



Siemens Realitis / GPT iSDX using DPNSS to Westell IiQ2000plus using QSIG to Cisco Unified CallManager 4.1

October 26, 2007 Revision 4

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Introduction

Although specific gateway router models were used to validate its content, this application note also applies to all Cisco 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 iSDX/Realitis 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 Interchange iQ2000plus, is required. This converts DPNSS to Q.Sig, mapping DPNSS features to their Q.Sig equivalent, where available.

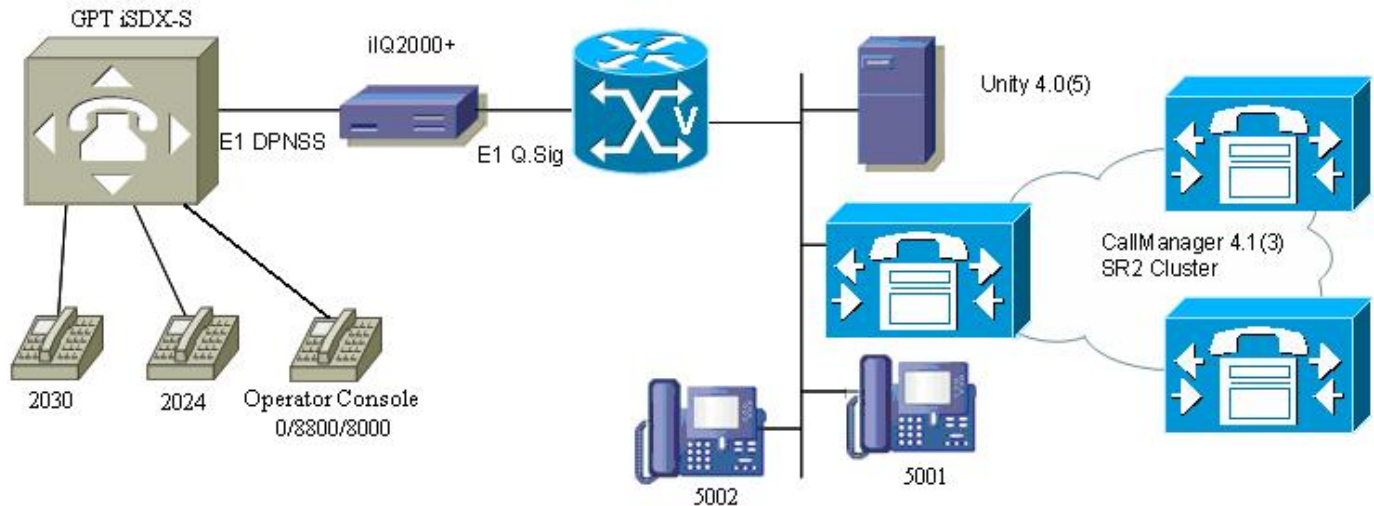
A single GPT iSDX-S was connected to a Cisco 2600 router with an NM-HDV, running MGCP backhaul to a Cisco Unified CallManager 4.1(3)SR1 cluster. The iSDX-S hosted analogue phones and a standard three-piece operators console. The DLI (Digital Line Interface) was then connected on G.703 to the Westell converter. The Westell converter was connected to the Cisco IOS gateway using a standard E1 cross-over cable, with the Cisco Unified CallManager cluster hosting a Cisco 7912G and a Cisco 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 operator feature codes to switch on/off MWI across the DPNSS trunk.

Using the iSDX 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 scenarCisco IOS. 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. Additionally, inter-working of DPNSS Route Optimisation with Q.Sig Path Replacement was demonstrated. Call Back services were shown to work – the exception being Call Back Next Used initiated by the IPT side, which produces an immediate response from the PBX.



Network Topology

Figure 1. Network Topology or Test Setup



Limitations

On Supervised Transfers from a PBX extension to any other destination, the Connected Name displayed on the originating IP Phone does not update, and will continue to show the name of the first called destination. This is a limitation of Cisco Unified CallManager.

Call Back When Next Used between an IP Phone and a PBX extension where the IP Phone is calling a free 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 DPNSS expecting the PBX not to be in the alerting state when the Call Back request is sent, and Q.Sig sending the request during the alerting phase. Consequently, the PBX sees the change from alerting state to free as evidence that the PBX phone has been used, and therefore alerts immediately. This is due to the state machine used in the iSDX for this particular service.

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.”

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.

Various iSDX Operator Console services are not supported due to either limitations in Q.Sig or Cisco Unified CallManager. Specifically, attempts to intrude on an IPT extension, over-ride diverts set on Cisco Unified CallManager, Camp-On to a busy IPT extension and request the Status of Destination from an IPT extension (e.g. dialing “100” followed by the IPT extension) will fail. However, Return will function correctly – this is where a call is extended to an IPT extension which rings without answering. The Return timer on the PBX will force the call back to the operator showing as “Ring No Answer.”

Calls from the IPT phones to the iSDX Operator which are forwarded to PBX phones will not return to the console on Ring No Answer. This is due to the way in which incoming DPNSS calls are seen by the iSDX.



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 iQ2000plus 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.

System Components

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) GPT iSDX.

(2) Standard Analogue Telephones

(1) Three-piece Operator Console

Westell Interchange iQ2000plus

Software Requirements

GPT/Siemens PBXs: iSDX 3.6/Realitis 6.1 or later.

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 CISCO IOS Q.Sig backhaul using MGCP).

Westell software, version R3.0.0 or later.

Westell VisionIQ Management software.

Features

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

Call Back Next Used *see limitations*



Return To Console – no answer *see limitations*

MWI

Route Optimisation



Configuration

Configuring the GPT iSDX PBX

Figure 2. Local Access Code from iSDX to Cisco Unified CallManager

```

UNPUBLISHED WORK. COPYRIGHT GPT LIMITED.
ALL RIGHTS RESERVED.
iSDX BDPCGS013 47123.01 01.033
3.6.201 0000100 UK 04 01/02/92 A M 110
15/10/05 18:24:40

```

```

OSL, PLEASE.
?

```

```

laca
CODE:172
CODE TQU TCB LCR IRD
172 N N N N

```

Figure 3. Ensure Trunk Group has correct Trunk Access (TAC)

```

?LTGA
GROUP:0099
ZONE:00
TAC 00000000001111111111222222222233
    01234567890123456789012345678901
MG099
Z00

```

Figure 4. Configure Trunk Main Group

```

?ltmg 099
    D      A R  D D  DT  M N D
MG TYPE CODE / OUT SRCH SEND PSD S T IN  D  T REG T S OG D L C PE
    A      T T    T M T
099 DPNS 172 D HRS FXD      A DDI 07  NN 00 N 03

```



Figure 5. Configuration of individual Trunk Channels showing X/Y setting (DIR) and Trunk Main Group number

```
?!tk
INDEX:A
TK TYPE PAD MG TG DIR DSA OAD NSA SIG CCT PSP
0077 DPNS 023030 099 099 X DDI Y DENS 016
0078 DPNS 023029 099 099 X DDI Y DENS 016
0079 DPNS 023028 099 099 X DDI Y DENS 016
0080 DPNS 023027 099 099 X DDI Y DENS 016
0081 DPNS 023026 099 099 X DDI Y DENS 016
0082 DPNS 023025 099 099 X DDI Y DENS 016
0083 DPNS 023024 099 099 X DDI Y DENS 016
0084 DPNS 023023 099 099 X DDI Y DENS 016
0085 DPNS 023022 099 099 X DDI Y DENS 016
0086 DPNS 023021 099 099 X DDI Y DENS 016
0087 DPNS 023020 099 099 X DDI Y DENS 016
0088 DPNS 023019 099 099 X DDI Y DENS 016
0089 DPNS 023018 099 099 X DDI Y DENS 016
0090 DPNS 023017 099 099 X DDI Y DENS 016
0091 DPNS 023016 099 099 X DDI Y DENS 016
0092 DPNS 023015 099 099 X DDI Y DENS 016
0093 DPNS 023014 099 099 X DDI Y DENS 016
0094 DPNS 023013 099 099 X DDI Y DENS 016
0095 DPNS 023012 099 099 X DDI Y DENS 016
0096 DPNS 023011 099 099 X DDI Y DENS 016
0097 DPNS 023010 099 099 X DDI Y DENS 016
0098 DPNS 023009 099 099 X DDI Y DENS 016
0099 DPNS 023008 099 099 X DDI Y DENS 016
0100 DPNS 023007 099 099 X DDI Y DENS 016
0101 DPNS 023006 099 099 X DDI Y DENS 016
0102 DPNS 023005 099 099 X DDI Y DENS 016
0103 DPNS 023004 099 099 X DDI Y DENS 016
0104 DPNS 023003 099 099 X DDI Y DENS 016
0105 DPNS 023002 099 099 X DDI Y DENS 016
0106 DPNS 023001 099 099 X DDI Y DENS 016
```



Figure 6. Display of DLI, showing DPNSS Side Setting

```
?ldlc
XXYY:0230
CHANNEL:A
TRUNK  TYPE  VIRTUAL REAL LINK
023001 DPNSS  C    C    A
023002 DPNSS  C    C    A
023003 DPNSS  C    C    A
023004 DPNSS  C    C    A
023005 DPNSS  C    C    A
023006 DPNSS  C    C    A
023007 DPNSS  C    C    A
023008 DPNSS  C    C    A
023009 DPNSS  C    C    A
023010 DPNSS  C    C    A
023011 DPNSS  C    C    A
023012 DPNSS  C    C    A
023013 DPNSS  C    C    A
023014 DPNSS  C    C    A
023015 DPNSS  C    C    A
023016 DPNSS  C    C    A
023017 DPNSS  C    C    A
023018 DPNSS  C    C    A
023019 DPNSS  C    C    A
023020 DPNSS  C    C    A
023021 DPNSS  C    C    A
023022 DPNSS  C    C    A
023023 DPNSS  C    C    A
023024 DPNSS  C    C    A
023025 DPNSS  C    C    A
023026 DPNSS  C    C    A
023027 DPNSS  C    C    A
023028 DPNSS  C    C    A
023029 DPNSS  C    C    A
023030 DPNSS  C    C    A
0230   MAINT  U    U
```



Figure 7. System Digit Translation Patterns, showing routing for 5XXX via Access Code 172

```
?ldtt 01 5
5991      1725991
5998      1725998
5990      1725990
5001      1725001
5002      1725002
```

```
?ldtt 02 5
5991      1725991
5998      1725998
5990      1725990
5001      1725001
5002      1725002
```

```
?ldtt 03 5
5991      1725991
5998      1725998
5990      1725990
5001      1725001
5002      1725002
```

```
?ldtt 04 5
5991      1725991
5998      1725998
5999      1725999
5990      1725990
5001      1725001
5002      1725002
```




