

Avaya Solution & Interoperability Test Lab

Application Notes for Avaya Business Communications Manager 450 R6.0 to support BT Wholesale/HIPCOM SIP Trunk Service – Issue 1.1

Abstract

These Application Notes describe the steps to configure Session Initiation Protocol (SIP) Trunking between BT Wholesale (BTW)/HIPCOM SIP Trunk Service and an Avaya SIP enabled Enterprise Solution. The Avaya solution consists of Avaya Business Communications Manager 450.

BT is a member of the DevConnect Service Provider program. Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect lab.

1. Introduction

These Application Notes describe the steps to configure Session Initiation Protocol (SIP) trunking between BT Wholesale/HIPCOM SIP Trunk Service and an Avaya SIP enabled enterprise solution. The Avaya solution consists of Avaya Business Communications Server (BCM) 450 connected to BT Wholesale/HIPCOM SIP Trunk Service. Customers using this Avaya SIP-enabled enterprise solution with BT Wholesale/HIPCOM's SIP Trunk Service are able to place and receive PSTN calls via a dedicated Internet connection and the SIP protocol. This converged network solution is an alternative to traditional PSTN trunks. This approach normally results in lower cost for the enterprise.

2. General Test Approach and Test Results

The general test approach was to configure a simulated enterprise site using an Avaya SIP telephony solution consisting of BCM 450. The enterprise site was configured to use the SIP Trunk Service provided by BTW/HIPCOM.

2.1. Interoperability Compliance Testing

The interoperability test included the following:

- Incoming calls to the enterprise site from the PSTN were routed to the DID numbers assigned by BTW/HIPCOM. Incoming PSTN calls were made to Unistim, Digital and analog telephones at the enterprise.
- Outgoing calls from the enterprise to the PSTN were made from Unistim, Digital and analog telephones.
- G.729 annex b (silence suppression) is not supported by BTW/HIPCOM's SIP Trunk Service and thus was not tested.
- Calls using G.729 and G.711A codecs were tested.
- Fax calls to/from a Group 3 fax machine to a PSTN connected fax machine using the T.38 mode.
- User features such as hold and resume, transfer, conference, call forwarding, etc. were tested.
- Caller ID Presentation and Caller ID Restriction features were tested.
- Call coverage and call forwarding for endpoints at the enterprise site was tested.

2.2. Test Results

Interoperability testing of the sample configuration was completed with successful results for BTW/HIPCOM SIP Trunk Service with no observations seen.

2.3. Support

For technical support on BTW/HIPCOM products please contact the following website: <u>http://www.hipcom.co.uk/support</u> or <u>http://ipvoicesupport.btwholesale.com</u>.

3. Reference Configuration

Figure 1 illustrates the test configuration. The test configuration shows an enterprise site connected to BTW/HIPCOM using SIP Trunks. Located at the enterprise site is a BCM 450. Endpoints are Avaya 1140, i2004 and i2007 series IP Deskphones with Unistim firmware, Avaya IP Softphones 2050, Avaya Digital telephone, Analog telephone and fax machine. For security purposes, any public IP addresses or PSTN routable phone numbers used in the compliance test are not shown in these Application Notes.

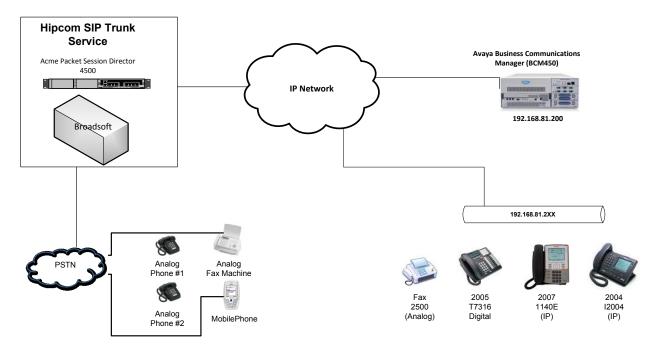


Figure 1: BT Wholesale/HIPCOM SIP Trunk topology with Avaya Business Communication Manager 450

4. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided.

Equipment	Software
Avaya Business Communications	Avaya Business Communications Manager 450 R6.0
Manager 450 R6.0 Standard	System Software Version 10.0.1.02.120
System Base Unit	Manufacturing SW Version 450.06
Avaya 1140E	UNISTIM /Firmware: 0625C70
Avaya i2004	UNISTIM /Firmware: 0602B76
Avaya i2007	UNISTIM /Firmware: 0621C8D
Avaya 2050 IP Softphone	Release 4.0.2.0062
Avaya T7316 (Digital)	Release 01
BTW/HIPCOM SIP Trunk Service	Acme Packet 4500 Net-Net SBC - version SCX6.1.0
	Broadsoft - version 14 Service Pack 9
	Configuration version - HIPCOM v8.1

Note: BCM450 and BCM50 use the same software stream on BCM Release 6.0. The SIP Trunking implementations on both platforms use the same components and behave the same.

5. Configure Avaya Business Communication Manager

These Application Notes assume that the basic configuration of the BCM 450 system has already been administered and the system has working lines and handsets. For further information on Avaya Business Communication Manager 450, please consult references in **Section 9**. The below procedures describe the configuration details of BCM 450 with Public SIP trunks connecting to BTW/HIPCOM SIP Trunk Service.

- Accessing the BCM 450 system
- Administer BCM SIP Trunk Keycodes
- Administer BCM Business Name
- Administer BCM Trunk Routes
- Administer BCM Destination Codes
- Administer BCM SIP Trunks Settings
 - o Administer IP Trunks General
 - Administer SIP Account Parent and Child
 - Administer BCM SIP Trunks Global Settings
 - o Administer SIP Trunks Media Parameters
 - Administer SIP Trunks Private
- Administer Dialing Plan Private Network Settings
- Administer BCM Handset Settings

5.1. Accessing the Avaya Business Communication Manager 450

5.1.1. Install Business Element Manager and Avaya Business Communication Manager 450 Monitor

Open web browser and connect to the Web GUI https://<BCM 450 IP address> as shown below. Login using the appropriate Username and Password.

