



Avaya INDeX using DPNSS to Westell IiQ2000plus using QSIG to Cisco Unified Cisco Unified CallManager 4.1

October 26, 2007 Revision 5

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Introduction

Note: This configuration was not tested at Cisco. It was tested at a customer site.

Although specific gateway router models were used to validate its content, this application note also applies to all 1700/2600/3600/3700/2800/3800 series Cisco IOS voice gateways, the Catalyst 6608 module, the Catalyst 6500 CMM Module and any future MGCP-controlled ISO Q.Sig device registered to Cisco Unified CallManager 4.X above 4.1(2).

This application note provides configuration guidelines for interconnecting the INDeX PBX using DPNSS to standard BTNR 188. As Cisco Unified CallManager does not natively support this protocol, use of an external protocol converter, the Westell IiQ2000plus, is required. This converts DPNSS to Q.Sig, mapping DPNSS features to their Q.Sig equivalent, where available.

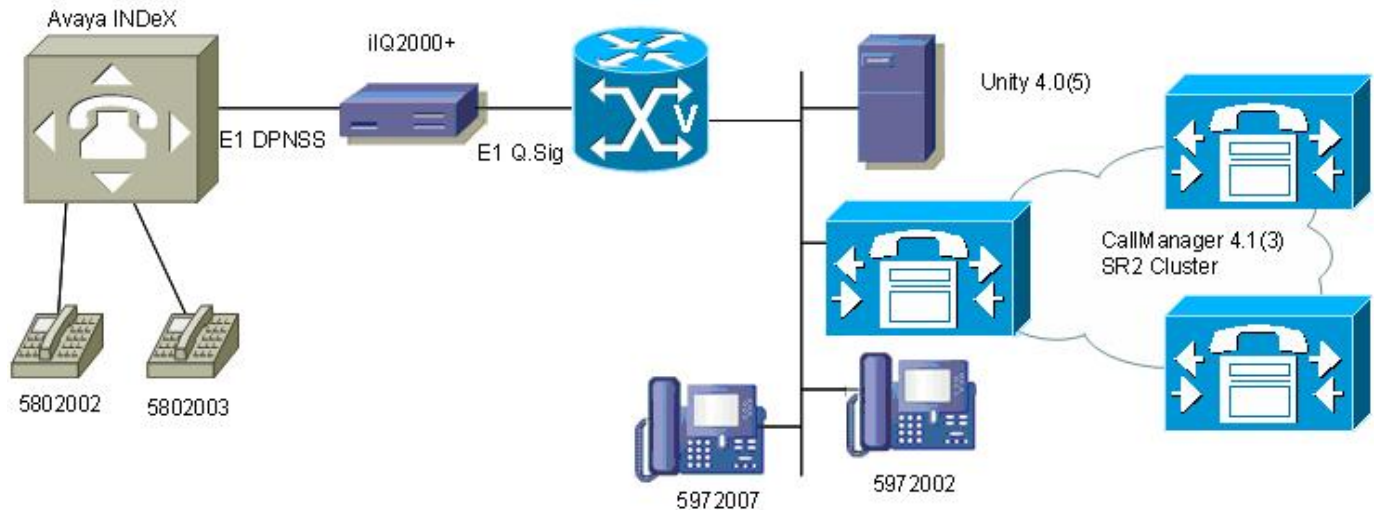
A single Avaya INDeX was connected to a 2600 router with an NM-HDV, running MGCP backhaul to a Cisco Unified CallManager 4.1(3)SR2 cluster. The INDeX hosted digital “feature” phones. The DPNSS Line Card was then connected on G.703 to the Westell converter. The Westell converter was connected to the IOS gateway using a standard E1 cross-over cable, with the Cisco Unified CallManager cluster hosting a 7912G and a 7940 phone. In order to prove MWI, a Unity 4.0(5) system was registered into Cisco Unified CallManager. MWI from the PBX was tested using the “Message” feature on the INDeX digital handsets to switch on/off MWI across the DPNSS trunk.

Using the INDeX PBX configurations, Cisco IOS voice gateway configurations, Westel IiQ2000plus parameters and Cisco Unified CallManager settings in this application note, successful integration was achieved. This includes basic call, call transfer, call conference, call forward, calling and connected names and numbers with some limitations on Caller ID features during transfer, forward, and conference scenarios. MWI was also passed from Cisco Unified CallManager to PBX phones and from the PBX to Cisco Unified CallManager, allowing possible integration with voicemail solutions on either side of the DPNSS connection to be considered. Call Back services were shown to work – the exception being Call Back When Free initiated by the IPT side, which produces an immediate response from the PBX.



Network Topology

Figure 1. Network Topology or Test Setup



Limitations

Call Back When Free between an IP Phone and a PBX extension where the IP Phone is calling a busy PBX extension and then initiates a Call Back Request will cause the PBX to alert Cisco Unified CallManager that the PBX phone is free immediately after the IP Phone clears down following the Call Back request. This is due to an error with the PBX implementation of DPNSS callback.

For Call Back to work correctly, the Service Parameter "Connection Response Type" in the "Clusterwide Parameters (Feature – Call Back)" needs to be set to "Default to Connection Release."

When call mature due to CallBack, only OLI information is displayed on the IP Phone. No name information is displayed. This is due to an incorrect implementation of CallBack calls on the INDeX.

For Call Forwarding to work correctly, the Service Parameter "Forward by Reroute Enabled" needs to be set to True.

A dedicated DN needs to be allocated to act as a Q.Sig PINX ID on the Cisco Unified CallManager. This should be in the same number range as the Cisco Unified CallManager phones, and is required for Path Replacement.

Path Replacement on Cisco Unified CallManager will by default be disabled.

Conference calls which are initiated by the PBX where the PBX host drops out leaving just IPT users will retain all connections between the PBX and Cisco Unified CallManager.

Conference calls which are initiated by Cisco Unified CallManager where the IPT host drops out leaving just PBX users will retain all connections between the PBX and Cisco Unified CallManager

Although any mode of PBX side (A/B) or Glare configuration (X/Y) is supported, fractional DPNSS and/or Q.Sig trunks are not supported.

MWI requirements vary between both PBX models, configuration and combination of voicemail platform and PBX. By default, the Westell IiQ2000plus sends/receives both NSI and CallBack MWI messages – this may not work in a particular deployment and will require modification. Please see later section for details.



Hardware Requirements

(1) Cisco IOS voice gateways with E1 VWICs (voice/WAN interface cards) or Catalyst 6500 CMM module with E1 ports, or Catalyst 6608 E1 module

(1) Avaya/SDX INDeX.

(2) Avaya/SDX Digital telephones.

Westell IiQ2000plus

Software Requirements

Avaya/SDX INDeX – all versions of software.

Cisco IOS voice gateways: Cisco IOS Release Version 12.3(9)T or later for the majority of gateways.

Cisco Unified CallManager 4.1(3) SR1 or later (requirement is to support IOS Q.Sig backhaul using MGCP).

Westell software, version R3.0.0 or later.

Westell VisionIQ Management software.

Features Supported

Basic Call (ENBLOC and Overlap)

Calling/Connected Number Display and Update

Calling/Connected Name Display and Update *see limitations*

Call Transfer: Supervised Local Transfer

Call Transfer: Supervised Network/External Transfer

Call Conference: Local

Call Conference: Network/External

Call Forward: Local

Call Forward: Network/External

Call Back When Free *see limitations*

Call Back Next Used

MWI

Features Not Supported

Route Optimisation



Configuration

Configuring the Avaya/SDX INDeX PBX

Figure 2. Initia Access Screen

```
Head Office      CPU-X1000 10.1.4

1. Reports
2. System
3. User
4. Station
5. Trunk
6. Group
7. Call Control Plan
8. Directory
9. Maintenance
10. PSTN Access
11. Network Facilities
12. Permissions
13. Night Service
14. Automatic Route Selection
15. Automatic Call Announcing
16. Database Management
17. Linecard Information
```

INDeX>

Figure 3. Select DPNSS Linecard

```
Linecard Information

1/1 PRI 30 2.0 O.K. 2/1 DPNSS 15 2.1 3/.
2 DSLC 24 1.7 O.K. 2 DPNSS 15 2.1 2 DPNSS 15 2.1
3 COMBO 32 1.2 O.K. . 3 DPNSS 15 2.1
4 PRI 30 2.0 4 DPNSS 15 2.1 4 DPNSS 15 2.1
5 PRI 30 2.0 5 DPNSS 15 2.1 5 IPNC 5 3.3
6 PRI 30 2.0 6 DPNSS 15 2.1 .
7 LC-4E 1.3 O.K. 7 DPNSS 15 2.1 7 DPNSS 15 2.1

4/1 DSLC 24 2.0 O.K. 5/.
2 COMBO 24 1.7 O.K. .
3 DPNSS 30 2.1 O.K. .
4 SVRC 0 2.2 O.K. .
5 VPC 16 1.0 O.K. .
6 IPNC 20 3.3 O.K. .
7 PRI 30 2.0 .

1. Linecard
2. System Shutdown

<ESC> Administration
INDeX>
```



Figure 4. DPNSS Linecard Configuration

```
Linecard - 4/3 DPNSS 2.1

DPNSS 30

23:30 17/05/06 : Online
09:58 02/03/06 : Card Installation
23:30 17/05/06 : Reset

1. Description :
2. Locked      : yes
3. Shutdown   : no

4. Channels
5. Setup
6. Deallocate
7. Select new target

<ESC> Linecard Information, <, >
```

INDeX>

Figure 5. Configuration of individual Channels showing on Linecard

```
Channels - 4/3 DPNSS

1 4/3/01 1682          16 4/3/17 1697
2 4/3/02 1683          17 4/3/18 1698
3 4/3/03 1684          18 4/3/19 1699
4 4/3/04 1685          19 4/3/20 1700
5 4/3/05 1686          20 4/3/21 1701
6 4/3/06 1687          21 4/3/22 1702
7 4/3/07 1688          22 4/3/23 1703
8 4/3/08 1689          23 4/3/24 1704
9 4/3/09 1690          24 4/3/25 1705
10 4/3/10 1691         25 4/3/26 1706
11 4/3/11 1692         26 4/3/27 1707
12 4/3/12 1693         27 4/3/28 1708
13 4/3/13 1694         28 4/3/29 1709
14 4/3/14 1695         29 4/3/30 1710
15 4/3/15 1696         30 4/3/31 1711
```

<ESC> Linecard, <, >, ->|

Channels [1-n,*]>



Figure 6. Sample Channel Configuration for Channel 1682

Trunk 1682 - DPNSS - 4/3/01

1. Type : Both way
2. Tenant : 1
3. Identification :
4. DDI Line : no
5. DDI digit count :
6. Live speech path : no
7. Forward on Busy/No answer : yes
8. Network priority : X
9. Wait for dial tone(10th secs) : 0
10. Analogue control data

11. Default record
12. Copy to record(s)

<ESC> Administration, <, >, ->|

INDeX>



Figure 7. Build all Channels on Linecard into Group

Group 916 - Trunk sequential

1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695 1696 1697
1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711

1. Delete number(s)
2. Add number(s)
3. Insert before
4. Rotate group

<ESC> Administration, ^, v, <, >, ->|

INDeX>

Figure 8. Local Access Code to Line Group mapping

Routing Digits 1/1

581...(7) 914 81 192.168.2.250
582...(7) 914 82 192.168.4.250
583...(7) 914 83 192.168.7.250
584...(7) 914 84 192.168.8.250
585...(7) 914 85 192.168.5.250
586...(7) 914 86 192.168.6.250
587...(7) 914 87 192.168.9.250
588...(7) 914 88 192.168.11.250
589...(7) 914 89 192.168.10.250
590...(7) 914 90 192.168.3.250
591...(7) 914 91 192.168.12.250
592...(7) 914 92 192.168.13.250
593...(7) 914 93 192.168.14.250
594...(7) 914 94 192.168.16.250
595...(7) 914 95 192.168.17.250
596...(7) 914 96 192.168.15.250
597...(7) 916