Configuring the Westell iQ2000 Plus

Figure 8. Initial Connection to Westell via VisionIQ – define shelf

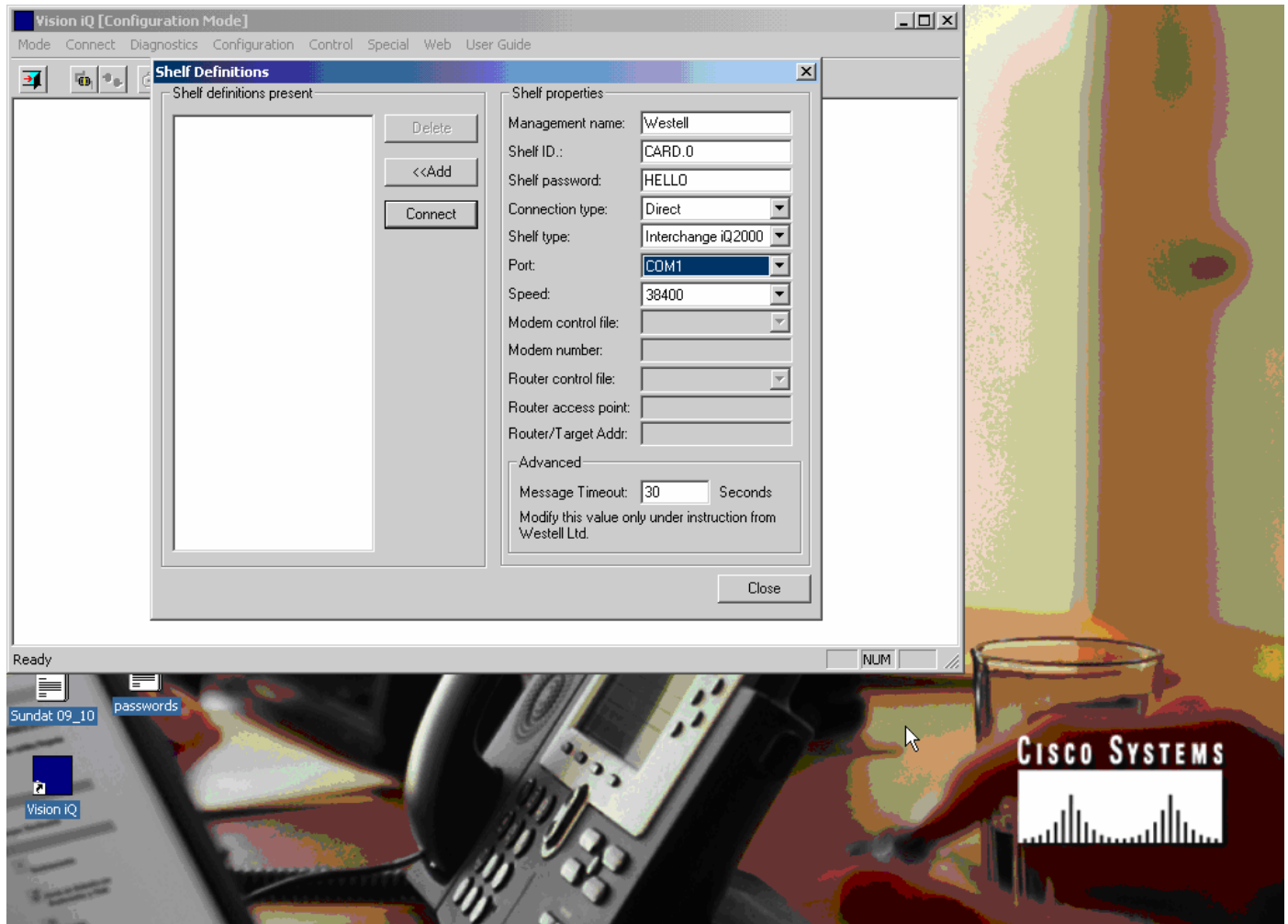




Figure 9. Connect to shelf and configure IiQ2000plus.

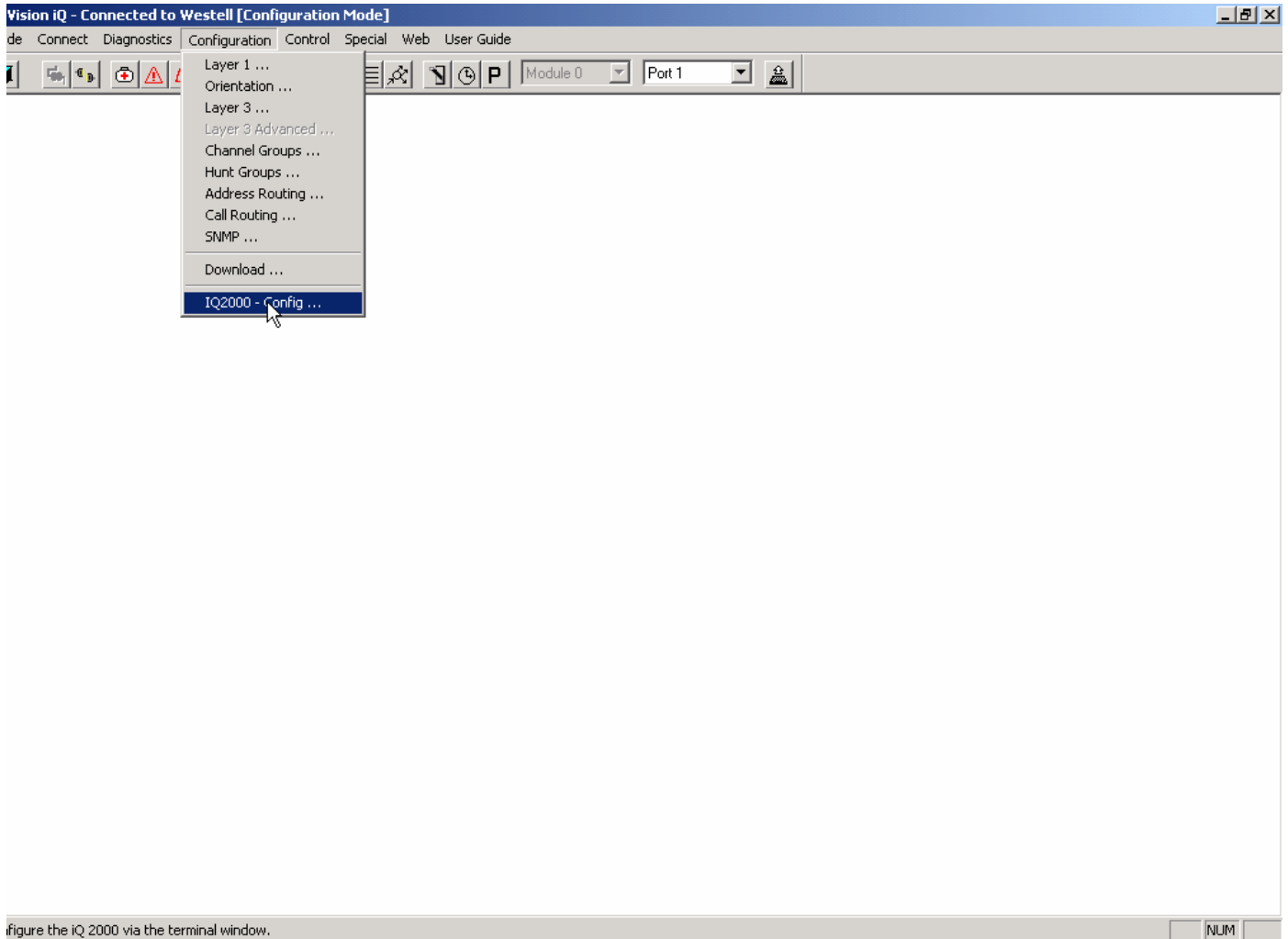




Figure 10. Connection warning

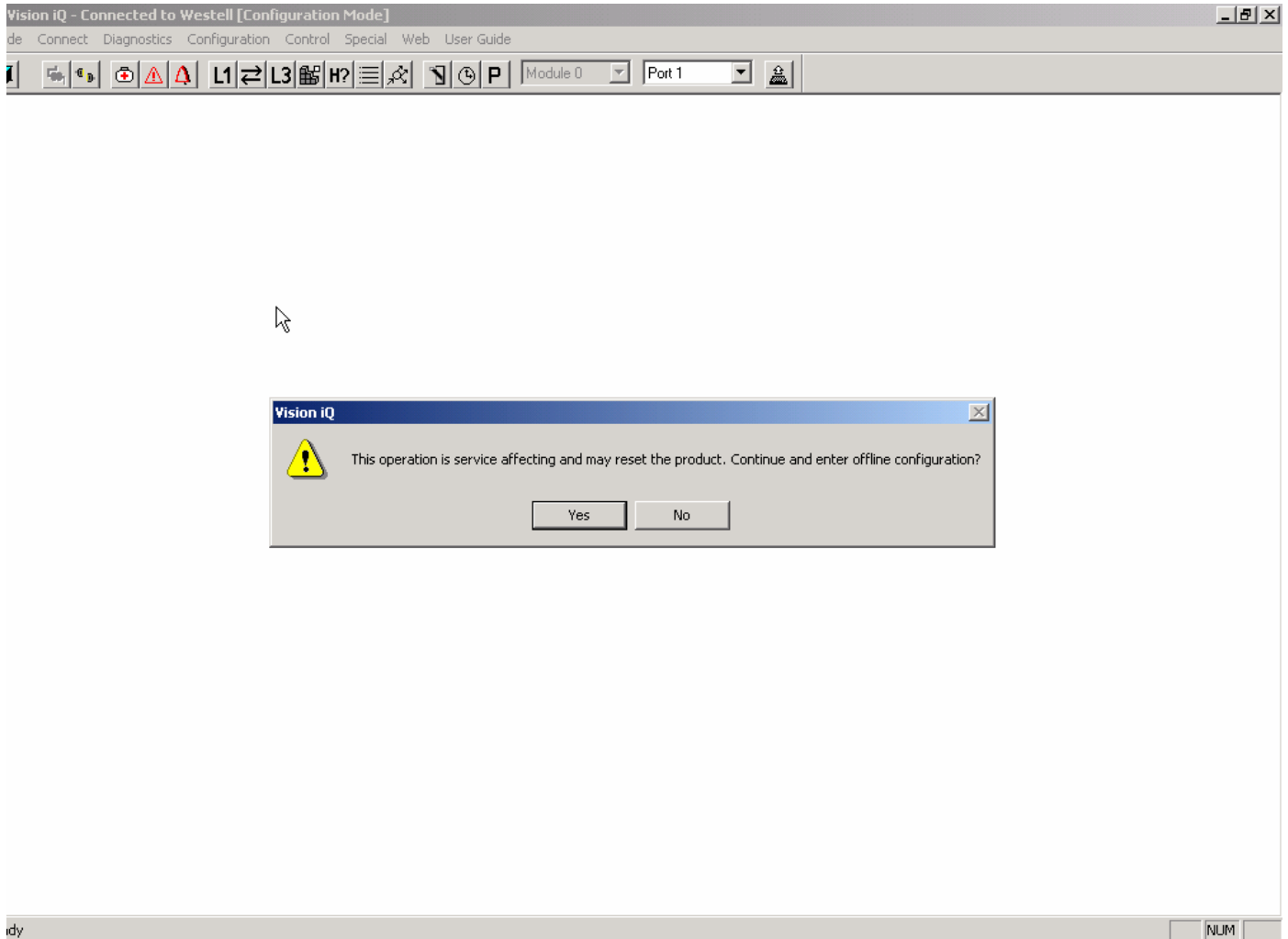




Figure 11. IiQ2000plus Off-line Configuration Screen

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

```
SYSTEM CONFIGURATION

READING EEPROM(S).....

CARD(S)                                MAC
PRESENT                                S/NO  MOD  TYP  REV  BLD  ADDRESS  MAN  DATE  CSM
-----
Q. IiQ2000 BASE CARD                    16000813  1   7   1   16  00A013000EA7  PAT  02/05  OK

|SELFTEST COMPLETE: READY FOR SERVICE

IiQ 2000plus Q3/DF R3.0.0

Hit RETURN to continue
```

