SIP Trunk Compatibility Report

NEC is pleased to verify that:

BT Wholesale – WSIPT & One Voice Services

Has successfully met the standards for SIP Trunk compatibility
with the NEC products listed below.

SV9100

NEC Enterprise Solutions has performed Interoperability Testing with the Switch(es) and Provider/Service listed above on the date specified.

Please always refer to the appropriate SIP Trunk Compatibility Report Index and the latest edition of a specific Compatibility Report on BusinessNet before considering connection.

If a Provider is no longer mentioned in the Index then the Compatibility Report has been withdrawn and connection will no longer be supported by NEC Enterprise Solutions.

Test Completion Date:	27/03/2015
Test Location:	**NEC UK**
Name of Provider:	BT Wholesale
Website:	www.btwholesale.com
System Tested:	SV9100
Software Version:	V2.00.59
SIP Connection Mode:	Networking Mode
Test Plan Version:	5.2

Please refer to the following page(s) for further
Information and Configuration Notes.

SIP Configuration Notes – BT Wholesale - WSIPT & One Voice Services

Use the specific configuration guide below as an example to configure an SV9100 PBX for connection to the service described above via SIP trunks.

Recommended Software Versions
*SV9100:*

CCPU   v.4.00.50

System Programming
The following items should be changed – all other items are considered irrelevant and as such left as default. Screenshots are for example purposes only and will have been taken from the PBX under test but will apply to the other PBXs listed on the cover of the Compatibility Report.
 Any differences in programming will be documented where necessary.

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP > General Settings > CCPU IP Address	10-12-09	IPLE/VOIPDB IP Address	Set according to customers network requirements
	10-12-10	IPLE/VOIPDB Subnet Mask	Set according to customers network requirements
	10-12-03	Default Gateway	Set according to customers network requirements
	10-12-02	Default Gateway Subnet Mask	Set according to customers network requirements
	10-12-01	IP Address	Must be in a different network range to IPLE IP Address (10-12-09) Must not be set as 0.0.0.0

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP > IP Addressing >VoIP Resource IP Address	84-26-01	VoIP Gateway IP Address	Set according to customers network SV9100 requirements. IPLE requires 1 x static IP address for the DSP resources.
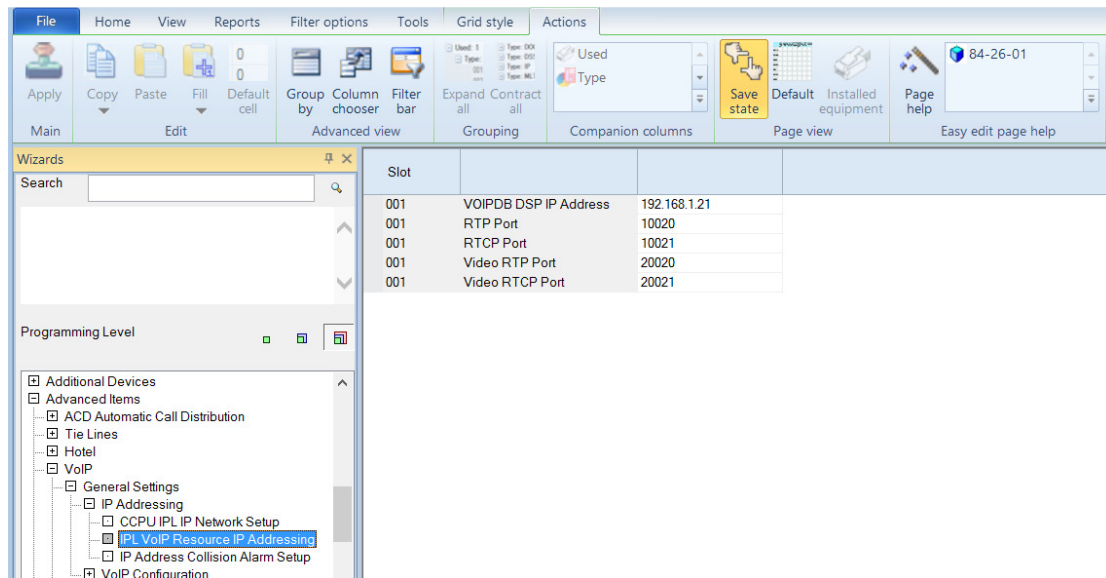
Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > SIP IP Trunk Assignment	10-68-01	Trunk Type	Set to SIP
	10-68-02	SIP Trunk Start Point	Enter the Trunk starting port. This may vary depending on other Trunk cards installed and must be from an un-allocated port.
	10-68-03	Number of ports	Enter the number of SIP Trunks required.
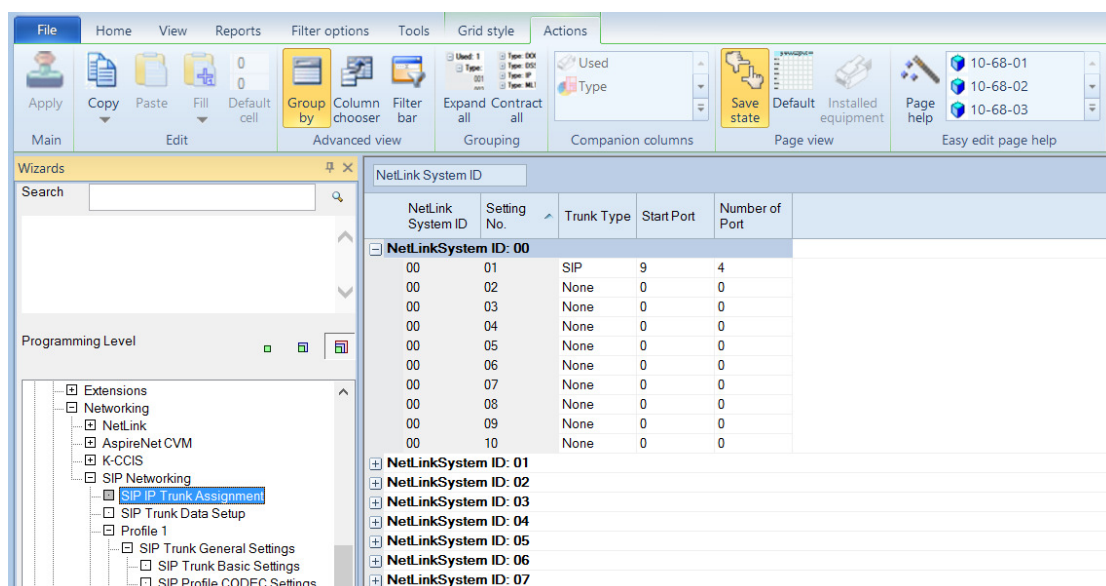
Note: Netlinked system 00 should be used in a single system enviroment where Netlink is not activated. If Netlink has been deployed then use netlinked system ID 01 to 50 depending where the SIP Trunks are connected.

