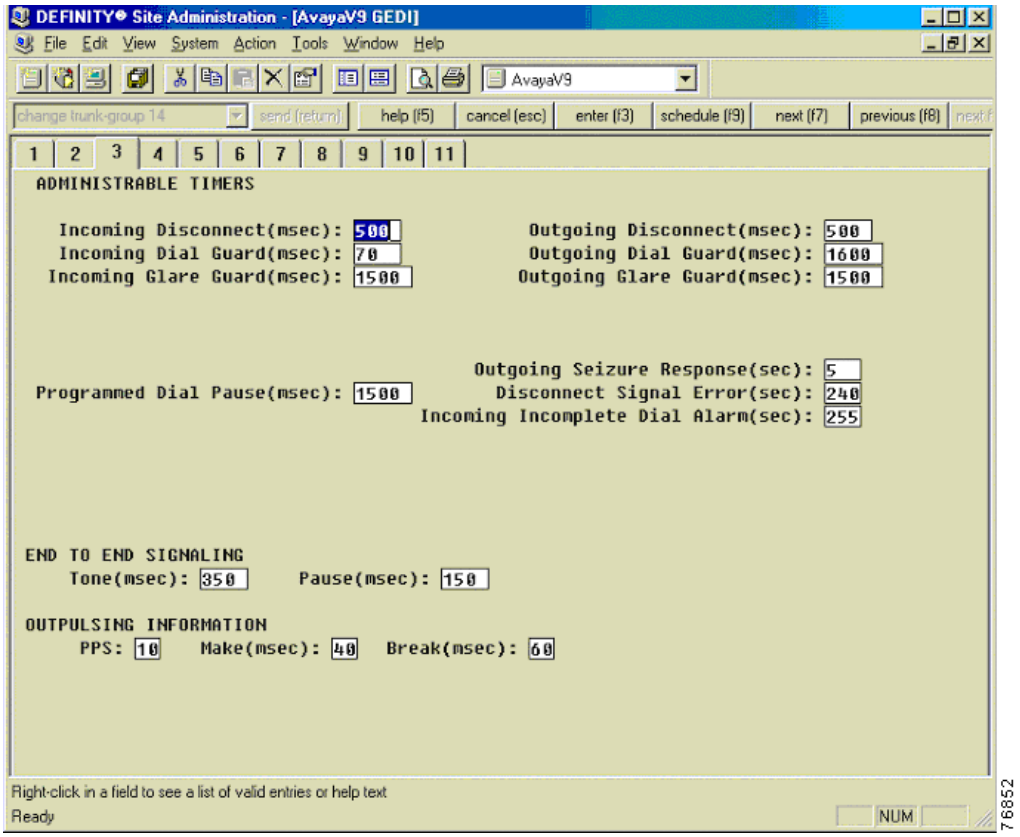
Trunk Group for Wink-Start Signaling



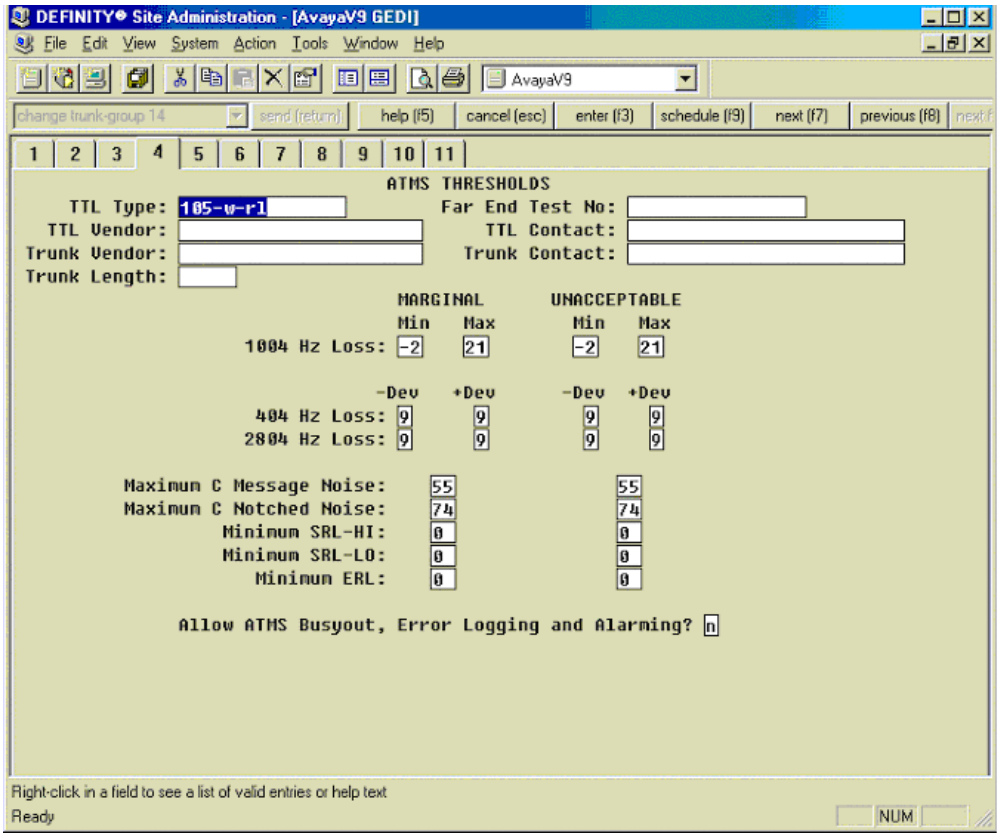
Trunk Group—Trunk Features



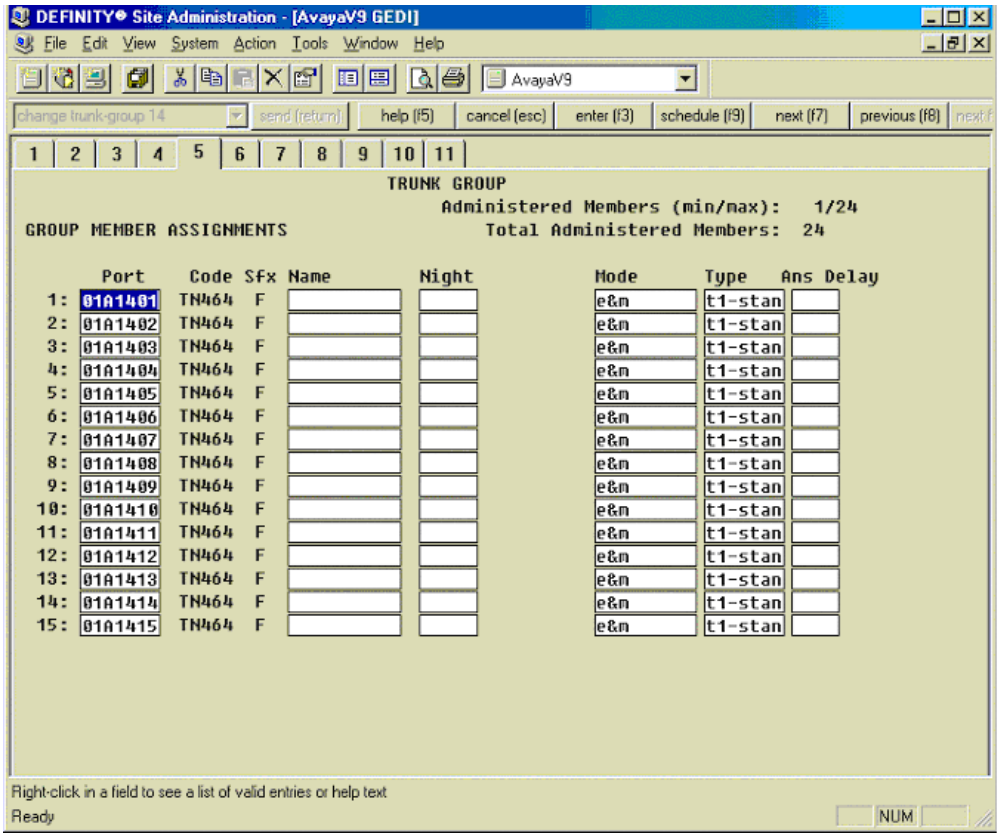
Trunk Group—Administrable Times