<ESC> Network Facilities, <, >

Routing Digits [nn.. (6)]>



Figure 9. Site Code for this Switch

Installation

1. Name : Acorn Head Office
2. Number :
3. Site network number : 580

4. Default language : English

5. Network name :
6. Network setup

7. Next terminal number : 1501
8. Next trunk number : 1683
9. Next group number : 6022

10. Clear device database

11. Data Installation
12. Internal networking setup

<ESC> System

INDeX>



Configuring the Westell iQ2000 Plus

Figure 10. Initial Connection to Westell via VisionIQ – define shelf

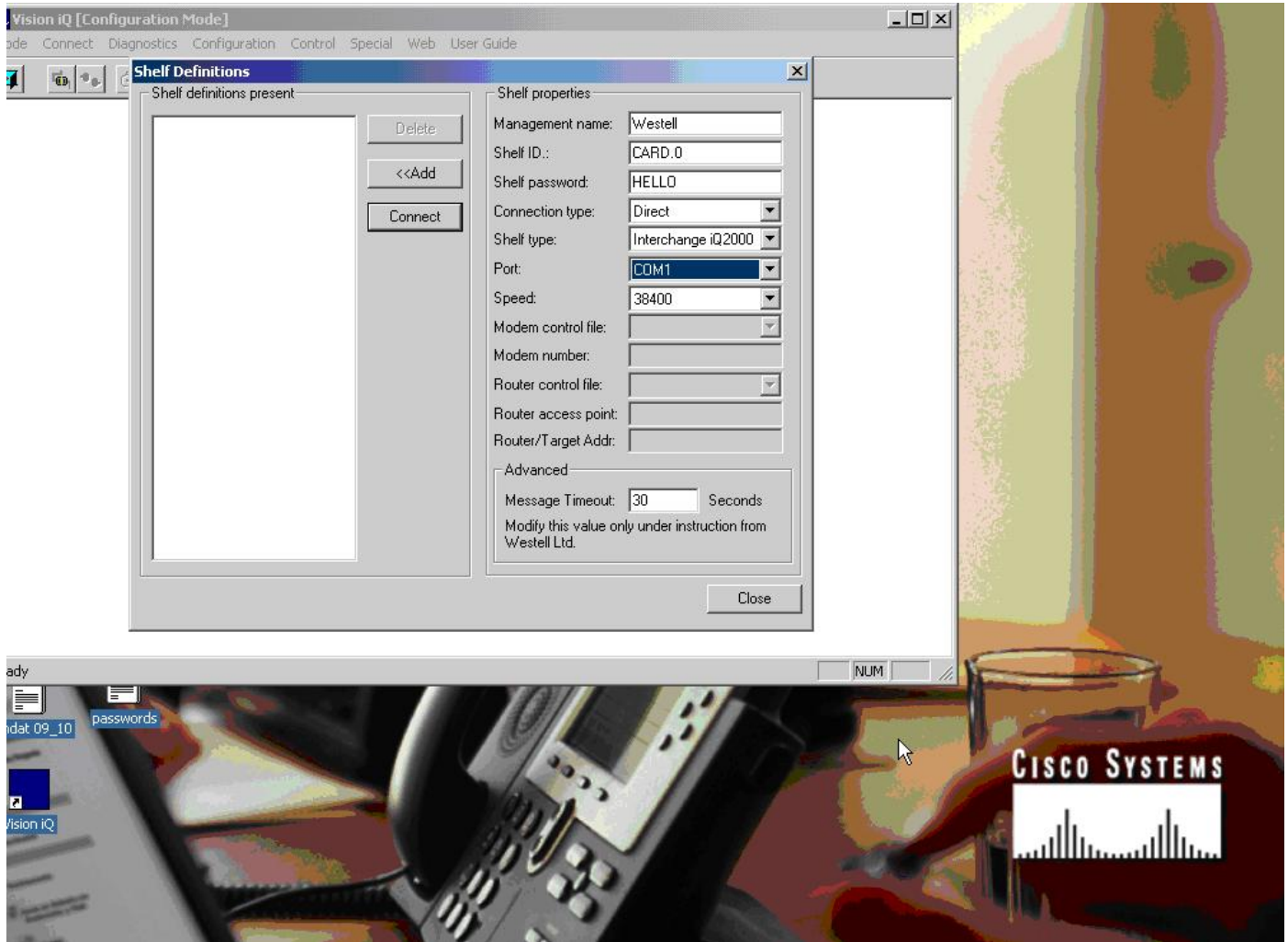




Figure 11. Connect to shelf and configure IiQ2000plus

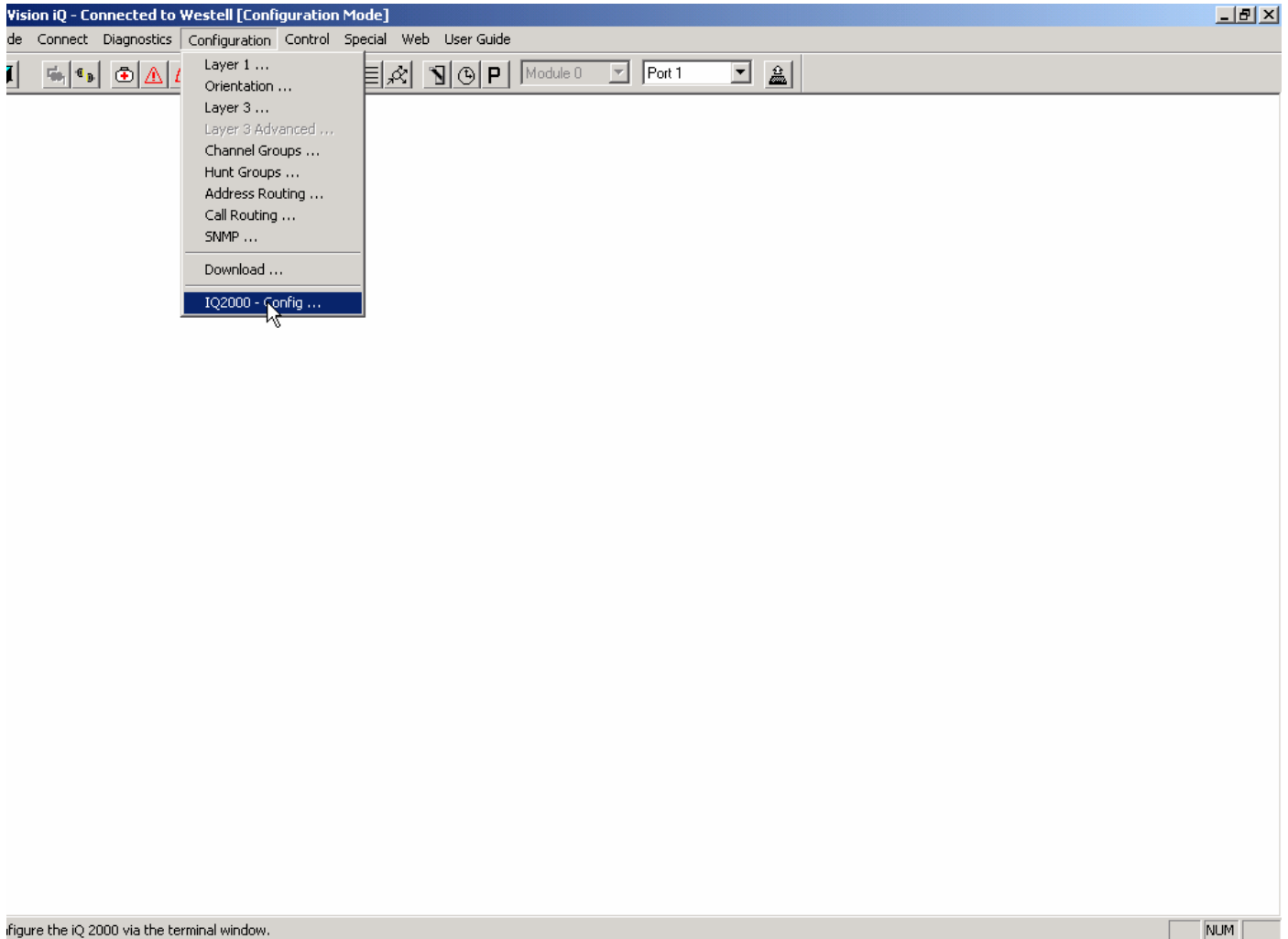




Figure 12. Connection warning

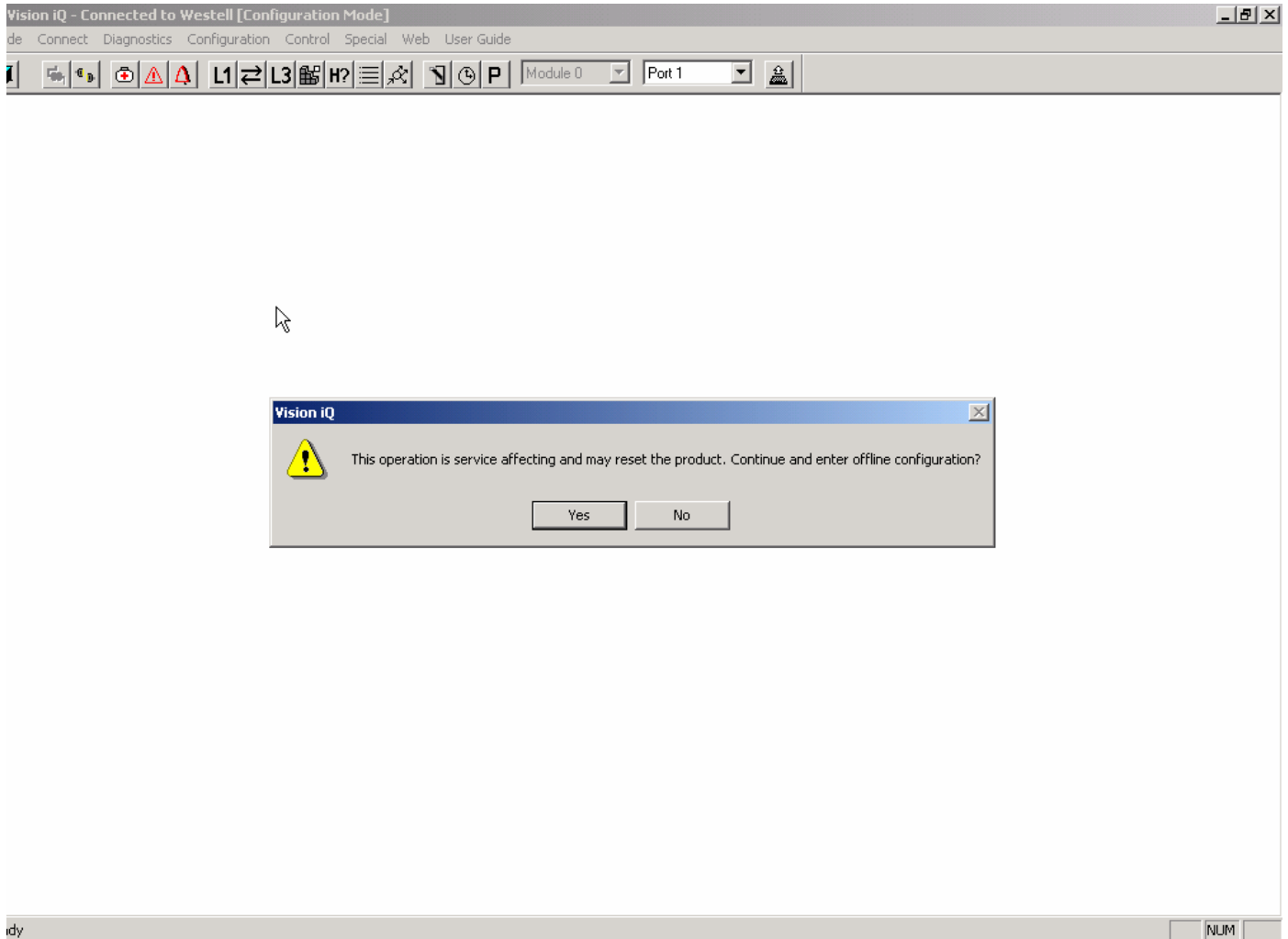




Figure 13. IiQ2000plus Off-line Configuration Screen

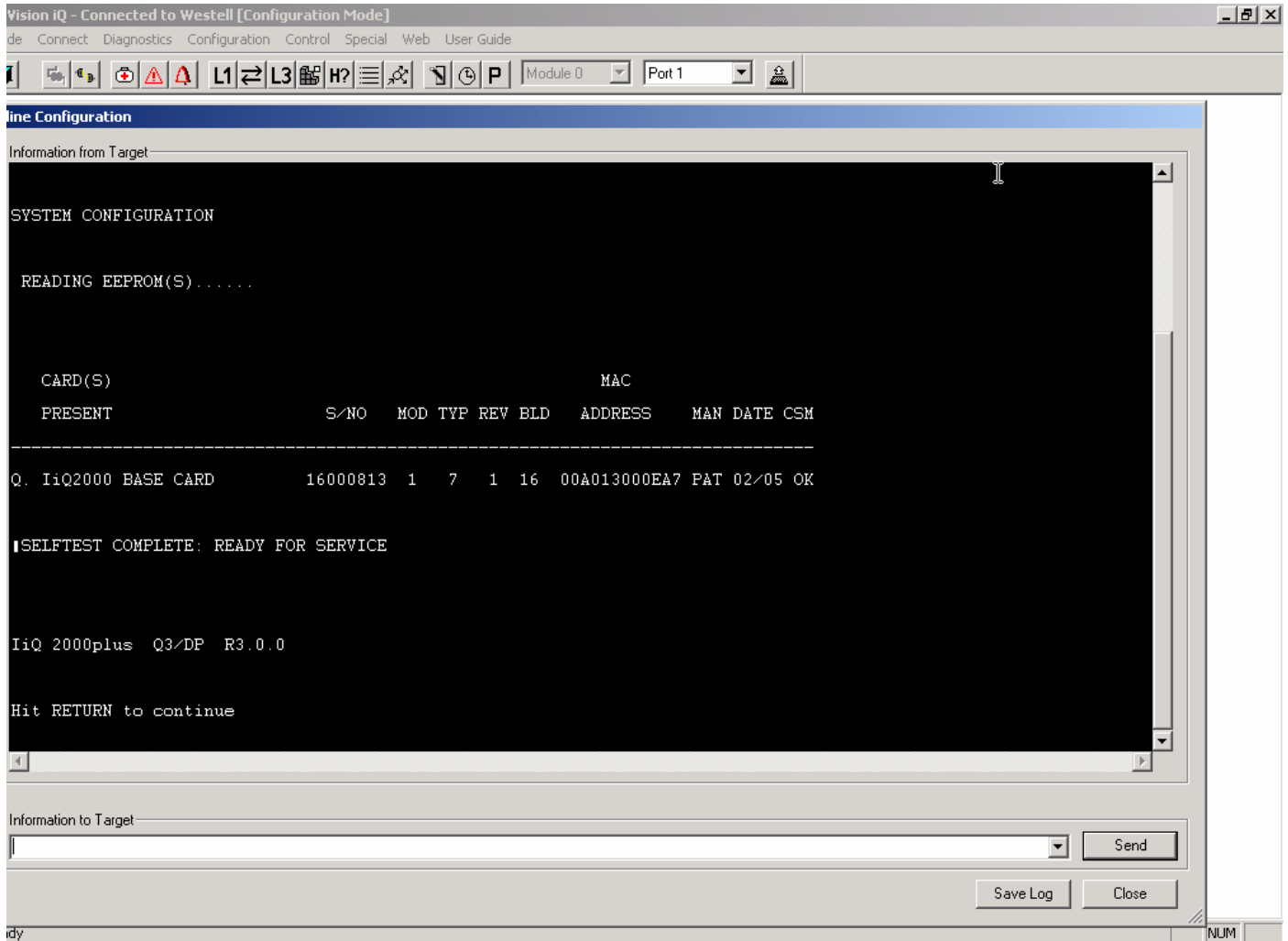




