AT&T VoIP Nortel BCM50 Release 3.0 SIP Configuration Guide For Use with AT&T IP Flexible Reach And AT&T IP Flexible Reach with AT&T Business in a BoxSM

Issue 1.4 2/4/2010



BCM50

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1 Introduction

This document provides a configuration guide to assist Nortel Networks BCM50 administrators in connecting to AT&T IP Flexible Reach and AT&T IP Flexible Reach with AT&T Business in a BoxSM via SIP trunks.

This document does not describe procedures to configure the BCM50 for advanced functionality. For more information and procedures, please refer to the Nortel technical documentation found on the Nortel website.

1.1 Pre-IP PBX Configuration Activity

This guide assumes that the administrator is knowledgeable in IP PBX programming and operations.

An important tool that the administrators should have at their disposal prior to testing their IP PBX with AT&T IP Flexible Reach and AT&T IP Flexible Reach with AT&T Business in a Box is the Wireshark network protocol analyzer. This software can be used to run traces on problem calls so the information can be shared with equipment and network engineers. This free software can be obtained at <u>http://www.wireshark.org/</u>.

The customer may also use TCPDUMP which can be found on most UNIX and Linux systems. The customer should have Wireshark or TCPDUMP loaded on a server that is connected to a LAN switch or hub that can monitor both the signaling and media packets on any calls between the customer PBX and the IP Flexible Reach managed router.

1.2 Customer Questions

Section 4 of this guide provides screen shots and instructions for the configuration of your IP PBX. Should you have questions regarding these instructions, please contact Brian Stegemoller at +1 (972) 685-6629 ((972) 745-5139 after 2/22/2010). When calling this number please have the following information available:

- Company name
- Company location

- Administrator name and phone number
- IP PBX name and software version
- Customer Configuration Guide Issue number and date

1.3 Trouble Reporting

Nortel and AT&T will make every effort to quickly resolve reported troubles. The time required for trouble shooting can be reduced if the customer has the necessary detailed information available when reporting a problem. Prior to reporting a problem please provide a Wireshark or TCPDUMP trace of the failed call.

1.4 Document Feedback

IP PBX administrators who would like to provide feedback on the contents of this document should send it to Brian Stegemoller (<u>brianstegemo@avaya.com</u>) with a copy to Al Chee (<u>alchee@avaya.com</u>) and Steven Chen (<u>stevenchen@avaya.com</u>).

Issue 0.0	October 12, 2007; draft
Issue 0.1	November 12, 2007; draft
	Edited Section 3: removed softphone support, added fax
	support, added new screenshot for software version,
	added sub-sections for Section 1
Issue 0.2	November 20, 2007;
	Edited screenshots in Section 3 w/ updated patch list
Issue 0.3	November 27, 2007;
	Edited fax configuration procedures (ATA device
	settings)
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	Added "SIP" after "BCM50 Release 3.0", added contact
	info in Section 1, explanation for software release in 4.1
Issue 0.6	December 12, 2007;
	Further explanation for software release in 4.1 and VoIP
	trunk licenses in 4.2
Issue 0.7	August 10, 2008;

1.5 Document Change History

	Added section for AT&T IP Flexible Reach with AT&T Business in a Box (changed title of document), removed calling number privacy limitation in Section 2, patches in 4.1, changed network diagram and removed verbiage in Section 3
Issue 0.8	August 25, 2008; Added special notes in Section 2, and added important note in Section 4.1
Issue 0.9	September 4, 2008; Replaced "AT&T IP Flexible Reach and AT&T IP Flexible Reach with AT&T Business in a Box networks" with "BVoIP network"
Issue 1.0	September 11, 2008; Added phrases to distinguish between IP Flexible Reach (Cisco router) and BIB (EdgeMarc router) Changed title for T.38 fax issue in Special Notes Attached patch file to document Changed header, footer and disclaimer note (end of document)
Issue 1.1	October 1, 2008; Added Section 4.5, SIP URI explanation and screenshot
Issue 1.2	March 17, 2009; Edits in Section 2 (T.38 fax support), patch list in 4.1
Issue 1.3	October 23, 2009; Edit in Special Notes section
Issue 1.4	February 4, 2010 Changed Contact Information to Reflect AVAYA Details

2 Special Notes

Emergency 911/E911 Services Limitations

While AT&T IP Flexible Reach and AT&T IP Flexible Reach with AT&T Business in a Box services support E911/911 calling capabilities in certain circumstances, there are significant limitations on how these capabilities are delivered. Please review the "AT&T IP Flexible Reach and AT&T IP Flexible Reach with Business in a Box" Service Guide in detail to understand these limitations and restrictions.

BCM Soft Phones not currently supported

Nortel BCM soft phones are not currently supported with the AT&T IP Flexible Reach and AT&T IP Flexible Reach with AT&T Business in a Box Services.

Ring back Issues with Unattended Transfers

An unattended transfer is one in which the party initiating the transfer hangs up prior to answer by the party to whom the call is being transferred. When 2 phones are in an active call on the BCM50 and one of those phones performs an unattended transfer to certain endpoints on the AT&T network, the BCM50 phone remaining on the call will not hear ring back prior to answer.

T.38 Fax must be used

Nortel recommends using T.38 as the means to transport fax on the BCM50.

No NAT Device between BCM50 and BIB Managed Router

Due to a limitation in the AT&T Managed Business In a Box (BIB) Router software, the network configuration at Customer Premise CANNOT contain any NAT device between BIB Router and BCM50 IP-PBX system. A network configuration with a NAT device between BIB Router and BCM50 results into no voice path for any direction calls.

3 Overview

This section provides a service overview of the Nortel Business Communication Manager 50 (BCM50) IP PBX integration with AT&T IP Flexible Reach and AT&T IP Flexible Reach with AT&T Business in a Box services.



Figure 1: AT&T BVoIP Network

The Nortel BCM50 customer premises site shall consist of the following components.

Nortel IP 200x, 11xx, 12xx phones* – These phones use the Nortel proprietary UNIStim signaling protocol to communicate to the Nortel BCM50 IP PBX for call feature and routing support. These phones can be connected to a Nortel Ethernet switch (ES 470, ERS 5520, etc.) that supplies in-line power (IEEE 802.3af) to the phones.

- The following interfaces are provided on all three variants of the BCM50 main module:
 - o 12 digital station ports supporting digital phones.
 - 4 Analog Loop Supervised Trunks (NA networking standards).
 - 4 Analog Station interfaces with message waiting and CLID support.
 - 3 port 10/100 Ethernet switch with auto sensing and auto polarity. Two of these ports also support connection of optional expansion units.
 - 1 10/100 Ethernet port reserved for direct access management of the system
 - Integrated CallPilot voice mail system

* RFC2833 DTMF is currently not supported on the IP Softphone 2050; thus the IP Softphone 2050 is not supported for AT&T IP Flexible Reach and AT&T IP Flexible Reach with AT&T Business in a Box services. This will be fixed in the next major release of the IP Softphone 2050 (release 3).

The following routing scenarios are supported by the Nortel BCM50 IP PBX and **DO NOT** use the AT&T Call Control.