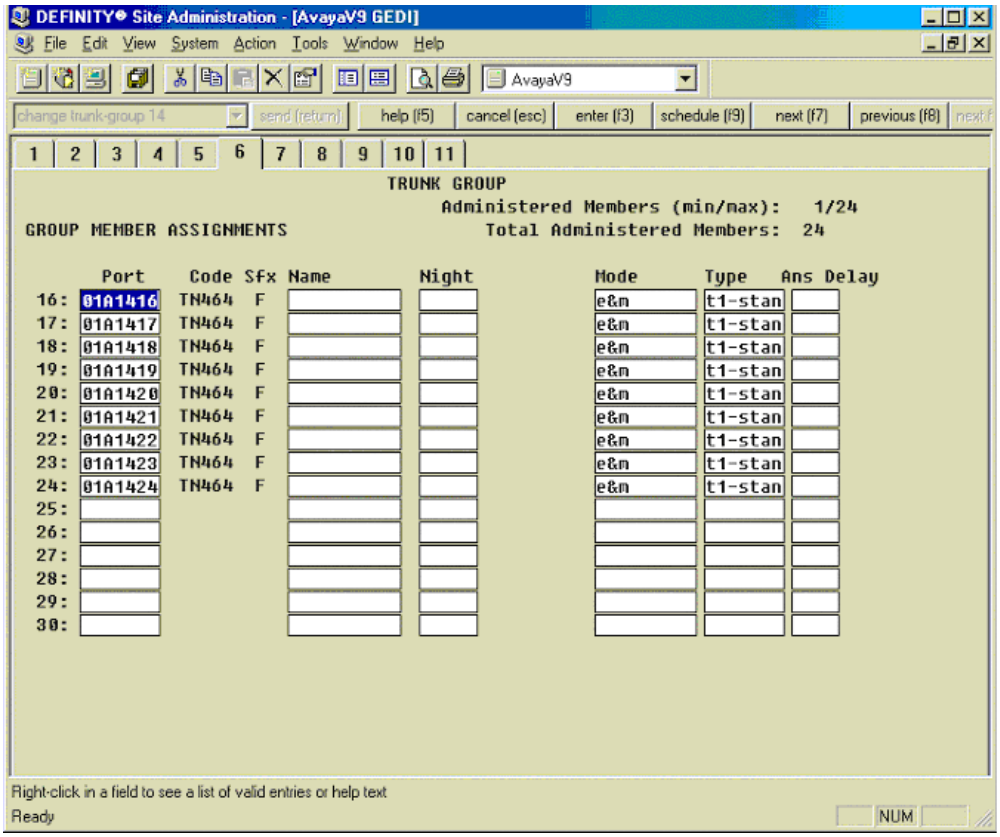
Trunk Group—ATMS Thresholds



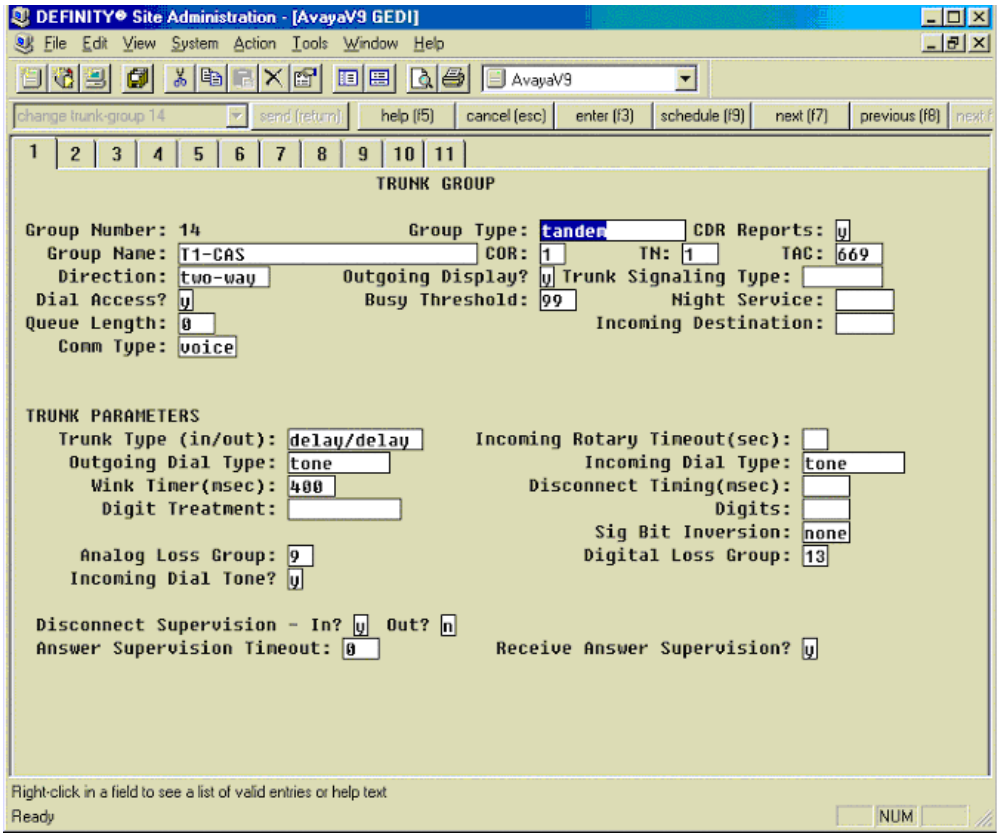
Trunk Group—Group Member Assignments



Trunk Group—Group Member Assignments Continued