Note: The web browser has to enable Java Runtime Environment to support the BCM 450 Web GUI. On first time of login, the user will be prompted for a username and password, along with the opportunity to save these credentials and set this web page for auto login in the future.



The Welcome to BCM page is displayed. From the Applications area select Business Element Manager, and then click Run as highlighted below. This action will install Business Element Manager to the local PC. After the installation complete, Business Element Manager shortcut will be created on the desktop.

AVAY	Δ			
Home Contact				
B	to CM			
Main Advanced				
Application Group	Applications			
	Name		Status	
	Activity Reporter Basic		No update required	~
	Business Applications		No update required	
	Business Element Mana	aer	No update required - currently	
ВСМ	BCM Monitor		No update required - currently	a 📃
	Data Migration Manage Other Administrator Ap		New update availiable - 1.1.0 No update required	~
	Uther Administrator Ad	Dications	No ubdate reduired	0.001
	Download Locations		R	un
3rd Party	Local BCM			
Application Launcher 1.07				

5.1.2. Create a new Network Element Entry for Business Element Manager

Once the software has been installed, double click on the **Business Element Manager** desktop icon; the **Avaya Business Element Manager** – **Network Elements** screen will open. It is necessary to create a **Network Element** to connect to the BCM 450 system. To do this, highlight Network Element, and right click and select **New Network Element** \rightarrow **Business Communications Manager**.

File Edit Viev	v Network Session Tool	s Help
📲 Exit 🛛 🗶	Cut 🐚 Copy 💼 Paste	📰 Web Page 🖌 Validate Device 🚔 Connect 🗙 Delete
Element Navig	ation Panel	
Network 47.1		
192.		Business Communications Manager
	Find Network Element 🕨	Business Access Point
	Delete	Business Ethernet Switch Business Secure Router
	Rename	Business Services Gateway
	Cut	
	Сору	
	Paste	

Solution & Interoperability Test Lab Application Notes ©2012 Avaya Inc. All Rights Reserved. Input the IP address of BCM 450, username: **nnadmin** and appropriate password in the relevant fields. Then click **OK**.

	5 Manager device
IP Address	192.168.81.200
User ID	nnadmin
Password	••••••

5.1.3. Login to Business Element Manager

Double click on the **Business Element Manager** desktop icon; select the **Network Element** then click **Connect** as shown below.

🔼 Avaya Business Elemer	nt Manager - Network Elements / 192.168.81.200
File Edit View Network S	iession Taals Help
🐗 Exit 🛛 💥 Cut 🗞 Copy	🖷 Paste 🔚 Web Page 🖌 Validate Device 🚔 Connect 🗙 Delete 🐚 New Folder
Element Navigation Panel	Connection Information IP Address: 192.168.81.200 User ID: nnadmin Password: ••••••• Inventory Information

After the connection has been established, click **OK** in the **Confirm** dialog (not shown). It may also be necessary to **validate** the Device at this stage. Click on the **Validate Device** button at the top of the screen.

🔼 Avaya Business Element N	Manager - 192.168.81.20	200	
File Edit View Network Sessi	ion Tools Help		
📲 Exit 🛛 💥 Cut 📭 Copy 💼	🖌 Paste 🛛 💳 Web Page 🗸	🖊 Validate Device 🧏 Disconnect 🛛 🥵 Refresh 🌒 Auto-refresh	
47.166.92.203	Administration Administration	Account Notifications: WARNING! Your telset password must be changed. WARNING! The following account passwords must be changed: Numeric ID: 738662 User ID: nnadmin Telset user ID: 738662 Last successful login: 2011-08-27 14:29	
		R	

5.1.4. Login to Avaya Business Communication Manager 450 Monitor

The BCM Monitor is a useful tool for monitoring the lines in and out of the BCM. The software may be installed via the web page to a local PC. (See Section 5.1.1 - the BCM Monitor is listed below the BCM Element Manager and is installed the same way). Once the software has been installed double click the BCM 450 Monitor icon on the desktop. Then input IP address of BCM 450, username: **nnadmin** and appropriate password.

BCM Monitor	
File Statistics Help	
Enter Logon Information	
System Name or IP Address:	
Connect As: Innadmin Password: Innadmin	
Save Information	
Connect Cancel Delete	
-	

The BCM Monitor can also be accessed via the BCM Element Manager screens. From the **Task** Navigation Panel, click on the Administration Tab. Select Utilities \rightarrow BCM Monitor. Click on the Launch BCM Monitor button that appears on the right hand side of the screen.

🗛 Avaya Business Eleme	nt Manager - 192.168.81.2	00	
File Edit View Network :	Session Tools Help		
🐗 Exit 🛛 💥 Cut 📭 Copy	📲 Paste 🔚 💳 Web Page 🗸	Validate Device 🧏 Disconnect	🔗 Refresh 🏉 Auto-refresh
Element Navigation Panel	Task Navigation Panel		
 → Network Elements 47.166.92.203 → 192.168.81.200 	Configuration Administration General General General General General General General General General General General System Metrics General General Seconde Configuration Metrics General Gener	BCM Monitor	K

A number of tabs are available once connected. Besides the **BCM Info** tab, the **RTP Sessions** and **Line Monitor** tabs show useful information on calls transiting the system.