• Local Nortel BCM50 phone to other local Nortel BCM50 phone

The following routing scenarios are supported by the Nortel Networks BCM50 IP PBX and **DO** use the AT&T Call Control. For voice calls, the G.729 codec shall be used.

- Nortel BCM50 phones to PSTN (domestic US and international).
- Nortel BCM50 phones to legacy PBX site with Cisco gateway.
- Legacy PBX site with Cisco gateway to Nortel BCM50 phones.
- Nortel BCM50 phones at one Nortel BCM50 IP PBX site to Nortel BCM50 phones at another Nortel BCM50 IP PBX site

If the customer has subscribed to Calling Plans B and C (Local), then the following routing scenarios are supported by the BCM50 IP PBX and **DO** use the AT&T Call Control. For voice calls, the G.729 or G.711 codec may be used. BCM50 selects G.729 as the highest priority codec.

- Inbound PSTN to BCM50 phone
- Outbound local PSTN calls from the BCM50 phones
- Outbound local N11 (i.e. 411, 911) calls from the BCM50 phones

Fax was tested and is supported on the BCM50 with the AT&T IP Flexible Reach (T.38 and G.711) and AT&T IP Flexible Reach with AT&T Business in a Box (T.38 only) services to/from the following:

- PSTN
- Legacy PBX site with Cisco gateway
- Another BCM50 IP PBX site

4 Configuration Guide

This configuration guide specifies the Nortel BCM50 screens that must be configured and updated to support the AT&T IP Flexible Reach and AT&T IP Flexible Reach with AT&T Business in a Box services.

4.1 Nortel BCM50 Version and Feature Requirements

<u>The Nortel Networks BCM50 must be running at least software version</u> <u>6.0.2.05.237</u>. You can check the version of BCM50 by viewing the following screen under *Administration* → *Software Management* → *Software Update History*.

Software Up	pdate History						
Current system software version 6.0.2.05.237							
Software Up	date History	-					
Date 🔺	Category	Name	Version	Description			
2007-11	Patch Applied	BCM50Pre	6.0.2.05-1	Prepares BCM50 syst			
2007-11	Patch Applied	BCM50R3	6.0.2.05-1	BCM50 R3 to R3 core			
2007-11	Patch Applied	BCM50R3	6.0.2.05-1	BCM50 R3 to R3 Win			
2007-11	Patch Applied	BCM50R3	6.0.2.05-1	BCM50 R3 to R3 doc			
				1			
	Software Up Current sy Date A 2007-11 2007-11 2007-11	Software Update History Current system software vers Software Update History Date ▲ Category 2007-11 Patch Applied 2007-11 Patch Applied 2007-11 Patch Applied 2007-11 Patch Applied	Software Update History Current system software version Software Update History Date Category Name 2007-11 Patch Applied BCM50Pre 2007-11 Patch Applied BCM50R3 2007-11 Patch Applied BCM50R3 2007-11 Patch Applied BCM50R3 2007-11 Patch Applied	Software Update History Current system software version 6.0.2.05.237 Software Update History Date A Category Name Version 2007-11 Patch Applied BCM50Pre 6.0.2.05-1 2007-11 Patch Applied BCM50R3 6.0.2.05-1 2007-11 Patch Applied BCM50R3 6.0.2.05-1 2007-11 Patch Applied BCM50R3 6.0.2.05-1			

Figure 2: BCM50 Software Version Number

This is the supported base release that is required for AT&T IP Flexible Reach and AT&T IP Flexible Reach with AT&T Business in a Box services. Any 6.0.x.x.x software release greater than the aforementioned software version is acceptable.

This software release 6.0.x.x.x refers to BCM50 Release 3.0 SIP.

The following BCM50 patches, at minimum, must be applied. To verify any installed patches on the system: under the BCM50 Element Manager's "Administration" tab, click on "Software Management" and select "Software Update History."

Task Navigation Panel	Software Update History						
Configuration Administration							
표·· 🛅 General	Current sy	stem software versio	n 6.0.2.05.237		1		
🗄 🛅 System Metrics	Software Up	date History					
E Celephony Metrics	Date 🛆	Category	Name	Version	Description		
🕀 🧰 Utilities	2007-11	Patch Applied	BCM50PreR3_Upgrade	6.0.2.05-1	Prepares BCM50 syst		
Backup and Restore	2007-11	Patch Applied	BCM50R3_to_R3_Upgra	6.0.2.05-1	BCM50 R3 to R3 core		
	2007-11	Patch Applied	BCM50R3_to_R3_Upgra	6.0.2.05-1	BCM50 R3 to R3 Win		
Log Management	2007-11	Patch Applied	BCM50R3_to_R3_Upgra	6.0.2.05-1	BCM50 R3 to R3 doc		
Software Management	2007-11	Patch Applied	BCM050.R300.FEPS	2-2	UPDATE to FEPS		
Software Updates							
Software Update History							
Sortware Inventory							
					أستحصر ومنتجب ومعتقد وروا		

Figure 3: BCM50 Lists of Applied Patches

Patch Name	Description
BCM050.R300.FEPS-2	UPDATE to FEPS
BCM050.R300.SOFTWARE-MANAGEMENT-32	
BCM050.R300.SU.Desktop-54.200804	
BCM050.R300.SU.System-139.200812	
BCM050.R300.FEPS-150	

4.2 IP Trunks

Voice over IP (VoIP) trunks, are signaling channels that simulate how CO lines work. However, VoIP trunks transmit data to the IP network over a LAN or IP network rather than over physical lines. Once the VoIP trunks are set up, you can assign them to line pools, and program their behavior in the same way you would PRI lines.

VoIP trunks use line numbers 001 to 012. These line records appear under *Configuration* \rightarrow *Telephony* \rightarrow *Lines* \rightarrow *Active VoIP Lines*. To access VoIP lines, you need to enter software keycodes. Each keycode supports a specific number of trunks. No entries appear in the Enabled VoIP lines field until you complete the IP Trunks Settings field, which displays when you click IP Trunks under *Configuration* \rightarrow *Resources* \rightarrow *Telephony Resources* \rightarrow *IP trunks*.

Note: The BCM50 (Release 3.0) offers two VoIP trunk license options: SIP Gateway Trunk License and VoIP Trunk Gateway License. The SIP Gateway Trunk License enables SIP-only trunks and the VoIP Trunk Gateway License enables SIP or H.323 trunks. <u>Either type of trunk licenses can be used for SIP signaling with AT&T IP Flexible Reach service</u>.

Customers that desire a lower cost or have no requirements for H.323 should choose the SIP Gateway Trunk License option.

VoIP trunks should be configured to use a single line pool. Do not mix other trunk types on the same line pool (e.g. analog, PRI, etc). The VoIP line pools are assigned to routes, which, in turn, are configured with destination codes that route calls to the BVoIP network.

You can also create a fallback for the trunk. This is a situation where the system reroutes the call to a PSTN line pool if the primary route is not available or the call quality is not suitable. If you do not configure your network for fallback and the call quality is below threshold, the IP call fails.