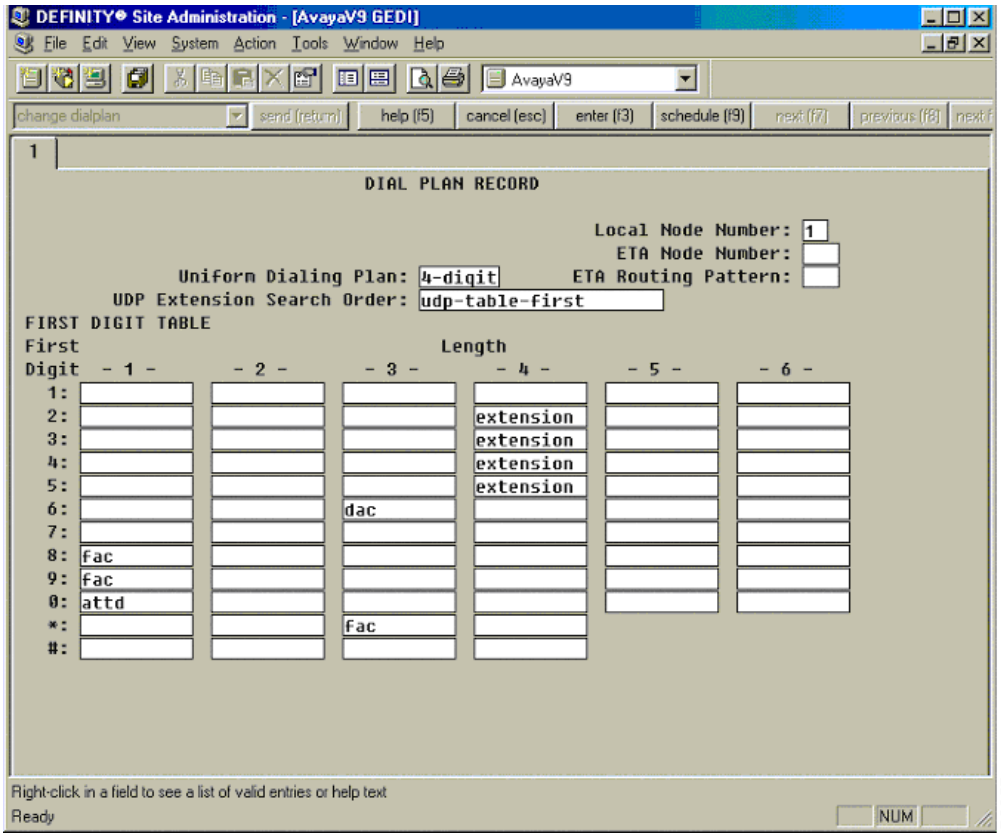
Trunk Group for Delay-Dial Signaling



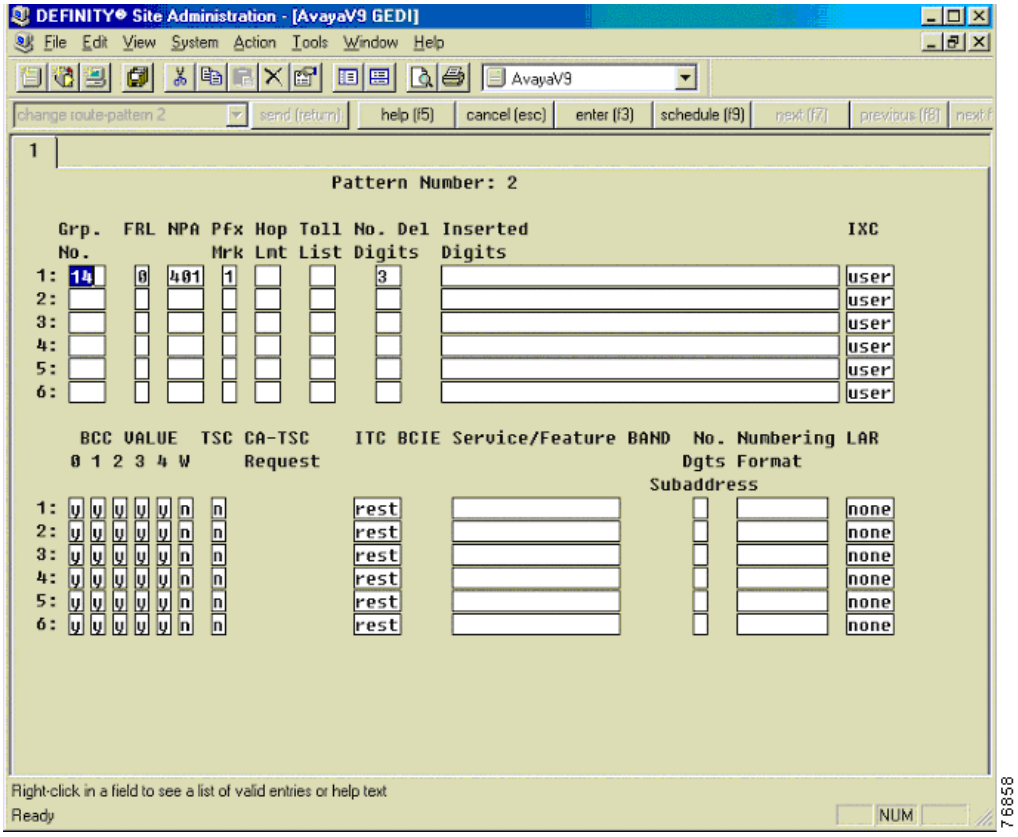
Uniform Dialing Plan

The following figures show the configuration of the uniform dialing plan.

