

Nortel Meridian PBX and Cisco CallManager Integration

Document ID: 7207

Contents

Introduction

Prerequisites

Requirements

Configure

Configurations

Troubleshoot

Troubleshooting Commands

Related Information

Introduction

This configuration is taken from a Nortel Meridian 1 Option 81c private branch exchange (PBX), which runs Release 2337. A T1 Primary Rate Interface (PRI) was defined to connect a DT24+ Voice over IP/Time Division Multiplexing (VoIP/TDM) gateway.

A NT-6D80AB 4 port Multiple Serial Data Link (MSDL) was used to provide D-channel framing for the PRI. There are three generations of PRI cards:

- The oldest generation supports one PRI and requires one serial port on the MSDL for the D-channel.
- The next generation supports 2 PRIs and requires two serial ports on the MSDL for the D-channel.
- The newest generation supports one PRI and does not require an MSDL serial port for the D-channel. (It has a high-level data link (HDLC) framer on the card.)

This PBX had the second generation PRI card; it required a physical cable to be run from the PRI card to a port on the MSDL.

The DT24+ was set to the ISDN Network side with a switch type of 5E8 Custom. The PBX PRI trunk was set to the ISDN User side with a switch type set to ESS5. This worked and is the configuration shown. We tried to set the switch type on the PBX trunk to DMS100, but no matter what we did on DT24+, the PBX always saw the trunk as in maintenance mode, and the calls were rejected.

For the D channel to become active, it does not matter which side (PBX or the VoIP gateway) is set to ISDN USER or NETWORK. Set one device to ISDN USER and the other to NETWORK.

At this point, Layer 1 is active. For Layer 2 to initialize, each side sends Q.921 SABME frames. One side responds with a Q.921 UA Unacknowledged message. After this, both sides begin to exchange Receiver Ready (RR) messages. At this point, Layer 2 connectivity is established.

For further explanation of the PBX commands, refer to Nortel's "Administration Input/Output Guide for Meridian 1" and Nortel's "1.5 mb DT1/PRI Administration and Maintenance Guide."

Prerequisites

Requirements

There are no specific requirements for this document.

Configure

In this section, you are presented with the information to configure the features described in this document.

This trunk was configured for a test scenario. The extension for the IP phone was x7373 and for the digital phone was x6925. When you called the IP phone from the digital phone, the access code 8815 was first dialed to choose the specific PRI trunk (see ACOD 8815 in LD21), and then the extension of the IP phone was dialed. For this test, the configuration allowed a number to be chosen for the IP phone that can be uniquely routed.

Note: Use the Command Lookup Tool (registered customers only) to obtain more information on the commands used in this section.

Configurations

This document uses these configurations:

D Signaling Channel Configuration	
Configuration Parameters	Comments
>LD 22	load overlay module 22 to print an i/o device report PT2000
REQ PRT	@ Request prompt, enter "PRT" to print
TYPE ADAN DCH 8	@ Type prompt, enter: "ADAN" for all i/o devices "DCH" to specify D-channel devices "8" to for the D-channel with ID #8
ADAN DCH 8	configuration for i/o D-channel 8
CTYP MSDL	card type – Mutiple Serial Data Link
GRP 1	System group – 1
DNUM 12	i/o device number – 12
PORT 3	physical port – 3
DES CISCO	description
USR PRI	D channel – PRI only
DCHL 115	the PRI card – aka "loop" – the channel is for
OTBF 32	default – 32 output request buffers

PARM RS422 DTE	default – physical interface type
DRAT 64KC	default – physical interface rate
CLOK EXT	default – physical interface clocking
NASA NO	default – Network Attendant Service Allowed?
IFC ESS5	Interface – aka "switch type"
SIDE USR	IDSN "side" – i.e. either USR or NET
CNEG 1	default – Channel Negotiation Option
RLS ID 36	release ID of the switch at the far end of the D-channel – 36, use 23 for SL1 <-> SL1
RCAP ND2	Remote D-channel Capabilities – name display 2
T200 3	default – retransmission Timer
T203 10	default – max Time secs without frames being exchanged
N200 3	default – max Number of retransmissions
N201 260	default – max Number of octets in information field
K 7	default – max Number of outstanding frames
REQ ****	type **** to exit overlay module 22
OVL000	