Figure 14. Select QUICK configuration mode

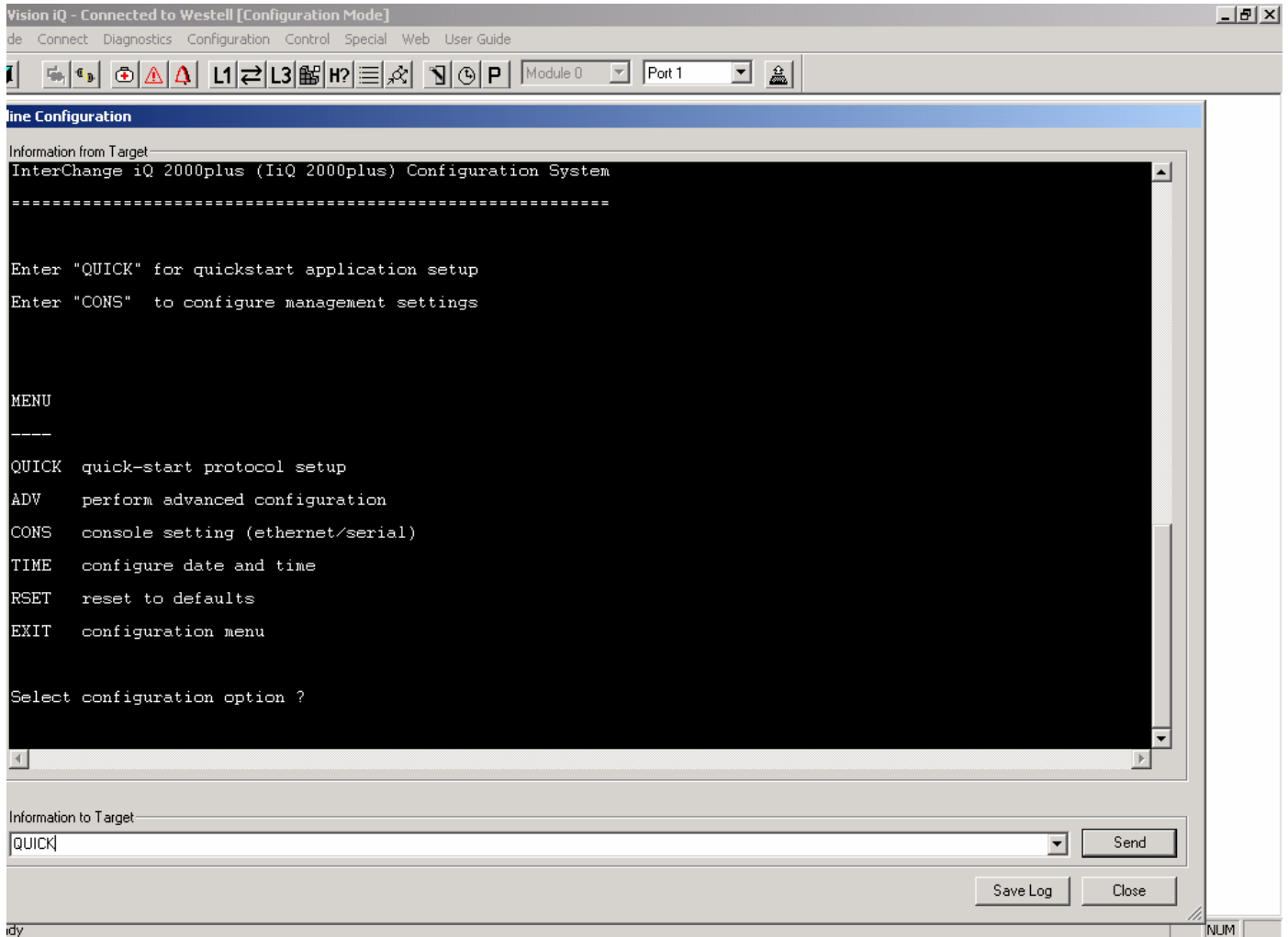




Figure 15. Instructions

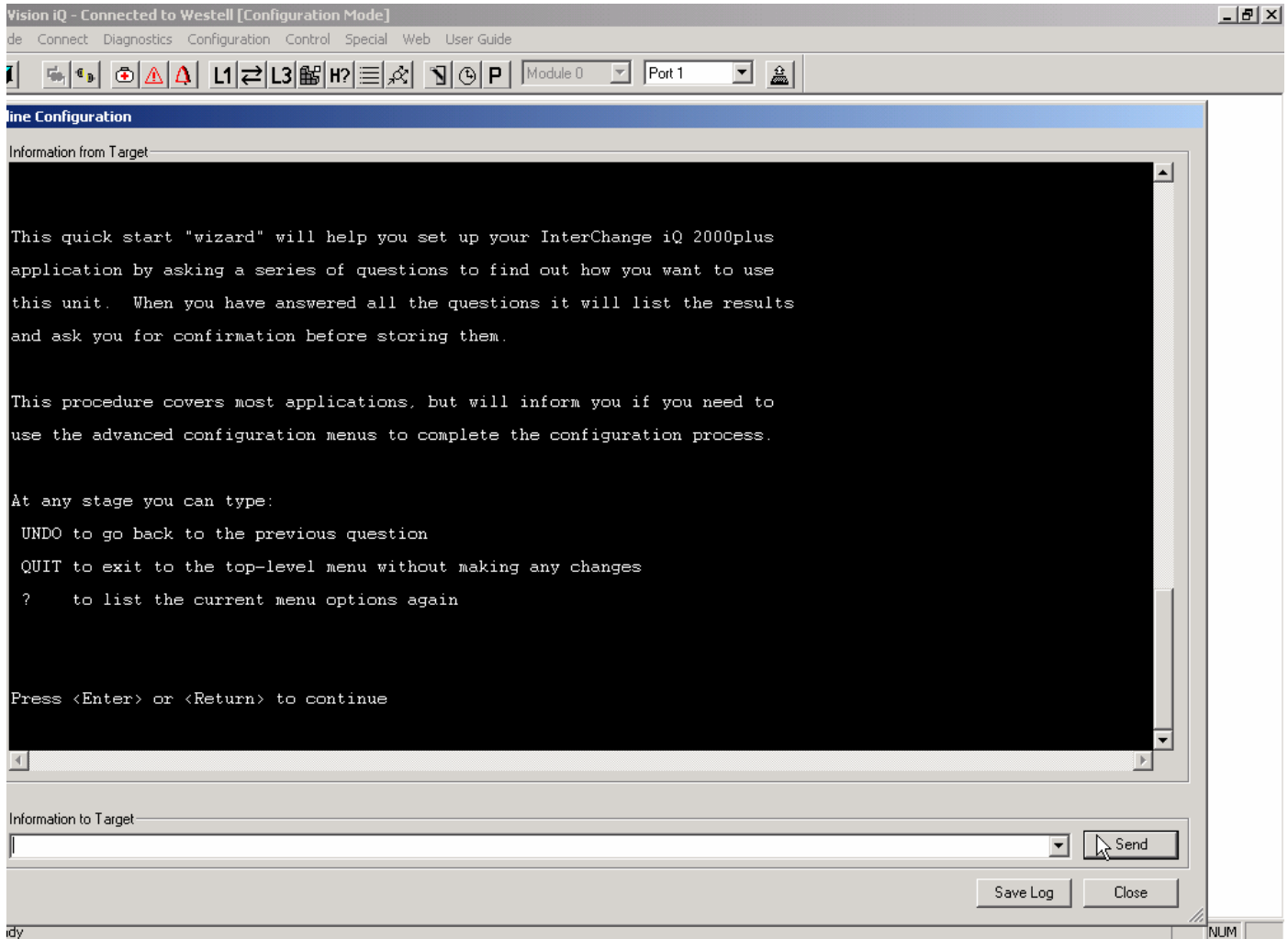




Figure 16. Select CCM for predefined options

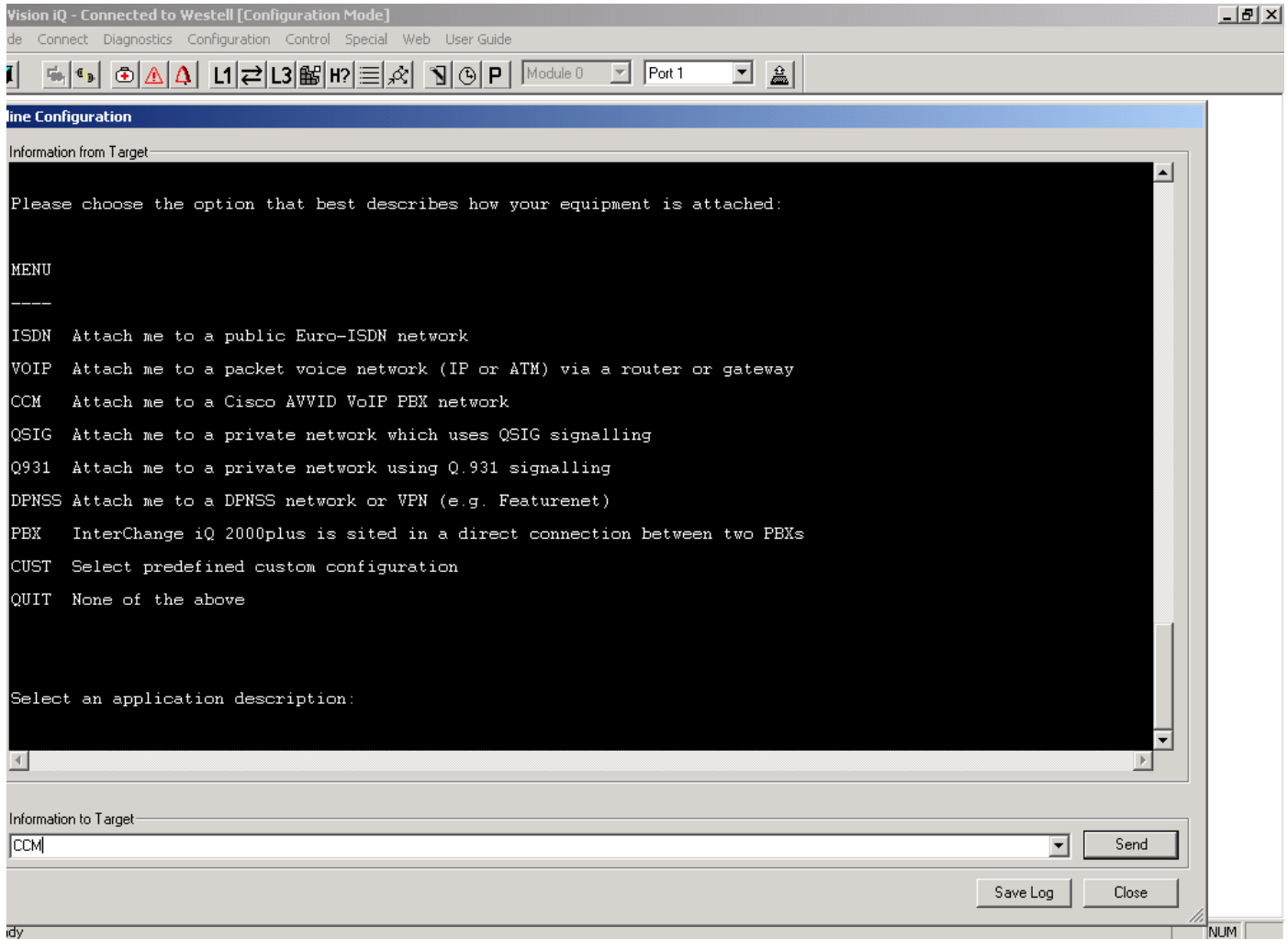




Figure 17. MGCP Gateway required for Q.Sig

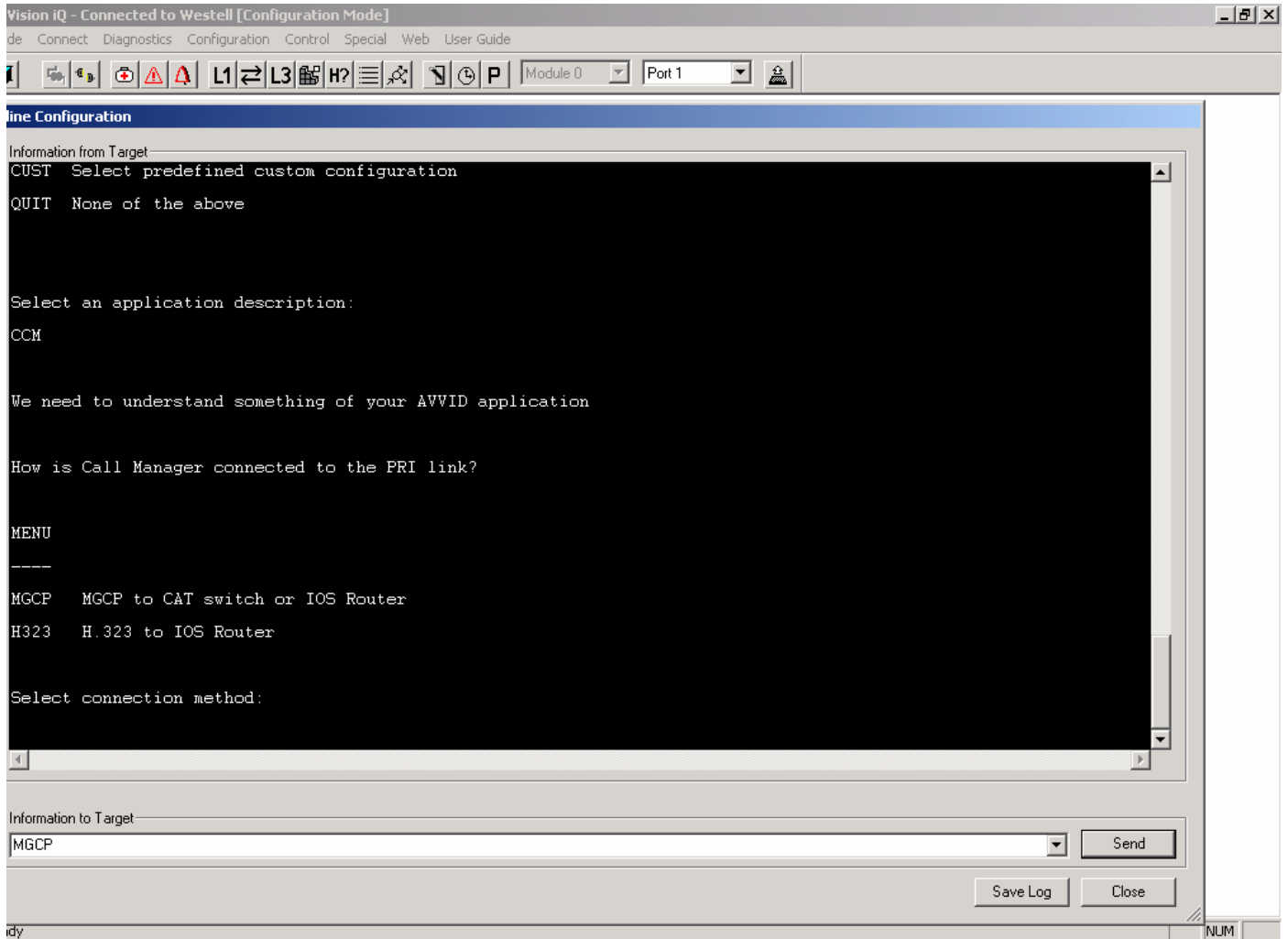




Figure 18. Q.Sig protocol selection

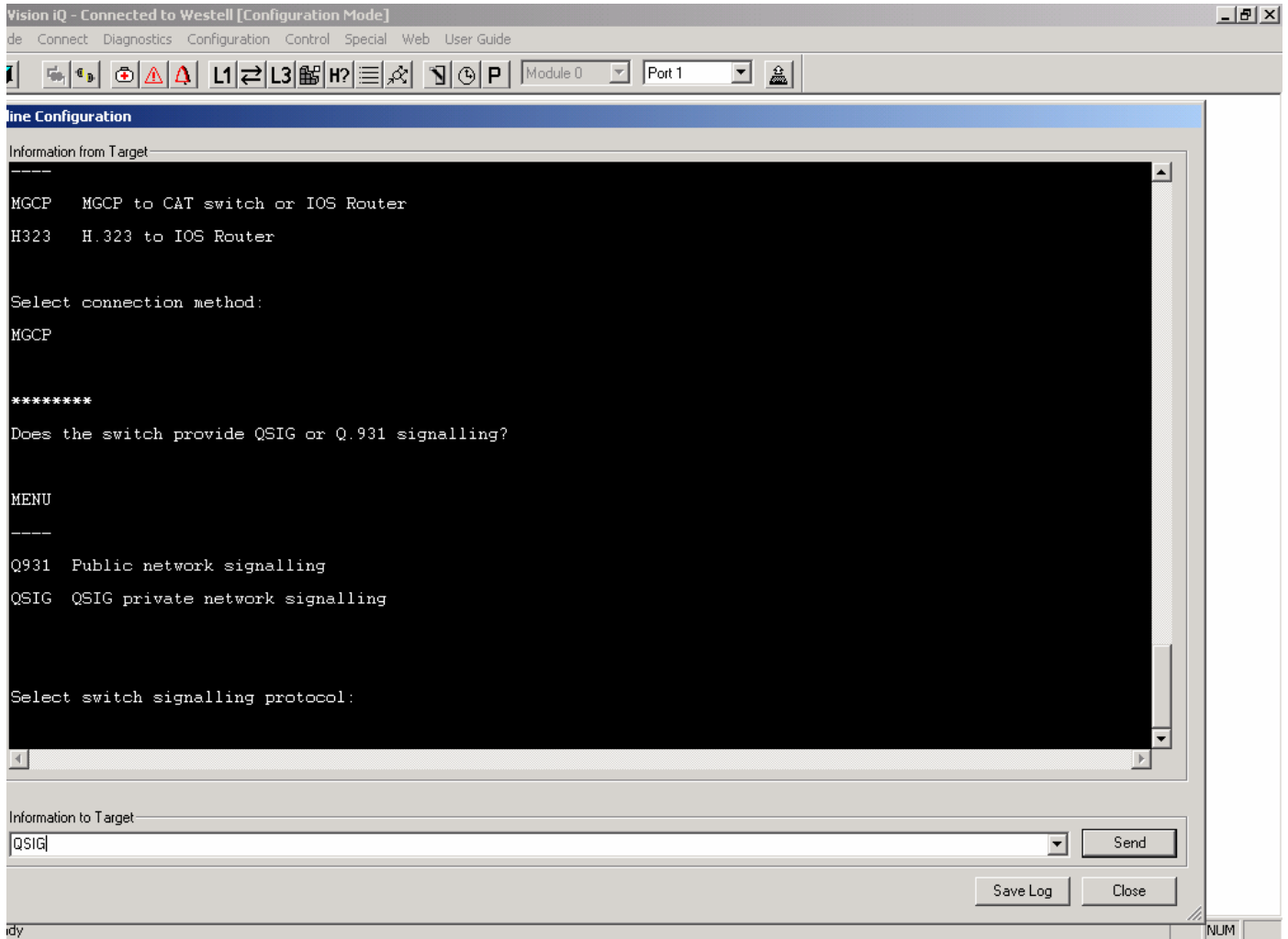




