



Avaya BCM Solutions Test Lab

Business Communication Manager BCM 50 and BCM450 Release 5.0 Configuration Guide for Bell Canada SIP Trunking

Issue 1.0

Abstract

This document provides guidelines for configuring a SIP Trunk between a BCM50 or BCM450 Release 5.0 and Bell Canada SIP Trunking Service

Table of Contents

TABLE OF CONTENTS	2
1.0 INTRODUCTION	4
1.1 PREREQUISITES.....	4
1.1.1 <i>Required Reading</i>	4
1.2 DOCUMENT CHANGE HISTORY	4
2.0 SIP TRUNKING SERVICE OVERVIEW	5
2.1 WHAT IS SIP TRUNKING?	5
3.0 REFERENCE TOPOLOGY	6
4.0 TESTED EQUIPMENT	7
5.0 FEATURES	8
5.1 FEATURES SUPPORTED	8
5.2 TRUNK GROUP SELECTION FOR ORIGINATING CALLS.....	8
5.3 FEATURES NOT SUPPORTED	10
6.0 DEPLOYMENT CONSIDERATIONS	11
6.1 MEDIA CODEC'S FOR BELL SIP TRUNKING	11
7.0 REQUIRED SERVICE CONFIGURATION INFORMATION	12
8.0 SIP TRUNKING DIAL PLAN OVERVIEW	13
9.0 CONFIGURE DNS (OPTIONAL)	14
9.1 BELL RESOLVES PBX DOMAIN	14
9.2 PBX RESOLVES BELL SERVICE DOMAIN.....	14
10.0 SYSTEM CONFIGURATION	15
10.1 VOIP TRUNK SETTINGS.....	15
<i>Select Resources</i> → <i>Telephony Resources</i> → <i>Module IP Trunks</i> → <i>IP Trunks Settings</i>	15
<i>Select Resources</i> → <i>Telephony Resources</i> → <i>Module IP Trunks</i> → <i>SIP Settings</i>	15
<i>Select Resources</i> → <i>Telephony Resources</i> → <i>Module IP Trunks</i> → <i>SIP Proxy</i>	16
<i>Select Resources</i> → <i>Telephony Resources</i> → <i>Module IP Trunks</i> → <i>SIP Media Parameters</i>	17
<i>Select Resources</i> → <i>Telephony Resources</i> → <i>Module IP Trunks</i> → <i>SIP URI Map</i>	18
<i>Select Resources</i> → <i>Telephony Resources</i> → <i>Module IP Sets</i> → <i>SIP Authentication</i>	19
11.0 IP SET SETTINGS	20
<i>Select Resources</i> → <i>Telephony Resources</i> → <i>Module IP Sets</i> → <i>IP Terminal Global Settings</i>	20
<i>Select Resources</i> → <i>Telephony Resources</i> → <i>Module IP Sets</i> → <i>IP Terminal Details</i>	21

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

2 of 34
BCM50_BCM450_R5_Configuration_Bell

12.0 DIALING PLAN SETTINGS	22
<i>Select Telephony → Dialing Plan → Public Network</i>	22
<i>Select Telephony → Dialing Plan → Routing → Routes</i>	23
<i>Select Telephony → Dialing Plan → Routing → Destination Codes</i>	23
<i>Select Telephony → Dialing Plan →Line pools</i>	24
<i>Select Telephony → Sets → Active Sets → Line Access → Line Pool Access</i>	24
13.0 SET CONFIGURATION	25
<i>Select Telephony → Sets → Active Sets → Line Access → Line assignment</i>	25
<i>Select Telephony → Sets → Active Sets → Line Access → Line Pool Access</i>	26
14.0 ANALOG SETS	27
<i>Select Telephony → Sets → Active Sets →Active Sets→ Capabilities and Preferences→Capabilities</i>	27
15.0 QOS	28
<i>DATA Services → QOS</i>	28
16.0 FAQ & TROUBLESHOOTING	29
16.1 SYSTEM MONITORING WITH BCM MONITOR	29
16.2 REAL-TIME DISPLAY OF BCM ALARMS	31
17.0 ACRONYMS	33

1.0 Introduction

This document will cover the basic setup of the Nortel BCM50 R5.0 and BCM450 R5.0 for use with the Bell Canada SIP Trunking service.

- Testing was performed in accordance to the Bell Canada test plan and all the core features of the SIP Trunking service were verified.
- The BCM450 configuration detailed in this document was verified in a lab environment with a minimal configuration used to ensure proper interoperability between Bell's SIP network and the system under test.

DISCLAIMER: The configuration described in this document details only the minimum configuration required for interoperability to be successful; so care must be taken by the network administrator to ensure this configuration is valid for their deployment network, accounting for version differences, and possible feature conflicts with their CPE environment as well. Note all test cases were run BCM450 R5.0 hardware. Minimal testing was performed on the BCM50R5.0 system as the function of the BCM50 R5.0 and BCM450 R5.0 systems are identical this service.

1.1 Prerequisites

This document assumes the reader possesses administrator-level knowledge in regard to the deployment and configuration of the BCM line of products and their associated Management tools. Based on that assumption, this document will only cover what is necessary to connect the specified the BCM hardware to the Bell SIP Trunking service. The document does not cover any non-trunk-related configurations or any complex trunk-routing scenarios specific to a given customer deployment scenario.

1.1.1 Required Reading

The reader is urged to consult the Bell SIP Trunking Service Interface Document for more detailed coverage of the content in this guide. The Service Interface Document includes detailed coverage of the SIP –Trunking service parameters, including example SIP messages, full coverage of the production version of the dial-plan, and detailed coverage of codec support and policies for trans-coder invocation.

1.2 Document Change History

Date,	Version	Summary of Changes
April 12 th , 2010,	Issue 1.0	original publication

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

4 of 34
BCM50_BCM450_R5_Configuration_Bell

2.0 SIP Trunking Service Overview

2.1 What is SIP Trunking?

The SIP Trunking Service is a critical element for customers migrating to VoIP. The SIP Trunking Service provides customers with a voice gateway (typically an IP-based PBX) over their data network for calls to and from the PSTN.

An IP Trunk consists of a single virtual voice channel with local calling rights in the rate centre in which it is associated. The terminology used to describe the virtual voice channel is a “concurrent call” (“DS-0 equivalent” is also used sometimes). Customers can buy one or more concurrent calls to enable more than one call to be established simultaneously. Purchasing multiple trunks is referred to as a trunk group, so purchasing a trunk-group with ten trunks would allow ten simultaneous calls to be carried on at once using that trunk group.