Dial Plan Record



Pattern Number



Configuring Cisco CallManager

To configure Cisco CallManager, do the following:

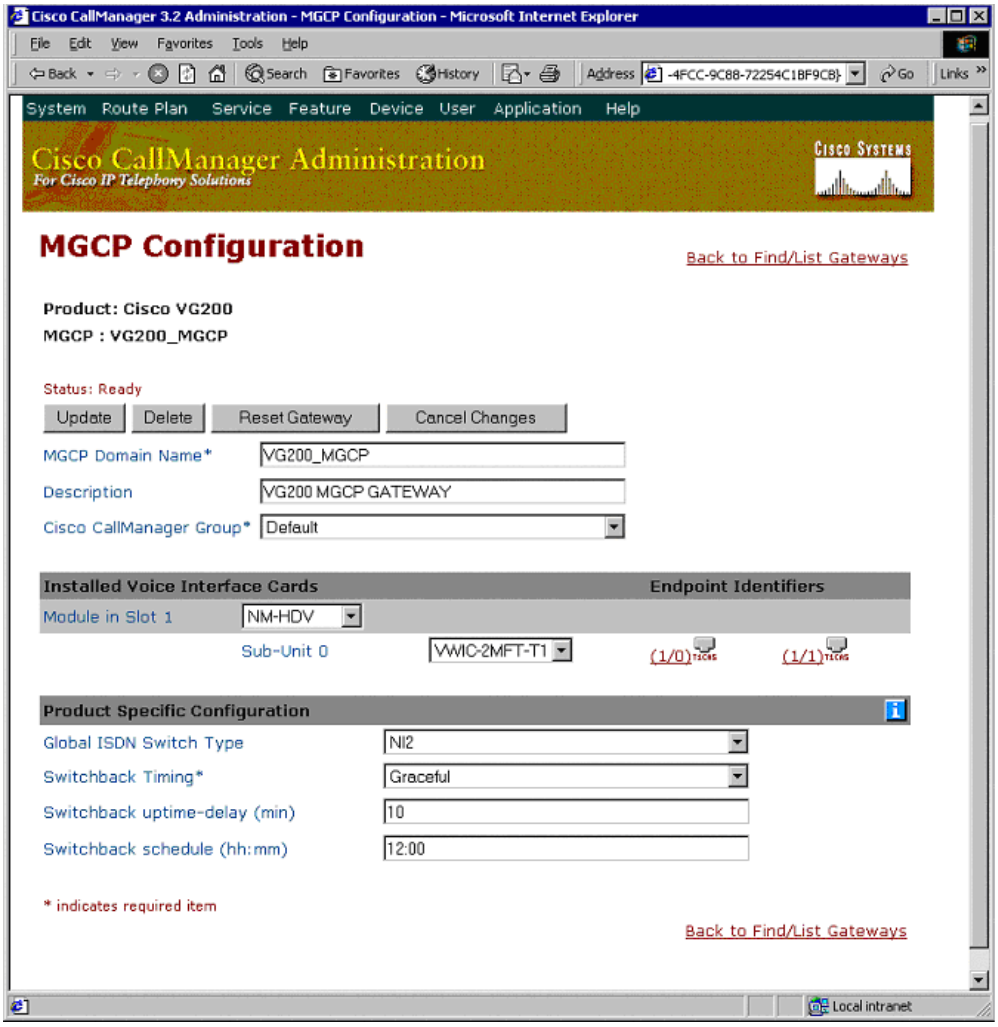
Step 1. Configure the gateway.