B Bearer Channel Configuration	
>LD 20	load overlay module 20 to print a Terminal Number Block report
PT0000	
REQ: PRT	@ Request prompt, enter "PRT" to print
TYPE: TNB	@ Type prompt, enter "TNNB" for Terminal Number Block
TN 115 1	@ TN prompt, enter:
	"115" to specify Terminal Number Block – aka "loop" # 115 aka PRI card 115
	"1" to specify B-channel #1, could be 1-23
SPWD	
DATE	

PAGE	
DES	
TN 115 01	configuration for TNB 115, B channel 1
TYPE TIE	type of trunk – TIE, could be DID ..., see LD 14
CDEN SD	default – card port density – single density
CUST 0	Customer number – 0 get operator "x", 1 get "Y", ...
NCOS 0	Network Class Of Service group – 0, change if trouble calling in or out
RTMB 115 1	Route Number and Member Number – member 1, could be 2...23, of route block number 115
B-CHANNEL SIGNALING	
TGAR 1	Trunk Group Access Restriction – 0-31, 1 in this case
AST NO	default – Associated Trunk for CTI trunk monitoring and control? – no
IAPG 0	default – Event Group for USM message 0-15
CLS CTD DIP WTA LPR APN THFD HKD	default – Class of Service:
P10 VNL	CTD – Conditionally Told Denied
	DIP – Dial Pulse
	WTA – Warning Tone Allowed
	LPR – Low Priority
	APN – ACD Priority Not Required
	THFD – Centrex Switchhook Flash Denied
	HKD – Hong Kong DTI Denied
	P10 – 10 pulses per second
	VNL – Via Net Loss, see LD14
TKID	default – Trunk Identifier – like to refernce a circuit ID
DATE 14 JUN 2000	default – date of this report
NACT ****	type **** to exit overlay module 20

OVL000	
--------	--

Call Routing Configuration	
>LD 21	load overlay module 21 to print a Route Data Block report
PT1000	
REQ PRT	@ Request prompt, entered "PRT" to print
TYPE: RDB	@ Type prompt, entered "RDB" for Route Data
CUST 0	Block Customer number – 0 get operator "x", 1 get "Y", ...
ROUT 115	Route Number – 0–127, 0–511 – 115, matches Terminal Block Number above
TYPE RDB	Route Data Block
CUST 00	Customer number – 0
ROUT 115	Route Number – 115
DES CISCO	description
TKTP TIE	type of trunk – TIE, could be DID ..., see LD 14
ESN NO	default – Electronic Switched Network pad control? – no
CNVT NO	default – Conventional switch route? – no
SAT NO	default – Satellite used for trunk route?
RCLS EXT	default – Route Class marked as external?
DTRK YES	Digital Trunk Route? – yes
DGTP PRI	Digital Trunk Type for route – PRI, could be BRI ...
ISDN YES	ISDN? – yes
MODE PRA	Mode of operation – PRA, could be ISLD ..., see LD16
IFC ESS5	Interface Type for this PRI route – ESS5, could be S100, D100, ...
SBN NO	default – Send Billing Number?
PNI 00000	default – Private Network Identifier?, see LD16
SRVC NNSF	default – Service type provisioned – No Network Specific Facility NNSF, could be M800, IWAT, ...