Information to Target

idy



Figure 12. Select QUICK configuration mode

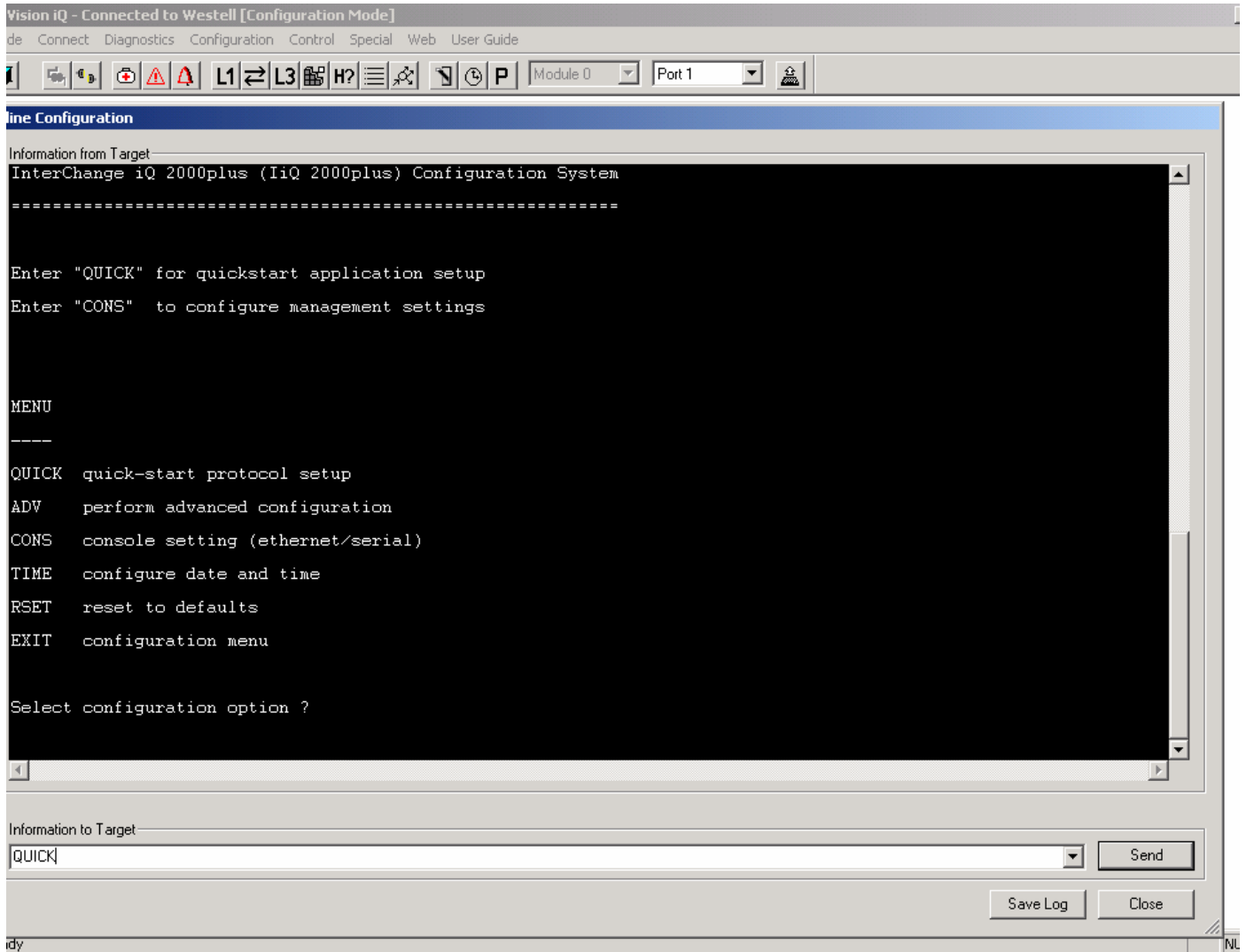




Figure 13. Instructions

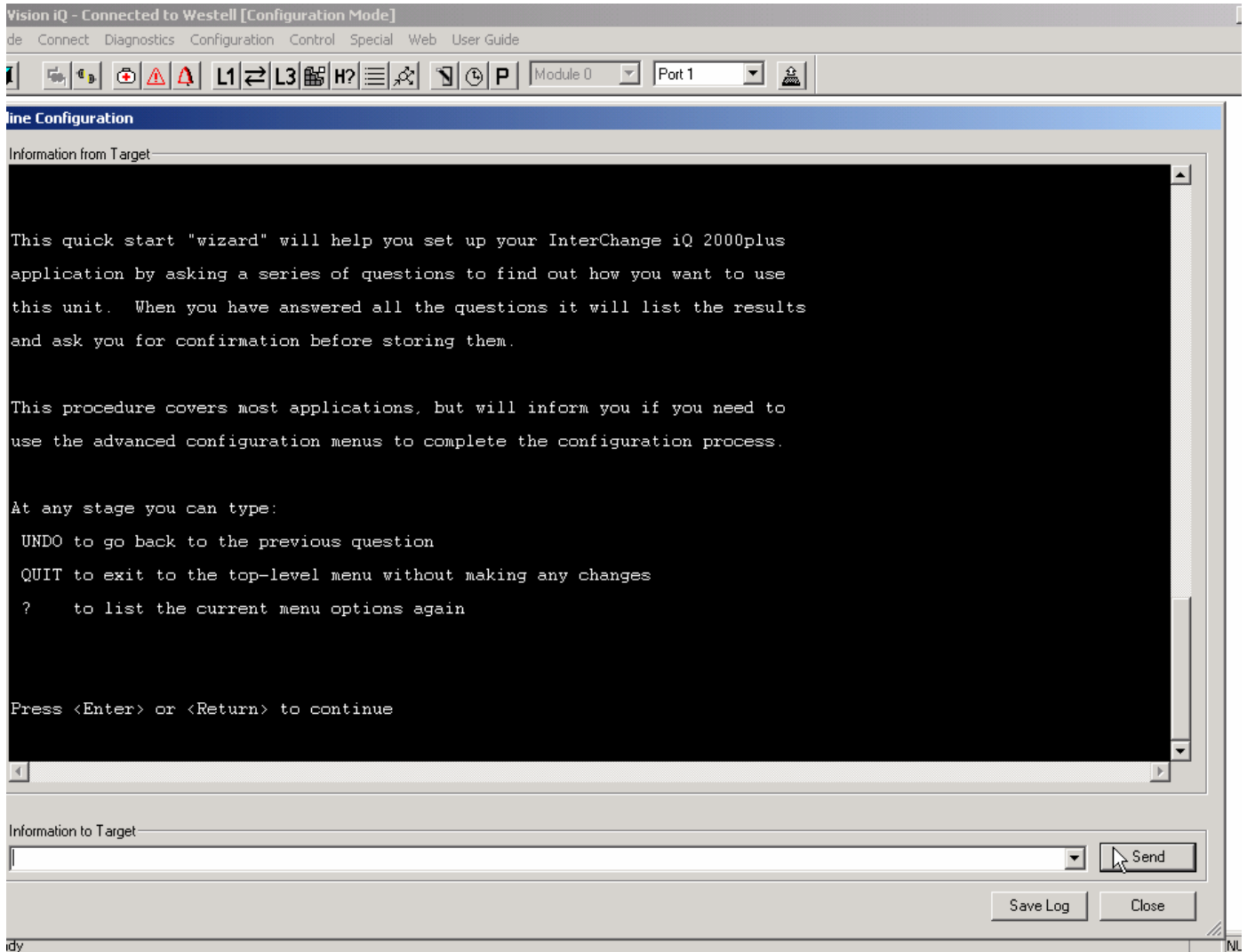




Figure 14. Select CCM for predefined options

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 choose the option that best describes how your equipment is attached:  
  
MENU  
----  
ISDN Attach me to a public Euro-ISDN network  
VOIP Attach me to a packet voice network (IP or ATM) via a router or gateway  
CCM Attach me to a Cisco AVVID VoIP PBX network  
QSIG Attach me to a private network which uses QSIG signalling  
Q931 Attach me to a private network using Q.931 signalling  
DPNSS Attach me to a DPNSS network or VPN (e.g. Featurenet)  
PBX InterChange iQ 2000plus is sited in a direct connection between two PBXs  
CUST Select predefined custom configuration  
QUIT None of the above  
  
Select an application description:
```

Information to Target

CCM Send

Save Log Close

idy



Figure 15. MGCP Gateway required for Q.Sig

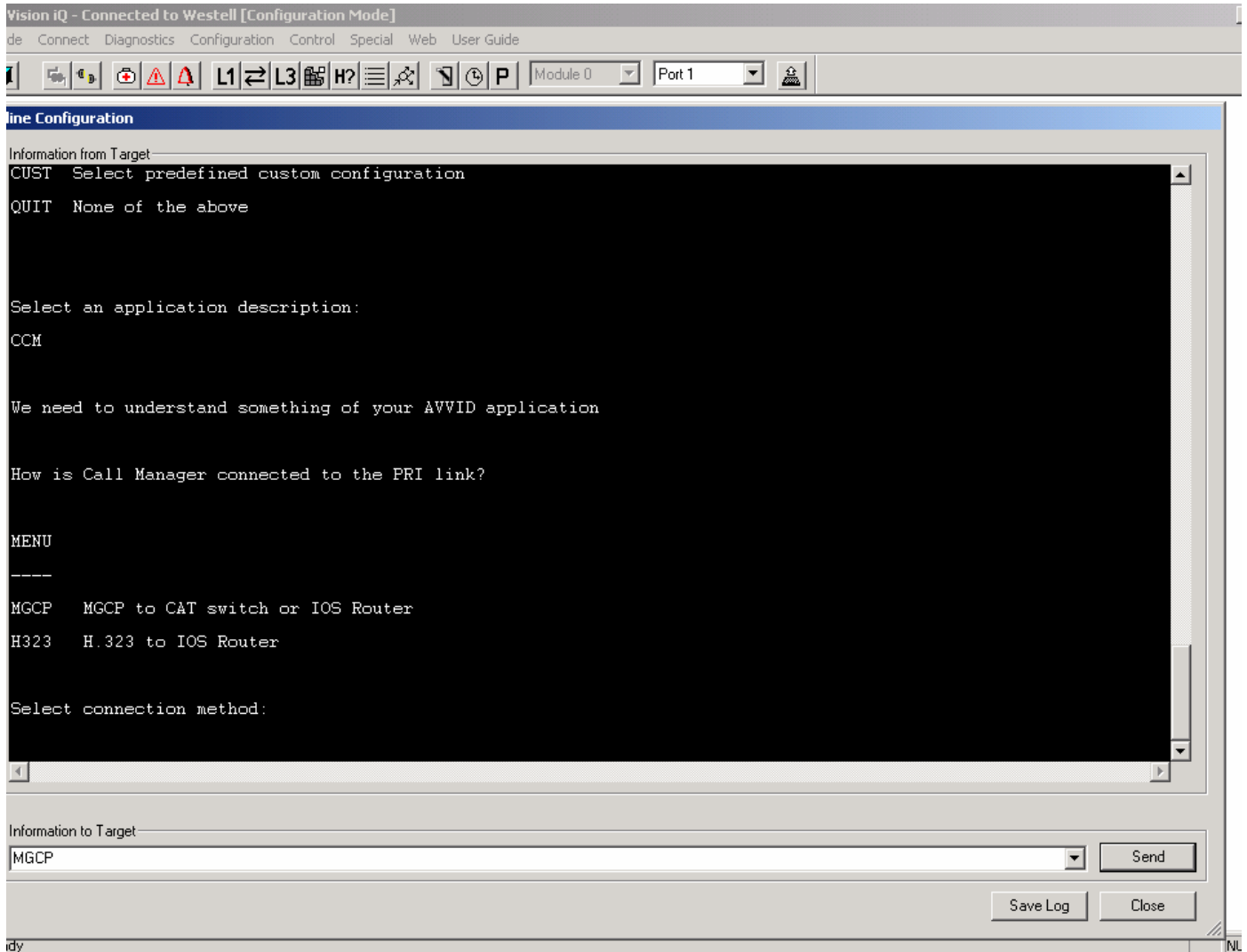




Figure 16. Q.Sig protocol selection

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