e Statistics	and the second sec				
CM Info Med	ia Card Voice Ports	IP Devices	RTP Sessions	UIP	Line Monitor Usage Indicators
BCM Hardware	e	Ins	talled Devices-		8
Platform:	M450	NIC); eth0		
CPU:	8567E 1333 MHz		IP Mask	127.1.0	
Memory:	504 MB		Mask		0.200.0 11-D3-51-50
Hard drive:	ST380815AS		≿eth1	10.00	
Profile:	N/A		IP	192.168	B.81.200
	0	_	Mask MAC		0.200.0 1-D3-51-51
System ID:	BBFCXCVGJCJB		: eth2		
Serial number:	LBNNTMGY0000M	F	IP .	10.10.1	1.1 5.255.252
BCM Software		4	Mask MAC		0.200.202 1-D3-51-52
Version:	10.0.1.02.120		c eth3		
		_	IP .	127.1.3	
Boot time:	8/26/11 4:35 PM		Mask MAC		0.200.0 15-00-00-03
IP Configuratio	n	NIC	c eth4		
Published IP			IP .	127.1.4	
address:	192.168.81.200		Mask MAC		5.255.0 :5-00-00-04
Next hop:	192,168,81,254		c eth5	02 11 0	
	1		IP	127.1.5	
			Mask MAC	255.255	5.255.0 :5-00-00-05
		NIC	: eth6	021110	
			IP	127.1.6	
			Mask MAC	255.255	5.255.0 :5:00:00:06

5.2. Verify Avaya Business Communication Manager SIP Trunk Keycodes

Keycodes are required in order to activate IP trunks on BCM. The **VoIP GW Trunks** license enables H.323 and SIP trunks. Alternatively a separate keycode is available to enable only SIP trunks. Ensure the BCM has the keycode installed prior to starting. If the required keycode is not installed, contact an authorized Avaya sales representative.

Connect to BCM Business Element Manager. From the **Task Navigation Panel** select the **Configuration** Tab. From the sub menu select **System** \rightarrow **Keycodes.** Review the data column to display the number of VoIP GW trunks available and check the Status to confirm as **Active**.

	ent Manager - 192.168.81.200							
File Edit View Network	Session Tools Help							
	y 💼 Paste 🔚 💳 Web Page 🖌 Valida	ate Device 🧏 Di	isconnect {	😴 Refresh	🔊 Auto-refresh			
Element Navigation Panel	Task Navigation Panel Configuration Administration	Keycodes						
47.166.92.203	Welcome		System ID:	BBFCXCVG.	ICJB	Sequence #:	8	
	😑 🗁 System		Key Type:	3		Date Stamp:	2010-10-29	
	 Identification Date and Time 		Region:	Global		SW Version:	Avaya BCM450 Release 6	
	Keycodes	Manufacturing				1		
	 IP Subsystem 	Feature license		430,00				
	Telephony Regions	Status A	Name	Dat	a Expiry Dati			
	Administrator Access Administrator Access	ACTIVE	ICC	1				
	E C Telephony	ACTIVE	UM seat	300				
	🗈 🧰 Data Services	ACTIVE	Fax on De					
	Applications	ACTIVE	Fax Suite Q.SIG	1				
		ACTIVE	MCDN	1				
		ACTIVE	DPNSS	1				
		ACTIVE	LANCTE S		52			
		ACTIVE		Trunks 130				
		ACTIVE	IP Client s	eat 300				
		Load Keyco	de File					
		Download	l Credit Proof	File				
		Keycode Ret	rieval					
			operate.		10.1			
		Connec	t to Avaya K	eycode Retr	eval System			

This document assumes that the VoIP trunks are present and have been programmed onto the system. A check may be made by going to the **Task Navigation Panel**. From the **Configuration** tab select **Telephony** \rightarrow **Lines** \rightarrow **Active VoIP Lines**. The VoIP lines are displayed and the associated Line Type. By default, SIP lines are assigned to **Bloc A**.

ask Navigation Panel	Active Voll	P Lines						
Welcome	Line 🔺	Trunk Type	Name	Control Set	Line Type	Prime Set	Pub. Received #	Pr
🖬 🛅 System	001	VoIP	Line001	4747	Pool:BlocA	5616	N/A	N/A
🖬 🛅 Administrator Access	002	VoIP	Line002	4747	Pool:BlocA	5616	N/A	N/A
Resources	003	VoIP	Line003	4747	Pool:BlocA	5616	N/A	N/4
- 🧰 Telephony	004	VoIR	Line004	4747	Pool:BlocA	5616	N/A	N/4
🗄 🛅 Global Settings	005	VoIP	Line005	4747	Pool:BlocA	5616	N/A	N/4
🕀 🛅 Sets	006	VoIR	Line006	4747	Pool:BlocA	5616	N/A	N//
😑 🗁 Lines	007	VoIR	Line007	4747	Pool:BlocA	5616	N/A	N//
Active Physical Lines	008	VoIP	Line008	4747	Pool:BlocA	5616	N/A	N//
- O Active VoIP Line:	009	VoIP	Line009	4747	Pool:BlocA	5616	N/A	N//
Target Lines	010	VoIP	Line010	4747	Pool:BlocA	5616	N/A	N/a
Inactive Lines	011	VoIR	Line011	4747	Pool:BlocA	5616	N/A	N/-
All Lines	012	VoIP	Line012	4747	Pool:BlocA	5616	N/A	N/a
O Loops	013	VoIR	Line013	4747	Pool:BlocA	5616	N/A	N/a
Scheduled Services	014	VoIP	Line014	4747	Pool:BlocA	5616	N/A	N/A
🖨 🧰 Dialing Plan	Сору	Paste	Renumber					
General	Coby	Paste	Kendinber					
ONs								
Public Network	Details for	Line: 001						
Private Network								

5.3. Administer Avaya Business Communication Manager Business Name

In order for the BCM to send CLID, a business name must be configured for the system. From the **Task Navigation Panel** select the **Configuration** Tab. From the sub menu select **Telephony** → **Global Settings** → **Feature Settings.** In field 1 of the **Business Names** area configure a suitable name.

Note: Since Business Communication Manager concatenates the station name to the end of the Business Name in the SIP message and there is a fixed length for this concatenated string, using a short Business Name is recommended.