Check under *Configuration* \rightarrow *Telephony* \rightarrow *Lines* \rightarrow *Active VoIP Lines* to see if trunks have been allocated. You should have a number of IP trunks displayed. The total number of lines indicated corresponds to the number of IP trunks licensed by Nortel for your BCM50. See figure below.

AT&T IP Flexible Reach and AT&T IP Flexible Reach with AT&T Business in a Box Nortel BCM50 Release 3.0 SIP Configuration Guide

Task Navigation Panel									
onfiguration Administration	Acuve	voir Lines				-	4	4	4
Welcome	Line	Trunk Type	Name	Control Set	Line Type	Prime Set	Pub. Received #	Priv. Received #	Distinct Ring
🚞 System	001	VolP	Line001	2000	Pool:BlocA	2000	N/A	N/A	None
Administrator Access	002	VolP	Line002	2000	Pool:BlocA	2000	N/A	N/A	None
Resources	003	VolP	Line003	2000	Pool:BlocA	2000	N/A	N/A	None
Telephony	004	VolP	Line004	2000	Pool:BlocA	2000	N/A	N/A	None
	005	VoIP	Line005	2000	Pool:BlocA	2000	N/A	N/A	None
🖃 🤤 Lines	006	VoIP	Line006	2000	Pool:BlocA	2000	N/A	N/A	None
Active Physical Lir	007	VolP	Line007	2000	Pool:BlocA	2000	N/A	N/A	None
Active VolP Lines	008	VolP	Line008	2000	Pool:BlocA	2000	N/A	N/A	None
Target Lines	009	VolP	Line009	2000	Pool:BlocA	2000	N/A	N/A	None
Inactive Lines	010	VolP	Line010	2000	Pool:BlocA	2000	N/A	N/A	None
All Lines	011	VoIP	Line011	2000	Pool:BlocA	2000	N/A	N/A	None
 Scheduled Services 	012	VolP	Line012	2000	Pool:BlocA	2000	N/A	N/A	None
🗉 🚞 Dialing Plan									
Ring Groups	Con	u Dente							
🗉 🚞 Call Security	- Cob	y raste							

Figure 4: Available VoIP Trunks

Note: If no active VoIP lines are present, check to see if either SIP or IP Trunks licenses are installed. If so, try restarting the "feps" service on the BCM50. This can be done by going to *Administration* \rightarrow *General* \rightarrow *Service Manager*, and restarting the "feps" service. Also, check under *Configuration* \rightarrow *Resources* \rightarrow *Application Resources*, and ensure that the SIP (or IP) Trunks Minimum and Maximum values are set to 0 and MAX, respectively.

Administrator Access		Application Resource	e Recervation					
 Accounts and Privileges Security Policies Security Policies 		Application	Minimum	Maximum	Licence	System Max.	Change Pending	Sig. C
	١.	IP Sets	0	MAX	12	2 32		\neg
Application Resources	Ш	IP Trunks	0	MAX	12	2 12	2	
Media Gateways Port Ranges		SIP Trunks	0	MAX		12	2	1
 Telephony Resources 	117	Media Gateways	2	MAX	N/A	. 80		
Dial Up Interfaces		Voice Mail + CC	2	10	N/A	. 15		1
Telephony		Fax	0	MAX	C) 2	2	
Data Services Applications		< <u></u>						أسب

Figure 5: Application Resource availability of SIP (or IP) Trunks

Also ensure that there is a number under "**Licence**" for either trunk entries. Otherwise, new keycodes/licenses need to be retrieved for the BCM50.

Under *Configuration* \rightarrow *Telephony* \rightarrow *Dialing Plan*; select "Line Pools." In this case we selected "BlocA" under the "Pool" tab. We will use this line pool to access the VoIP trunks. Additionally, all DN numbers that need to access the VoIP trunks must be added to this pool. Please see the following screen shots for an example configuration.



Figure 6: Assigning Line Pool to IP Trunks

Details for Line Poot BlocA
DNs Call by Call Limits
DNs with Access to Line Pool
DN 2000 2001 2002
Add Delete

Figure 7: Assigning DN to Line Pool

Under *Configuration* \rightarrow *Telephony* \rightarrow *Dialing Plan* \rightarrow *General*, we define the DN length to 4 digits.

File View Network Session To	ols Help						
🜗 Exit 🎽 Disconnect 🎯 Ref	Exit 🔀 Disconnect 🔗 Refresh 🖉 Auto-refresh						
Task Navigation Panel	Dialing Plan - General						
Configuration Administration							
 Welcome 							
🗉 🖻 🚞 System	Global Settings						
🗉 🖻 🛅 Administrator Access	DN length (intercom)						
🗄 🛅 Resources							
🗖 🖃 🔄 Telephony	Dialing timeout 4 🗸						
🗄 📄 Global Settings							
🗄 💼 Sets							
🗄 🚞 Lines	-Access Codes						
 Loops 							
Scheduled Services	Park prefix 1 🗸						
🖃 🚞 Dialing Plan							
🕒 🕒 General	External code None 💟						
 DNs 							
Public Network							

Figure 8: Configuring General DN Length

Under *Configuration* \rightarrow *Telephony* \rightarrow *Dialing Plan* \rightarrow *Public Network*, we define the Public Received number length to "4" digits and Public network dialing plan to "National."

File View Network Session Too	ls Help							
🖟 Exit Disconnect 🎯 Refresh 🏉 Auto-refresh								
Task Navigation Panel Configuration Administration	Dialing Plan - Public Network							
● Welcome	Public Network Settings Public Received number length							
	Public Auto DN Public network code Public network code							
 Loops Scheduled Services Scheduled Services Scheduled Services Scheduled Services DNs 	Public Network DN Lengths Carrier Codes							
Public Network Private Network Line Pools Routing Ring Groups	0 11 Code Prefix ID Length 10							
Hang of cape Gall Security Hospitality Hunt Groups Call Detail Recording	1 11 011 18 411 3							
	911 3 Default 7 Add Delete							

Figure 9: Configuring Public Received Number Length and Dialing Plan

Under *Configuration* \rightarrow *Telephony* \rightarrow *Dialing Plan* \rightarrow *Private Network*, we define the Private Received number length to "4" digits.

File View Network Session Too	ls Help	1
🐐 Exit 🎽 Disconnect 🍠 Refr	esh 🍠 Auto-refresh	
Task Navigation Panel	Dialing Plan - Private Network	
Welcome System Administrator Access	Private Network Settings	
 	Private Auto DN	Private network type CDP V
Global Settings Sets	Private DISA DN	Location code
Lines Loops Scheduled Services	Private access code	Private DN length
 □ (aling Plan) ● General ● DNs 		
Public Network Private Network Line Pools	Local access code	VolP Virtual Private Network ID
Routing Ring Groups	National access code	Zone ID 0
 	Network ICCI	FTS
Call Detail Recording E	TRO	Network Diversion
Applications	TAT	MCID

Figure 10: Configuring Private Received Number Length

Under *Configuration* \rightarrow *Telephony* \rightarrow *Dialing Plan* \rightarrow *Routing*: Select the "Routes" tab and ensure there is an entry for "BlocA." In this case "001" is the route number and the DN type is specified as "National." See figure below.