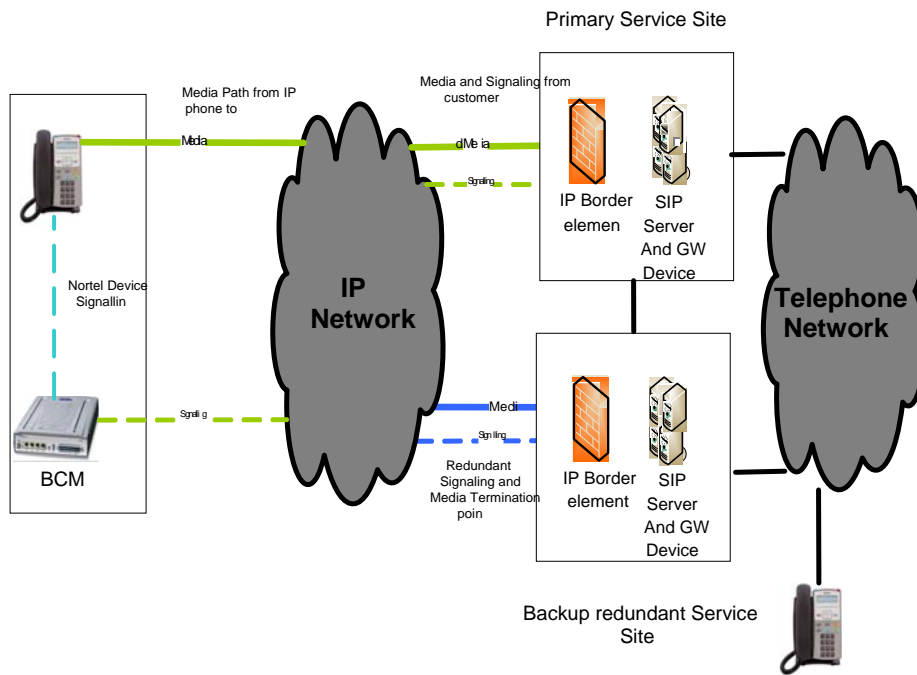
A rate centre represents the local calling area wherein customers can call each other without incurring toll charges. If a customer buys one trunk (one concurrent call) in the Toronto rate centre (416), they have purchased the capability for anyone on their corporate network to make one local call within that rate centre. If the customer places a trunk call to a location that is outside their local rate center, they would be charged for a long distance call. Callers in the Toronto 416 calling area must pay long distance to call the 514 rate centre in Montreal, for instance.

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

5 of 34
BCM50_BCM450_R5_Configuration_Bell

3.0 Reference Topology



Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights Reserved.

6 of 34
BCM50_BCM450_R5_Configuration_Bell

4.0 Tested Equipment

Bell service is compatible with BCM50 and BCM450. The following list summarizes the version and patch levels of the hardware that has been validated as compatible in the Bell lab:

- BCM450 R5.0 System Software Version 9.0.1.22.542 patch 002.200912-1

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

7 of 34
BCM50_BCM450_R5_Configuration_Bell

5.0 Features

5.1 Features Supported

The following list summarizes the base feature set for Bell SIP Trunking that has been verified on the tested equipment.

- Basic Call using G.729 or G.711ulaw
- Calling Party Number Presentation and Restriction
- Calling Name
- Intra- and Inter-site Call Transfer
- Intra- and Inter-site Conference.
- Call Hold and Resume
- Call Forward All, Busy and No Answer
- Fax using G.711 passthru
- TTY using G.711 passthru
- Outbound calls to IP and TDM networks

5.2 Trunk Group Selection for Originating Calls

The charging model for Bell SIP Trunking service is based upon Bell's legacy PRI trunk model, and allows a trunk subscriber the ability to purchase trunks that provide local presence in one or more given toll rate centre's. This implies the need for the subscriber to be able to originate outbound calls on the trunk of their choice so as to minimize the toll charges they would incur placing calls into any rate centre that they do not have a local presence (dedicated trunk) for. For instance, an Ottawa-based trunk subscriber can place local calls to Toronto customers if they have purchased a trunk for the 416 rate centre.

The ability to select an outbound trunk on a per-call basis allows a customer with multiple trunks to originate their call from within a rate centre that is local to the called party. This selection is accomplished through one of the following mechanisms (listed in order of precedence):

** Note currently the BCM does not support trunk group selection within the IP trunk interface via the additions of specific SIP headers as described above, so by default the "No Trunk Selected" mechanism is used.*

- **TGRP (RFC 3904)**

RFC 3904 describes a standardized mechanism for conveying trunk group selection parameters within 'sip:' and 'tel:' URLs..

Bell Canada SIP Trunking service expects a trunk group selection to be conveyed in the contact header for calls originating on the PBX and destined for the PSTN. The trunk group parameters detailed below are specific to the Bell Canada SIP Trunking service. These parameters are defined during the service setup process.

Example SIP Header:

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

8 of 34
BCM50_BCM450_R5_Configuration_Bell

Contact: <sip:6131112222;**tgrp=rate_613;trunk-context=sipt.bell.ca**@gw1.example.com;user=phone>

The example shows the trunk selection parameters are to be inserted between the user and domain parts of the contact address, and are semicolon-delimited. In this example, trunk group identified by the label 'rate_613' and trunk-context 'sipt.bell.ca' are used to route this particular outbound call.

- **OTG**

Including an OTG parameter in the From:, P-Asserted-Identity:, or Diversion: SIP header fields will indicate to the SIP Trunking service that the customer wishes to use originate a call within the trunk group specified by the 'otg=' parameter. The value of this parameter is defined during the service setup process.

Example SIP Headers:

From: <sip:6135604063@company.ca;user=phone;**otg=rate_613**>

P-Asserted-Identity: <sip:6135604063@company.ca;**otg=rate_613**>

Diversion: <sip:6135604063@company.ca;user=phone;**otg=rate_613**>

Each of the header parameters above can be used to specify the trunk preference for this call to the SIP trunking service. In this example the customer wants the call to be placed using the settings for trunk group 613 (including billing and capacity management).

- **No Trunk Selected**

If none of the preceding trunk selection mechanisms are used for a given outbound call, the SIP Trunking service will use the calling party's default trunk for that call. The default trunk is selected using the identity of the call originator, which is typically specified by the contents of the SIP From: header. If the From: header is encrypted or set to 'anonymous', then the service will use the contents of the P-Asserted-Identity: header instead.