Session Tools Help		
📫 Paste 🔚 💳 Web Page 🖌 Valida	te Device 🧏 Disconnect 🛛 🚳 Refresh 🏉 Auto-refresh	
Task Navigation Panel Configuration Administration	Feature Settings	
Welcome System Administrator Access Administrator Access The Resources The International Access	Business Names 1: BCM450 2:3:3:3:	
Gobal Settings Gobal Settings Advanced Feature Settin DIP Terminal Features DMC Feature List System Speed Dial CAP Assignment CAP Assignment Dimes	Feature Settings Background music: On hold: Tones Answer keys: Enhanced Page tone: Held line reminder: Immediate Receiver volume: Use set volume Conference tone: Delayed ring transfer: After 10 rings Directed pickup: Directed pickup: Message reply enhancement: Park mode: Lowest Set relocation: Directed pickup: Force auto/spd dial over ic/conf: Maximum CLI per line: 50 Alarm set: 4747	*
Cloops Cloops Cloops Cloops Cloops Cloops Cloops Cloops Classecurity	Timers Camp timeout (sec.): 45 • Transfer callback timeout: After 4 rings • Host delay (ms.): 1000 • Park timeout (sec.): 45 • Network callback: 30 • Link time (ms.): 200 • Page timeout (sec.): 180 • Image timeout (sec.): 180 • Image timeout (sec.): 180 •	

5.4. Administer Avaya Business Communication Manager Trunk Routes

From the Task Navigation Panel select the Configuration Tab. Select Telephony \rightarrow Dialing Plan \rightarrow Routing. On the Routes tab, click Add to create a new route. (Add button at the bottom of the screen is not shown). Enter appropriate Route number in Route field and click OK to confirm change.

File Ed	File Edit View Network Session Tools Help							
👘 Exit	🐗 Exit 🐰 Cut 🤹 Copy 💼 Paste 🔚 Web Page 🗸 Validate Device 🧏 Disconnect 🧬 Refresh 💣 Auto-refresh							
	Navigation Panel	D	ialing Plan - R	outing				
_	Welcome		Routes Destin	ation Codes Second Dial Tone	•			
) System	15	Routes					
	Administrator Access Resources		Route 🔺	External Number	Use Pool	DN Type	Service Type	Service ID
	Telephony		000		A	N/A	N/A	N/A
	Global Settings		001		BlocA	Public (Unknown)	N/A	N/A
	- Calobar Sectings		002		BlocA	Private	N/A	N/A
	- Lines		003		BlocA	Private	N/A	N/A
	Loops		004		BlocA	Private	N/A	N/A
	Scheduled Services							
	🗁 Dialing Plan							
	General							
	ONs							
	Public Network							
	Private Network					🔼 🗚 🔼	koute 🛛 🔀	
	Line Pools					Route: 00	11	
	Routing							
	Ring Groups Call Security					OK	Cancel	
	- O Hospitality							
	 Hunt Groups 							
	Call Detail Recording							
	Call Recording							
	Data Services							
	Applications							

Once the route has been created, it can be modified, by clicking into the relevant field. Set the **Use Pool** to **BlocA** and set **DN Type** to **Public (Unknown)**. All SIP lines by default will go into **BlocA**.

📕 Exit 🛛 💥 Cut 🖺 Copy 🛚	Paste 🔚 Web F	Page √ Validate Device 🏅	📓 Disconnect 🛛 🎒 Rel	fresh 🔊 Auto-refresh		
ask Navigation Panel Configuration Administration Welcome	Dialing Plan - Rout	ting				
E C System	Routes	in codes becond biar rone				
E 🛅 Administrator Access		External Number	Use Pool	DN Type	Service Type	Service ID
	000		A	N/A	N/A	N/A
🖹 🗀 Telephony	001		BlocA	Public (Unknown) 🗸	collection and the second seco	N/A
🕀 🧰 Global Settings	002		BlocA	Public (Unknown)	N/A	N/A
🖻 🧰 Sets	003		BlocA	International	N/A	N/A
🕀 🧰 Lines	004		BlocA	National	N/A	N/A
 Loops 				Special (International		
Scheduled Services				Local (Subscriber)	1	
📄 🚞 Dialing Plan				Private		
 General 				imaco	J	
- ONs						
Public Network						
Private Network						
Cine Pools						

Solution & Interoperability Test Lab Application Notes ©2012 Avaya Inc. All Rights Reserved. Destination Codes were also added and linked to the newly created Route 001. Click on the **Destination Codes** tab in **Dialing Plan - Routing**. In the example below **Destination Code 9** was created to access **Normal Route 001** (which was created above). This is shown below:

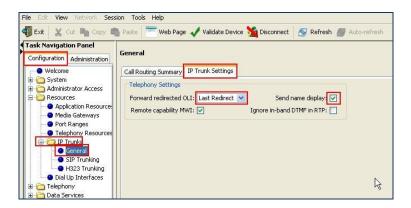
Task Navigation Panel	n. 1.																		
Configuration Administration	vialing	Plan - Routing																	
	Routes	Destination Cod	s Second	Dial Tone															
🛓 🛅 System	Dectina	tion Codes	_					-					-						
🚊 🛅 Administrator Access		nation Code 🔺		Normal Rou		Absorbed Length			ard: 0		1	2	3	4	5	6	7	8	N
- O Accounts and Privileges						-		iiu ca	aru: U		1	2	3	4	5	0	1	0	
Security Policies	9			001		All													
Email Settings																			
SNMP																			
🗄 🦳 Resources																			
😑 🛅 Telephony																			
😟 🛅 Global Settings																			
🕀 🦳 Sets																			
🕀 🦳 Lines																			
- O Loops																			
Scheduled Services																			
😑 🚞 Dialing Plan																			
General																			
- ONs	Ad	d Delete	٦																
- O Public Network		J Delete																	
Private Network													_						
- S Line Pools	Alterna	ate Routes for Des	tination Cod	e: 9															
Routing																			
Ring Groups																			
🕀 🛅 Call Security		nate Routes																	
- O Hospitality																			
Hunt Groups		hedule 🔺	First Rout	e	Absorbed Length	1	Second Route			rbed Leng	jin		_	Inin	d Route			Absorbed I	ength.
Call Detail Recording	Eve				All				All								A		
Call Recording	Lune				All				All								A		
🚊 🛅 Data Services	Nigh				All				All								A		
🛓 🛅 Applications	Sche				All				All								A		
	Sche				All				All								A		
	VoIF)			All				All								A		
													_						