File	View Network Session Too	ils Help					
4	Exit 🎽 Disconnect 🍠 Refr	esh 💋 Au	.to-refresh				
	Task Navigation Panel	Dialing Pl	lan - Routing				
	Configuration Administration	Routes	Destination Codes 1	Pagend Diel Ter			1
		Poutes	Destination Codes :	Second Dial Tor			
	🗄 🔝 System	Roules	1	12	lr.	1	
		Route	External Number	Use Pool	DN Type	Service Type	Service ID
		000		A	N/A	N/A	N/A
	E Global Settings	001	(BlocA	National	N/A	N/A
	∃ 💼 Sets	\sim		\bigcirc			
	🗄 🧰 Lines						
	Loops						
	Scheduled Services						1
	🖃 🚞 Dialing Plan						1
	General						1
	DNs						4
	Public Network						1
	Private Network						1
							1
	Routing						1
	Call Security						a

Figure 11: Assigning a Route for IP Trunks

Under *Configuration* \rightarrow *Telephony* \rightarrow *Dialing Plan* \rightarrow *Routing*, select the "Destination Codes" tab to assign a destination code for the IP trunks. Configure a destination code "9" or to whatever code you want to access for outside (IP off-net) call that will be presented to the AT&T service for routing. In this case, when "9" is dialed we wish to push the dialed string to the IP trunk for routing. See figure below.

Note: When completing the Technical Questionnaire Section 6.0 Dial Plan Information and the **private dial plan** is selected (**YES**), then please refer to *Appendix 'A': Configuring Destination Code with Wildcard*.

Fil	e View Network Session Too	ols Help	1
4	🕽 Exit 🛛 🎽 Disconnect 🏾 🚳 Refr	resh 🏉 Auto-refresh	
•	Task Havigation Panel Configuration Administration Welcome Configuration System	Dialing Plan - Routing Routes Destination Codes Destination Codes Second Dial Tone	And the second
	Administrator Access Administrator Access Resources Telephony Olobal Settings	Destination Code Normal Route Absorbed Length Wild Card: 0 1 2 3 9 001 All	
	 Scheduled Services Dialing Plan General 		
	 DNs Public Network Private Network 		
	Cuine Pools Routing Ring Groups	Add Delete	
	E Call Security		

Figure 12: Assign Code to Access IP Trunk Routes

4.3 SIP Proxy Parameters

Under *Configuration* → *Resources* → *Telephony Resources:* Select module type "IP Trunks" and click on the "Sip Proxy" tab (see figures below).

File View Network Session Too	ls Help											
ᆌ Exit 🛛 🎽 Disconnect 🎅 Refr	esh <i>圖</i> Auto-refres	h										
Task Navigation Panel	Telephony Resou	irces						1				
Configuration Administration	Modules	Modules										
± iii System	Location	Module type	Bus State	Devices	Low Hig	h Tơ	al Bu	sy				
🗄 🚞 Administrator Access	Internal	IP & Application Sets	1 N/A	Sets	N/A	N/A	3	0				
Application Resources	Internal	P Trunks	N/A N/A	Lines	1	12	12	0				
 Media Gateways 	Internal	Analog Trunk	3 Enabled	Lines	61	64	4	0				
Port Ranges	Internal	Sets	4 Enabled	Sets	N/A	N/A	0	0				
Telephony Resources	Expansion 1	Empty	5 N/A	N/A	N/A	N/A	N/A	N/A				
🛨 🧰 Telephony	Expansion 2	Empty	7 N/A	N/A	N/A	N/A	N/A	N/A				
🗄 🚞 Data Services												
III Applications	Lanna anana											

Figure 13: Selecting IP Trunk Module

Routing Table IP Trunk Setting:	H323 Settings	H323 Media Parameters	SIP Settings	Sip Proxy	SIP Media Param	eters S
SIP Proxy * D Route all calls using	omain 135.25 oroxy	.29.135			Optional IP Addr IP Address Port	ess for Id
MCDN Pr	otocol None 🔽	•				
Outbound Proxy Table	ress Por	t Load-baland	cing Weight	Keep alive		

Figure 14: Sip Proxy Parameters

For IP Flexible Reach: Populate the "**Domain**" as the IP address of the AT&T IP Border Element.

For AT&T IP Flexible Reach with AT&T Business in a Box: The "**Domain**" will be the IP address of the local interface of the AT&T Business in a Box router.

Contact your local AT&T Customer Care representative for the IP addresses and more information.

4.3.1 Failover to Secondary AT&T IP Border Element (IPBE) – NOT SUPPORTED ON AT&T IP Flexible Reach with AT&T BUSINESS IN A BOX

For AT&T IP Flexible Reach with AT&T Business in a Box customers, please skip this section and continue on to Section 4.4.

Backup to a secondary AT&T IP Border Elements is supported on the BCM50 using the SIP "OPTIONS" keep-alive approach. The BCM50 will send SIP "OPTIONS" messages to the AT&T IPBEs listed in the Outbound Proxy Table and send VoIP calls based on whether or not the BCM50 receives a "200 OK" from the IPBEs and the Load-balancing Weights values set for each entry.

	SIP Pruxy	* Domain	135.25	.29.135				-Optio
	Route all ca	alls using proxy						IP.
		MCDN Protocol	None 🔽					
-Out	bound Proxy Te	able						
-Out	bound Proxy Ta	able	Port	:	Load-balan	cing Weight	Keep alive	e]
Out Na	bound Proxy Ta me 5.25.29.135	able IP Address 135.25.29.135	Port	5060	Load-balan	cing Weight	Keep alive	8

Figure 15: Outbound Proxy Table for failover to secondary AT&T IPBEs

A Load-balancing weight of 0 means the IPBE is used as last resort. Any nonzero number value indicates the ratio of calls (the specific IPBE's load-balancing weight to sum of all IPBE's load-balancing weights) the BCM50 will send out to each IPBE. In this example, the BCM50 will send 1 call for every 1 call made (in essence, all calls) to the IPBE with IP address 135.25.29.135 and use 135.25.29.79 IPBE as backup.

Additionally, the AT&T IP Flexible Reach service will send incoming calls to the BCM50 from multiple IP border elements. The BCM50 will accept calls from any border element without additional configuration.

4.4 Media Parameters

Configuration → Resources → Telephony Resources:

Select module type "**IP Trunks**" and click on the "**SIP Media Parameters**" tab. Within this screen; ensure that all values are exactly as the sample screen shot shown below:

Auto

T.38**

- 1st Preferred Codec: G.729*
- 2nd Preferred Codec: G.711-uLaw
- Voice Activity Detection: Disabled
- Jitter Buffer:
- Fax transport:
- G.729 Payload Size: 20



Figure 16: SIP Media Parameters

* For default configurations, G.729A codec will be used for voice calls. However, in the case that G.729B needs to be configured instead of G.729A, ensure that "Enable Voice Activity Detection" is checked.

** Nortel recommends using T.38 as the fax transport – this has been tested and is known to work. Any analog lines that will be used for fax should also have the following minimum setting (see figure below):

For customers requiring G.711 fax, the following procedure needs to be executed: Under *Configuration* \rightarrow *Telephony* \rightarrow *Sets* \rightarrow *All DNs*, select the DN used the analog device and go to the "Capabilities and Preferences" tab.