5.3 Features not supported

- **SIP REFER**
 - The REFER method is not supported under Bell's SIP Trunking service.
- **T.38 Fax Protocol**
 - T.38 Fax transmissions are not supported by Bell SIP Trunking service. In-band Fax transmissions using G.711 transport have been verified in Bell's SIP Trunking verification tests.
- **Modem transmissions not supported**
 - Modem connections are not supported over the Bell SIP Trunking at this time; although these connections may work.
- **Call Connected Network Name Display**
 - This feature is not supported by the SIP Trunking service. Name and Number display is presented as provisioned in the SIP Trunking core elements.

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

10 of 34
BCM50_BCM450_R5_Configuration_Bell

6.0 Deployment considerations

- A clear media path from IP sets to the sip trunk interface is required. The IP set determines the available codec used for media exchange.
- Trunk selection for the service is based on the From and PAI headers of the sip message. The headers are configured at a set level. Explicit trunk group selection is not supported on the BCM devices.
- If the call contains both G.711 and G.729 G711 will be used independent of the codec preference in the SDP to the PSTN.
- Call forwards do not include the original caller display information; instead these calls will appear as if they originated from the set doing the forwarding. When "Forward redirection OLI" is turned **off**. This feature must be turned **on** for original call display information to be used.
- Additional licensing maybe required on the BCM to support deployment requirements. To connect the Bell SIP trunks you will need at a minimum the IP Trunk module Auth codes

6.1 Media Codec's for Bell SIP Trunking

Bell SIP Trunking service provides support for G.711, and G.729 codecs. The G.711 codec is the default for SIP Trunking customers, but they may choose to sign up for SIP Trunking as G.729 subscribers in order to take advantage of the bandwidth saving a compressed codec offers them.

The SIP Trunking service infrastructure provides transcoding services to manage and alter the media path for calls where G.729 can't be supported end-to-end. The transcoder's intervention allows G.729 customers to view their service as a G.729-only service, and they need not consider the media capabilities of the called party's device or network, as the transcoder mediates the negotiation if required, and encapsulates any discrepancies between the customer's codec choice and that of the parties they place calls to, or receive calls from.

NOTE: The only validptime value for media codecs on the SIP Trunking service is 20 ms. All supported codecs must abide by this restriction. The 'ptime is specified in the SDP part of the SIP signaling, which is used to negotiate the media path for each session.

7.0 Required Service Configuration Information

Service domain

This is the domain name used by the service and will be inserted into the To: field of all sip messages generated by the PBX destined for the SIP Trunking interface, and in the From: header of all sip messages destined for the PBX from the SIP Trunking interface. The service domain for Bell SIP Trunking service is siptrunking.bell.ca

PBX domain

The PBX domain is the domain name that will be used by the SIP Trunking service to resolve the IP address of the customer PBX that is using the SIP Trunking service. This domain will be present in the To: header of all SIP messages generated by Bell SIP Trunking service to direct inbound calls to the customer's SIP trunks. This PBX domain is also expected to be the domain presented in the From: header of SIP messages entering the SIP trunk from the customer PBX. An example of a PBX domain specification would be: 'pbx1.customer.com'

Service IP address

The service IP address will be supplied to the customer by Bell. The service address will be the IP address (or addresses) of the customer-facing SIP trunk interface(s) on Bell's Session Border Controller(s).

PBX IP address

The IP address of the customer's PBX that inbound calls will be directed to. The customer's PBX domain must be resolved to this address when an inbound call is processed by the SIP Trunking service.

Authentication Credentials

This will be the authentication credentials used to authenticate SIP invite messages sent to Bell. This will consist of a user and password

8.0 SIP Trunking Dial Plan Overview

The SIP Trunking service will accept call requests with destinations according to the North American Number Plan (NANP: http://en.wikipedia.org/wiki/North_American_Numbering_Plan) If the service receives a request for a destination number that is not in service or has a malformed number, a proper announcement treatment will be applied.

** Please note that the service will accept 10 digit and 11 digit call requests for local and long distance calls. Depending on the purchased rate, long distance charges may apply. The following list shows a non-exhaustive dial plan example we used in our testing

- 10 Digits and 11 Digits for Local and Long Distance Call (long distance charge may apply)
- 0+10D Call (operator assistant NA LD Call)
- 01+International NDC (from 8 to 35 digits, Operator Assistant International Call)
- Toll Free Call 1-800,1-888,1-877
- 011+ International Call
- 101+xxxx+NDC call(from 13 to 40 digits, Casual Dial Call)
- 911
- 411, 611, 711, 211, 311, 511, 811
- 1-xxx-555-1212
- 310-xxxx Call
- 1-900 and 1-976 Call

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

13 of 34
BCM50_BCM450_R5_Configuration_Bell

9.0 Configure DNS (Optional)

There are two requirements for name resolution to support SIP Trunking calls. They are summarized briefly below. For more detailed information, please refer to the SIP Trunking Interface Document.

9.1 Bell resolves PBX domain

- A DNS resolution is needed for SIP trunking to reach the PBX. This DNS resolution can either be managed by customer DNS server or managed by Bell Canada.
- If Managed by Bell Canada the PBX destination IP address(es) needs to be provided to Bell Canada.
- If Managed by the customer, the customer needs to provide DNS access for the SBC to query the PBX domain. The domain is agreed upon during service setup and must resolve to the PBX IP address via an SRV and A records.

9.2 PBX resolves Bell service domain

- Bell Canada provides redundant connections for the service. To provide redundancy the customer PBX can utilize DNS SRV records to resolve 1 or more Service interface IP addresses. These IP addresses are provided during service setup

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

14 of 34
BCM50_BCM450_R5_Configuration_Bell

10.0 System Configuration

This section provides procedures for configuring a SIP trunk on BCM RIs. 5.0 to Bell Canada IP network

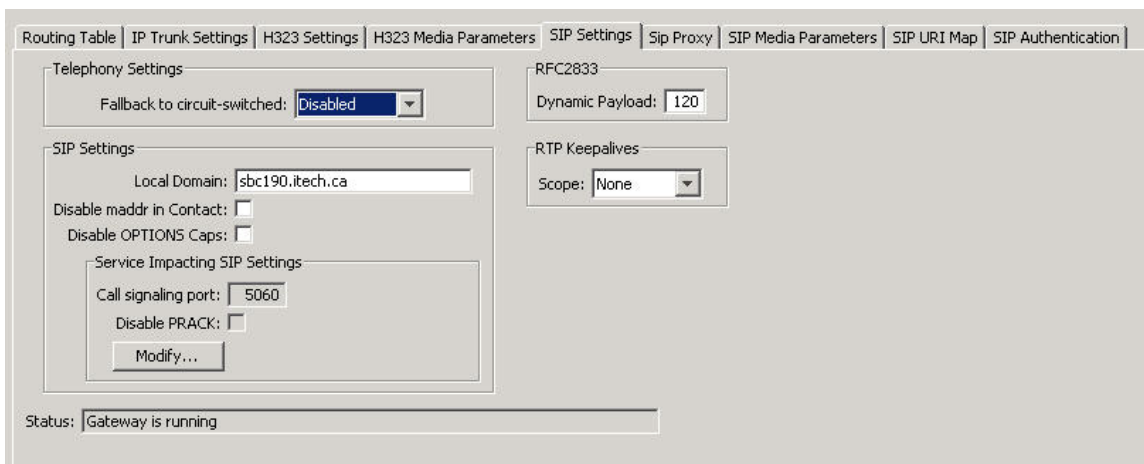
10.1 VoIP Trunk Settings

Select Resources → Telephony Resources → Module IP Trunks → IP Trunks Settings



Forward redirection OLI: On
Remote Capacity MWI: Off
Send name display: On
Ignore in-band DTMF in RTP: Off