5.5. Administer Avaya Business Communication Manager SIP Trunks Settings

5.5.1. Administer IP Trunks General

From the **Task Navigation Panel** select the **Configuration** Tab; select **Resources→IP Trunks→General**. Click on the tab **IP Trunk Settings**. Set the following fields:

- Forward redirected OLI: Set to Last Redirect
- Send name display: Enabled with tick



5.5.2. Configure BCM Public SIP Account – Parent

From the Task Navigation Panel select the Configuration Tab, then select Resources \rightarrow IP Trunks \rightarrow SIP Trunking and click on the Public tab in the right pane. Select the Accounts tab and click on Add and select No Template, as shown below.

File Edit View Network Se	File Edit View Network Session Tools Help					
	🖡 Exit 🛛 💥 Cut 🗟 Copy 뼼 Paste 🔚 Web Page 🖌 Validate Device 🧏 Disconnect 🚭 Refresh 🍘 Auto-refresh					
Configuration Administration	SIP Trunking Public Private Global Settings Media Parameters					
	Routing Table Settings Accounts ITSP Templates					
Resources	Name 🔺 Description					
Media Gateways	вти втинірсом					
Port Ranges Telephony Resource: General Toligo Trunking Toligo Trunking Dial Up Interfaces Telephony Telephony Data Services	Add Account Select Template Cancel					
🗄 👘 🛅 Applications	Add Delete					

The following window appears:

Add Account	
Name:	BTW
Description:	BTWHIPCOM
Template:	None
SIP domain:	hipcom.co.uk
Registration required:	
SIP username:	xxxxxxxxxxxxxxx
Password:	•••••
	OK Cancel

Enter the following information in the fields:

- Name: Enter a name for the new account e.g. **BTW**
- Description: Enter a description e.g. BTWHIPCOM
- **SIP domain:** Enter the domain name that is going to be used. This is
- partially hidden for security purposes
- **Registration required:** Enabled with **tick**
- SIP username: Enter the SIP username provided by BTW/HIPCOM
- **Password** Enter the Password provided by BTW/HIPCOM

NOTE – It is important not to click on the OK button in the above screen but hit the TAB key. The following window will appear, reconfirm the password. Click on the OK button as highlighted below when ready.

Confirm Password	×
Please type again to confirm the password	:
OK Cance	

Once the account has been created basic information needs to be added. At the bottom pane of the **Accounts** window is where the **Details for Account** section can be found. Click on the **Basic** tab, as shown in the screen shot below. Enter the following values in the fields:

- Local: The local domain was the same as the Remote domain. This was configured when adding the SIP domain in Section 5.5.2, (hidden for security purposes)
- **Proxy Address**: IP address of proxy, this was given by BTW/HIPCOM, (hidden for security purposes)
- Proxy Port:

5060

- **Registrar Address**: IP address of registrar, this was given by BTW/HIPCOM, (hidden for security purposes)
- Registrar Port: 5060

Det	tails for Account	:					
В	Basic Advanced	User Accounts					
	⊂SIP Domain Remote: Local:	i i co.uk					
	Proxy			Registrar			
	Address:	8]	Address:	8 0		
	Port:	5060]	Port:		5060	
	Transport:	UDP					

Also Advanced settings can be set. At the bottom pane of the **Accounts** window is where the **Advanced** section can be found. Click on the **Advanced** tab, this is shown in the screen shot below. The following values were set for the testing:

🌗 Exit 🛛 💥 Cut 🖺 Copy 🖷	🚡 Paste 🛛 💳 Web Page 🖌 Validate Device 🧏 Disconnect 🛛 🌮 Refresh 🍘 Auto-refresh	
Task Navigation Panel	Routing Table Settings Accounts ITSP Templates	
Configuration Administration	Name 🔺 Description	
Welcome System Identification Date and Time	Add Delete	
 Keycodes IP Subsystem Telephony Regions 	Enable local NAT compensation: NAT Pinhole Maintenance Enable media relay: V Signaling method: None V	
Administrator Access Administrator Access	Use maddr in R-URI: Signaling interval: 30	
Application Resource	Use maddr in Contact:	
Media Gateways Ort Ranges	Support 100rel: Session timer	
Telephony Resource	Allow UPDATE: 🗌 Session refresh method: Disable 💌	
🖃 🗁 IP Trunks	Use Null IP to hold:	
SIP Trunking	Use user=phone:	
H323 Trunking	Force E164 international dialing:	
 Dial Up Interfaces Telephony 	Enable SDP OPTIONS query:	
⊡ Telephony ⊡ Data Services	Allow REFER: Active call limit: 4	
Applications	Support Replaces:	
	Enable Connected Identity:	
	Standard SIP Caps Exchange:	
	ITSP association method: To header domain match	
	Outbound Called characters to absorb: 0	
	Inbound Called prefix to prepend:	
	Authentication realm:	

5.5.3. Configure BCM Public SIP Account – Child

Child accounts need to be created for every DDI that is associated with a line on the BCM. Once the parent account has been created child accounts need to be added. At the bottom pane of the **Accounts** window is where the **User Accounts** section can be found. Click on the **User Accounts** tab and click on **Add** (not shown). A new window will appear, this is shown in the screen shot below. Enter the following values in the fields:

Enter a name for this child account e.g. can be a DDI number or **Description**: • name. CLID: Enter the Public OLI number of an individual extension or extensions. This will match outgoing calls to a particular DDI (child account). **SIP Username**: Enter the SIP username provided by BTW/HIPCOM, same SIP Username configured in Section 5.5.2. The number inserted must be in the following format i.e. 441234567890. Auth Username: Enter the SIP username provided by BTW/HIPCOM, same Auth Username configured in Section 5.5.2. Auth Password: Enter the Password provided by BTW/HIPCOM, same Auth Password confdigured in Section 5.5.2 **CLID Override:** Enter the DDI number that will be presented to the PSTN. The number inserted **must** be in the following format i.e. 441234567890.