On the lower navigation section, select "**ATA Settings**" and set the "**ATA device**" to "Modem."



Figure 17: Configuring analog DNs for fax

For T.38 fax requirements, ensure that the "ATA device" is set to "Telephone."

4.5 SIP URI Map

Configuration → *Resources* → *Telephony Resources:* Select module type "**IP Trunks**" and click on the "**SIP URI Map**" tab.

Ensure that the e.164 / National SIP domain name is blank.

Modules							
Location	Configured I	Device	Dip Switch	Bus	State	Low	High
Internal	IP Trunks		N/A	N/A	N/A	001	008
nternal	IP Sets		N/A	N/A	N/A	2253	2268
internal	Applications		N/A	N/A	N/A	2300	2399
fain MBM 1	ASM/ASM+ M	BM	All On	10.1	Enabled	2221	2228
fain MBM 2	None		N/A	N/A	N/A	N/A	N/A
lain MBM 3	None		N/A	N/A	N/A	N/A	N/A
Tain MBM 4	4x16 MBM		All On	N/A	N/A	N/A	N/A
	: Internal					_	
Details for Module							
Routing Table	IP Trunk Settings	H323 Settings	H323 Media Parameters	SIP Settings Sip Pr	oxy SIP Media Pa	rameters SIP	URI Map
Routing Table	IP Trunk Settings	H323 Settings	H323 Media Parameters	SIP Settings Sip Pr	oxy SIP Media Pa	rameters SIP	URI Map
Routing Table SIP Domain M e.164 / N	IP Trunk Settings	H323 Settings	H323 Media Parameters	SIP Settings Sip Pr	oxy SIP Media Pa	rameters SIP	URI Map
Routing Table SIP Domain M e.164 / N e.164 / Su	IP Trunk Settings anco Jational: ascriber: Subscribe	H323 Settings	H323 Media Parameters	SIP Settings Sip Pr	oxy SIP Media Pa	rameters SIP	URI Map
Routing Table SIP Domain N e.164 / N e.164 / U	IP Trunk Settings Inco National: Incriber: Subscribe	H323 Settings r.e164 e164	H323 Media Parameters	SIP Settings Sip Pr	oxy SIP Media Pa	rameters SIP	URI Map

4.6 Port Ranges

Configuration \rightarrow *Resources* \rightarrow *Telephony Resources:*

Select "**Port Ranges**" and use the values shown below. The default RTP ranges are from 28000 to 28255. This range is used for fax (T.38), digital phones and analog phones. The media gateway port ranges are configurable.

AT&T IP Flexible Reach and AT&T IP Flexible Reach with AT&T Business in a Box Nortel BCM50 Release 3.0 SIP Configuration Guide

File View Network Session To	ols Help			
ᆌ Exit 🛛 🎽 Disconnect 🏾 🚭 Ref	resh 🍠 Auto-refresh			1
Task Navigation Panel	Port Ranges			1
Configuration Administration				
VVelcome	RTP over UDP U	DP	Signalling	1
🛨 🧰 System	Begin End f	Begin End	Begin	
E Administrator Access	22000 22025	20000 20255		4000
Resources	28000 28255	20000 20255	U	1023
 Application Resources 			1718	1719
Media Gateways			2216	2219
Port Ranges			5000	2000
Telephony Resources			5000	5000
 Dial Up Interfaces 			7000	7000
🛨 🧰 Telephony			60000	60001
🗄 🧰 Data Services				
🛨 🚞 Applications	Add Delete	Add Delete		
		and the state of t		

Figure 18: Media Gateway Port Ranges

The BCM50 IP phone's RTP and RTCP port range are 51000-51399. Each IP phone call uses two ports. The default port range for RTP and RTCP are not configurable.

4.7 Configuring Outgoing Calls from BCM50 to AT&T IP Flex Reach

Configuration → Telephony → Sets → All DNs:

We will now associate the private DN number with the DID number. In the example below; 2000 is entered in the "**Private OLI**" field and 7323683478 is entered in the "**Public OLI**" field. This example enables "calling number translation" (outgoing) for this particular DN number. See figure below.

ili Dha							
	_						
Line Acces	SS Capabilities and Preferen	ces Restricti	ons				
DN	Model	Name	Port	Pub OLI	Priv. OLI	Fwd No Answer	Fwd Delay
2000	1140E/2004/2007/2050	2000	0101	7323683478	2000	2174	2
2004	1140E200420072050	2004	01.09		2004	2174	4
2001	11405/2004/2001/2000	2001	0100		2001	2114	-
2002	1140E/2004/2007/2050	2002	0102		2002	2174	4
2003	T7208/M7208	2003	0404				N/A
2004	T7208/M7208	2004	0405				N/A
<							
Сору	Paste					مر بر کار رماندر کار 2010 کار مرد	
	Line Acces DN 2000 2001 2002 2003 2004 Copy	Line Access Dapabilities and Preference DN Model 2000 1140E/2004/2007/2050 2001 1140E/2004/2007/2050 2002 1140E/2004/2007/2050 2003 T7208/M7208 2004 T7208/M7208 Copy Paste	Line Access Opapabilities and Preferences Restricti DN Model Name 2000 1140E/2004/2007/2050 2000 2001 1140E/2004/2007/2050 2001 2002 1140E/2004/2007/2050 2002 2003 T7208/M7208 2003 2004 T7208/M7208 2004 Copy Paste	DN Model Name Port 2000 1140E/2004/2007/2050 2000 0101 2001 1140E/2004/2007/2050 2001 0109 2002 1140E/2004/2007/2050 2002 0102 2003 T7208/M7208 2003 0404 2004 T7208/M7208 2004 0405 Copy Paste	DN Model Name Port Pub. OLI 2000 1140E/2004/2007/2050 2000 0101 7323683478 2001 1140E/2004/2007/2050 2001 0109 7323683478 2002 1140E/2004/2007/2050 2002 0102 2003 T7208/M7208 2003 0404 2004 T7208/M7208 2004 0405 119 119 Copy Paste 119 119 119 119	DN Model Name Port Pub. OLI Priv. OLI 2000 1140E/2004/2007/2050 2000 0101 7323683478 2000 2001 1140E/2004/2007/2050 2001 0109 2001 2002 1140E/2004/2007/2050 2002 0102 2002 2003 T7208/M7208 2003 0404 2004 T7208/M7208 2004 0405	DN Model Name Port Pub. OLI Priv. OLI Fwd No Answer 2000 1140E/2004/2007/2050 2000 0101 7323683478 2000 2174 2001 1140E/2004/2007/2050 2001 0109 2001 2174 2002 1140E/2004/2007/2050 2002 0102 2002 2174 2003 T7208/M7208 2003 0404 2004 T7208/M7208 2004 0405 Copy Paste

Figure 19: Configuring DID for Outgoing Calls

4.8 Configuring Incoming Calls from AT&T IP Flex Reach to BCM50

Configuration \rightarrow *Telephony* \rightarrow *Sets* \rightarrow *All DNs:*

We will now configure the "called number translation" (incoming) for the DN number. In our example, go to the "Line Assignment" tab located at the bottom of the "Line Access" page. Enter 2000 in the "Priv. Received #" field; then enter the last four digits of the DID (Public number) in the "Pub. Received #" (Note: 10 digit entries are now supported with Release 2.0). Incoming DID calls will be routed to telephones, based on the trailing portion of the digits received by the network. For example, Incoming calls from the AT&T IP Flexible Reach network will deliver a ten digit DID number, e.g. 7323683478. The BCM50 will route the call using the last four digits, e.g. 3478. Additionally, this configuration will allow incoming 4-digit dialing plan calls from the IP Flexible Reach network, e.g. 3478.