Step 2. Configure the route pattern.

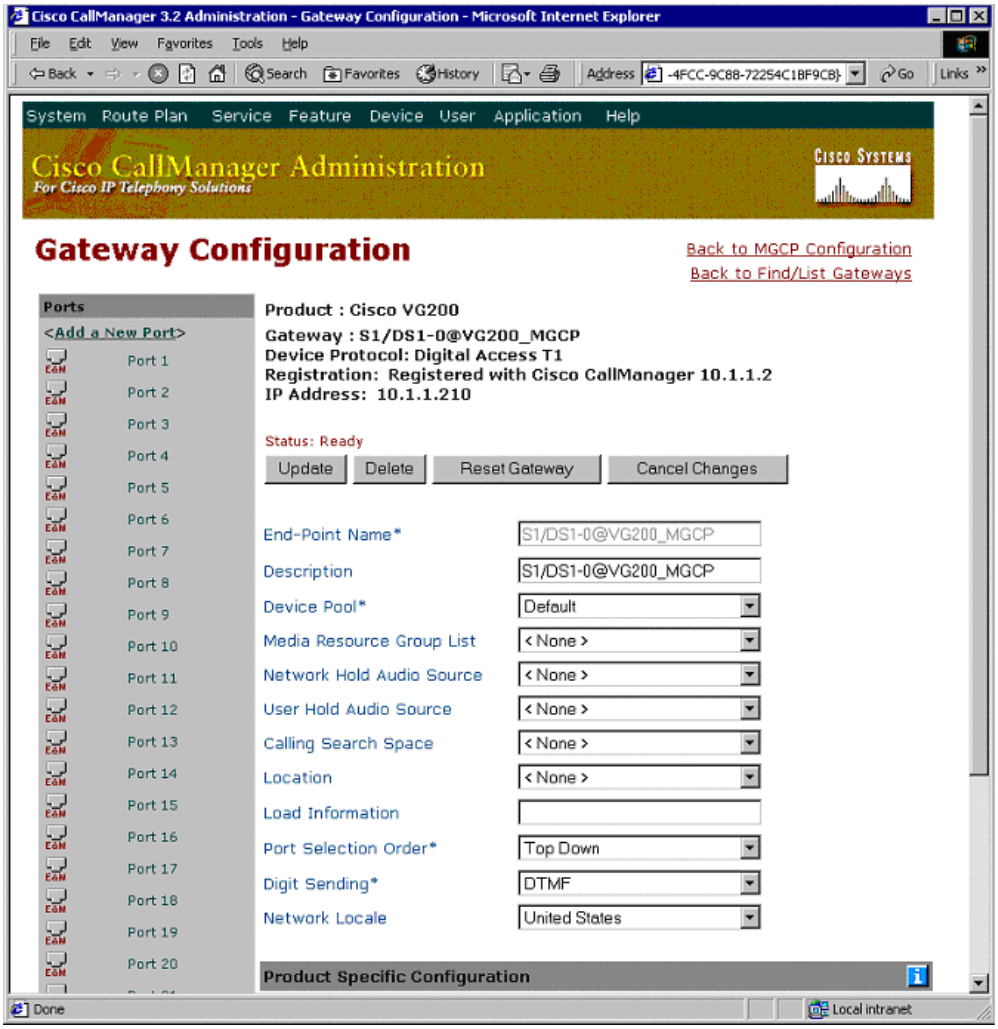
Gateway Configuration

The following figures show the configuration of the VG200 MGCP Gateway.