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- **PAI CLID Override**: Enter the DDI number you want to present to the PSTN. The number inserted <u>must</u> be in the following format i.e. 441234567890.
- **Contact Override**: Enter the DDI number you want to present to the PSTN. The number inserted <u>must</u> be in the following format i.e. 441234567890.

Click **OK** to save changes.

🔺 Add Trunk User Account 🛛 🛛 🗙
Description: child3
Domain: initiation in the second second
Account identity
Parent:
CLID: 6173
User Credentials
SIP Username: 100000016170
Auth Username: 400000 6170
Auth Password:
Message Handling
CLID Override:
Display name Override:
PAI CLID Override:
PAI Display name Override:
Contact Override:
SIP Registration
Registration:
OK Cancel

5.5.4. Configure BCM Public Settings

Check the **Public Provisioned Port** field is set to **5060**. From the **Task Navigation Panel** select the **Configuration** Tab then select **Resources** \rightarrow **IP Trunks** \rightarrow **SIP Trunking**. Under the **Public** tab, click on the **Settings** tab in the right pane as shown below.

File Edit View Network Se:	ssion Tools Help
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	SIP Trunking Public Private Global Settings Media Parameters Routing Table Settings Accounts ITSP Templates
Cessurces Application Resource Application Resource Application Resource Ort Ranges Ceneral Ort Ranges Ceneral Orter Range Orter Range Orter Ranges Orter Ranges	Provisioned Public Port: 5060

5.5.5. Configure BCM SIP Trunks Global Settings

From the Task Navigation Panel select the Configuration Tab, then select Resources \rightarrow IP Trunks \rightarrow SIP Trunking and click on Global Settings tab. In the SIP Settings area, enter the following:

- Local Domain Leave blank
- **Call Signaling Port** Set to **5060** (Click the **Modify** button to alter)

In the RFC2833 Area

• **Dynamic Payload** Set to 101

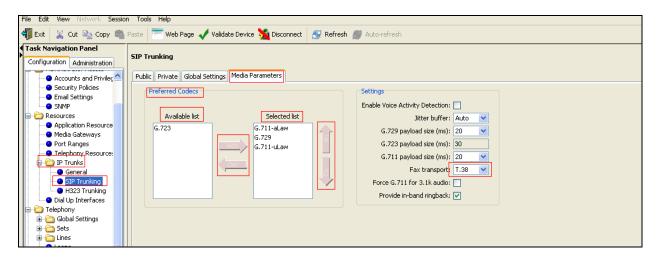
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🖨 🗁 System	SIP Settings					
 Identification Date and Time 						
Cate and time Cate and time Cate and time	Local Domain: Scope: None					
IP Subsystem	Service Impacting SIP Settings					
Telephony Regions	Call signaling port: 5060					
🗄 🛅 Administrator Access						
🖶 🦳 Resources	Modify					
Application Resource						
Media Gateways	Telephony Settings					
Port Ranges						
Telephony Resource	Fallback to circuit-switched: Disabled 🕑 Dynamic Payload: 101					
🖃 🧰 IP Trunks						
SIP Trunking	Status: Gateway is running					
H323 Trunking						
Dial Up Interfaces						
🕀 🛅 Telephony						
🗈 🛅 Data Services						
🗄 💼 Applications						

5.5.6. Configure SIP Trunks Media Parameters

From the Task Navigation Panel select the Configuration Tab, then select Resources \rightarrow IP Trunks \rightarrow SIP Trunking and click on Media Parameters tab. From the Preferred Codecs area, select the relevant codecs from the Available list and add to the Selected list. The codec order may be changed by using the Up/Down arrows.

In the **Settings** area;

- Check whether **Enable Voice Activity Detection** (*Silence Suppression*) is ticked. **Note**: BTW/HIPCOM do not support this option, so it was left not ticked.
- Alter the codec payload size, if required.
- Set the **Fax transport** to **T.38**.
- Choose whether **Provide in-band ringback** should always be provided by the BCM on incoming SIP calls. (Default is unselected)



5.6. Configure Dialing Plan Public Network Settings

From the Task Navigation Panel select the Configuration Tab. Select Telephony \rightarrow Dialing Plan \rightarrow Public Network. In the Public Network Settings area, set the following:

• Public Received number length:

Set to **4.** The BCM will then match on the last 4 digits of the DDI number sent from BTW/HIPCOM Set to **Public (Unknown)**

• Public network dialing plan:

Click Add to save changes.