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > SIP Trunk Data Set Up	14-18-01	Trunk Type	Should be set to SIP
	14-18-02	System ID	Should match the netlink system ID as per 10-68
	14-18-05	SIP Profile	Set to Profile 1 or alternative profile if multiple SIP Carriers are required.

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > Profile 1>SIP Trunk General Settings>SIP Trunk Basic Settings	84-14-07	Session timer value	Set to 900
	84-14-08	Minimum session timer value	Leave set as 600
	84-14-09	Called Party Info	Leave set as Request URI
	84-14-15	100rel Settings	Use Default Setting

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > Profile 1>SIP Trunk General Settings>SIP Profile Codec Settings	84-13-28	Audio Capability Priority	Set to customer's requirements (G.711 or G.729only)
	84-13-49	RTP Filter	Set to disabled

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > Profile 1>SIP Trunk General Settings>SIP Profile DTMF Settings	84-34-01	DTMF Relay Mode	Set to RFC2833
	84-34-02	DTMF Payload Size	Set as 101

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > Profile 1>SIP Trunk General Settings>SIP Profile FoIP Settings	84-33-01	Fax Relay Mode	Enable if required to support T.38 Fax
	84-33-02	T.38 Protocol Mode	Set to UDPTL

| Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > Profile 1>SIP Trunk General Settings>SIP Trunk Incoming Type	14-01-01	Trunk Name	Label Trunks
	14-05-01	Trunk Group/Priority	Assign to Trunk Groups and set priority. You must remove all unused Trunks from the group selected.
	22-02	Incoming Call Trunk Setup	Set to DID

e.164 Number Formatting Support

BT Wholesale require that the caller ID presentation to be converted as e.164 format +44 for example. Please configure as below to meet the requirements as addition to the settings above for commands 84-14-13 & 84-14-16 for SIP Profile 1.

Advanced Edit	PRG	Item	Setting
Trunks>Location Set Up	10-02-01	Country Code	Enter the country code as 44 for UK
	10-02-02	International Access Code	Enter as 00
	10-02-03	Caller ID Edit Mode	Enter 0 if required
	10-02-05	CID Edit TAC	Enter the digit used for Trunk Access – Normally 9 or 0

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > Profile 1>SIP Trunk General Settings>E.164 Number Formatting>E.164 Number Format Settings	84-14-13	Incoming/Outgoing SIP Trunk for E.164	Set to Mode 2
	84-14-16	SIP Trunk SIP-URI E.164 Incoming Mode	Set to Mode 2