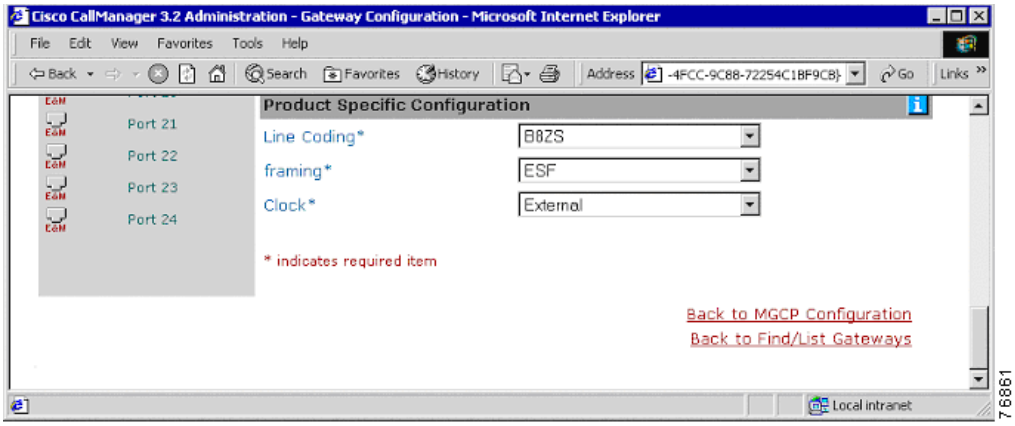
Cisco VG200 MGCP Gateway Configuration



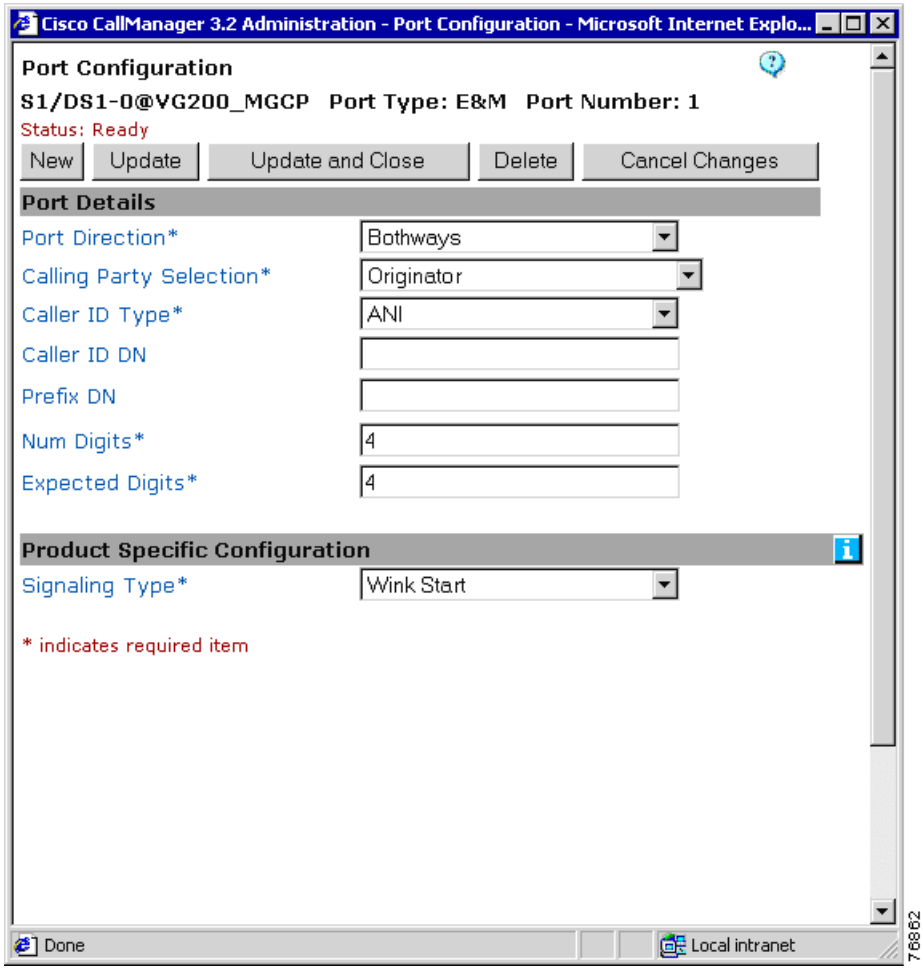
Digital Access T1-CAS Configuration



Digital Access T1-CAS Configuration Continued



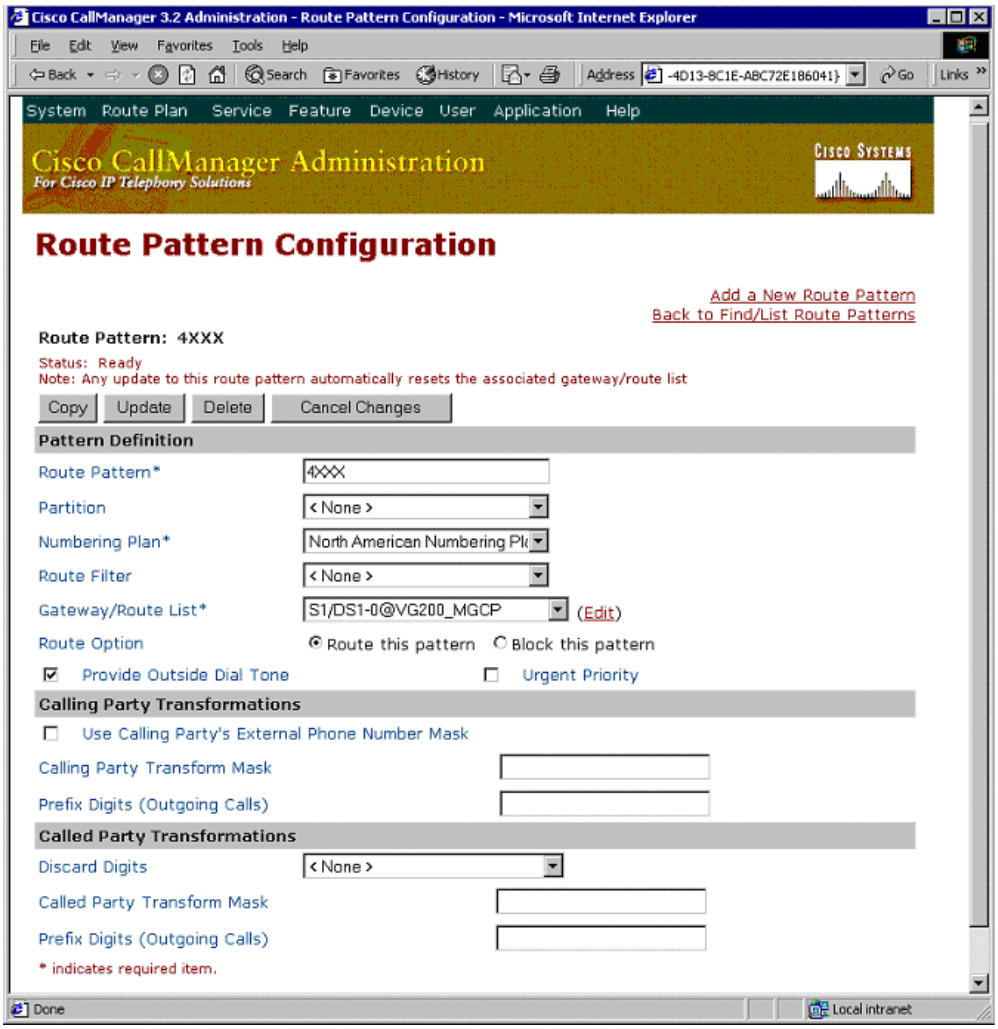
T1-CAS Port Configuration



Route Pattern Configuration

The following figure shows the configuration of the route pattern.