Select Resources → Telephony Resources → Module IP Trunks → SIP Settings



Reviewed:
04/12/2010

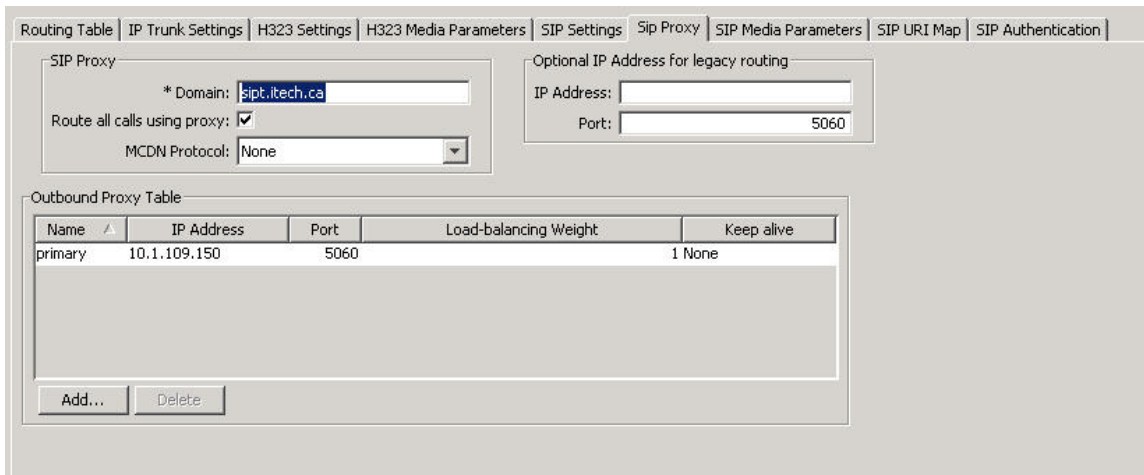
Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights Reserved.

15 of 34
BCM50_BCM450_R5_Configuration_Bell

Fallback to circuit-switched: Optional On or Off depends on BCM deployment
 Dynamic Payload: 120
 Local Domain: domain
 Call signaling port: 5060

* Local domain will be determined and set as part of the activation process with Bell Canada.

Select Resources → Telephony Resources → Module IP Trunks → SIP Proxy



SIP Proxy

Domain: Service domain
 Route all calls using proxy: On
 MCDN Protocol: None

Optional IP address for legacy routing

IP Address: Leave blank
 Port: 5060

Outbound Proxy Table

Name: Service IP address or a name that represents the SBC

IP Address: Service IP address

Port: 5060

Load-balancing Weight: 1 or 0

When the weight is set to 1 all calls will use this device first

The device with a weight of 0 will be a failover device in the event the primary is unavailable.

Keep alive: Options

If the redundancy option is not used use a weight of 1 and only 1 table entry.

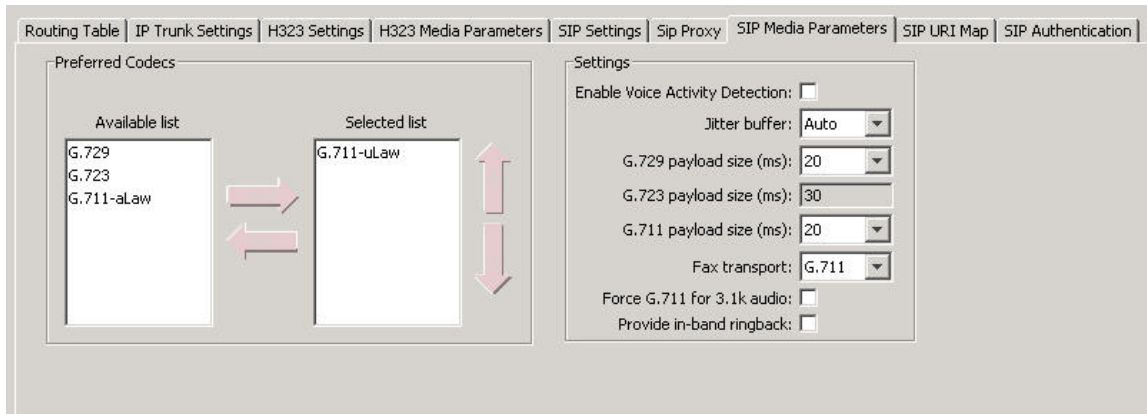
* Service IP addresses and Domains will be provided by Bell Canada

Reviewed:
 04/12/2010

Avaya BCM Solutions Test Lab
 Application Notes
 ©2010 Avaya Inc. All Rights Reserved.

16 of 34
 BCM50_BCM450_R5_Configuration_Bell

Select Resources → Telephony Resources → Module IP Trunks → SIP Media Parameters



Preferred Codecs:

The selected list should only contain the codec that we want to use G711 u-law or G729 only.

Settings

Enable voice activity Detection: Off – leave blank

Jitter buffer: Auto

G.729 payload size (ms): 20

G.723 payload size (ms): not applicable

G.711 payload size (ms): 20

Fax transport: G.711

Force G.711 for 3.1k audio: Off – leave blank

Provide in-band ringback: Off – leave blank

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

17 of 34
BCM50_BCM450_R5_Configuration_Bell

Select Resources → Telephony Resources → Module IP Trunks → SIP URI Map

Details for Module: Internal

Routing Table | IP Trunk Settings | H323 Settings | H323 Media Parameters | SIP Settings | Sip Proxy | SIP Media Parameters | SIP URI Map | SIP Authentication

SIP Domain Names

e.164 / National	<input type="text"/>
e.164 / Subscriber	subscriber.e164
e.164 / Unknown	unknown.e164
e.164 / Special	special.e164
Private / UDP	udp
Private / CDP	cdp
Private / Special	special.private
Private / Unknown	unknown.private
Private / Subscriber	subscriber.private
Unknown / Unknown	<input type="text"/>

SIP Domain Names

e.164/National: blank this field

Unknown/Unknown: blank this field

All other fields should remain at the default settings.