```
-----  
MGCP    MGCP to CAT switch or IOS Router  
H323    H.323 to IOS Router  
  
Select connection method:  
MGCP  
  
*****  
Does the switch provide QSIG or Q.931 signalling?  
  
MENU  
-----  
Q931    Public network signalling  
QSIG    QSIG private network signalling  
  
Select switch signalling protocol:
```

Information to Target

QSIG

idy



Figure 17. CCM 4.1 required for Q.Sig functionality

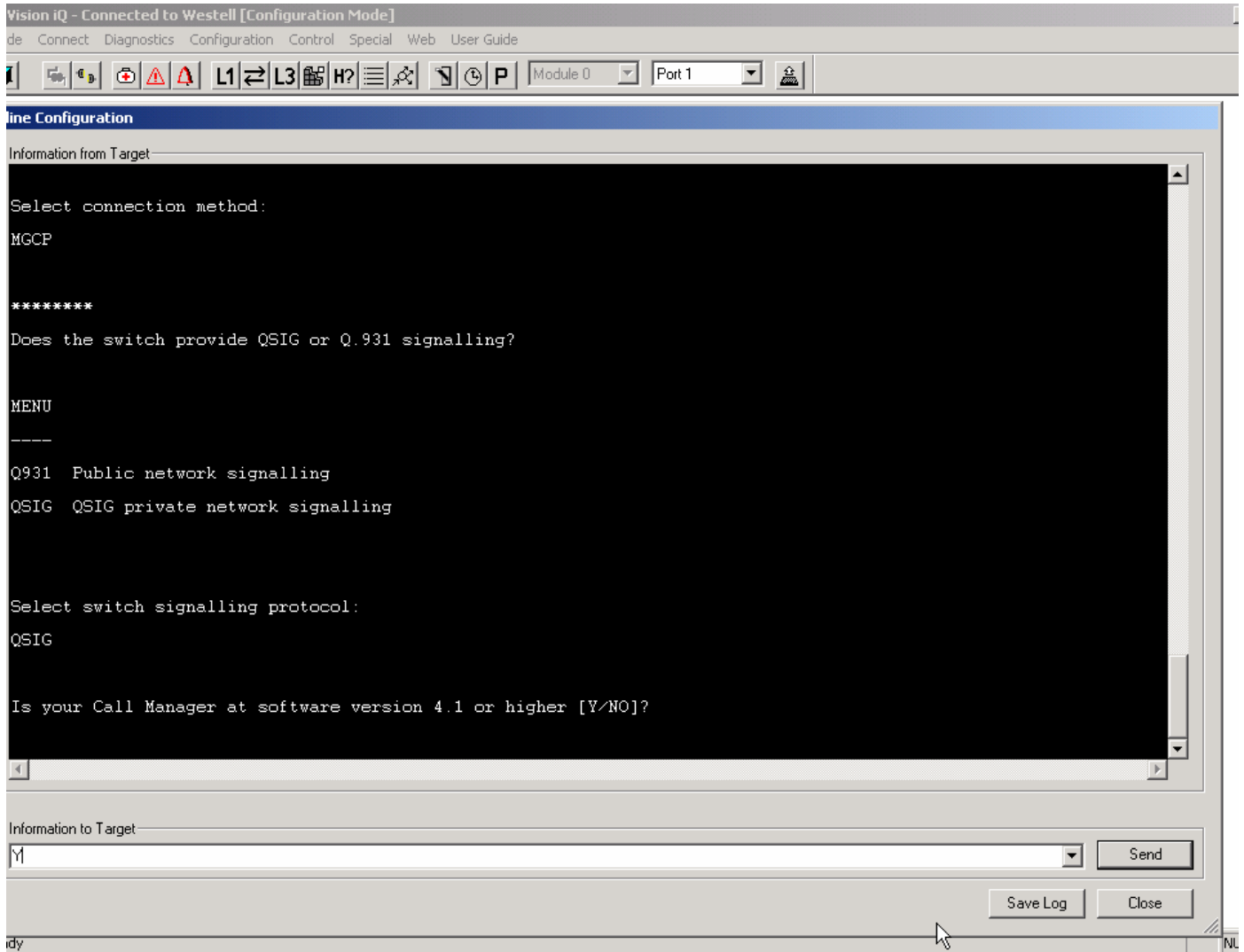




Figure 18. Select ISDN Side (Westell to CCM)

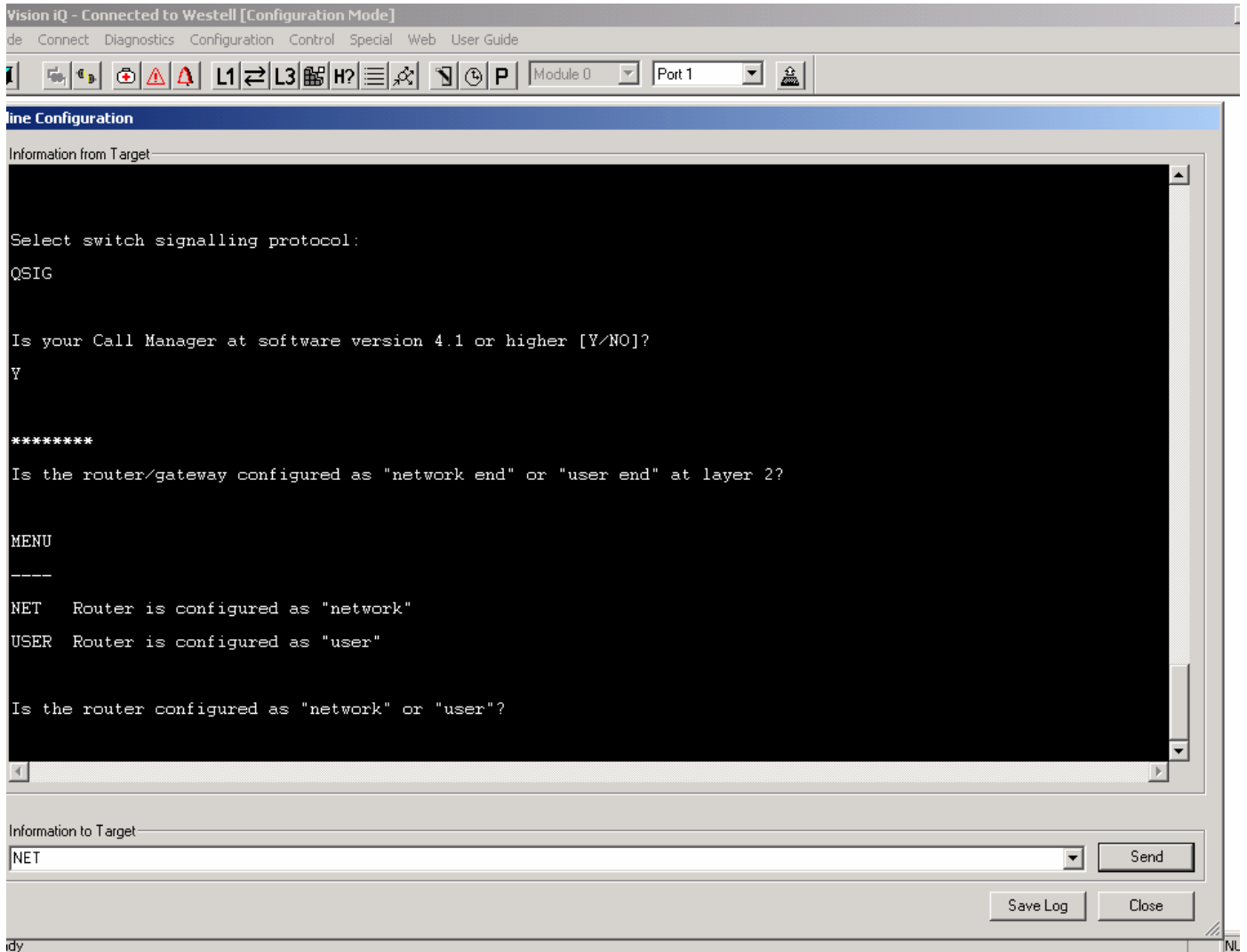




Figure 19. Define Overlap Sending

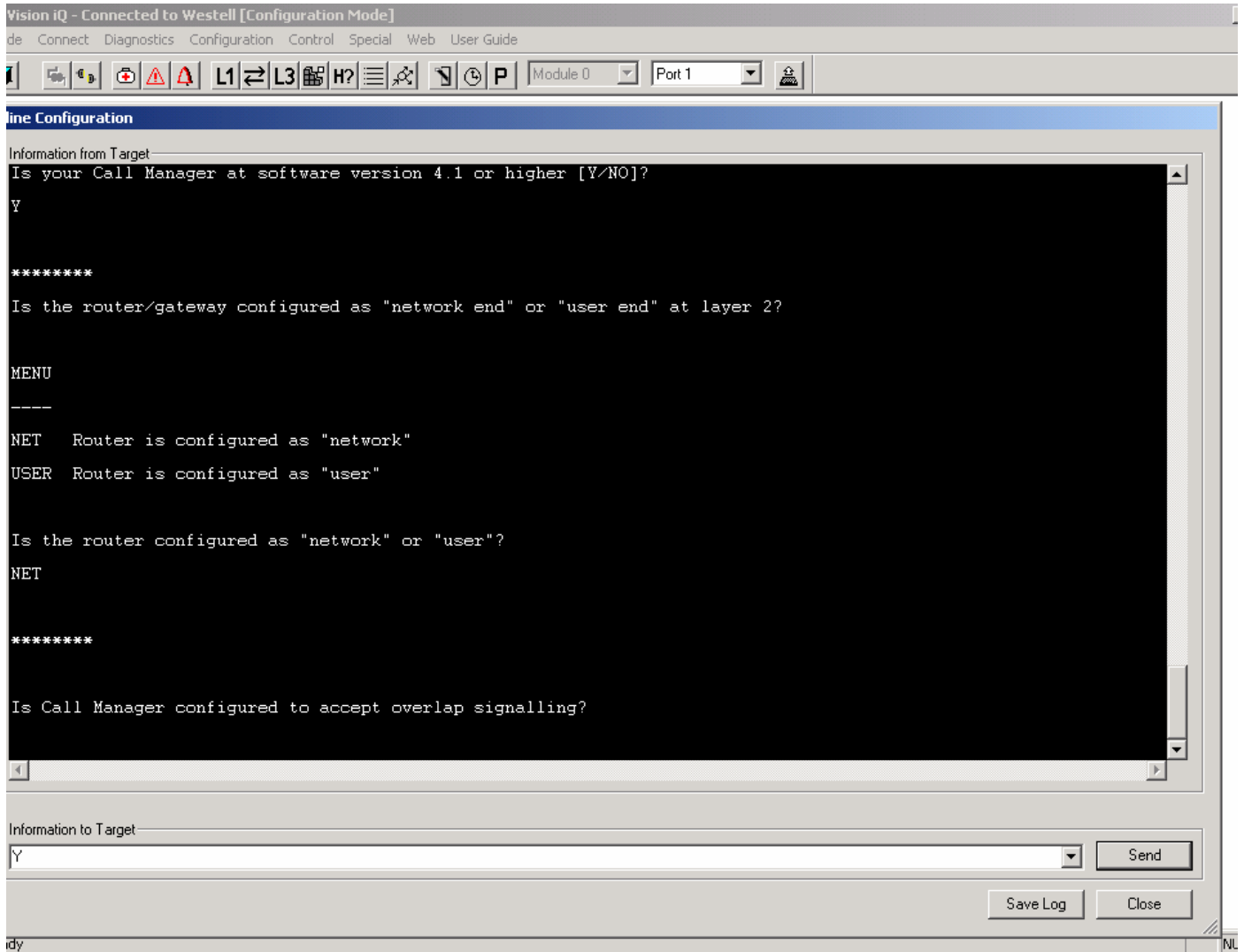




Figure 20. DPNSS A/B End Setting

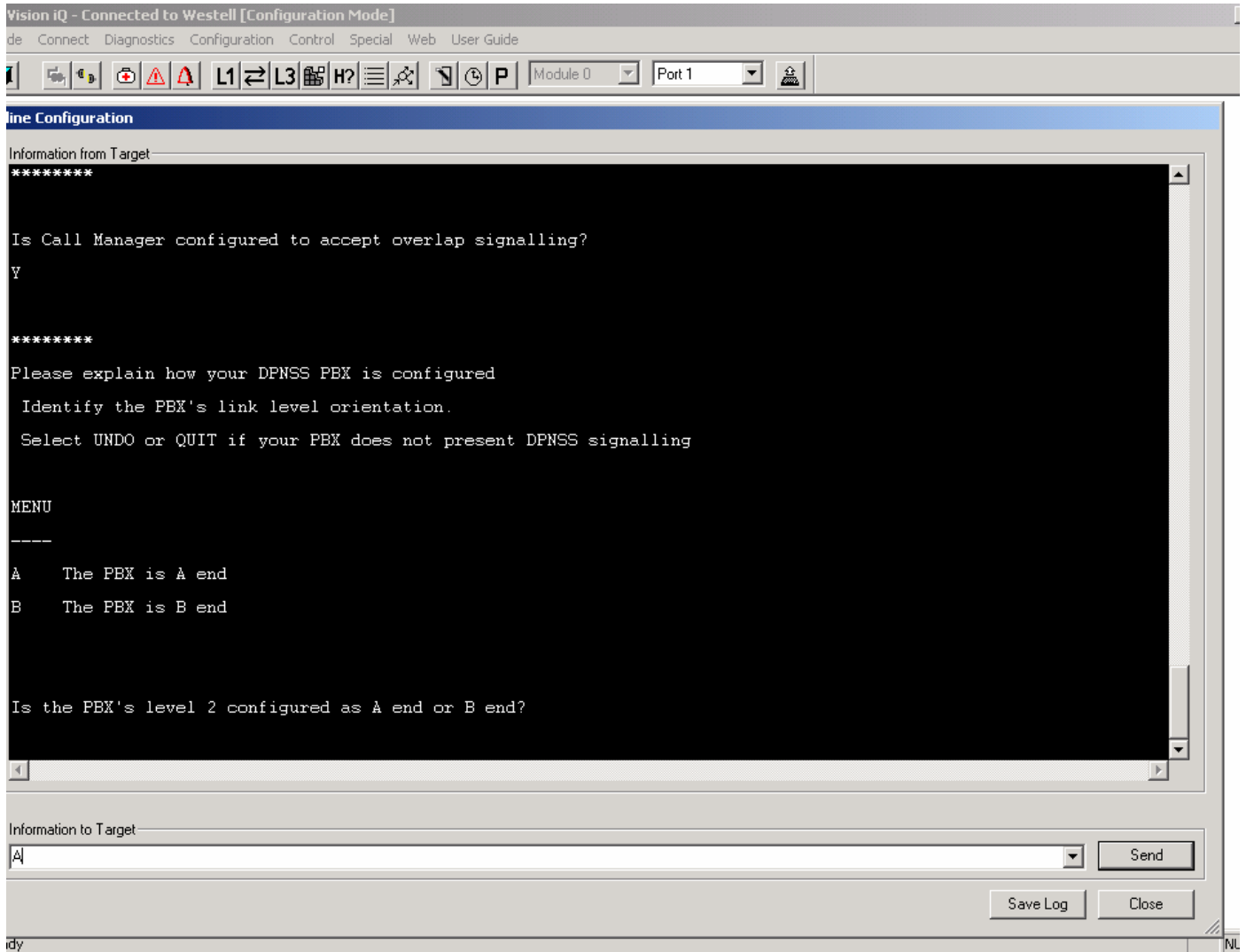




Figure 21. DPNSS X/Y Settings

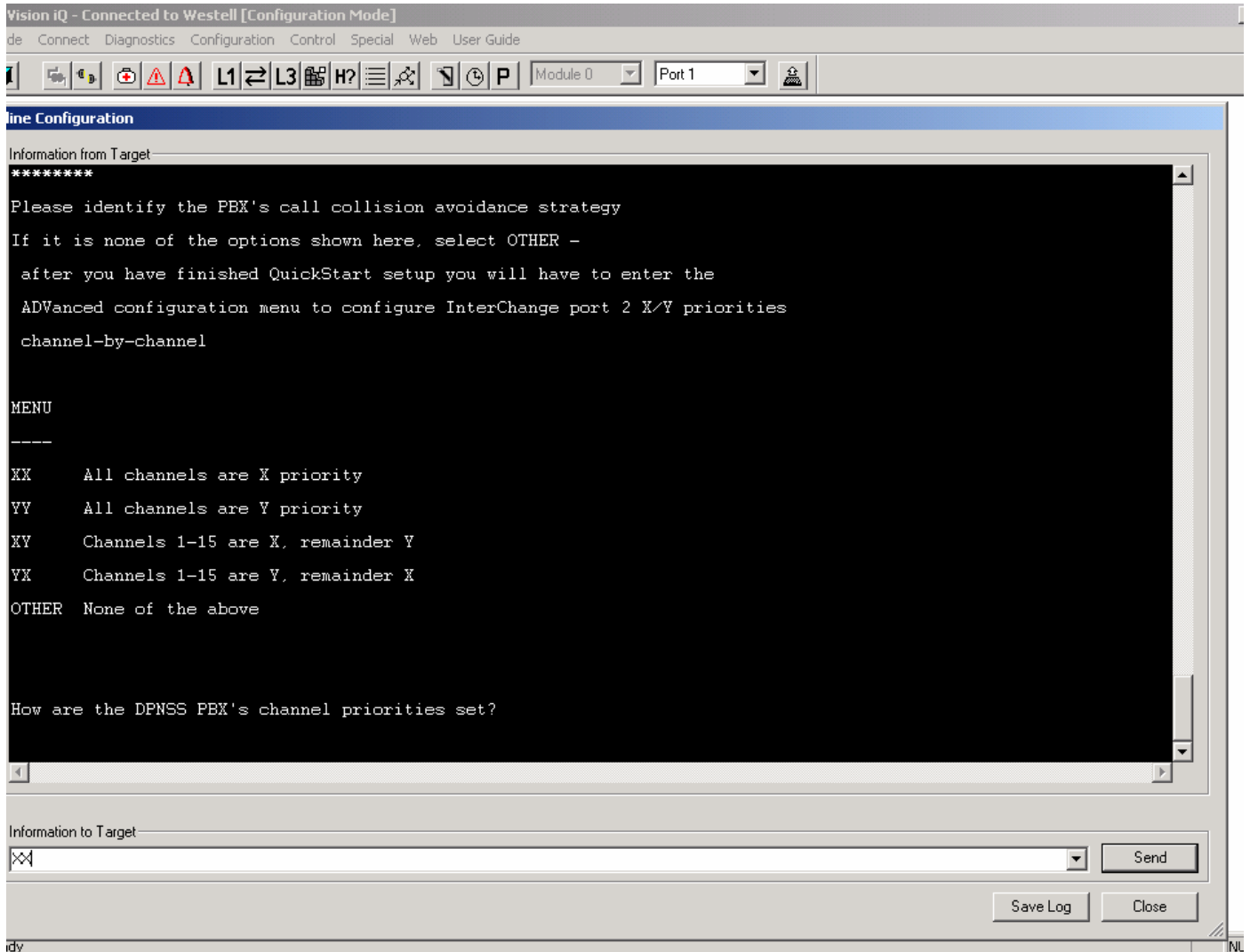




Figure 22. Configuration confirmation (1 of 2)

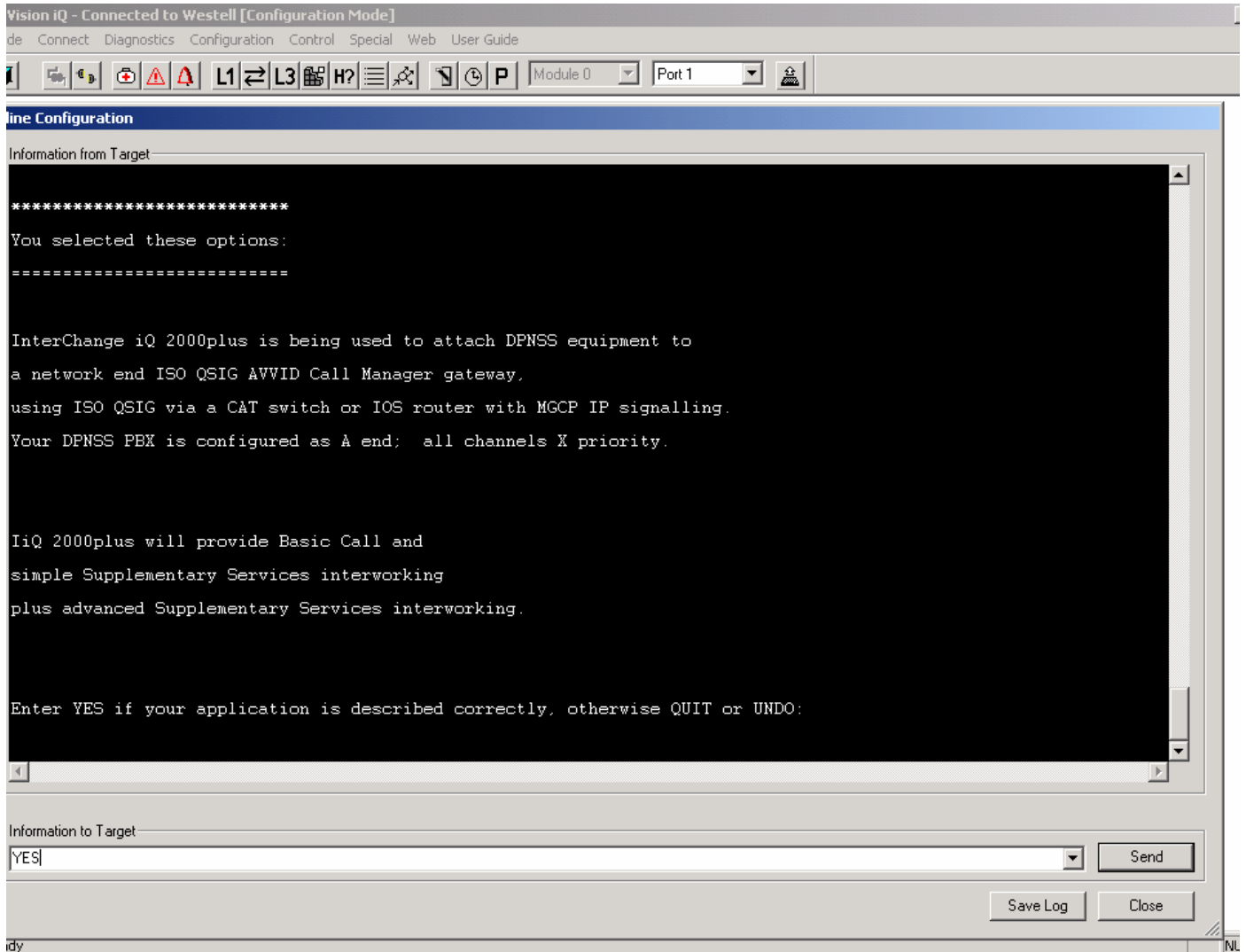
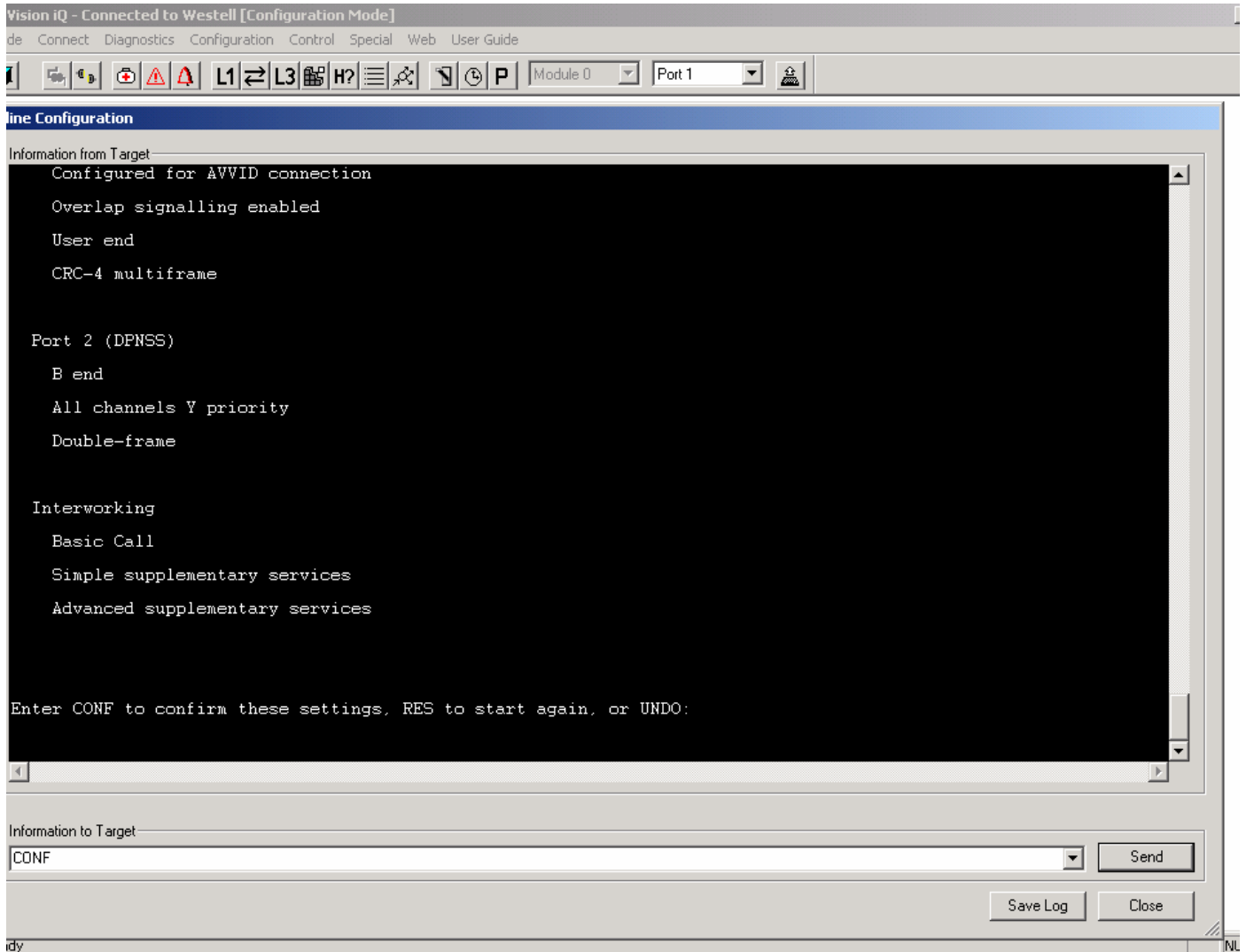




Figure 23. Configuration confirmation (2 of 2)





Configuring the Cisco Unified CallManager 4.1(3)SR1

Figure 24. 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 the Cisco CallManager Administration header with the Cisco Systems logo. The main content area is titled "Find and List Gateways" and shows a search result for "mgcpgw1".


Find and List Gateways [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 25. 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 26. 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 27. MGCP Gateway Configuration (4 of 9)

The screenshot shows the Cisco CallManager Administration interface for MGCP Gateway Configuration. The page has a dark green navigation bar at the top with links for System, Route Plan, Service, Feature, Device, User, Application, and Help. Below this is a brown header with the Cisco CallManager Administration logo and the Cisco Systems logo. The main content area has a yellow background and features a large heading "Gateway Configuration" on the left. On the right, there are three links: "Back to MGCP Configuration", "Back to Find/List Gateways", and "Dependency Records". The configuration details for a gateway are listed: Product: Cisco 26XX, Gateway: S1/DS1-0@mgcpgw1, Device Protocol: Digital Access PRI, Registration: Not Registered, and IP Address: 10.1.1.199. The status is "Ready". Below the details are three buttons: "Update", "Delete", and "Reset Gateway". A "Device Information" section is at the bottom, containing a table with fields for End-Point Name*, Description, and Device Pool*.

| Device Information | |
|--------------------|------------------|
| End-Point Name* | S1/DS1-0@mgcpgw1 |
| Description | S1/DS1-0@mgcpgw1 |
| Device Pool* | Default |



Figure 28. 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 29. 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 30. 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 31. 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 32. MGCP Gateway Configuration (9 of 9)