NCNA YES	default – Network Calling Name Allowed? – yes
NCRD NO	default – Network Call Redirection Allowed? – no
CHTY BCH	Channel Type – BCH, could be ABCH
CTYP UKWN	default – Call Type for outgoing direct dialed TIE route – Unknown, could be INTL, NXX, ...
INAC NO	default – Insert ESN Access Code to incoming private network call? – no
ISAR NO	default – Integrated Service Access Route denied? – no
TGAR 1	Trunk Group Access Restriction – 0–31, 1 in this case
BCOT 0	default – B-channel Overload Control Timer – 0
DSEL VOD	default – Data Selection – Voice or Data Route
PTYP PRI	VOD Port Type at far end – PRI, could be ATT, ACO, ...
AUTO NO	default – Auto-Terminate? – no, terminate normally.
DNIS NO	default – ACD DNIS route?
DCDR NO	default – Include DNIS in CDR records? related to ACD – no
ICOG IAO	Incoming and/or Outgoing trunk – IAO, could be ICT, OGT
SRCH LIN	default – Linear Hunting Search Method for outgoing trunk member – LIN, could be RRB
TRMB YES	default – Tromboning allowed? – yes
STEP	default – Alternate trunk route for outgoing trunks – " ", could be 0–511
ACOD 8815	Access code for the trunk route – 8815 – see note
TCPP NO	above default – CPP flag for incoming non-ISDN trunk call tandemed to this trunk – no
PII NO	default – Calling Privacy Indicator Ignored? – no
TARG 01	Trunk Access Restriction Group – match "TGAR" – 1
CLEN 1	default – Calling Line ID entry number – 1
BILN NO	default – Billing Number required? – no
ABS	default – Actual Outgoing toll digits to be ignored for code restriction – " ", could be 0–9.
INST	default – Insert – " " – no digits are entered

ANTK	default – ANI identifier number
SIGO STD	default – Signaling arrangement – std, could be ESN3, ...
ICIS YES	default – Incoming Identifier Send – yes
TIMR ICF 512	default – Trunk timer: Incoming Flash – 512ms
OGF 512	default – Trunk timer: Outgoing Flash – 512ms
EOD 13952	default – Trunk timer: End of Dial – 13952ms
NRD 10112	default – Trunk timer: No Ringing Detector – 10112ms
DDL 70	default – Trunk timer: Dial Delay – 70ms
ODT 4096	default – Trunk timer: End of dial for DIGITONE trunks – 4096ms
RGV 640	default – Trunk timer: Ring Validation – 640ms
GRD 896	default – Trunk timer: Guard – 896ms
SFB 3	default – Trunk timer: Seize Fail Busy – 3s
NBS 2048	default – Trunk timer: Enblock Short dialing – 2048ms
NBL 4096	default – Trunk timer: Enblock Long dialing – 4096ms
IENB 5	default – Trunk timer: Idle Extension Notification Block – 5s
TFD 0	default – Trunk timer: Timed Forced Disconnect – 0s
DRNG NO	default – North American Distinctive Ringing? – no for tie trunks to have normal ringing
CDR NO	default – Call Detail Recording for this route? – no
MUS NO	default – Music on hold? – no
RACD NO	default – Route traffic information in ACD reports? – no
OHQ NO	default – Off Hook Queuing? – no
PAGE 002	page 2 of this report
OHQT 00	default – Off Hook Queue Threshold – 0s
CBQ NO	default – Call Back Queuing? – no
AUTH NO	default – Authorization code to be prompted for incoming NARS/BARS calls? – no
TDET NO	default – Tone Detector required? – no

PLEV 2	default – Priority Level – 2, could be 0–7 for forcing override, camp-on, ...
ALRM NO	default – Malicious Call Trace Alarm is allowed for external calls? – no
ART 0	default – Access Restriction Table – 0
SGRP 0	default – Scheduled access Restriction Group – 0
AACR NO	default – Route Acquired by Application? – no

Troubleshoot

Refer to T1 PRI Troubleshooting for tips to debug PRI trunks.

Note: If you receive an intermittent fast busy signal when you call from an IP phone to a Nortel phone, make sure that you use the R2 analog signaling.

Troubleshooting Commands

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

Note: Refer to Important Information on Debug Commands before you use **debug** commands.

If you experience any problems after the Tspan is connected, and there are no framing, LOS, or sync errors, refer to these documents for ideas:

- T1 Layer 1 Troubleshooting
- T1 Error Events Troubleshooting
- T1 Alarm Troubleshooting

Related Information

- [Technical Support & Documentation – Cisco Systems](#)

[Contacts & Feedback](#) | [Help](#) | [Site Map](#)

© 2014 – 2015 Cisco Systems, Inc. All rights reserved. [Terms & Conditions](#) | [Privacy Statement](#) | [Cookie Policy](#) | [Trademarks of Cisco Systems, Inc.](#)

Updated: Feb 02, 2006

Document ID: 7207