Route Pattern Configuration



Considerations

E&M-Immediate-Start Signaling

E&M-Immediate-start Signaling type is not supported on CCM Gateway configuration GUI.

E&M-Delay-Dial Signaling

E&M-Delay-Dial signaling is not functional when the default timer setting (300msec) for the Delay-Start parameter is used on the Gateway. Because this timer parameter cannot be changed by the CCM Gateway configuration GUI, the Wink Timer trunk parameter on the Lucent/Avaya PBX must be changed from the default of 300 msec to 400msec for the Delay-Dial signaling type to work properly.

Note: The Delay-Dial signaling type is a delayed version of a Wink-Start Signaling, therefore the Wink Timer on the PBX needs to be set to a greater value than the Delay-Start timer on the Gateway.

Wink-Start signaling is best choice for reliability.

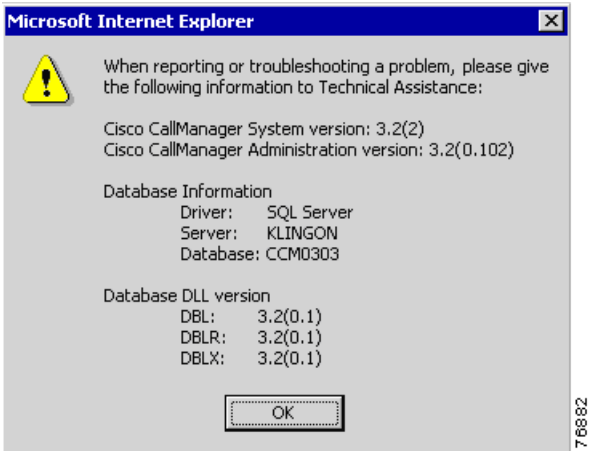
Integration Testing

This section contains information about the setup used in testing the integration of the Lucent/Avaya Definity G3si V9 PBX with CallManager using the Cisco VG200 as an MGCP Gateway.

CallManager Software Release:

The following figure shows the information about the release of CallManager being used.

CallManager Software Release



Lucent/Avaya Definity G3si Software Release

The following release of the Lucent/Avaya Definity G3si was used:

- System: G3siV6
- Software Version: G3V9i.02.0.033.2

Cisco 3640 Router Configuration

The following shows the configuration of the Cisco 3640 router.

```
VG200_MGCP#show version
Cisco Internetwork Operating System Software
IOS (tm) VG200 Software (VG200-I6S-M), Version 12.2(2)XN, EARLY DEPLOYMENT RELEA
SE SOFTWARE (fc2)
TAC Support: http://www.cisco.com/tac
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Fri 01-Mar-02 08:20 by eaarmas
Image text-base: 0x80008088, data-base: 0x8087FC2C

ROM: System Bootstrap, Version 12.1(1r) [phanguye 1r], RELEASE SOFTWARE (fc1)
```

```
ROM: VG200 Software (VG200-I6S-M), Version 12.2(2)XN, EARLY DEPLOYMENT RELEASE SOFTWARE
(fc2)

VG200_MGCP uptime is 1 week, 2 days, 1 minute
System returned to ROM by power-on
System image file is "flash:vg200-i6s-mz.122-2.XN"

cisco VG200 (MPC860) processor (revision 0x102) with 26624K/6144K bytes of memor
y.
Processor board ID JAB04400CNJ (0)
M860 processor: part number 0, mask 49
Primary Rate ISDN software, Version 1.1.
1 FastEthernet/IEEE 802.3 interface(s)
2 Channelized T1/PRI port(s)
32K bytes of non-volatile configuration memory.
8192K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102

VG200_MGCP#
```

```
VG200_MGCP#show diag
Slot 0:
        VG200 1FE Mainboard Port adapter, 1 port
        Port adapter is analyzed
        Port adapter insertion time unknown
        EEPROM contents at hardware discovery:
        Hardware Revision        : 1.2
        PCB Serial Number        : JAB04400CNJ (0)
        Part Number              : 73-4742-01
        RMA History              : 00
        RMA Number               : 0-0-0-0
        Board Revision           : A0
        Deviation Number         : 0-0
        EEPROM format version 4
        EEPROM contents (hex):
          0x00: 04 FF 40 00 94 41 01 02 C1 0F 4A 41 42 30 34 34
          0x10: 30 30 43 4E 4A 20 28 30 29 82 49 12 86 01 04 00
          0x20: 81 00 00 00 00 42 41 30 80 00 00 00 00 FF FF FF
          0x30: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

Slot 1:
        High Density Voice Port adapter
        Port adapter is analyzed
        Port adapter insertion time unknown
        EEPROM contents at hardware discovery:
        Hardware Revision        : 1.0
        Top Assy. Part Number    : 800-03567-01
        Board Revision           : A0
        Deviation Number         : 0-0
        Fab Version              : 02
```

```
        PCB Serial Number        : JAB034004D1
        RMA Test History         : 00
        RMA Number               : 0-0-0-0
        RMA History              : 00
        EEPROM format version 4
        EEPROM contents (hex):
          0x00: 04 FF 40 00 CC 41 01 00 C0 46 03 20 00 0D EF 01
          0x10: 42 41 30 80 00 00 00 00 02 02 C1 8B 4A 41 42 30
          0x20: 33 34 30 30 34 44 31 03 00 81 00 00 00 00 04 00
          0x30: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
          0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

        VIC Slot 0:
        T1 (2 Port) Multi-Flex Trunk WAN Daughter Card
        Hardware revision 1.0           Board revision B0
        Serial number     19766455      Part number    800-04615-01
        Test history      0x0           RMA number     00-00-00
        Connector type    PCI
        EEPROM format version 1
        EEPROM contents (hex):
          0x20: 01 22 01 00 01 2D 9C B7 50 12 07 01 00 00 00 00
          0x30: 58 00 00 00 00 04 19 00 FF FF FF FF FF FF FF FF

        HDV firmware: Compiled Fri 23-Mar-01 00:20 by miriyala
        HDV memory size 524280 heap free 197609
```

```
VG200_MGCP#show controllers t1 1/0
T1 1/0 is up.
  Applique type is Channelized T1
  Cablelength is long gain36 0db
  No alarms detected.
  alarm-trigger is not set
  Version info Firmware: 20010315, FPGA: 15
  Framing is ESF, Line Code is B8ZS, Clock Source is Line.
  Data in current interval (78 seconds elapsed):
     0 Line Code Violations, 0 Path Code Violations
     0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
     0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavail Secs
VG200_MGCP#
```

```
VG200_MGCP#show running
Building configuration...

Current configuration : 1301 bytes
!
version 12.2
no parser cache
no service single-slot-reload-enable
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname VG200_MGCP
!
logging rate-limit console 10 except errors
!
voice-card 1
!
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
call rsvp-sync
!
!
!
!
!
ccm-manager mgcp
ccm-manager music-on-hold
ccm-manager config server 10.1.1.2
ccm-manager config
!
controller T1 1/0
 framing esf
 linecode b8zs
 ds0-group 1 timeslots 1-24 type e&m-wink-start
!
controller T1 1/1
 framing esf
 linecode b8zs
!
!
interface FastEthernet0/0
 ip address 10.1.1.210 255.255.255.0
 duplex auto
 speed auto
```