| UUIE Configuration | |
|--|--------------------------------|
| <input type="checkbox"/> Passing Precedence Level Through UUIE | |
| Security Access Level | <input type="text" value="2"/> |

| Product Specific Configuration  | |
|--|---------------------------------------|
| Line Coding* | <input type="text" value="HDB3"/> |
| Framing* | <input type="text" value="CRC4"/> |
| Clock* | <input type="text" value="External"/> |
| Input Gain (-6..14 db)* | <input type="text" value="0"/> |
| Output Attenuation (-6..14 db)* | <input type="text" value="0"/> |
| Echo Cancellation Enable* | <input type="text" value="Enable"/> |
| Echo Cancellation Coverage (ms)* | <input type="text" value="Default"/> |


* 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 33. Route Pattern (1 of 4)

System
Route Plan
Service
Feature
Device
User
Application
Help

Cisco CallManager Administration

For Cisco IP Telephony Solutions



Find and List Route Patterns

[Add a New Route Pattern](#)

5 matching record(s) for Pattern begins with ""

Find Route Patterns where

and show items per page

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

Matching record(s) 1 to 5 of 5











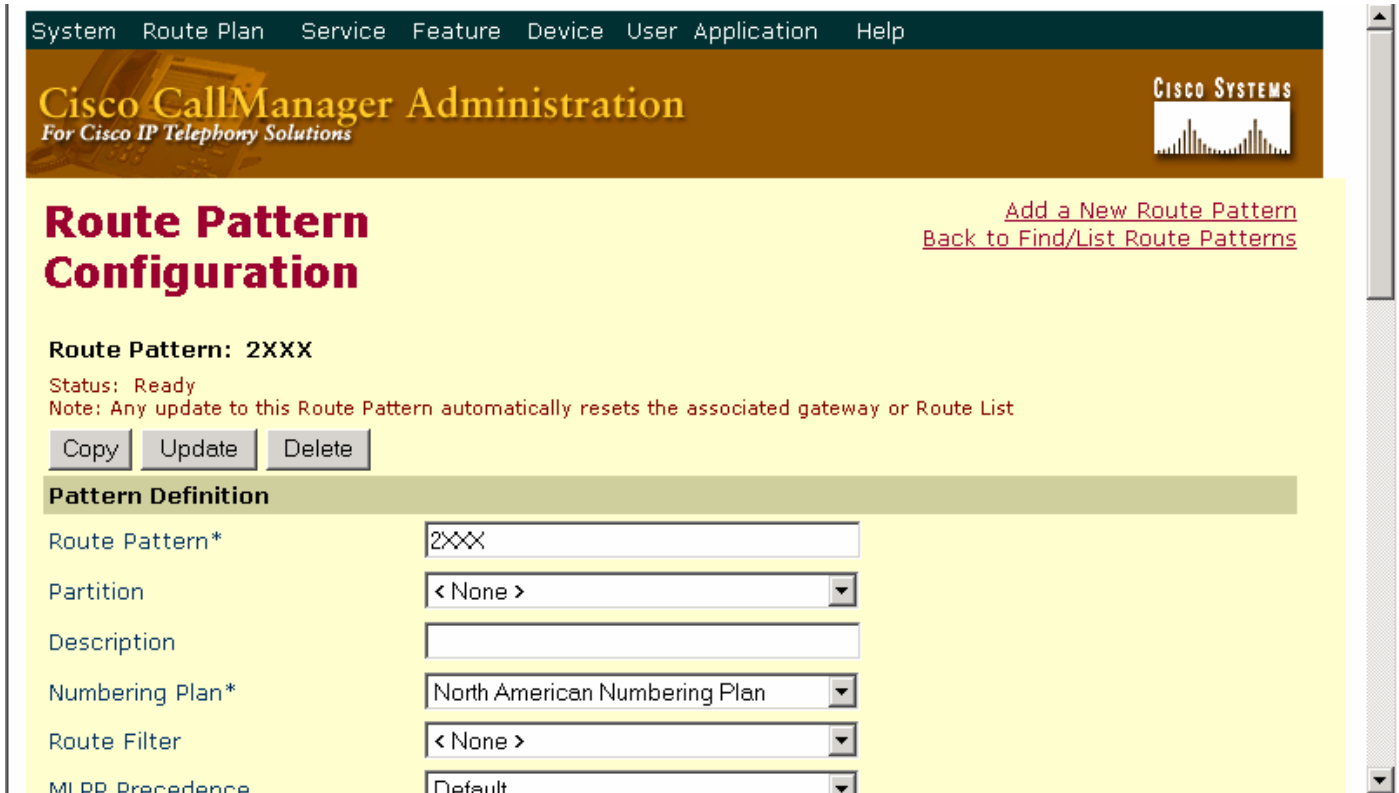
| | Route Pattern | Partition | Description | Route Filter | Gateway/Route List | Copy |
|--------------------------|--|-----------|-------------|--------------|--------------------|---|
| <input type="checkbox"/> |  0 | | | | S1/DS1-0@mgcpgw1 |  |
| <input type="checkbox"/> |  100 | | | | S1/DS1-0@mgcpgw1 |  |
| <input type="checkbox"/> |  2XXX | | | | S1/DS1-0@mgcpgw1 |  |
| <input type="checkbox"/> |  3XXX | | | | S1/DS1-0@mgcpgw1 |  |
| <input type="checkbox"/> |  8XXX | | | | S1/DS1-0@mgcpgw1 |  |

Figure 34. Route Pattern (2 of 4)



The screenshot displays the Cisco CallManager Administration web interface. At the top, a navigation menu includes System, Route Plan, Service, Feature, Device, User, Application, and Help. The page title is "Cisco CallManager Administration For Cisco IP Telephony Solutions" with the Cisco Systems logo. The main heading is "Route Pattern Configuration". On the right, there are links for "Add a New Route Pattern" and "Back to Find/List Route Patterns". The configuration details for a route pattern named "2XXX" are shown, with a status of "Ready". A note states: "Any update to this Route Pattern automatically resets the associated gateway or Route List". Below the note are buttons for "Copy", "Update", and "Delete". The "Pattern Definition" section contains the following fields:

| Pattern Definition | |
|--------------------|-------------------------------|
| Route Pattern* | 2XXX |
| Partition | < None > |
| Description | |
| Numbering Plan* | North American Numbering Plan |
| Route Filter | < None > |
| MLPP Precedence | Default |



Figure 35. Route Pattern (3 of 4)

| | | |
|---|--|---|
| MLPP Precedence | Default | |