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Task Navigation Panel	
Configuration Administration	Dialing Plan - Public Network
Application Resourc	Public Network Settings
• Media Gateways	Public Received number length: 4 V Public network dialing plan: Public (Unknown) V
Port Ranges	Public Auto DN: Public network code:
Telephony Resourc	
🖻 🧰 IP Trunks	Public DISA DN:
General	
SIP Trunking	Public Network DN Lengths Carrier Codes
H323 Trunking	DN Prefix 🔺 DN Length Code Prefix 🔺 ID Length
Dial Up Interfaces	
End Global Settings	
Sets	Default 17
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General	
O DNs	
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Line Pools Deutine	
Routing	

5.6.1. Configure Dialing Plan Public for Outgoing Calls

To add a public route from the **Task Navigation Panel** select the **Configuration** tab, then select **Resources** \rightarrow **IP Trunks** \rightarrow **SIP Trunking** and click on the **Public** tab in the right pane. Select **Routing Table** tab and click on **Add** (not shown). Enter the following fields in **Add Route** window:

- Name: Enter a name for the route, e.g. international
- **Destination Digits:** Prefix of the digits that are going to use this route e.g. **00**
- **ITSP Account** Associate with the ITSP account that was created in Section 5.5.2

Click **OK** to save changes. As shown in the screen shot below, a local route that uses prefix digits of **0203** had been previously added.

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Task Navigation Panel Configuration Administration	SIP Trunking
🕘 Welcome 🛛 🔼	Public Private Global Settings Media Parameters
🗐 🗁 System	Routing Table Settings Accounts ITSP Templates
	Routing Table Settings Accounts ITSP Templates
Date and Time	Name A Destination Digits Account
Keycodes IP Subsystem	local 0203 BTW
Telephony Regions	
Administrator Access	
Accounts and Privileges	
 Security Policies 	🔺 Add Route
 Email Settings 	
	Name: international
🗐 🗁 Resources	Destination Digits: 00
Application Resources	ITSP Account: BTW
Media Gateways	
Port Ranges	OK Cancel
Telephony Resources	
P Trunks	
General	
H323 Trunking	
Dial Up Interfaces	
	1 1 1 1 1 1 1 1 1 1

5.7. Configure Avaya Business Communication Manager Handset Settings

This document assumes that handsets are programmed and already working on the system and have being assigned a line. So this section concentrates on settings on the handsets which may need to be checked to ensure operability with the settings described in previous sections. From the **Task Navigation Panel** select the **Configuration** Tab, select **Telephony** \rightarrow **Sets** \rightarrow **Active Sets**. Click once on an extension from the list of available **Active Sets**. Click on the **Line Access** tab.

Set the following:

Pub Receieved #: Set this to be the last 4 digits of the DDI number that is going to be received by the BCM from the PSTN. The Pub Received number is allocated to a target line, which can be allocated to an individual or multiple extensions. Maps incoming calls to particular extension(s).
 Note: field is located in Line Assignment Tab located in the (lower half of the screen).
 Pub OLI: Set to same value as Pub Received #

In the **Line Assignment** Tab, select **Caller ID Set**. This ensures the BCM handset will display the incoming callers name or extension number or line number on the BCM handset.

Navigation Panel										
guration Administration	Active Sets									
Application Resourc	Line Access	Capabilities and Preferences	Restriction	s						
Media Gateways	DN 🔺	Model	Name	Port	Pub. OLI	Priv. OLI	Fwd No Answer	Fwd Delay	Fwd Busy	Fwd All
Port Ranges	2007	1140E/2004/2007/2050/221×	(IP2007	0244	6173	12007		N/A		
Telephony Resourc	2008	1140E/2004/2007/2050/221×		0237	6170			N/A		
IP Trunks	2009	1140E/2004/2007/2050/221×		0245	6170			N/A		
General	2035	1140E/2004/2007/2050/221×	2035	0235	2035			N/A		
 SIP Trunking 	2500	Analog	FAX2500	2001	6170	22500		N/A		
H323 Trunking	2501	Analog	2501	2002	2501	22501		N/A		
Dial Up Interfaces	2502	Analog	2502	2003	2502	22502		N/A		
phony	2503	Analog	2503	2004	2503	22503		N/A		
Global Settings	2504	Analog	2504	2005	2504	22504		N/A		
iets	2505	Analog	2505	2006	2505	22505		N/A		
Templates	2506	Analog	2506	2007	2506	22506		N/A		
Active Sets	2507	Analog	2507	2008	2507	22507		N/A		
 Active Applicati Inactive DNs 	4600	1140E/2004/2007/2050/221×	Martin	0233	4600			N/A		
 All DNs 	Copy	Paste	Renumber.							
Lines		Paste	Renumber.							
Loops	· •									
Scheduled Services	Details for D	N: 2007								
Dialing Plan										
General	Line Assig	nment Line Pool Access Ansi	wer DNs	1eetMe C	onferencina					
 DNs 	Assigned L									
Public Network		Appearance Type		Ånno:	arances	Caller ID Set	Vmsg Set	Priv. Received #	Pub. Received #	1
Private Networl	416	Appr&Ring	_	Appe	arances	1 V	Vinsy Sec	12007	6173	

Next, select the **Line Pool Access** tab. By default, SIP Lines/trunks are put into pool BlocA on the BCM 450. Sets do not automatically have access to this pool, so access permissions must be added to BlocA on a set by set basis. Click on the **Add** button and in the pop up window; enter the name of the Line Pool. Click **OK** to confirm.

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nfiguration Administration	Active Sets						
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System	L	Capabilities and Preferences					
Administrator Access	DN 🔺	Model	Name	Port	Pub. OLI	Priv. OLI	Fwd No Answer
Resources	2004	1140E/2004/2007/2050/221×	IP2004	0243	2004	62004	
Telephony	2005	T7316/M7310	DIG2005		2005	62005	
🗄 🦳 Global Settings	2006	1140E/2004/2007/2050/221×		0236	2006	62006	
🖶 🤂 Sets	2007	1140E/2004/2007/2050/221×		0244	2007	62007	
Templates	2035	1140E/2004/2007/2050/221×		0235	2035		
Active Sets	2500	Analog	FAX2500	2001	2500	22500	
Active Application	Сору	Paste	Renumber:				
Inactive DNs			centamber.	<u></u>			
All DNs							
🗄 🛅 Lines	Details for DM	J: 2004					
O Loops							
Scheduled Services	Line Assian	ment Line Pool Access Answ	er DNs	leetMe Cor	ferencing 🔼 A di	d Line Pool	
	Line Pools						
🗄 🚞 Dialing Plan	Line Pools				Line poo	bl: BlocA	
Dialing Plan	11 P. 1						
	Line Pool					OK	Cancel
 General 	Line Pool A				-	ОК	Cancel
General	Line Pool A					ОК	Cancel
General DNs Public Network	Line Pool A					OK	Cancel
 General DNs Public Network Private Network Line Pools 	Line Pool					ОК	Cancel
DNs Public Network	Line Pool					OK	Cancel