Act	tive Sets	;								
Li	ne Acce:	SS Capabilities and Preference	es Restric	tions						
	N	Model	Name	Port	Pub. OLI	Priv. OLI	Fwd No Answer	Fwd Delay	Fwd Busy	Fwd All
\square	000	1140E/2004/2007/2050	2000	0101	7323683478	2000	2174	4		
2	001	1140E/2004/2007/2050	2001	0109	7323683479	2001	2174	4		
2	002	1140E/2004/2007/2050	2002	0102		2002	2174	4		
2	012	Analog	2012	0413				N/A		
2	013	Analog	2013	0414				N/A		
	Сору	Paste								
	Details fo	r DN: 2000 Assignment Line Pool Acces	s Answer	DNs						
	Assi	gned Lines		1	1	1				
	Line	Appearance Type	opearances	Caller I	D Set Vmsg Se	et Priv. Re	eceived # (Pub. Re	ceived #		
	141	Appr&Ring		1		2000	3478			

Figure 20: Configuring DID for Incoming Calls

Configuration → Telephony → Lines → Target Lines

To display the DID number on the IP phone LCD screen; under the "**Target Lines**" tab click on the assigned "Line" number of the DN you want to program. In our example below we click on "**Line 141**"; enter 3683478 in the "**Name**" field. See figure below.

File	View Network Session Too	ols	Help								
4	Exit 🎽 Disconnect 🎯 Refr	resh	n 💋 Au	to-refresh							
	ask Navigation Panel	Т	arget Li	nes							
	Configuration Administration	П	Line	Trunk Tuno	Thoma	Control Sot	Line Tune	Drimo Sot	I Bub Rossiund #	Intin Received #	1 Dictinct Ring
	 Welcome 		LINE	Turunk Type	Indine	Control Set	Line Type	Frine Sec	Fub. Received #	FIN. Received #	Distinct King
	🗉 🧾 System		137	Target line	Line137	2000	Public	2000			None 🦉
	Administrator Access		138	Target line	Line138	2000	Public	2000			None 📄
	Resources		139	Target line	Line139	2000	Public	2000			None
	Celephony		140	Target line	Line140	2000	Public	2000			None
	🗄 🔝 Global Settings		1.41	Terget line	269247	2000	Public	2000	9479	2000	None
	🗄 🔛 Sets	I N	141	raiget line	300347	2000	Fublic	2000	3470	2000	None
			142	l arget line	Line142	2000	Public	2000			None
	Active Physical Li		143	Target line	Line143	2000	Public	2000			None
	Active VolP Lines		144	Target line	Line144	2000	Public	2000			None
	Target Lines		145	Target line	Line145	2000	Public	2000			None
	Inactive Lines		146	Target line	Line146	2000	Public	2000			None
	All Lines		1.47	Target line	Line147	2000	Public	2000			None
	 Loops Calead day Carries 		147	rai get inte	Linerer	2000	Fablic	2000			None
	Scrieduleu Services Dialian Dian		<								>
	Ping Croups										1
	Coll Security		Сору	Paste							
	Hospitality	ſ									1
	Hust Groups		Details	for Line: 141							4
	Call Detail Recording										
ц,	Can betain Necording	1.	ante	man a barron	and marked and a		and a state to prove the second se	~~~		، سمهدین شدهند.	and a sea an south

Figure 21: Display DID on IP Set LCD

Additionally, all telephone sets that need to access the VoIP trunks needs to be configured with the designated "Line Pool" code. In our example we defined "BlocA" as the code to access the VOIP trunks. See figure 19 below.

File	1	iew Network Session To	ols	Help							
4	E>	kit 🛛 🎽 Disconnect 🏾 🚳 Refi	res	h 🍠 Auto-	refresh						
	ſas	k Navigation Panel		Active Sets							
1	Со	nfiguration Administration			_						
		 Welcome 		Line Acces:	Capabilities and Preferen	ices Restr	ctions				
	÷	🚞 System		DN	Model	Name	Port	Pub. OLI	Priv. OLI	Fwd No Answer	Fwd Delay
	•	Administrator Access	0	2000	1140E/2004/2007/2050	2000	0101	7323683478	2000	2174	4
		Resources		2001	1140E/2004/2007/2050	2001	0109		2001	2174	4
	-	Global Settings		2002	1140E/2004/2007/2050	2002	0102	7323683479	2002	2174	4
		🖃 🔄 Sets		2012	Analog	2012	0413				N/A
		Active Sets		2013	Analog	2013	0414				N/A
		Active Application			- maiog	2010					
		Inactive DNs		Сору	Paste						1
		H intes									
		Loops		Details for	DN: 2000						4
		Scheduled Services				_					i
		🗄 🚞 Dialing Plan		Line A	Assignment Line Pool Acce	ss Answe	er DNs				
		Ring Groups		Line P	ools						
		Call Security		Line F	Pool						4
		 Hunt Groups 		Place							
		Call Detail Recording									
	÷	💼 Data Services									1
	Ŧ	Applications									ł
											i. i
											4
											i
					La Delete						-
				Ad	a Delete						
					البراغ ريام والمحافظة فعقبته فارتفاعهم		-				

Figure 22: Assign Line Pool to IP Sets

5 Troubleshooting

This section provides some tips about troubleshooting problems

5.1 System Monitoring with BCM Monitor

A valuable application for performance monitoring is the BCM Monitor. It allows the BCM administrator to see the current status of various parts of the BCM system. Statistical information is provided on system throughput and other performance-related information, including system CPU usage (graph or table format) and memory usage (graph or table format).

If a performance display is active, it is automatically updated with real-time performance information in user-selectable time increments.

The focus of the real-time monitoring capabilities is:

- Overall system status
- Utilization of resources on the Media Services Card (e.g. signaling channel usage)
- Operation of telephony applications (e.g., Messaging, Call Center, etc.).
- IP telephony activity
- D-channel monitoring for PRI, BRI and VoIP trunks

BCM Monitor - Bcm_2	
File Statistics Help	
BCM Info Media Card Voice Ports IP Devices RTP Sessions UIP Line Monitor Usage Indicators	-
FBCM Info	
CPU: 0%	
Physical memory (MB): 187 of 254 74%	
Nonpaged mem. (MB): 33 of 98 34%	
Used Media Card Resources	1
Signaling channels: 10 of 59 17%	}
Media channels: 4 of 59 7%	-
Voice bus channels: 5 of 62 8%	
DSP resources: 10 of 64 16%	
Active Telephony Devices	
IP trunks: 1 of 16 6%	
IP sets: 1 of 2 50%	\rightarrow
Voice ports: 0 of 6 0%	
Media gateways: 0 of 4 0%	\rightarrow
and the second s	
and the second sec	المريدة

Figure 23: System Monitoring Example

The BCM Monitor application can be downloaded to an administrator's PC from the BCM and pointed at a specific BCM's IP address for monitoring. Multiple

instances of the BCM Monitor application can be used on a single PC to monitor several remote BCM systems at the same time. Backward version compatibility is supported.