Figure 19. CCM 4.1 required for Q.Sig functionality

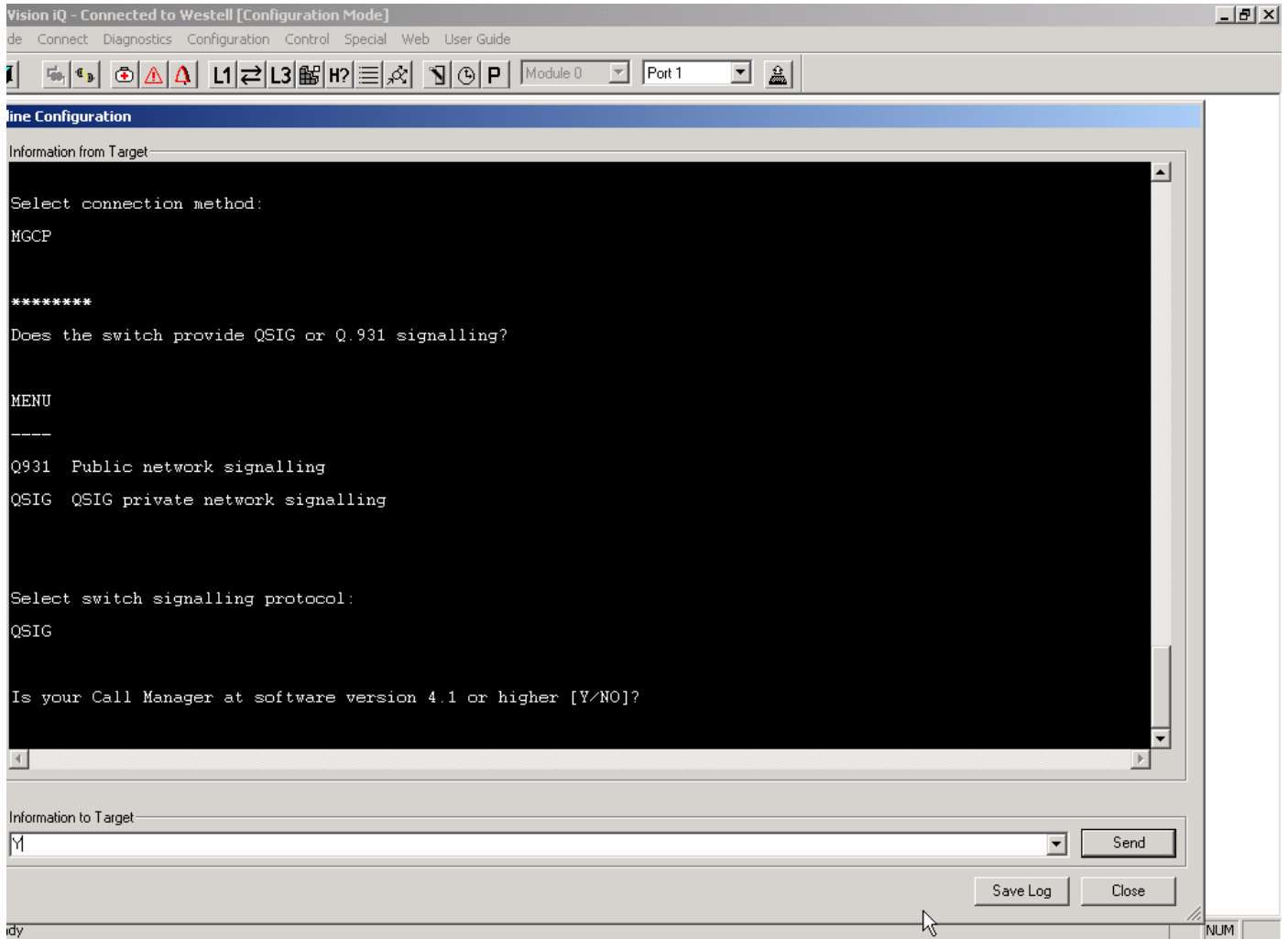




Figure 20. Select ISDN Side (Westell to CCM)

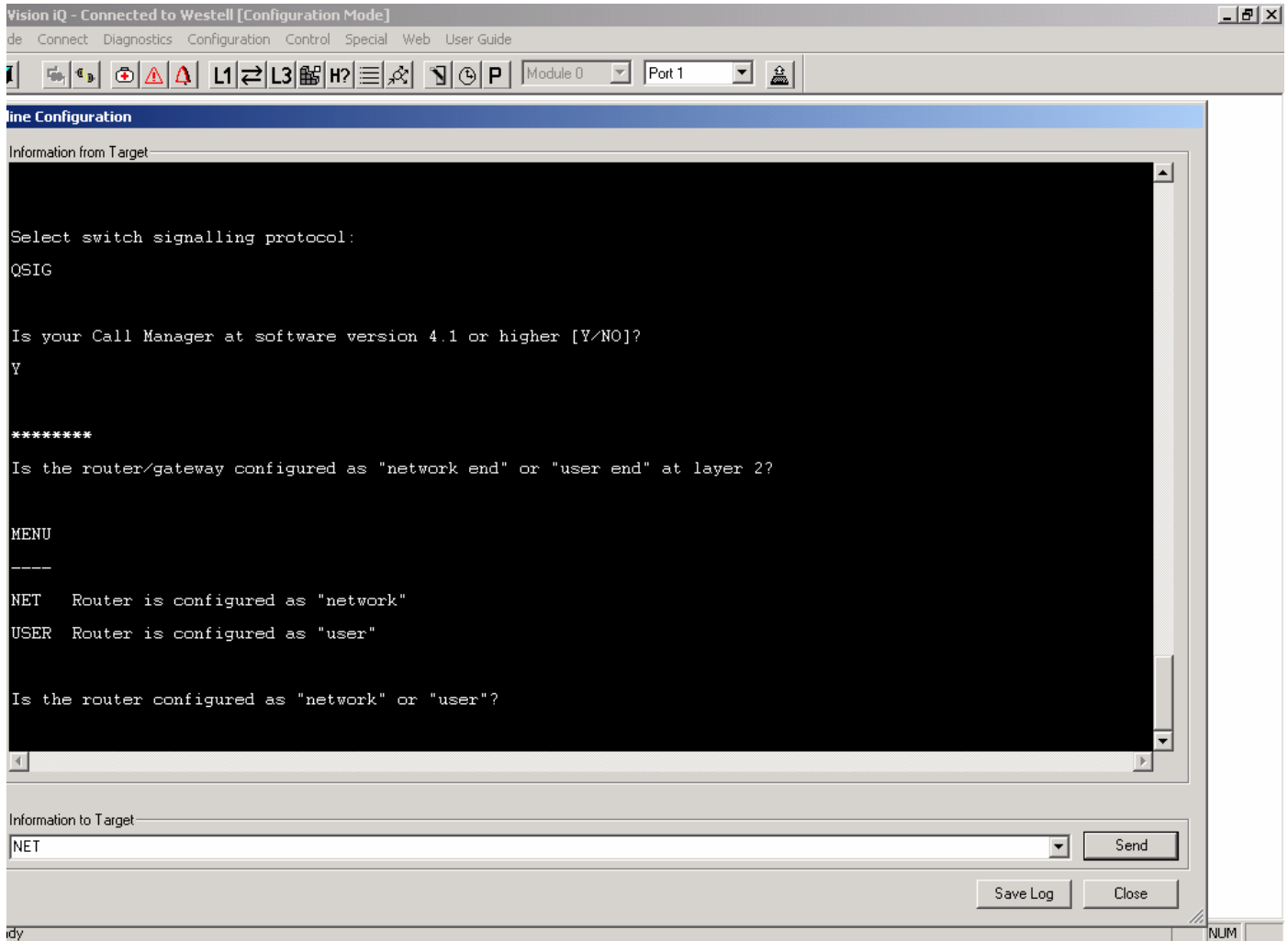




Figure 21. Define Overlap Sending

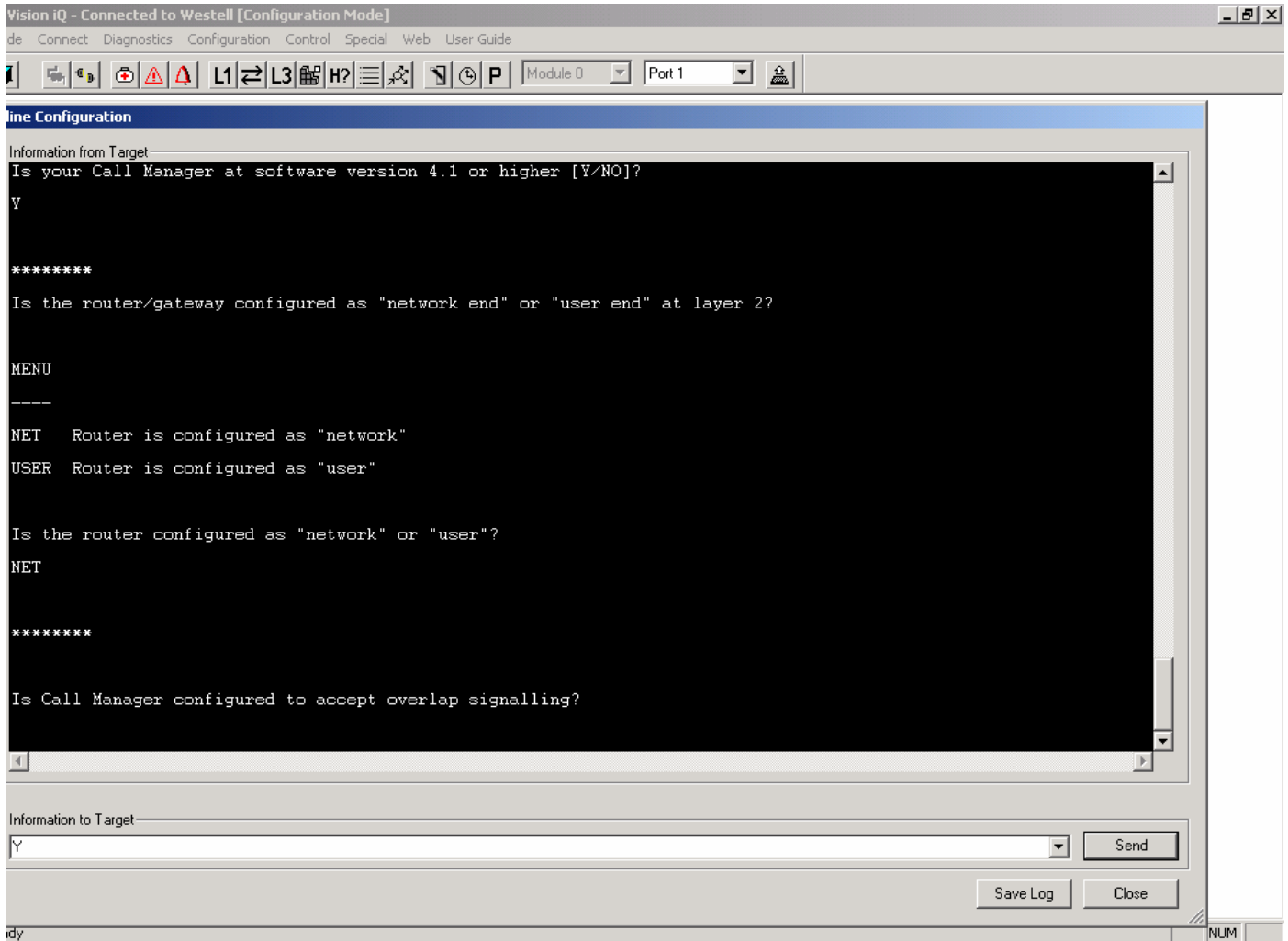




Figure 22. DPNSS A/B End Setting

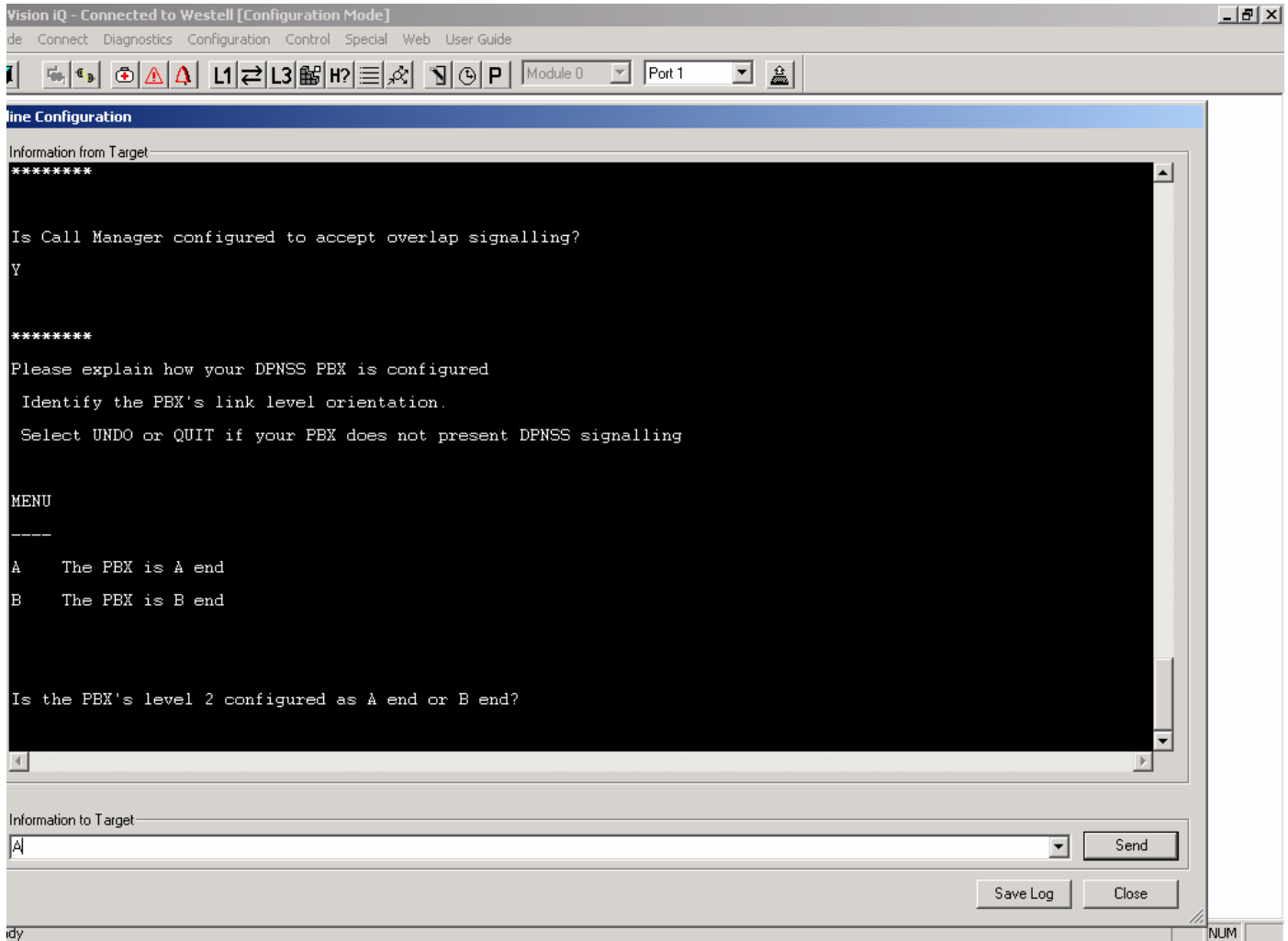




Figure 23. DPNSS X/Y Settings

Vision IQ - Connected to Westell [Configuration Mode]