| Gateway or Route List* | S1/DS1-0@mgcpgw1 | (Edit) |
| Route Option | <input checked="" type="radio"/> Route this pattern | |
| | <input type="radio"/> Block this pattern — Not Selected — | |
| Call Classification* | OnNet | <input type="checkbox"/> Allow Device Override |
| <input type="checkbox"/> Provide Outside Dial Tone | <input checked="" type="checkbox"/> Allow Overlap Sending | <input checked="" type="checkbox"/> Urgent Priority |
| <input type="checkbox"/> Require Forced Authorization Code | Authorization Level: 0 | |
| <input type="checkbox"/> Require Client Matter Code | | |
| Calling Party Transformations | | |
| <input type="checkbox"/> 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 | |



Figure 36. Route Pattern (4 of 4)

| | |
|---|--|
| Calling Line ID Presentation | <input type="text" value="Default"/> |
| Calling Name Presentation | <input type="text" value="Default"/> |
| Connected Party Transformations | |
| Connected Line ID Presentation | <input type="text" value="Default"/> |
| Connected Name Presentation | <input type="text" value="Default"/> |
| Called Party Transformations | |
| Discard Digits | <input type="text" value="< None >"/> |
| Called Party Transform Mask | <input type="text"/> |
| Prefix Digits (Outgoing Calls) | <input type="text"/> |
| ISDN Network-Specific Facilities Information Element | |
| Carrier Identification Code | <input type="text"/> |
| Network Service Protocol | <input type="text" value="— Not Selected —"/> |
| Network Service | <input type="text" value="— Not Selected —"/> |
| Service Parameter Name | <input type="text" value="< Not Exist >"/> |
| Service Parameter Value | <input type="text"/> |

* indicates required item.



Figure 37. 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 Reroute | <input type="text" value="True"/> | True |



Figure 38. 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 39. Service Parameters – Path Replacement (2 of 2)


| | | |
|---|---|------------------------|
| Path Replacement T1 Timer (sec)* | | |
| Path Replacement T1 Timer (sec)* | <input type="text" value="30"/> | 30 |
| Path Replacement T2 Timer (sec)* | | |
| Path Replacement T2 Timer (sec)* | <input type="text" value="15"/> | 15 |
| Path Replacement PINX ID | | |
| Path Replacement PINX ID | <input type="text" value="5998"/> | |
| Path Replacement Calling Search Space | | |
| 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 40. PINX Call Pick-up Group

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration

For Cisco IP Telephony Solutions



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 Call Pickup Number ▼ begins with ▼ Find

and show 20 ▼ items per page

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

Matching record(s) 1 to 1 of 1

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

Delete Selected
First Previous Next Last
Page 1 of 1



Configuring the Cisco 2600

Current configuration : 1649 bytes

