Cisco Unified CallManager 4.0-PBX Interoperability: Nortel Meridian-1 Release 25 PBX to a Cisco 6608 Gateway using T1 Q.SIG with MGCP for Nortel CallPilot MWI

Introduction

- This is an application note for the connectivity of a Nortel Meridian 1 Opt 11C PBX using Succession 4.0 software with a Cisco Unified CallManager using a Cisco Catalyst 6608-T1 QSIG interface as the MGCP gateway.
- The network topology diagram shows end-to-end interoperability between the Cisco Unified CallManager connected to the PBX via the Cisco 6608-T1 link as the MGCP Gateway.
- Connectivity is achieved by using the industry standard ISO QSIG protocol. The Nortel Meridian 1 can be configured as either Peer-master or Peer-slave.
- Nortel’s Network Message Services (NMS) provides messaging services across Meridian 1 network using ISDN signaling. There are two NMS applications:
  - The Network Message Service – Message Center allows a caller transparent access to a centralized message center over an ISDN PRI/ISL network. Three types of Message Center configurations are supported:
    - a) ACD Message Center
    - b) DN Message Center
    - c) Attendant Message Center
  
   For these types of Message Centers, the message taker’s set is used to activate and deactivate a user’s Message Waiting Indicator. Message Indication Key (MIK) and Message Cancellation Keys (MCK) are used to turn on/off the Message Waiting Indication on a user telephone.

  - The Network Message Service – Meridian Mail offers access to the Meridian Mail system across the Meridian 1 network. Remote users defined as part of the NMS-MM server have access to all the Meridian Mail features available on the local switch. This type of configuration uses the existing Nortel Meridian 1 voice mail system (i.e. Meridian Mail or Nortel Call Pilot) as the network’s voice mail hub while in the process of migrating to IP telephony.
Network Topology

Basic Call Setup End-to-End Configuration

PBX: Nortel Meridian 1
- Option 11C
- Sucession 4.0

Phone A

Phone B

PBX #1

ISDN Type:
- T1-QSIG

CMM-T1

Cisco Catalyst
- 6000
- Ethernet Switch

CISCO CallManager
- Release 4.01 (SR2A)

Phone C

Phone D

Nortel Networks
- Call Pilot

Phone A

Phone B

Phone C

Phone D

Cisco 7960 IP phones

Network Topology

Limitations
- For the Nortel Meridian 1 PBX to support the QSIG MWI feature, the PBX must at least have an Enterprise software level (to get ISDN Tie lines) with X11 Rel. 25.40 or 25.40B software (to get QSIG MWI).
- In addition to NMS software and Phantom TN Features, the following packages must be installed on the PBX:
  - PKG 305 (QSIG Generic Function)
  - PKG 316 (QSIG Supplementary Services)
  - PKG 263 (QSIG Basic Call/Name Display)
  - PKG 175 (Network Message Service)
- MCK and MIK keys do not work using the Network Message Service – Message Center setup. The following error is generated:

  PRI5033 DCH: 18  Data: 4  
  This message is defined as follows:

  An application has requested to send on a QSIG a non-call related message 
  received on MCDN but the QSIG RCAP is not configured on the outgoing link or 
  the service is not supported on QSIG. The message is rejected. 
  Output: DCH or DSL number, PRI/BRIT type, Service identifier. 
  Service Identifier data 4 is defined as Network Message Center.
System Components

Hardware Requirements
- Cisco Hardware
  - Cisco Catalyst 6000 switch with Cisco 6608-T1 Gateway
  - Cisco Unified CallManager server
- PBX Hardware
  - Nortel Meridian 1 Opt. 11C

Software Requirements
- Cisco CatOS 7.6
- Nortel Succession 4.0.
- Cisco Unified CallManager 4.01

Configuration

Note: The following working configuration uses the Network Message Service-Meridian Mail configuration. It was taken from an actual installation site wherein the customer maintains their existing Nortel Meridian 1 voice mail system (Nortel Call Pilot, in this case) as their network’s voice mail hub while in the process of migrating to IP telephony. The MWI activate and deactivate messages were successfully passed from the Nortel side to the Cisco side.

Note: Due to the absence of a Nortel Voice Mail System such as Meridian Mail or Call Pilot, this configuration was not tested by Cisco.