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

18 of 34
BCM50_BCM450_R5_Configuration_Bell

Select Resources → Telephony Resources → Module IP Sets → SIP Authentication

The screenshot shows a configuration window for SIP Authentication. It is divided into several sections:

- Local SIP Authentication:** Contains a checkbox for "Local Authentication" (unchecked), a dropdown menu for "Quality of Protection" set to "Authentication only", and a text field for "401 Reason" set to "Unauthorized".
- Local Accounts:** An empty table with columns "User ID" and "Description". Below it are "Add...", "Delete", and "Modify..." buttons.
- Remote Accounts:** A table with columns "Realm", "User ID", and "Description". It contains one entry: "sipt.itech.ca", "bcm450trunk", and "BCm450Authentication". Below it are "Add...", "Delete", and "Modify..." buttons.

Local SIP Authentication

Local Authentication: Off – leave blank

Remote Accounts

Realm: Service domain

User ID: Authentication Credentials user id

Description: a label describing the account

**Authentication Credentials will be determined and set as part of the activation process with Bell Canada*

11.0 IP Set Settings

Select Resources → Telephony Resources → Module IP Sets → IP Terminal Global Settings

Details for Module: Internal

IP Terminal Global Settings	IP Terminal Details
Enable registration <input checked="" type="checkbox"/>	Default codec <input type="text" value="G.711-uLaw"/>
Enable global registration password <input checked="" type="checkbox"/>	Default jitter buffer <input type="text" value="Auto"/>
Global password <input type="text" value="*****"/>	G.729 payload size (ms) <input type="text" value="20"/>
Auto-assign DNs <input checked="" type="checkbox"/>	G.723 payload size (ms) <input type="text" value="30"/>
Play DTMF-tone <input type="checkbox"/>	G.711 payload size (ms) <input type="text" value="20"/>
Advertisement/Logo <input type="text" value="Quebec"/>	

In this section we are only concerned with the codec settings

Default codec: G.711-uLaw or G.729

Default jitter buffer: auto

G729 payload size (ms):20

G723 payload size (ms):30 ← G723 is not supported for the service.

G711 payload size (ms):20

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

20 of 34
BCM50_BCM450_R5_Configuration_Bell

Select Resources → Telephony Resources → Module IP Sets → IP Terminal Details

Details for Module: Internal

IP Terminal Global Settings | IP Terminal Details

IP Terminals

IP Address	DN	Device Type	State	FW Version	Codec	Jitter Buffer
		305 2004_p2	Offline		Default	Default
		306 2004_p2	Offline		Default	Default
		307 2004_p2	Offline		Default	Default
		308 2004_p2	Offline		Default	Default
		309 2004_p2	Offline		Default	Default
		310 2004_p2	Offline		Default	Default
		311 2004_p2	Offline		Default	Default

Reset Hotdesking Password Force Firmware Download Deregister

In this section for all devices using the SIP trunk these values should be set to Default or a Codec and Jitter buffer that are supported.

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

21 of 34
BCM50_BCM450_R5_Configuration_Bell

12.0 Dialing Plan Settings

Select Telephony → Dialing Plan → Public Network

Public Network Settings

Public Received number length: 10

Public Auto DN:

Public DISA DN:

Public network dialing plan: National

Public network code:

Public Network DN Lengths

DN Prefix	DN Length
0	11
00	12
01	17
1	11
011	18
411	3
416	10
911	3
Default	10

Add... Delete

Carrier Codes

Code Prefix	ID Length
10	3
101	4

Add... Delete

Public Receive number: in our example we set this to 10 as it matches the 10 digit numbers sent from the SIP trunk service.

Public Network Dialing Plan: National ← this dictates the type of SIP messaging required for the service.

Select Telephony → Dialing Plan → Routing → Routes

Dialing Plan - Routing

Routes | Destination Codes | Second Dial Tone

Routes

Route	External Number	Use Pool	DN Type	Service Type	Service ID
000		A	N/A	N/A	N/A
001		BlocA	Public (Unknown)	N/A	N/A

Add Route 001

User Pool: **BlocA** (or the Bloc that the SIP trunks are assigned to)
 DN Type: **Public** (Unknown)

Select Telephony → Dialing Plan → Routing → Destination Codes

Routes | Destination Codes | Second Dial Tone

Destination Codes

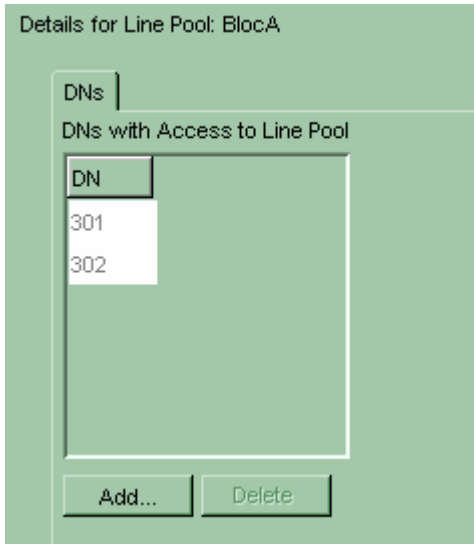
Destination Code	Normal Route	Absorbed Length	Wild Card: 0	1	2	3	4	5	6	7	8	9
9	001	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Add Destination Code: 9 ← this is the code to seize the SIP trunk

Normal Route: **001**

Absorbed Length: **All** ← send all dialed digits and absorb the destination code

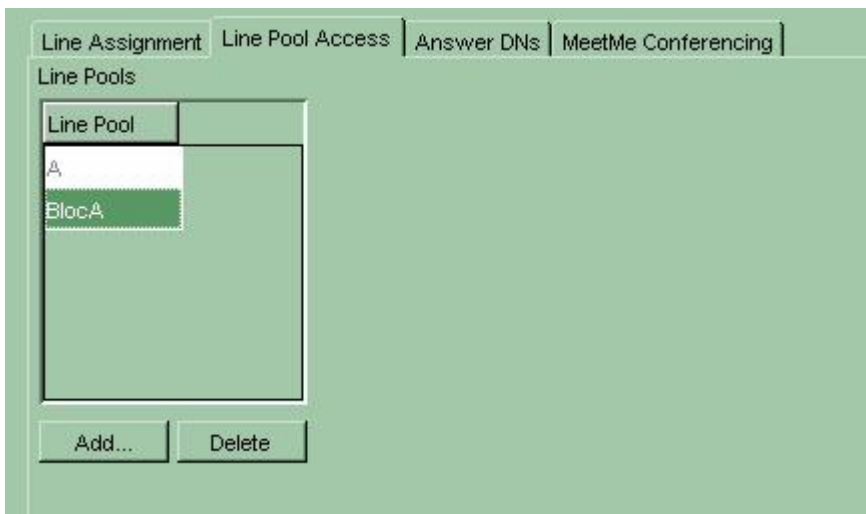
Select Telephony → Dialing Plan → Line pools



The Line Pool BlocA must contain the DN's of all the sets that require access to the SIP trunks. (or the Bloc that the SIP trunks are assigned to).