```
!  
version 12.3  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption  
!  
hostname mgcpgw1  
!  
boot-start-marker  
boot-end-marker  
!  
enable password cisco  
!  
memory-size iomem 10  
voice-card 1  
!  
no aaa new-model  
ip subnet-zero  
ip tcp synwait-time 13  
!  
!  
no ip domain lookup  
ip host ukpeccm41 10.1.1.1  
ip host mgcpgw1 10.1.1.199  
!  
ip cef  
isdn switch-type primary-qsig  
!  
!  
!  
!  
!  
!  
!  
!  
!  
!  
cmm-manager mgcp  
cmm-manager music-on-hold  
cmm-manager config server ukpeccm41  
cmm-manager config  
!  
!  
controller E1 1/0  
pri-group timeslots 1-31 service mgcp  
!  
!  
!  
interface Ethernet0/0  
ip address 10.1.1.199 255.255.255.0  
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-l3 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 IiQ2000 sends a combination of NSI and Callback message waiting signals encoded for the GPT iSDX. In most cases, this will work without modification.

In cases of existing installations where the PBX MWI settings have been changed, it will be necessary to ascertain the MWI sequence in use, and then mimic these through the advance settings options on the Westell.

First, it will be necessary to determine the MWI strings in use.

For the iSDX, this can be achieved as follows:

- On the MMI terminal, run a DPNSS trace for Virtual messages on the first channel in use for outbound calls from the PBX to the Westell converter
- From the Operator Console, send a MWI On request to one of the IPT numbers; this can be actioned by dialing “##61<IPT Number>”
- Note the DPNSS sequence seen
- From the Operator Console, send a MWI Off request to the same IPT number; this can be actioned by dialing “##60<IPT Number>”
- Note the DPNSS sequence seen

It will then be necessary to modify the MWI NSI settings to mimic those seen. In some cases, the COS/TAC will prevent DPNSS devices from activating MWI on PBX phones – in these cases, appending a valid COS string to the MWI message (*18) may be required. For PBX hosted Voicemail systems, the ports connected to the voicemail platform may be required to be moved to a difference TAC. Please see site documentation for details.