All of the registered IP devices can be viewed with the BCM Monitor. The screen shot below depicts IP Phone type, DN number and IP address of each registered IP phone. Additionally, if the device is active on a call the RTP session information is also displayed.

🗐 BCM Moni	tor - Bcm_2						DG ,
File Statistics	Help						
BCM Into Me	dia Card Voice F	Ports IP I)evices	RTP Sessions UIP	Line Monitor Usage Indicators		
IP Clients		□ IP Set I	Details —				
Used license	s: 2 of 12	DN	Туре	IP:Port	RTP Session	Info	1
- I20xx Sets-		3000	12004	172.16.6.103:5000	51000<->135.25.29.135:16770	G729 2 fpp, SMALL jb	3
Enabled:	2	3002	12002	172.16.6.103.3000			
Connected:	2						
Active (on ca	ll): 1						
⊢Wireless Sets							
Enabled:	0						
Connected:	0						
Active (on ca	ll): 0						5
10.7							J
IP Trunks Used license	v 16 of 16						5
Active (on ca							\geq
MCDN over I	P: Enabled						3
							~ ~
Arrest	the second second	-		The second se			Trubel and

Figure 24: IP Device Listing

The end-to-end RTP sessions per IP call can also be displayed with the BCM Monitor. The example below depicts an end-to-end call.

		_
BCM Monitor - Bcm_2		JC
File Statistics Help		
BCM ho Media Card Voice Po	orts IP Devices (RTP Sessions) UIP Line Monitor Usage Indicators	1
Local IP Endpoints	- RTP Session Details	-
IP to IP: 0	{Set 3000 172.16.6.103:51000}<->{IP Trunk 16}{135.25.29.135:16768} G.729, 2 (pp, SMALL ib	
TDM to IP: 0		- 1
TDM to TDM: 0		- 3
Est. bandwidth: 0 bps		
- Local to Remote IP Endopint-		- 1
IP to IP		
TDM to IP: 0		1
Est, bandwidth: 62.4 khns		1
		2
Remote IP Endpoints		1
IP to IP: 0		5
Est. bandwidth: 0 bps		5
Media Gateways		5
Active (on call): 0 of 4		5
		1
	the second s	1

Figure 25: RTP Session Information

The BCM Monitor can be used to monitor incoming and outgoing trunks to determine if trunks are being busy or if they are idle. The example below depicts utilized lines used by local and remote telephone/DN numbers.

BCM Monitor - Bcm_2							_ 0
File Statistics Help							
BCM Info Media Card Voice Ports IP Devi	ices RTP Session	ns UIP L	ine Monitor Usage	Indicators			
Statistics	Line Monitor						
Active Lines: 1	Line	Direction	Start Time	User	State	Duration	Number and Name
Visible lines Show all lines (including inactive)	1 - Line001 15 - Line015 16 - Line016	Incoming Outgoing Outgoing	09/08/06 15:1 09/08/06 12:4 09/08/06 18:4	3680415 - Li 3128 - 3128F 3000 - 3000	Idle Idle Connected	00:00:35	7323680459 - BVOL 19082223076 17324208823
	5						

Figure 26: Line Monitor Information

The BCM Monitor can also be used to monitor all types of system usages. The following are some parameters that can be monitored:

- CPU utilization
- Physical memory
- Media card DSP utilization
- IP sets and IP Trunks
- Voice ports and media gateway usage

ile Statistics BCM Info Media Card DVI 0% Physical memory (MB): 187 of 254 74% 0% Physical memory (MB): 187 of 254 74% 0% Used Media Card Resources Signaling channels: 10 of 59 17% 0 Voice bus channels: 5 of 62 8% 0 DSP resources: 10 of 64 16% 16% P trunks: 1 of 16 17% 0%	SCM Monitor - Bc	m_2		
BCM Info Media Card Voice Ports IP Devices RTP Sessions UIP Line Monitor Usage Indicators BCM Info	File Statistics Help			e
BCM Info 0% CPU: 0% Physical memory (MB): 187 of 254 33 of 98 34% Used Media Card Resources 33 of 98 Signaling channels: 10 of 59 17% 17% Media channels: 5 of 62 8% 10 of 64 DSP resources: 10 of 64 10 of 64 16% Active Telephony Devices 1 IP trunks: 1 of 16 10 of 64 0% Voice potts: 0 of 6 0 of 6 0%	BCM Info Media Card	Voice Ports	IP Det	vices RTP Sessions UIP Line Monitor Usage Indicators
CPU: 0% Physical memory (MB): 187 of 254 Jack 33 of 98 Used Media Card Resources Signaling channels: 10 of 59 José Media Card Resources Signaling channels: 10 of 59 Media channels: 4 of 59 JSe Channels: 10 of 64 JSe Channels: 10 of 64 JSe Channels: 10 of 64 JSe Channels: 1 of 16 Active Telephory Devices I IP sets: 1 of 16 JSe context 1 of 2 JSi of 62 3% Active Telephory Devices I IP sets: 1 of 16 JSi of 60 3% JSi of 60 0%	BCM Info			
Physical memory (MB): 187 of 254 74% Nonpaged mem. (MB): 33 of 98 34% Used Media Card Resources 10 of 59 17% Signaling channels: 10 of 59 7% Voice bus channels: 5 of 62 8% DSP resources: 10 of 64 16% Active Telephony Devices 11 of 16 6% IP trunks: 1 of 16 6% Voice pott: 1 of 2 50% Voice pott: 1 of 4 0%	CPU:		0%	
Nonpaged mem. (MB): 33 of 98 34% Used Media Card Resources Signaling channels: 10 of 59 17% Media channels: 4 of 59 7% 7% Voice bus channels: 5 of 62 8% 8% DSP resources: 10 of 64 16% 7% Active Telephony Devices 10 of 16 6% 7% IP sets: 1 of 16 6% 7% Voice potts: 0 of 6 0% 7%	Physical memory (MB):	187 of 254	74%	
Used Media Card Resources Signaling channels: 10 of 59 Media channels: 4 of 59 Voice bus channels: 5 of 62 DSP resources: 10 of 64 IBP resources: 10 of 64 IP trunks: 1 of 16 IP sets: 1 of 2 Voice ports: 0 of 6 0 of 4 0%	Nonpaged mem. (MB):	33 of 98	34%	
Signaling channels: 10 of 59 17% Media channels: 4 of 59 7% Voice bus channels: 5 of 62 8% DSP resources: 10 of 64 16% Active Telephony Devices I I IP stat: 1 of 16 6% Voice potts: 0 of 6 0% Media acteways: 0 of 4 0%	Used Media Card Reso	urces		1
Media channels: 4 of 59 7% Voice bus channels: 5 of 62 8% DSP resources: 10 of 64 16% Active Telephony Devices IP trunks: 1 of 16 6% IP sets: 1 of 2 50% IP sets: 0 of 6 0% Weide agteways: 0 of 4 0% IP sets: 0 of 4 0%	Signaling channels:	10 of 59	17%	
Voice bus channels: 5 of 62 8% DSP resources: 10 of 64 16% Active Telephony Devices IP trunks: 1 of 16 6% IP sets: 1 of 2 50% 50% Voice ports: 0 of 6 0% 6%	Media channels:	4 of 59	7%	_ (
DSP resources: 10 of 64 16% Active Telephony Devices I I I I 6% IP trunks: 1 of 16 6% I <td>Voice bus channels:</td> <td>5 of 62</td> <td>8%</td> <td> <i>></i></td>	Voice bus channels:	5 of 62	8%	<i>></i>
Active Telephony Devices IP trunks: 1 of 16 6% IP sets: 1 of 2 50% Voice ports: 0 of 6 0%	DSP resources:	10 of 64	16%	
IP trunks: 1 of 16 6% IP sets: 1 of 2 50% Voice ports: 0 of 6 0% Media gateways: 0 of 4 0%	Active Telephony Devi	ces		
IP sets: 1 of 2 50% Voice ports: 0 of 6 0% Media gateways: 0 of 4 0%	IP trunks:	1 of 16	6%	-
Voice ports: 0 of 6 0% Media gateways: 0 of 4 0%	IP sets:	1 of 2	50%	
Media gateways: 0 of 4 0%	Voice ports:	0 of 6	0%	
	Media gateways:	0 of 4	0%	
5				
			_	