Next, click on the **Capabilities and Preference** tab at the top of the screen. In the top half of the screen, set the following fields

- First Display Set to Name, Number or Line. This determines what incoming details from the calling handset will be displayed on the BCM Handset
- Auto Called ID Enabled (to see the CLID of internal telephones)

In the lower half of the screen, set the field **Allow redirect**, enabled with a **Tick**. This permits the BCM 450 handset to use Call Forward Always.

e Edit View Network Sess		lp Web Page 🛛 Validate Device	M Disci	onnect 🔗	Refresh 🎒 Auto-	refresh		
ask Navigation Panel	Active Sets							
• Welcome	Line Access	Capabilities and Preferences	Restriction	s				
🗈 🧰 System	DN 🔺	Model	Name	Pril e Line	Intercom Keys	Control Set	First Display	Auto Called II
Administrator Access	2004	1140E/2004/2007/2050/221×		I/C	2	4740	Name	
Resources	2005	T7316/M7310	DIG2005	and the second se	2	4740	Name	
Telephony	2006	1140E/2004/2007/2050/221×		I/C I/C	2	4740	Name	
Global Settings	2007	1140E/2004/2007/2050/221×		I/C	2	4740	Name	
10000	2035	1140E/2004/2007/2050/221×		I/C	2	4740	Name	
Completes Active Sets	2500	Analog	FAX2500	5.0 M (S. 6. 6	N/A	4740	Name	
Inactive DNs All DNs Lines Active Physical Line	Details for D	N: 2004						
- O Active VoIP Lines	Capabilitie	SWCA Call Group Preferen	ces IP Te	rminal Details	Button Programmin	g Table Buttor	Programming I	Jser Speed Dia
Target Lines Thactive Lines		Handsfree: Auto	~	HF	answerback: 🔽	ļ	Allow redirect: 🔽]
All Lines		Pickup group:			DND on Busy: 📃		Redirect ring: 🔽]
- O Loops		Page zone: 1			Paging: 🔽	Silent monit	or supervisor:	1
Scheduled Services		and the second second						
Dialing Plan General		Direct dial: 1	- S	Auto hold for in	coming page: 🔲			
- ONs	Intrusi	on protection level: None	~		Priority call: 📃			
Public Network					Auto hold: 🔽			
Public Network Private Network								
Line Pools								

6. BT Wholesale/HIPCOM Service Provider Configuration

The configuration of BTW/HIPCOM's equipment used to support the SIP trunk service is outside of the scope for these Application Notes and will not be covered. To obtain further information on BTW/HIPCOM's equipment and system configuration please contact an authorised BTW/HIPCOM representative.

7. Verification Steps

This section provides details on how to verify the main configuration setup of the BCM 450 SIP trunk with BTW/HIPCOM's SBC.

7.1. Verify Avaya Business Communication Manager SIP Trunk

To verify that the sip trunk is up and operational, set up test calls between the BCM handsets and the PSTN and ensure that these calls route out over the sip trunk.

From the Task Navigation Panel select the Configuration Tab, then select Resources \rightarrow IP Trunks \rightarrow SIP Trunking and click on the Public tab in the right pane. Select the Accounts tab and select the account that was created in Section 5.5.2. In the bottom pane in the Details for Account section, click on User Accounts. Verify that under Status is showing as displayed Registered with xx.xx.xx:5060, where xx.xx.xx is the Registrar IP address configured in Section 5.5.2.

Exit X Cut Copy Paste Web Page Validate Device Disconnect Routing Table Settings Media Parameters Final Administrator Access Final Settings Accounts ITSP Templates Name Description
Configuration Administration Welcome Welcome Administrator Access Routing Table Settings Accounts ITSP Templates Name Description
Bergin System Bergin Administrator Access Routing Table Settings Accounts ITSP Templates Name Description
Routing Table Settings Accounts ITSP Templates
Resources
Application Resources
PTW PTWHIDCOM
Media Gateways Port Ranges
- Ottoranges
General SIP Trunking H323 Trunking
Dial Up Interfaces
e 🗁 Telephony
🕒 🕀 🔂 Global Settings
🖨 🔁 Sets 🗧 🔤 Add Delete
Templates
Active Sets
Inactive DNs All DNs Basic Advanced User Accounts
E Coops Description Parent CLID SIP Username Register Status
Scheduled Services BTW
Cheudieu Services

To monitor traffic between BCM 450 and BTW/HIPCOM use the BCM Line Monitor to determine the incoming and outgoing line numbers and the RTP sessions tab.

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8. Conclusion

These Application Notes describe the configuration necessary to connect Avaya Business Communication Manager 450 to BTW/HIPCOM's SIP Service. Please refer to **Section 2** for observations from testing.

9. Additional References

Product Documentation for Avaya Products, including BCM 450 may be found at http://support.avaya.com

- [1] Avaya Business Communications Manager 6.0 Configuration —Telephony NN40170-502 Document issue: 03.03 Document date: October 2010 Product release: 6.0
- [2] Avaya Business Communications Manager 450 6.0 Installation System NN40170-303 Document issue: 03.03 Document date: February 2011 Product release: 6.0
- [3] Avaya Business Communications Manager 6.0 Planning and Engineering NN40170-200 Document issue: 02.03 Document date: May 2010 Product release: 6.0

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