OR

Select Telephony → Sets → Active Sets → Line Access → Line Pool Access



For sets that need access to the SIP trunk they must have access to BlocA (or the Bloc that the SIP trunks are assigned to)

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

24 of 34
BCM50_BCM450_R5_Configuration_Bell

13.0 Set Configuration

Select Telephony → Sets → Active Sets → Line Access → Line assignment

Active Sets

DN	Model	Name	Port	Pub. OLI	Priv. OLI	Fwd No Answer	Fwd Delay	Fwd Busy	Fwd All
2223	M7324	JClarke	0403	4167601298		2363	4		
2224	T7316E		0404	4167601299		2363	4		
2233	Analog	2233	0413				N/A		
2234	Analog	2234	0414				N/A		
2235	Analog	2235	0415				N/A		
2236	Analog	2236	0416				N/A		
2308	1140E/2004/2007/2050/221x	2308	0110	4167601291		2363	4		
2314	1140E/2004/2007/2050/221x	2314	0102	4167601292		2363	4		
2315	1140E/2004/2007/2050/221x	BMulmy	0101	4167601297		2363	4		
2316	1140E/2004/2007/2050/221x	2316	0109	4167601296		2363	4		
2317	1230	2317	0103	4167601294		2363	4		
2318	1120E/2002	2318	0111	4167601295		2363	4		
2319	1120E/2002	BDavis	0104	4167601290		2363	4		

Copy Paste Renumber...

Details for DN: 2223

Line Assignment Line Pool Access Answer DN's MeetMe Conferencing

Assigned Lines

Line	Appearance Type	Appearances	Caller ID Set	Vmsg Set	Priv. Received #	Pub. Received #
147	Appr&Ring	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2223	4167601298

The DID phone number associated with the Bell SIP trunk that is assigned to the BCM, has to be associated with a BCM "Target" line. The BCM Target line can be assigned to an individual DN/set or group of set(s) and all calls to the DID number will be routed to those phone(s) respectively.

Note: All calls to the DID phone number associated with the Bell SIP trunk assigned to the BCM, can also be answered by the Auto Attendant (AA) and from there, a DN/extension number can be entered to reach a set on the BCM

What is important in this area is to "Add" and "Assign" a "Target Line" number to the DN/set and enter the DID phone number into the Pub Received phone number area. Add the Pub OLI 10 Digit phone number to the DN/set. This is set to the 10 digit outbound phone number that you want to display when a call leaves the BCM toward the SIP trunk.

This can be done in several ways;

Click on Add, enter Target Line number and select "**Appear & Ring**" and then select Check box **Caller ID Set**. Add the Pub. Received # : This is the phone number assigned to this DN/set on inbound calls and will cause the DN/set to ring.

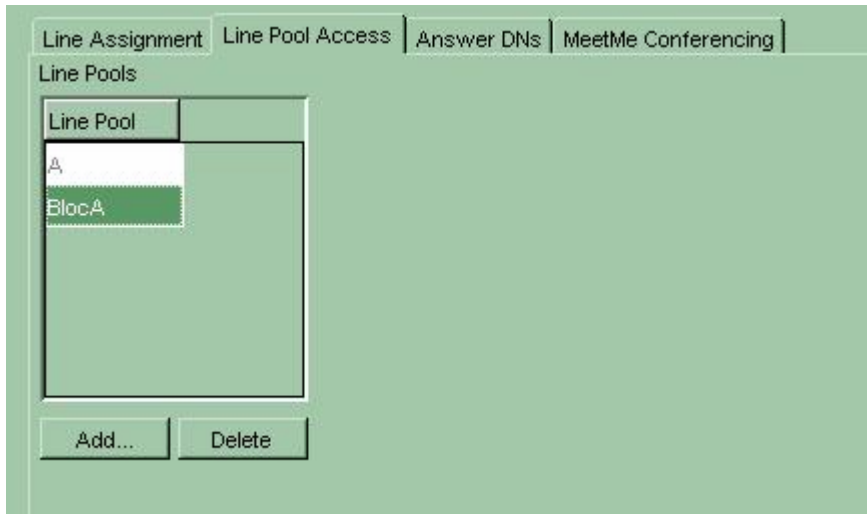
Pub OLI. : This is set to the 10 digit outbound phone number that you want to display when a call leaves the BCM toward the SIP trunk.

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights Reserved.

25 of 34
BCM50_BCM450_R5_Configuration_Bell

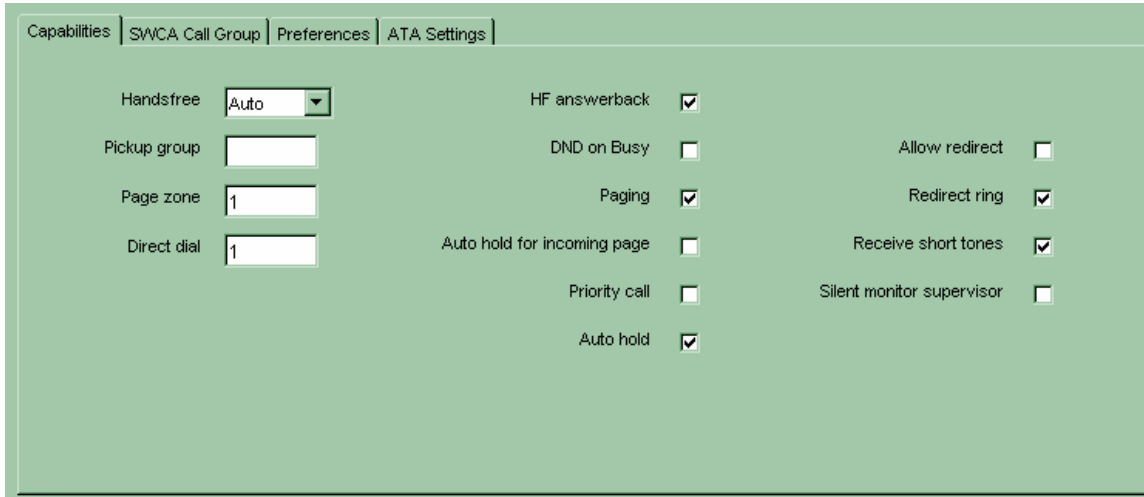
Select Telephony → Sets → Active Sets → Line Access → Line Pool Access



For sets that need access to the SIP trunk they must have access to BlocA (or the Bloc that the SIP trunks are assigned to).