de Connect Diagnostics Configuration Control Special Web User Guide

Module 0 Port 1

Line Configuration

Information from Target

Please identify the PBX's call collision avoidance strategy

If it is none of the options shown here, select OTHER -

after you have finished QuickStart setup you will have to enter the

ADVanced configuration menu to configure InterChange port 2 X/Y priorities

channel-by-channel

MENU

XX All channels are X priority

YY All channels are Y priority

XY Channels 1-15 are X, remainder Y

YX Channels 1-15 are Y, remainder X

OTHER None of the above

How are the DPNSS PBX's channel priorities set?

Information to Target

Send

Save Log Close

NUM



Figure 24. Configuration confirmation (1 of 2)

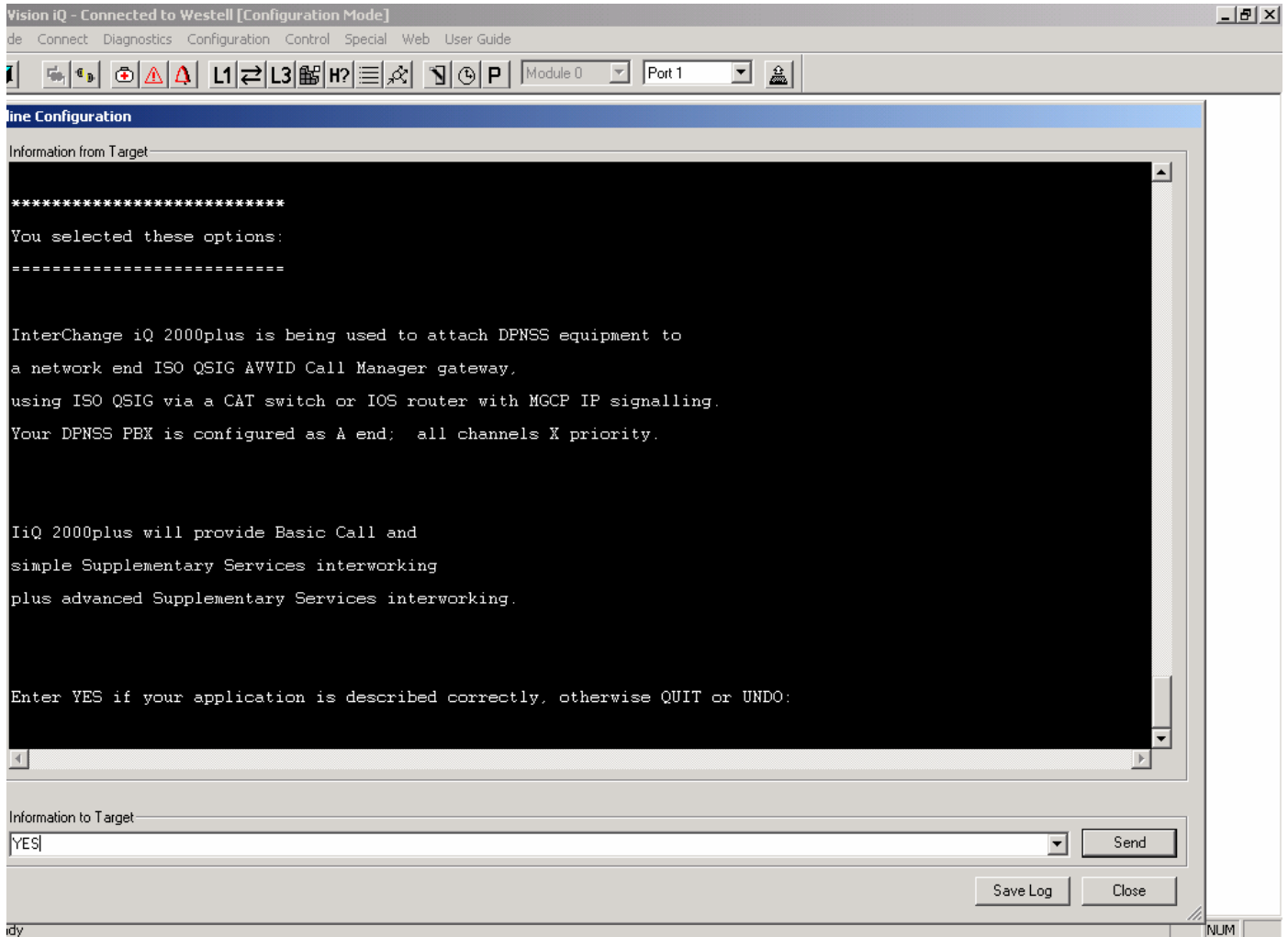
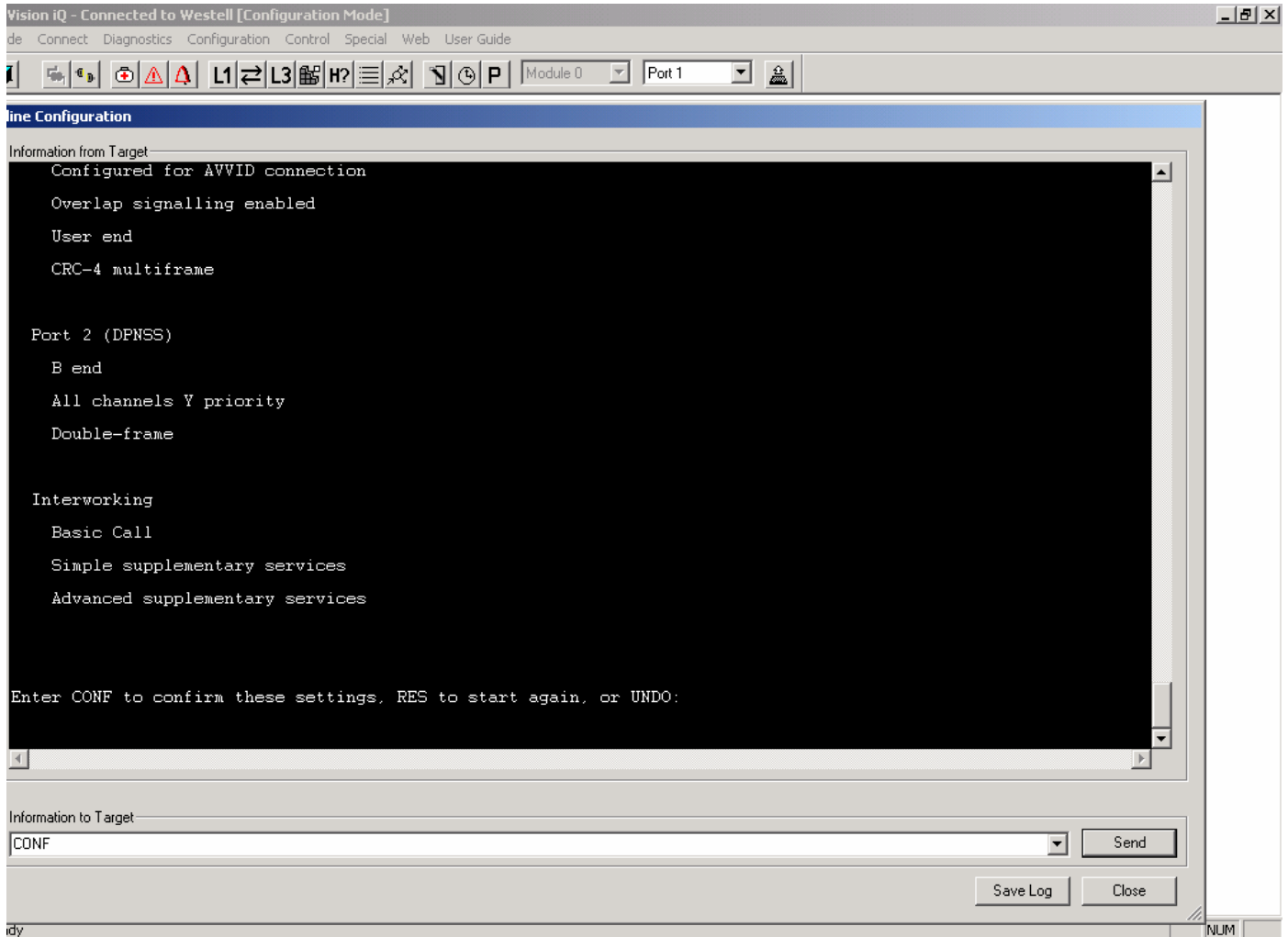




Figure 25. Configuration confirmation (2 of 2)





Configuring the Cisco Unified CallManager 4.1(3)SR1

Figure 26. MGCP Gateway Configuration (1 of 9)

The screenshot shows the Cisco CallManager Administration web interface. At the top, there is a navigation menu with links for System, Route Plan, Service, Feature, Device, User, Application, and Help. Below the menu is a header banner with the Cisco CallManager Administration logo and the Cisco Systems logo. The main content area is titled "Find and List Gateways" and includes a search bar with a dropdown menu set to "Device Name" and a "begins with" filter. A "Find" button is next to the search input. Below the search bar, there are options to show 20 items per page and a "Hide" dropdown for endpoints. A message states "1 matching record(s) for Device Name begins with """. Below this, a table lists the gateway information. The table has columns for Device Name, Description, Device Pool, Status, and IP Address. One gateway is listed: mgcpgw1. Below the table, there are buttons for "Delete Selected" and "Reset Selected", and a pagination control showing "Page 1 of 1".

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Find and List Gateways

Cisco CallManager 4.1 Administration [Add a New Gateway](#)


1 matching record(s) for Device Name begins with ""

Find gateways where begins with

and show items per page. endpoints.

To list all items, click Find without any search text, or use "Device Name is not empty" as the search criteria.

Matching record(s) 1 to 1 of 1
Real-time Information Service returned information for 0 of 1 devices listed below.