Configuring the Nortel Meridian 1

D-Channel Configuration

ADAN     DCH 32
CTYP TMDI
CARD 32 --- defines card in slot 32 (loop 32) as the QSIG trunk to CCM
PORT 1
DES Qsig
USR PRI
DCHL 32
OTBF 127
PARM RS232 DTE
DRAT 64KC
CLOK EXT
IFC ISGF --- defines switch-type ISO QSIG with GF platform
PINX_CUST 0
ISDN_MCNT 300
CLID OPT0
CO_TYPE STD
SIDE USR
CNEG 1
RLS ID **
RCAP COLP QMWI --- enables MWI feature across QSIG trunk
MBGA NO
OVLR NO
OVLS NO
T310 120
T200 3
T203 10
N200 3
N201 260
K 7

Route Data Block Configuration

REQ: prt
TYPE: rdb
CUST 0
ROUT 32

TYPE RDB
CUST 00
DMOD
ROUT 32
DES QSIG
TKTP TIE
NPID_TBL_NUM 0
ESN NO
CNVT NO
Trunk Data Block Configuration

TYPE: tnb
TN   32 1
DATE
PAGE
DES

DES  QSIG
TN   032 01
TYPE TIE
CDEN SD
CUST 0
TRK  PRI
PDCA 1
PCML MU
NCOS 5
RTMB 32 1 --- ties the Route Data Block to the actual QSIG card/slot
B-CHANNEL SIGNALING
TGAR 1
AST NO
IAPG 0
CLS UNR DTN WTA LPR APN THFD HKD
   P10 VNL
TKID
AACR NO
DATE 31 AUG 2004
Configuring Cisco Unified CallManager

IP Phone Configuration
Directory Number (DN) Configuration

**Note:** Voice Mail Profile(DN) is defined under Directory Number Settings
Gateway Configuration

Product: Cisco Catalyst 6000 T1 VoIP Gateway
Gateway: S0/D01-398DA008164720D85
Device Protocol: Digital Access PRI
Registration: Registered with Cisco CallManager CN-B
IP Address: 10.299.2.100

Status: Ready

Device Information

- MAC Address: 0001B402CD35
- Description: Test-qsig
- Device Pool: Default
- Network Locale: United States
- Media Resource Group List: <None>
- Location: <None>
- AAR Group: <None>

Multilevel Precedence and Preemption (MLPP) Information

- MLPP Domain: (e.g., "Q931"), (Optional)
- MLPP Indication: Off
- MLPP Preemption: Disabled

Interface Information
### Cisco CallManager 4.0 Administration - Gateway Configuration - Microsoft Internet Explorer

**Product: Cisco Catalyst 6000 T1 VoIP Gateway**

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRI Protocol Type</td>
<td>T1-1920/J0900-11</td>
</tr>
<tr>
<td>Protocol Side</td>
<td>Network</td>
</tr>
<tr>
<td>Channel Selection Order</td>
<td>Top Down</td>
</tr>
<tr>
<td>Channel B Type</td>
<td>Timeslot Number</td>
</tr>
<tr>
<td>PCM Type</td>
<td>Low</td>
</tr>
<tr>
<td>Delay for first restart (1/8 sec ticks)</td>
<td>32</td>
</tr>
<tr>
<td>Delay between restarts (1/8 sec ticks)</td>
<td>4</td>
</tr>
<tr>
<td>Inhibit restarts at PRI initialization</td>
<td>Yes</td>
</tr>
<tr>
<td>Enable status poll</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Call Routing Information

#### Inbound Calls
- Significant Digits: All
- Calling Search Space: None
- AAR Calling Search Space: None
- Prefix ON

#### Outbound Calls
- Calling Line 10 Presentation: Default

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Route Pattern Configuration

Note: Route Pattern “3077199” routes the call over to QSIG trunk to Nortel
Voice Mail Profile Configuration

Voice Mail Profile: 3077199
Status: Ready

Voice Mail Profile Name: 3077199
Description: 3077199
Voice Mail Pilot: 3077199\(<Name>\)
Voice Mail Box Mdn: 

- Make this the default Voice Mail Profile for the system
- Indicates required item
- ** The Voice Mail Pilot is comprised of the Voice Mail Pilot Number and its corresponding Calling Search Space Name (Voice Mail Pilot Number\(<Calling Search Space>\)).
Voice Mail Pilot Configuration

Voice Mail Pilot Number: 3077199

Status: Ready

- Update
- Delete
- Reset Devices

Voice Mail Pilot Number: 3077199

Description: Call Pilot

Calling Search Space: (None)

- Make this the default Voice Mail Pilot for the system
  * indicates a required item
MWI Configuration

MWI OFF
Important Information

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