Figure 27: System Resources

5.2 Real-time display of BCM50 Alarms

Administration → General →Alarms

The BCM50 provides extensive alarm logs along with severity and problem descriptions. The following is an example screen shot of the "Alarms" display:

File View Network Session Tools Help											
ſ	🖡 Exit 🔀 Disconnect 🔗 Refresh 🖉 Auto-refresh										
	Fask Navigation Panel	Alarms									
	Configuration Administration	Thur	Talama Ashad	L'alama in	linuutu	Investion Description					
	🖃 🔄 General	lime	Alarm Acked	Alarmito	Seventy	Problem Description					
	Alarms	2007-02-16 16:34:01			50507 information	Round Trip Delay Violation Cleared: near DN: 2000, source IP: 172.16.1					
	Alarm Settings	2007-02-16 16:33:41			50508 warning	Round Trip Delay Violation Warning: 56ms, nearDN: 2000, source IP: 17					
	SNMP Trap Destination	2007-02-16 16:33:10			30200 information	User logon User=nnadmin Host=172.16.10.93:1045 Comp=CIM					
	Hardware Inventory	2007-02-16 16:33:06			30200 information	User logon User=nnadmin Host=172.16.10.93:1043 Comp=CIM					
	🗉 🚞 System Metrics	2007-02-16 16:19:41			30200 information	User logon User=nnadmin Host=172.16.10.93:1209 Comp=CIM					
I	Telephony Metrics	2007-02-16 16:19:37			30200 information	User logon User=nnadmin Host=172.16.10.93:1207 Comp=CIM					
	Utilities Deckup and Postara	2007-02-16 16:13:42			50507 information	Round Trip Delay Violation Cleared: 0ms, nearDN: 2002, source IP: 172					
	Logs	2007-02-16 16:13:19			50508 warning	Round Trip Delay Violation Warning: 60ms, nearDN: 2002, source IP: 17					
	🖃 🔄 Software Management	2007-02-16 16:12:01			50507 information	Round Trip Delay Violation Cleared: 0ms, nearDN: 2002, source IP: 172					
	Software Updates	2007-02-16 16:11:44			50508 warning	Round Trip Delay Violation Warning: 68ms, nearDN: 2002, source IP: 17					
	Software Update Hist	2007-02-16 16:10:50			50507 information	Round Trip Delay Violation Cleared: near DN: 2000, source IP: 172.16.1					
	Software Inventory	<									
		Clear Alarmular	Peret I EDa								
			Reserceds								

Figure 28: BCM50 Alarms Page

5.3 Log Management

Another extremely useful tool is the "Log Management." This allows you to quickly and easily collect all relevant logs files and other information to help the various support teams debug any problems you may have with your BCM50. The entire log files required to diagnose a problem is consolidated into a single file.

ile View Network Session Tools Help								
🐐 Exit 🛛 🧏 Disconnect 🎯 Refresh 💣 Auto-refresh								
Task Navigation Panel	Log Management							
	Immediate Log Transfer Scheduled Log Transfer							
	Transfer to My Computer							
Interprint Metrics Interprinter Interprint Metrics Interprint Metrics Interpr	Transfer							
Backup and Restore Galactic Logs								
Log Management E Gottware Management								
Software Updates								
Software Inventory	1							

Figure 29: Log Management

When you first suspect a problem with your BCM50, it is important that you go into the "Log Management" screen and download the log file to your PC. Even if you end up resolving the issue, it is good to know that this information has been captured if it does end up being required.

6 APPENDIX A: Configuring Destination Code with Wildcard

In an inbound call scenario, the leading digit sent to the BCM50 may be the same as the digit used in the destination code. Without configuring for a wildcard; the BCM50 will interpret the call as a tandem call, and will fail to terminate the call on the BCM50. To remedy this, it is recommended to configure destination code with wildcard.

If the IP Flexible Reach sends a site prefix that is the same as the digit being used for the destination code; please use the following configuration example.

In this example, the number sent to the BCM50 is the following: "961170". To configure the BCM50 for this call, use the following wildcard configuration.

Under Configuration \rightarrow Telephony \rightarrow Dialing Plan \rightarrow Routing, under the Destination Codes tab, add the destination code "9A" to use Normal Route "001." Configure the absorbed length to 1 so that the BCM50 will absorb the '9' only in an outbound call scenario. Uncheck the digit following the '9' in the incoming digits to the BCM50 (in this example, the '6' in "961170").

Task Navigation Panel	Dialing Plan - Routing					
Configuration Administration						
 Welcome 	Routes Destination Codes Second Dial Tone					
🗉 💼 System	Destination Codes					
🗉 🛅 Administrator Access	Destination Code Letterse Route Lettersected Length Wild Card: 0 1 12 3 4 5 6 7 8					
🗄 🚞 Resources 🛛 🖌						
🖃 🚞 Telephony 🛛 🛛 📘						
🗉 💼 Global Settings 🛛 🗋						
🕀 🧰 Sets						
🕀 🧰 Lines						
 Loops 						
Scheduled Services						
General						
DNs	1					
Public Network	Alternate Routes for Destination Code: 9A					
Private Network	1					
Line Pools						
Routing	Alternate Routes					
Ring Groups	Schedule First Route Absorbed Length Second Route Absorbed Length Third Route Absorbed Length					
🛛 🕀 🧰 Cell Security						

Figure 30: Configuring Destination Code with Wildcard

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