<input type="checkbox"/>	Device Name	Description	Device Pool	Status	IP Address
<input type="checkbox"/>	 mgcpgw1	mgcpgw1		See Endpoints	

First Previous Next Last Page of 1



Figure 27. MGCP Gateway Configuration (2 of 9)

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Gateway Configuration

[Back to Find/List Gateways](#)

Product: Cisco 26XX
Protocol: MGCP
MGCP : mgcpgw1

Status: Ready

Domain Name*

Description

Cisco CallManager Group*

Installed Voice Interface Cards **Endpoint Identifiers**

Module in slot 0



Figure 28. MGCP Gateway Configuration (3 of 9)

Domain Name	mgcpgw1
Description	mgcpgw1
Cisco CallManager Group*	Default

Installed Voice Interface Cards		Endpoint Identifiers	
Module in slot 0	< None >		
Module in slot 1	NM-HDV		
Subunit	VVIC-1MFT-E1	(1/0)	E1PRI

Product Specific Configuration	
Switchback Timing*	Graceful
Switchback uptime-delay (min)	10
Switchback schedule (hh:mm)	12:00

* indicates required item

[Back to Find/List Gateways](#)



Figure 29. MGCP Gateway Configuration (4 of 9)

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Gateway Configuration

[Back to MGCP Configuration](#)
[Back to Find/List Gateways](#)
[Dependency Records](#)

Product : Cisco 26XX
Gateway : S1/DS1-0@mgcpgw1
Device Protocol: Digital Access PRI
Registration: Not Registered
IP Address: 10.1.1.199

Status: Ready

Device Information

End-Point Name*	<input type="text" value="S1/DS1-0@mgcpgw1"/>
Description	<input type="text" value="S1/DS1-0@mgcpgw1"/>
Device Pool*	<input type="text" value="Default"/>



Figure 30. MGCP Gateway Configuration (5 of 9)

Device Pool*	Default	▼
Call Classification*	Use System Default	▼
Network Locale	< None >	▼
Signal Packet Capture Mode	None	▼
Packet Capture Duration	60	
Media Resource Group List	< None >	▼
Location	< None >	▼
AAR Group	< None >	▼
Load Information		
V150 (subset)	<input type="checkbox"/>	
Multilevel Precedence and Preemption (MLPP) Information		
MLPP Domain (e.g., "0000FF")		
MLPP Indication	Not available on this device	
MLPP Preemption	Not available on this device	
Interface Information		
PRI Protocol Type*	PRI QSIG E1	▼



Figure 31. MGCP Gateway Configuration (6 of 9)

Interface Information	
PRI Protocol Type*	PRI QSIG E1
Protocol Side*	Network
Channel Selection Order*	Top Down
Channel IE Type*	Use Number when 1B
PCM Type*	A-law
Delay for first restart (1/8 sec ticks)	32
Delay between restarts (1/8 sec ticks)	4
<input checked="" type="checkbox"/> Inhibit restarts at PRI initialization	
<input type="checkbox"/> Enable status poll	
Call Routing Information	
Inbound Calls	
Significant Digits*	All
Calling Search Space	< None >
AAR Calling Search Space	< None >



Figure 32. MGCP Gateway Configuration (7 of 9)

Call Routing Information	
Inbound Calls	
Significant Digits*	All
Calling Search Space	< None >
AAR Calling Search Space	< None >
Prefix DN	
Outbound Calls	
Calling Line ID Presentation*	Default
Calling Party Selection*	Last Redirect Number
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
Number of digits to strip*	0
Caller ID DN	
SMDI Base Port*	0



Figure 33. MGCP Gateway Configuration (8 of 9)

PRI Protocol Type Specific Information	
<input type="checkbox"/>	Display IE Delivery
<input type="checkbox"/>	Redirecting Number IE Delivery - Outbound
<input type="checkbox"/>	Redirecting Number IE Delivery - Inbound
<input checked="" type="checkbox"/>	Send Extra Leading Character In DisplayIE***
<input type="checkbox"/>	Setup non-ISDN Progress Indicator IE Enable****
<input type="checkbox"/>	MCDN Channel Number Extension Bit Set to Zero**
<input type="checkbox"/>	Send Calling Name In Facility IE
<input type="checkbox"/>	Interface Identifier Present**
Interface Identifier Value**	<input type="text" value="0"/>
Connected Line ID Presentation (QSIG Inbound Call)*	<input type="text" value="Default"/>
UUIE Configuration	
<input type="checkbox"/>	Passing Precedence Level Through UUIE
Security Access Level	<input type="text" value="2"/>




Figure 34. MGCP Gateway Configuration (9 of 9)

UUIE Configuration

Passing Precedence Level Through UUIE

Security Access Level

Product Specific Configuration 

Line Coding*

Framing*

Clock*

Input Gain (-6..14 db)*

Output Attenuation (-6..14 db)*

Echo Cancellation Enable*

Echo Cancellation Coverage (ms)*

* indicates required item
** applicable to DMS-100 protocol only
*** applicable to DMS-100 protocol and DMS-250 protocol only
**** may be required to force ringback from some PBXs



Figure 35. Route Pattern (1 of 4)

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Find and List Route Patterns [Add a New Route Pattern](#)

1 matching record(s) for Pattern begins with "580"

Find Route Patterns where begins with

and show items per page

To list all items, click Find without entering any search text.

Matching record(s) 1 to 1 of 1

<input type="checkbox"/>	Route Pattern	Partition	Description	Route Filter	Gateway/Route List	Copy
<input type="checkbox"/>	580XXXX				S1/DS1-0@mgcpgw1	

First Previous Next Last Page of 1



Figure 36. Route Pattern (2 of 4)

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Route Pattern Configuration

[Add a New Route Pattern](#)
[Back to Find/List Route Patterns](#)

Route Pattern: New

Status: Ready
Note: Any update to this Route Pattern automatically resets the associated gateway or Route List

Pattern Definition

Route Pattern*	<input type="text" value="580XXXX"/>
Partition	<input data-bbox="581 932 1027 968" type="text" value=" < None > "/>
Description	<input type="text"/>
Numbering Plan*	<input data-bbox="581 1037 1027 1073" type="text" value="North American Numbering Plan"/>
Route Filter	<input data-bbox="581 1087 1027 1123" type="text" value=" < None > "/>
MLPP Precedence	<input data-bbox="581 1138 1027 1173" type="text" value="Default"/>
Gateway or Route List*	<input data-bbox="581 1188 1027 1224" type="text" value="S1/DS1-0@mgcpgw1"/>
Route Option	<input checked="" type="radio"/> Route this pattern <input type="radio"/> Block this pattern <input data-bbox="846 1283 1292 1318" type="text" value=" — Not Selected — "/>



Figure 37. Route Pattern (3 of 4)

Block this pattern — Not Selected —

Call Classification* OnNet Allow Device Override

Provide Outside Dial Tone Allow Overlap Sending Urgent Priority

Require Forced Authorization Code

Authorization Level 0

Require Client Matter Code

Calling Party Transformations

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask

Prefix Digits (Outgoing Calls)

Calling Line ID Presentation Default

Calling Name Presentation Default

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



Figure 38. Route Pattern (4 of 4)

Calling Party Transformations

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask

Prefix Digits (Outgoing Calls)

Calling Line ID Presentation

Calling Name Presentation

Connected Party Transformations

Connected Line ID Presentation

Connected Name Presentation

Called Party Transformations

Discard Digits

Called Party Transform Mask

Prefix Digits (Outgoing Calls)

ISDN Network-Specific Facilities Information Element

Carrier Identification Code

Network Service Protocol

Network Service	Service Parameter Name	Service Parameter Value
<input type="text" value=" — Not Selected —"/>	<input type="text" value=" < Not Exist >"/>	<input type="text"/>

* indicates required item.



Figure 39. Service Parameters – Call Forwarding

Clusterwide Parameters (Feature - Forward)		
Parameter Name	Parameter Value	Suggested Value
Forward Maximum Hop Count*	<input type="text" value="12"/>	12
Forward No Answer Timer (sec)*	<input type="text" value="12"/>	12
Max Forward Hops to DN*	<input type="text" value="12"/>	12
Retain Forward Information*	<input type="text" value="True"/>	False
Forward By Reroute Enabled*	<input type="text" value="True"/>	False
Transform Forward by Route*	<input type="text" value="True"/>	True



Figure 40. Service Parameters – Path Replacement (1 of 2)

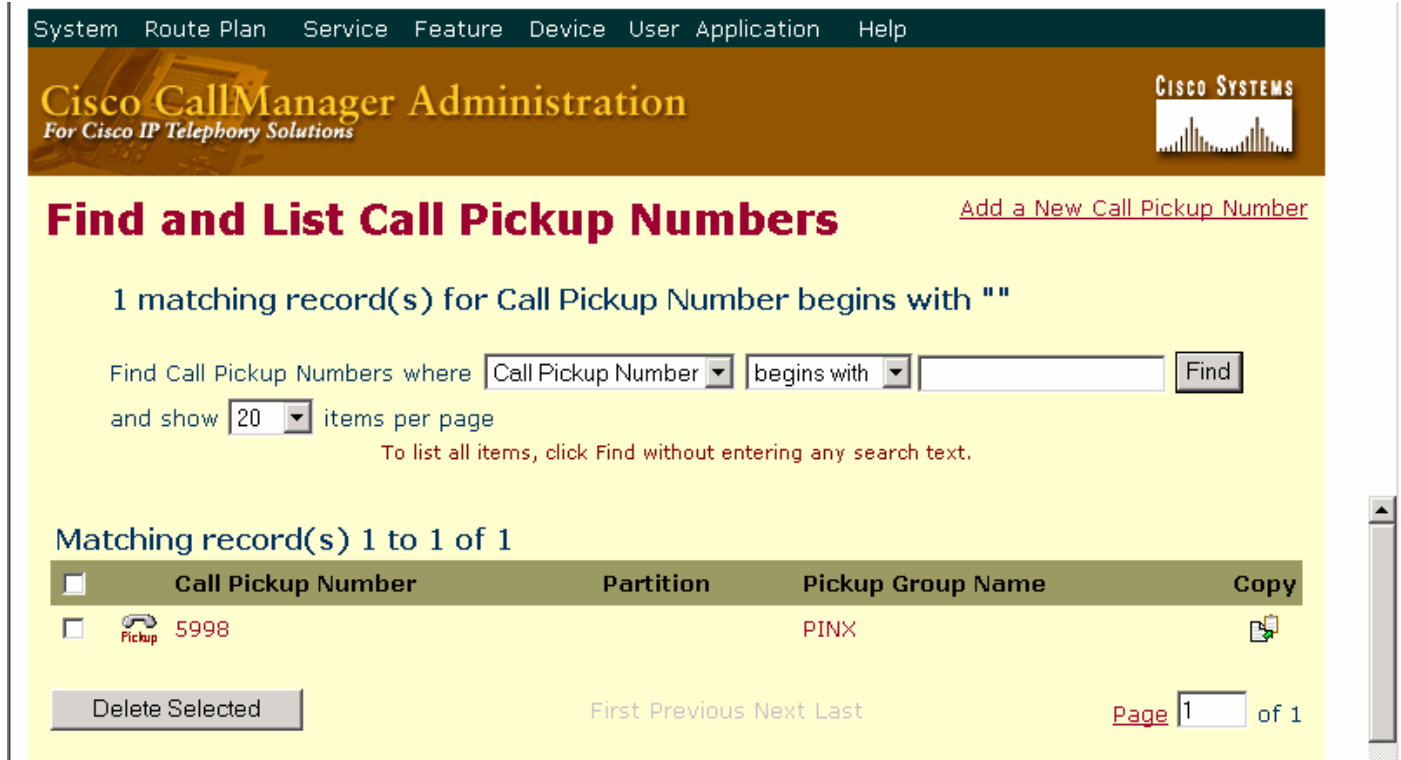
Clusterwide Parameters (Feature - Path Replacement)		
Parameter Name	Parameter Value	Suggested Value
Path Replacement Enabled*	<input type="text" value="True"/>	False
Path Replacement on Tromboned Calls*	<input type="text" value="False"/>	True
Start Path Replacement Minimum Delay Time (sec)*	<input type="text" value="0"/>	0
Start Path Replacement Maximum Delay Time (sec)*	<input type="text" value="0"/>	0
Path Replacement	<input type="text"/>	



Figure 41. Service Parameters – Path Replacement (2 of 2)

Delay Time (sec)*		
Path Replacement T1 Timer (sec)*	<input type="text" value="30"/>	30
Path Replacement T2 Timer (sec)*	<input type="text" value="15"/>	15
Path Replacement PINX ID	<input type="text" value="5998"/>	
Path Replacement Calling Search Space	<input type="text" value="< None >"/>	
Clusterwide Parameters (Feature - Call Back)		
Parameter Name	Parameter Value	Suggested Value
Call Back	<input type="text" value="True"/>	True

Figure 42. PINX Call Pick-up Group



The screenshot displays the Cisco CallManager Administration web interface. At the top, there is a navigation menu with links for System, Route Plan, Service, Feature, Device, User, Application, and Help. Below the navigation is a header banner with the text "Cisco CallManager Administration For Cisco IP Telephony Solutions" and the Cisco Systems logo. The main content area is titled "Find and List Call Pickup Numbers" and includes a link to "Add a New Call Pickup Number". A search summary indicates "1 matching record(s) for Call Pickup Number begins with """. Below this, there is a search form with dropdown menus for "Call Pickup Number" and "begins with", a text input field, and a "Find" button. The search criteria are set to "20 items per page". A note states "To list all items, click Find without entering any search text." The search results are displayed in a table with the following columns: Call Pickup Number, Partition, Pickup Group Name, and Copy. One record is shown with a checkbox, a phone icon, the number "5998", the partition "PINX", and a copy icon. At the bottom of the table, there is a "Delete Selected" button, navigation links "First Previous Next Last", and a page indicator "Page 1 of 1".