14.0 Analog Sets

Select Telephony → Sets → Active Sets → Active Sets → Capabilities and Preferences → Capabilities



Setting	Value
Handsfree	Auto
Pickup group	
Page zone	1
Direct dial	1
HF answerback	<input checked="" type="checkbox"/>
DND on Busy	<input type="checkbox"/>
Paging	<input checked="" type="checkbox"/>
Auto hold for incoming page	<input type="checkbox"/>
Priority call	<input type="checkbox"/>
Auto hold	<input checked="" type="checkbox"/>
Allow redirect	<input type="checkbox"/>
Redirect ring	<input checked="" type="checkbox"/>
Receive short tones	<input checked="" type="checkbox"/>
Silent monitor supervisor	<input type="checkbox"/>

To enable DTMF you must turn on "Receive short tones". If turned off DTMF does not work correctly in all cases. This setting only applies to analog sets.

Receive short tones: select box for On

15.0 QOS

DATA Services → QOS

The screenshot shows a configuration window with three tabs: 'DSCP Marking', 'DSCP Mapping', and 'VLAN P Bit Mapping'. The 'DSCP Mapping' tab is selected. At the top, there is a section for 'Nortel Automatic QoS' with a checkbox that is currently unchecked. Below this is a 'DSCP Setting' section containing three sub-sections: 'VOIP Signaling', 'Voice Media', and 'Fax Media'. Each sub-section has a dropdown menu for 'QoS value' and a text input field for 'TOS byte'. For 'VOIP Signaling', the QoS value is 'CS5 (0x28 or 40)' and the TOS byte is '160'. For 'Voice Media', the QoS value is 'EF (0x2E or 46)' and the TOS byte is '184'. For 'Fax Media', the QoS value is 'EF (0x2E or 46)' and the TOS byte is '184'.

The QOS values for signaling and media are supported by the service. Signaling will use a value of CS5 and Media will use a value of EF. On the BCM these can be configured in the Data Services → QOS section.

To provide QOS end to end it may be required to set similar parameters to the above on the IP sets. The configuration of these values is not covered in this document. Device specific documents should be reference for the procedures on setting these values.

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

28 of 34
BCM50_BCM450_R5_Configuration_Bell

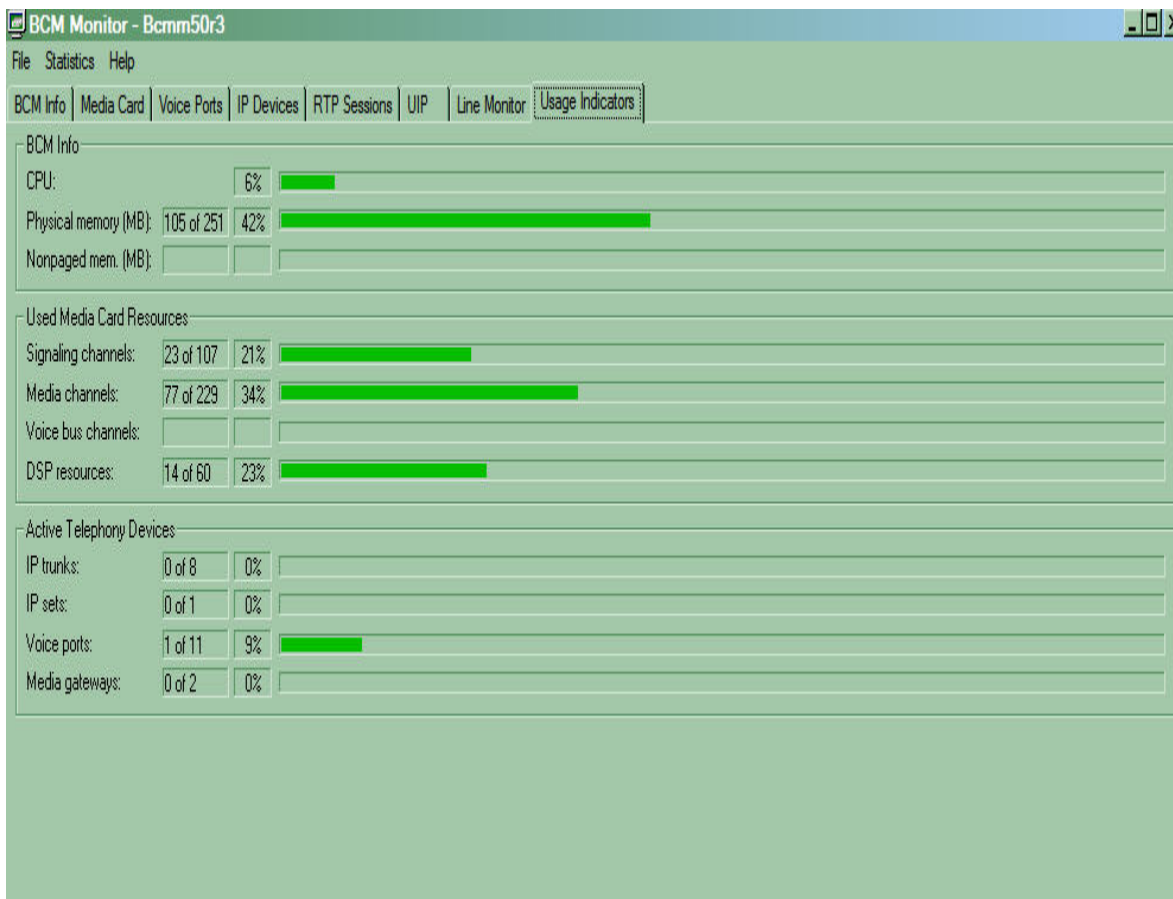
16.0 FAQ & Troubleshooting

Several commands and tools can be used to troubleshoot the SIP functionality from the CPE point of view. This section identifies a few of them but many other commands and tools are available. Please refer to vendor documentation for more detailed explanation of features and functions.