Figure 41. Advanced Options

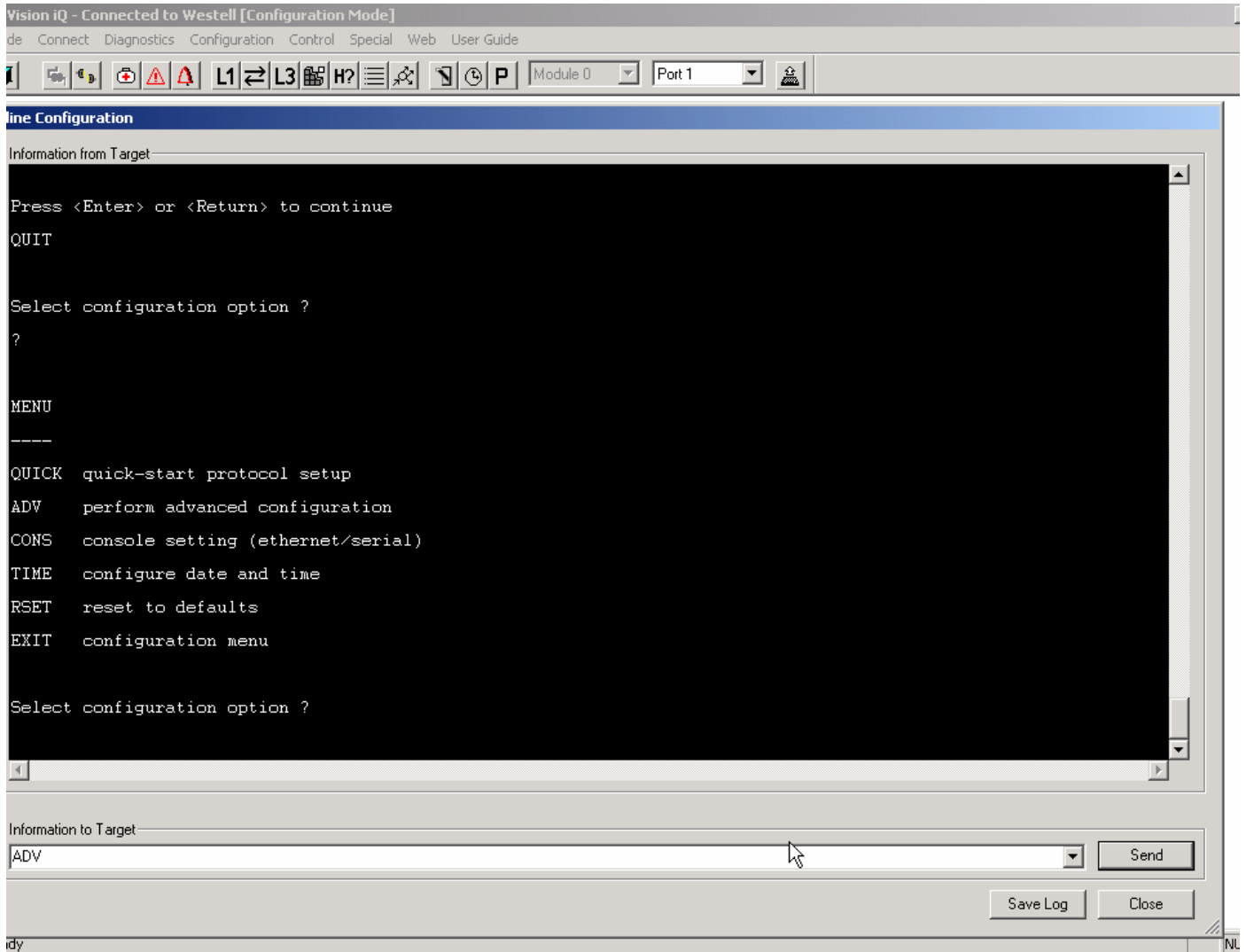




Figure 42. Interworking

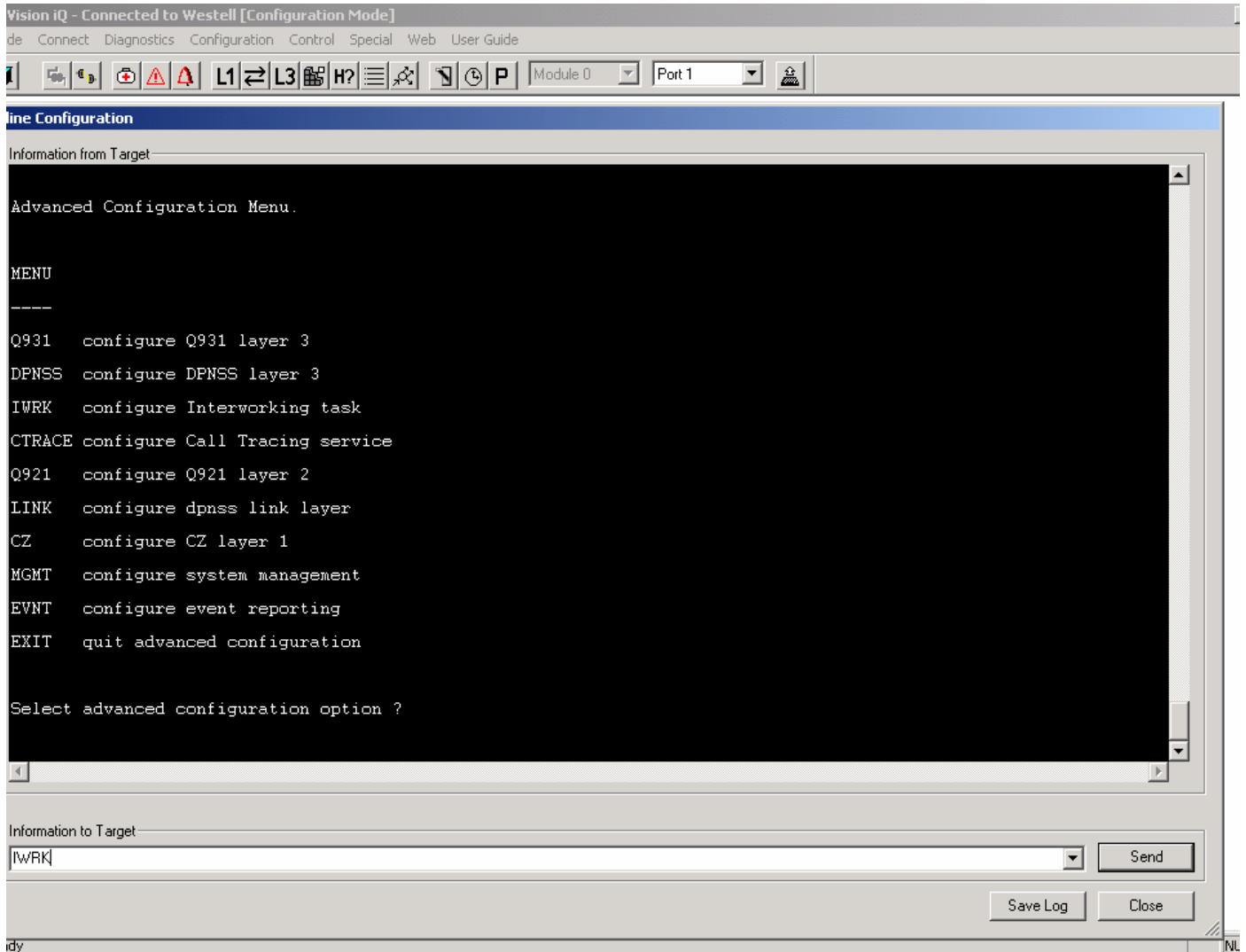




Figure 43. NSI Selection

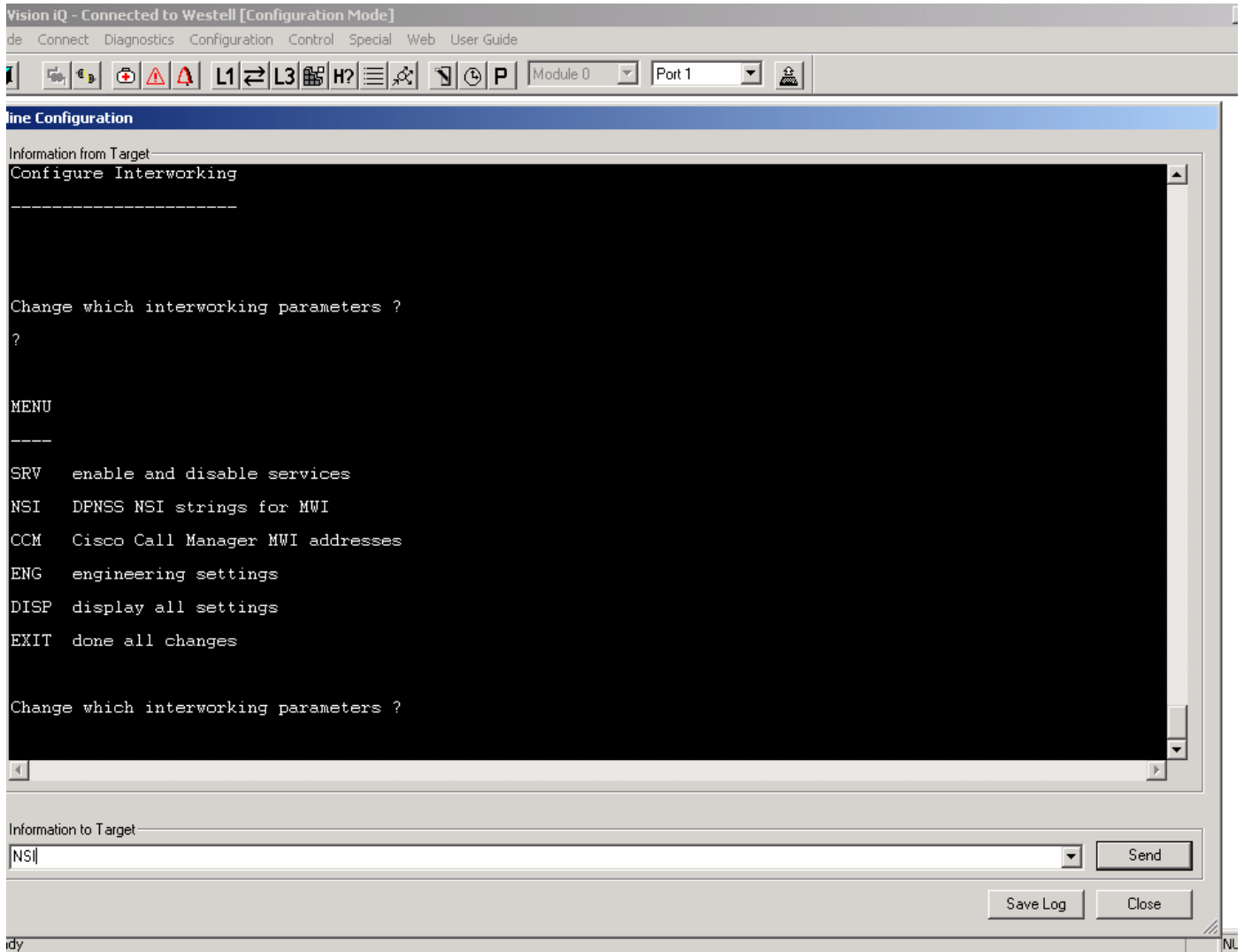




Figure 44. MWI Settings

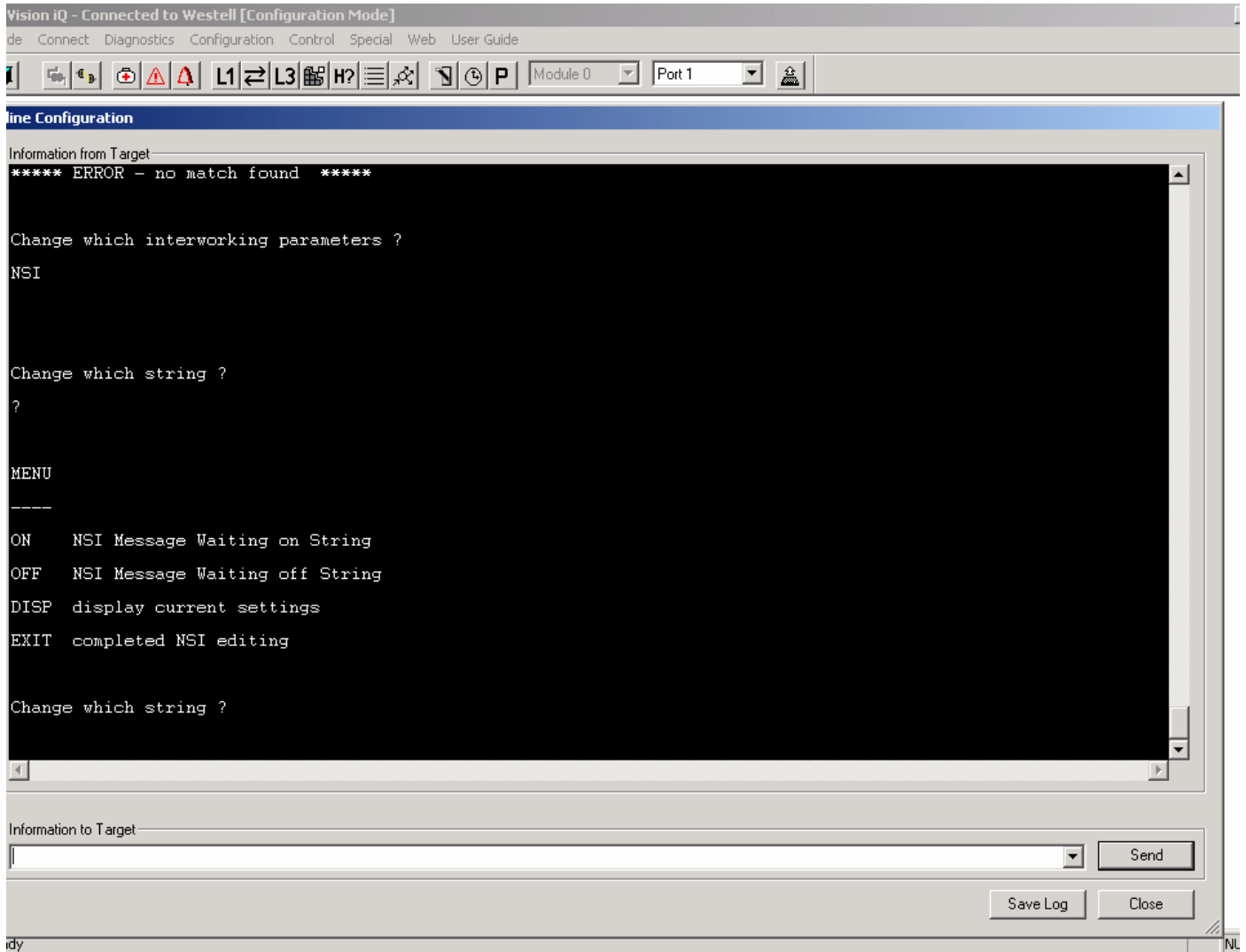




Figure 45. Display of Raw NSI settings for iSDX-S

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

```
?  
  
MENU  
----  
ON   NSI Message Waiting on String  
OFF  NSI Message Waiting off String  
DISP display current settings  
EXIT completed NSI editing  
  
Change which string ?  
DISP  
  
DPNSS NSI strings for Message Waiting :  
indicator ON      : *50*5990#*18*31*31*31#*19*B#  
indicator OFF     : *50*5990#*18*31*31*31#*19*B#  
  
Change which string ?
```

Information to Target

Send Save Log Close

idy



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 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 iSDX/Realitis, a VT100 style console |
| COS | Class Of Service – on an iSDX, the ability to activate features on a particular line |
| TAC | Trunk Access Class – the ability for an extension to use a specific trunk |
| | |
| | |



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