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Find and List Call Pickup Numbers

[Add a New Call Pickup Number](#)



1 matching record(s) for Call Pickup Number begins with ""

Find Call Pickup Numbers where begins with

and show items per page

To list all items, click Find without entering any search text.

Matching record(s) 1 to 1 of 1

<input type="checkbox"/>	Call Pickup Number	Partition	Pickup Group Name	Copy
<input type="checkbox"/>	 5998		PINX	

First Previous Next Last Page of 1



```
half-duplex
!
interface Serial1/0:15
no ip address
isdn switch-type primary-qsig
isdn overlap-receiving
isdn protocol-emulate network
isdn incoming-voice voice
isdn bind-13 ccm-manager
no cdp enable
!
ip http server
ip classless
ip route 0.0.0.0 0.0.0.0 10.1.1.10
ip route 0.0.0.0 0.0.0.0 10.1.1.100
!
!
!
!
!
voice-port 1/0:15
!
mgcp
mgcp call-agent ukpeccm41 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
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 voice 1 pots
application mgcpapp
!
!
line con 0
line aux 0
line vty 0 4
password cisco
login
length 0
!
!
end
```



Message Waiting Indication

Within DPNSS, two systems exist for notifying Message Waiting Indication; Call Back Message Waiting (171B and 172B messages) and NSI encoded Message Waiting.

Callback message waiting follows the same standard for all types of PBX/Voicemail combinations; however, it is only supported on a small subset of PBXes.

NSI indication consists of PBX specific combinations of encoded information to indicate MWI on/off states – not only do the exact NSI strings vary from PBX to PBX, they vary according to the combination of voicemail platform and PBX.

By default, the Westell IiQ2000plus sends a combination of NSI and Callback message waiting signals encoded for the GPT iSDX. This will not work with the INDeX and changes to the NSI strings must be made.

The INDeX uses standard Callback MWI (*171B/*172B) but requires a calling line number – in this case 5977700 for the Unity system on CCM, or *50*5977700#. This information is not passed by Cisco Unified CallManager, and consequently the pilot number for Unity needs to be statically configured. This is only required where the voicemail platform is on Cisco Unified CallManager – where the voicemail platform is on the INDeX, no changes are required.



Figure 43. Advanced Options

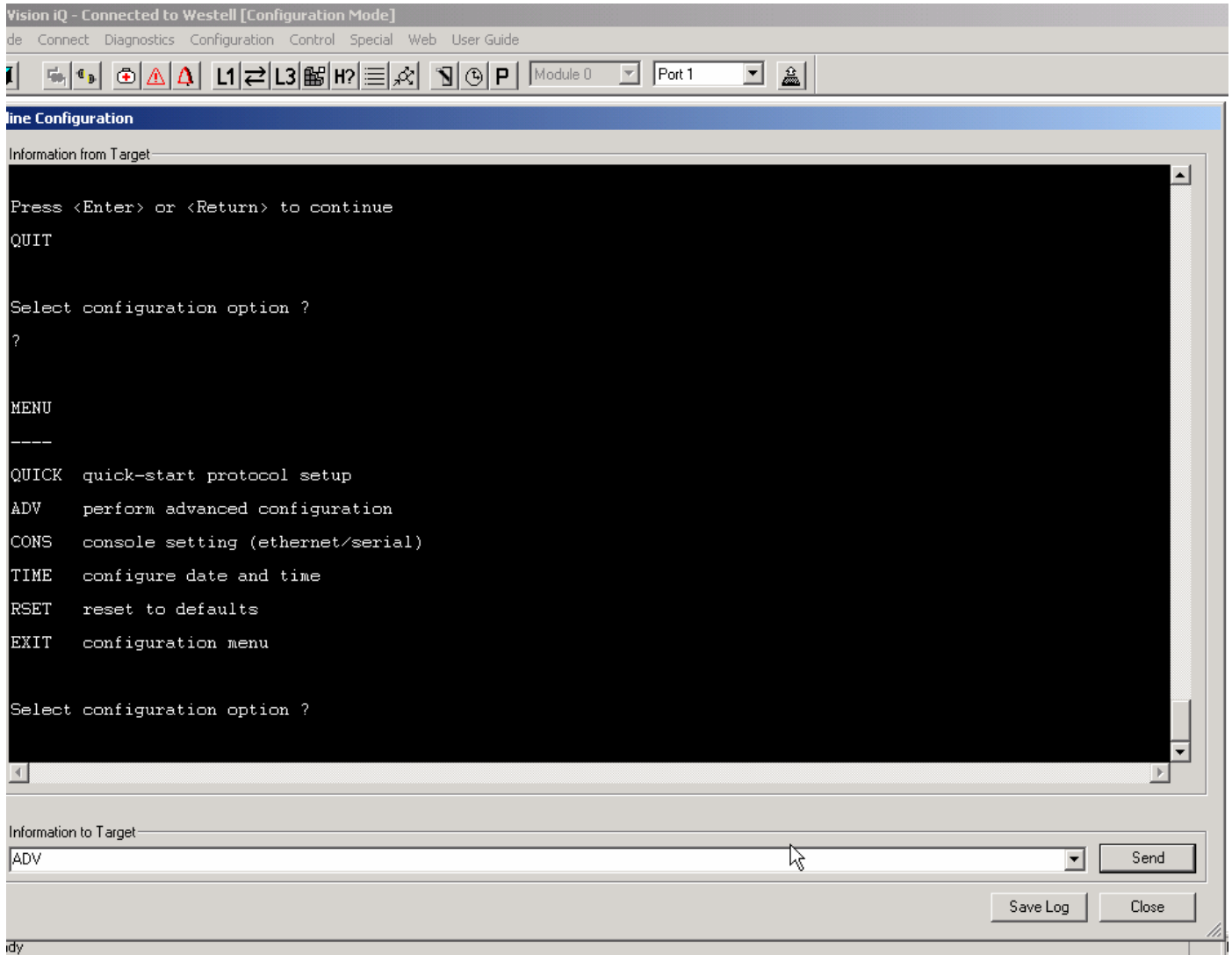




Figure 44. Interworking

Vision IQ - Connected to Westell [Configuration Mode]
de Connect Diagnostics Configuration Control Special Web User Guide

Line Configuration
Information from Target

```
Advanced Configuration Menu.  
  
MENU  
-----  
Q931  configure Q931 layer 3  
DPNSS configure DPNSS layer 3  
IWRK  configure Interworking task  
CTRACE configure Call Tracing service  
Q921  configure Q921 layer 2  
LINK  configure dpnss link layer  
CZ    configure CZ layer 1  
MGMT  configure system management  
EVNT  configure event reporting  
EXIT  quit advanced configuration  
  
Select advanced configuration option ?
```

Information to Target
[IWRK] Send

Save Log Close

dy



Figure 45. NSI Selection

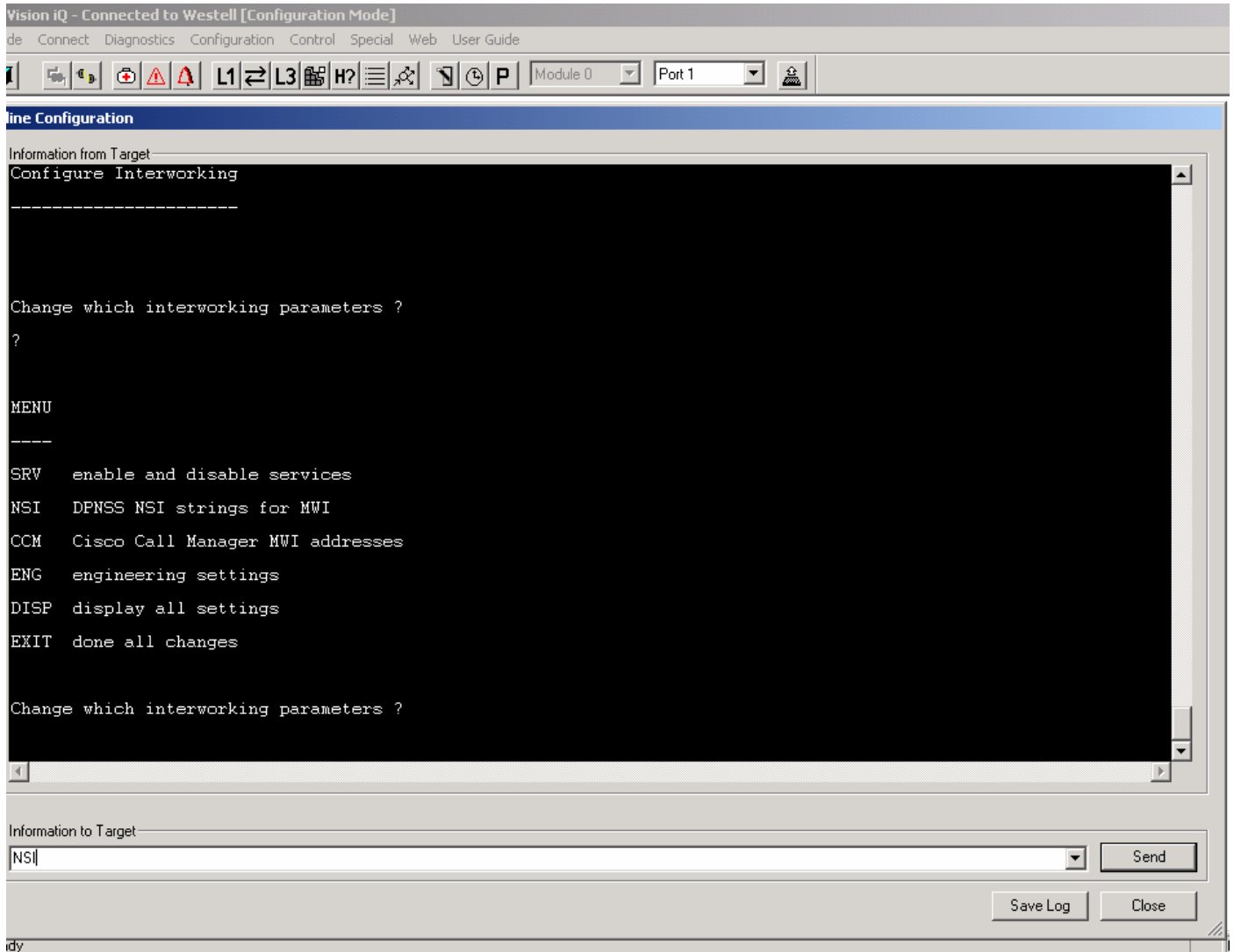




Figure 46. MWI Settings

Vision IQ - Connected to Westell [Configuration Mode]
de Connect Diagnostics Configuration Control Special Web User Guide

Module 0 Port 1

Line Configuration

Information from Target

```
***** ERROR - no match found *****
```

Change which interworking parameters ?
NSI

Change which string ?
?

MENU

ON NSI Message Waiting on String
OFF NSI Message Waiting off String
DISP display current settings
EXIT completed NSI editing

Change which string ?

Information to Target

Send

Save Log Close

dy



Figure 47. Display of Raw NSI settings for INDeX

The screenshot shows a window titled "Offline Configuration" with a dark terminal-style background. The text displayed is as follows:

```
Information from Target
IWRK

Configure Interworking
-----

Change which interworking parameters ?
NSI

Change which string ?
DISP

DPNSS NSI strings for Message Waiting :
    indicator ON      : *50*5977700#
    indicator OFF     : *50*5977700#

Change which string ?
```

Below the terminal area, there is a section labeled "Information to Target" with a text input field and a "Send" button. At the bottom right of the window are "Save Log" and "Close" buttons.



Acronyms

Acronym	Definitions
DPNSS	Digital Private Network Signaling System as detailed in BTNR 188 and 189
NSI	Non-Specified Information – vendor specific free-form PBX-to-PBX messaging
IPT	IP Telephony
CCM	Cisco Cisco Unified CallManager
Q.931	ITU ISDN protocol at level 3
Q.Sig	ITU ISDN protocol enhancement to q.931 carrying additional features
MGCP	Media Gateway Control Protocol
PBX	Private Branch Exchange
MMI	Man Machine Interface – specifically on INDeX, a VT100 style console



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