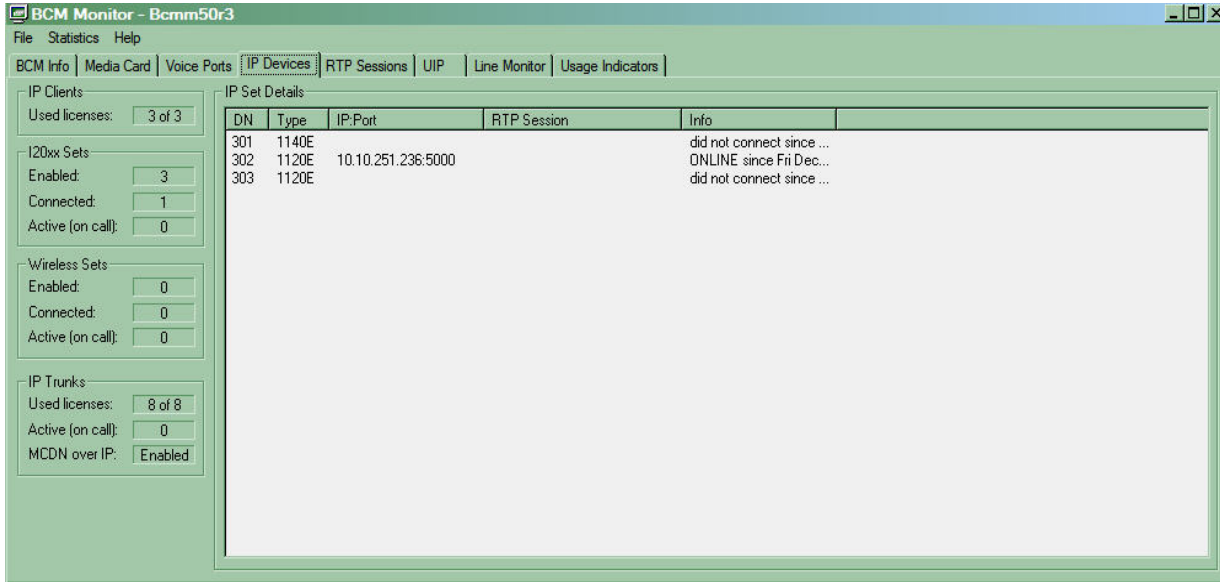
16.1 System Monitoring with BCM Monitor

The BCM monitor tool provides information on the general health of the BCM and utilization of system resources. You can start The BCM monitor tool from the windows start menu.

The below usage indicators tab Gives general information on CPU Memory, Media resources and Telephony Devices.



The IP devices tab show the status of IP devices connected to the system as well as devices that are not currently connected to the system. If a device is in an active call then additional information is show in the RTP Sessions and Info columns. Additional RTP session information is available on the RTP Sessions TAB.



Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

30 of 34
BCM50_BCM450_R5_Configuration_Bell

16.2 Real-time display of BCM Alarms

The BCM generates many types of alarms looking at alarms generated can give clues to the state of the BCM and errors that may have occurred. These alarms are visible in the Administration tab under General. Various alarms can be additionally configured in the Alarm Settings section.

Time	Alarm Acked	Alarm ID	Severity	Problem Description
2010-01-11 16:44:29	<input type="checkbox"/>		30200 information	User logon User=nnadmin Host=67.69.249.68:6638 Comp=CIM
2010-01-11 16:43:15	<input type="checkbox"/>		30200 information	User logon User=nnadmin Host=67.69.249.68:6627 Comp=CIM
2010-01-11 16:43:11	<input type="checkbox"/>		30200 information	User logon User=nnadmin Host=67.69.249.68:6625 Comp=CIM
2010-01-04 13:44:34	<input type="checkbox"/>		265 minor	Test Event : Core Telephony - Outgoing trunk could not be seized. Handshake between the system and network failed.
2010-01-04 13:44:29	<input type="checkbox"/>		265 minor	Test Event : Core Telephony - Outgoing trunk could not be seized. Handshake between the system and network failed.
2010-01-04 13:44:15	<input type="checkbox"/>		265 minor	Test Event : Core Telephony - Outgoing trunk could not be seized. Handshake between the system and network failed.
2010-01-04 13:34:12	<input type="checkbox"/>		30200 information	User logon User=nnadmin Host=10.10.251.216:4634 Comp=CIM
2010-01-04 13:33:52	<input type="checkbox"/>		30200 information	User logon User=nnadmin Host=10.10.251.216:4630 Comp=CIM
2009-12-18 19:09:13	<input type="checkbox"/>		10909 information	System Startup - Startup complete. Service Manager and scheduling services available. Power LED = solid green; Status LED = so
2009-12-18 19:08:52	<input type="checkbox"/>		10908 information	System Startup - Element Manager is available. Power LED = solid green; Status LED = flashing green.
2009-12-18 19:06:30	<input type="checkbox"/>		44000 information	Voicemail is operational
2009-12-18 19:06:29	<input type="checkbox"/>		10907 information	System Startup - Telephony and Voicemail active. Power LED = flashing green; Status LED = flashing green.
2009-12-18 19:06:05	<input type="checkbox"/>		8024 information	MCC Modem Disabled
2009-12-18 19:04:12	<input type="checkbox"/>		40002 information	DSP 0 initialized

Clear Alarm Log Reset LEDs

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

32 of 34
BCM50_BCM450_R5_Configuration_Bell

17.0 Acronyms

Acronym	Definition
DNS	Domain Name Resolution
G.711	Voice Codec (Uncompressed)
G.729	Voice Codec (Compressed)
OTG	Originating Trunk Group
PAI	P-Asserted Identity
PRI	Primary Rate Interface
PSTN	Public Switched Telephone Network
RFC	Request For Comment
RTP	Real Time Protocol
T.38	Fax over IP protocol
TGRP	SIP Trunk Group selection convention
URI	Uniform Resource Indicator
BCM	Business Communications Manager

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

33 of 34
BCM50_BCM450_R5_Configuration_Bell

©2010 Avaya Inc. All Rights Reserved.

Avaya and the Avaya Logo are trademarks of Avaya Inc. All trademarks identified by ® and ™ are registered trademarks or trademarks, respectively, of Avaya Inc. Nortel, Nortel Networks, the Nortel logo, and the Globemark are trademarks of Nortel Networks. All other trademarks are the property of their respective owners. The information provided in these Application Notes is subject to change without notice. The configurations, technical data, and recommendations provided in these Application Notes are believed to be accurate and dependable, but are presented without express or implied warranty. Users are responsible for their application of any products specified in these Application Notes.

If you have any issues with the solution described in this document, please contact 1-800-4-NORTEL

Reviewed:
04/12/2010

Avaya BCM Solutions Test Lab
Application Notes
©2010 Avaya Inc. All Rights
Reserved.

34 of 34
BCM50_BCM450_R5_Configuration_Bell