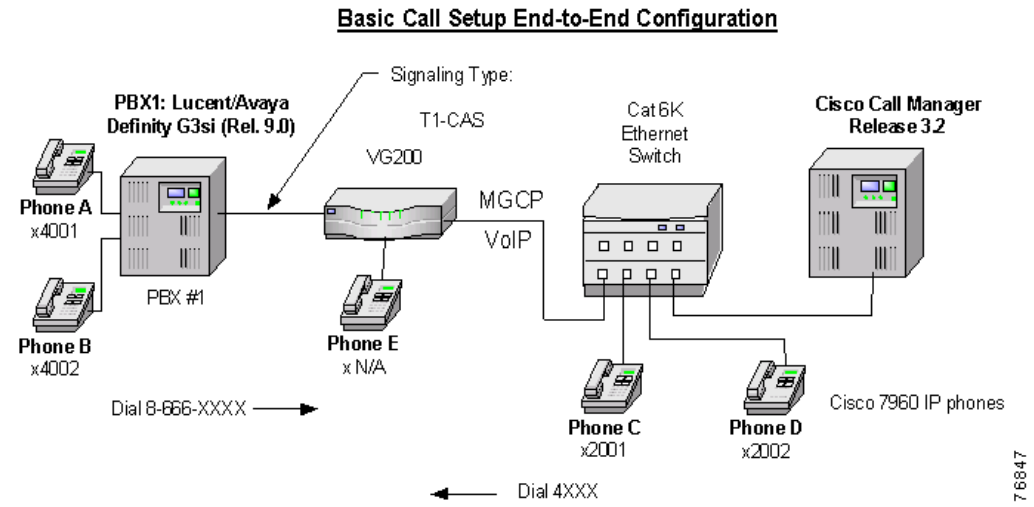
```
!
ip classless
no ip http server
!
!
voice-port 1/0:1
!
dial-peer voice 100 pots
 application mgcpapp
!
dial-peer voice 200 pots
 application mgcpapp
!
dial-peer voice 999101 pots
 application mgcpapp
 port 1/0:1
!
!
line con 0
line aux 0
line vty 0 4
 login
line vty 5 15
 login
!
end

VG200_MGCP#
```

Test Configuration

The following figure represents the various configurations used for testing.

Testbed Network Configuration



As shown in the figure above, a Lucent/Avaya Definity G3si PBX was connected via a T1-CAS link to a Cisco VG200 Gateway, which in turn, was connected to an Ethernet switch. The interoperability testing involved basic call setup functionality between the CCM and the Lucent/Avaya PBX.

The objective was to test the VG200 Digital T1 interface over the T1-CAS signaling options on the Lucent/Avaya Definity G3si PBX by testing basic call setup functionality to verify the voice path in both directions of the call between the CCM and the Lucent/Avaya Definity G3si PBX

Test Results

Testing was performed by Test Engineer(s): Samir Batio, June 17, 2002

Test 1

In test 1:

- The PBX1 signaling type was set to Wink/Wink.
- The Cisco VG200 Gateway signaling type was set to E&M-Wink-Start.

The results are shown in the following table..

Table 1 Basic Calls (E&M-Wink-Start, verify call path)

Calls Made	Call Comp?	Confirm voice path?	Comments
Phone A to Phone C	Yes	Yes	No problem dialing through the PBX using this signaling type.
Phone C to Phone A	Yes	Yes	No problem dialing through the PBX using this signaling type.

Test 2

In test 2:

- The PBX1 signaling type was set to Delay/Delay.
- The Cisco VG200 Gateway signaling type was set to E&M-Delay-Dial.

The results are shown in the following table..

Table 2 Basic Calls (E&M-Delay-Dial, verify call path)

Calls Made	Call Comp?	Confirm voice path?	Comments
Phone A to Phone C	Yes	Yes	Wink Timer on PBX should be set to 400 msec.
Phone C to Phone A	Yes	Yes	Wink Timer on PBX should be set to 400 msec.