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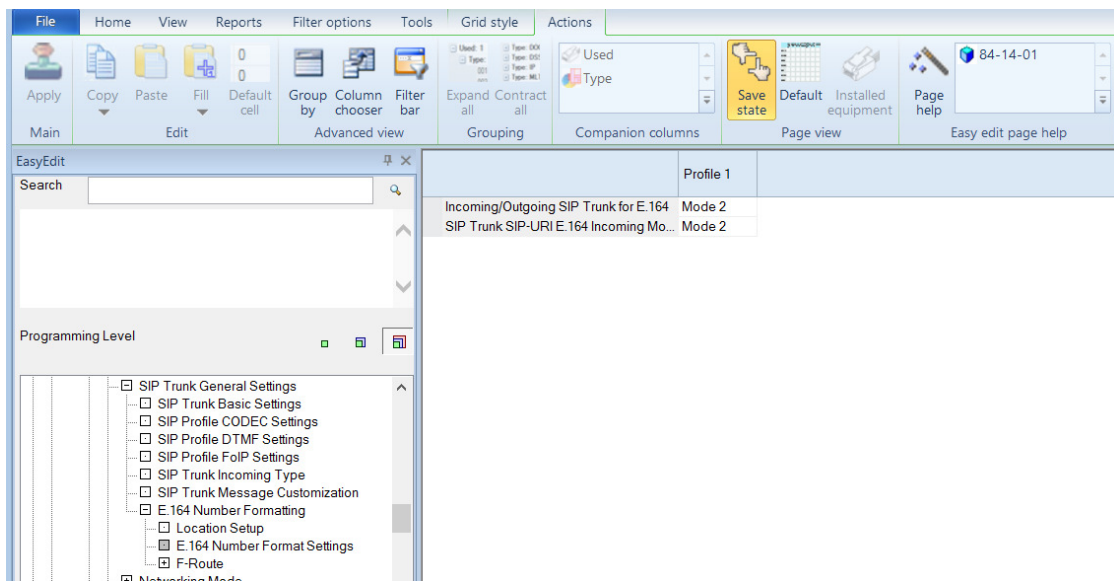
Also configure LCR to convert the dialed digits to add 0044 infront of the number so the customer can still dial using the national format when dialing. LCR also converts numbers dialed from the Speed Dial tables & Caller History from key sets. Please set LCR as per the table below and enable Trunks required.

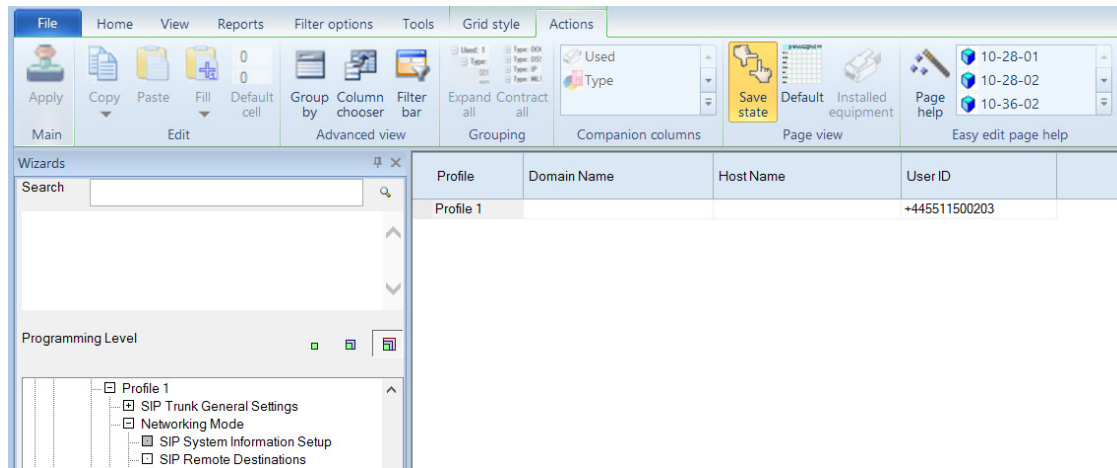| Advanced Edit	PRG	Item	Setting
Advanced Items > LCR>LCR Dial Data	14-01-23	Least Cost Routing	Enable each required Trunk (SIP Trunk only)
	26-02-01	Dial Data	Enter digits to be modified. See table below and add further digits as required.
	26-02-06	Carrier Table	Enter the required Carrier Table for the modification for each dialled digit.
	26-05-01	LCR Delete Digits	Enter the amount of digits required for deletion per carrier table. See table below
	26-05-02	Access Code	Use this table to add digits per carrier table. See table below.

See screen shot on next page

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > Profile 1>Networking Mode>SIP System Information Setup	10-28-01	Domain Name	Set according to customers network requirements or leave blank if not required
	10-28-02	Host Name	Set according to customers network requirements or leave blank if not required
	10-36-02	User ID	Enter the user ID supplied by BT Wholesale (normally the main number that must be entered in international format)

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > Profile 1>Networking Mode>SIP Remote Destinations	10-23-01	System Interconnection	Set to **Enabled**
	10-23-02	IP Address	Set to SIP server IP Address supplied by **BT Wholesale**
	10-23-04	Dial Number	The first digit(s) that will be dialled
	10-23-05	Keep Alive Mode	Set to option keep alive mode required for SIP Proxy Fall back to profile 2. See comments for further information on this requirement.
	10-23-06	SIP Profile	Set to Profile 1 or alternative profile if multiple SIP Carriers are required.
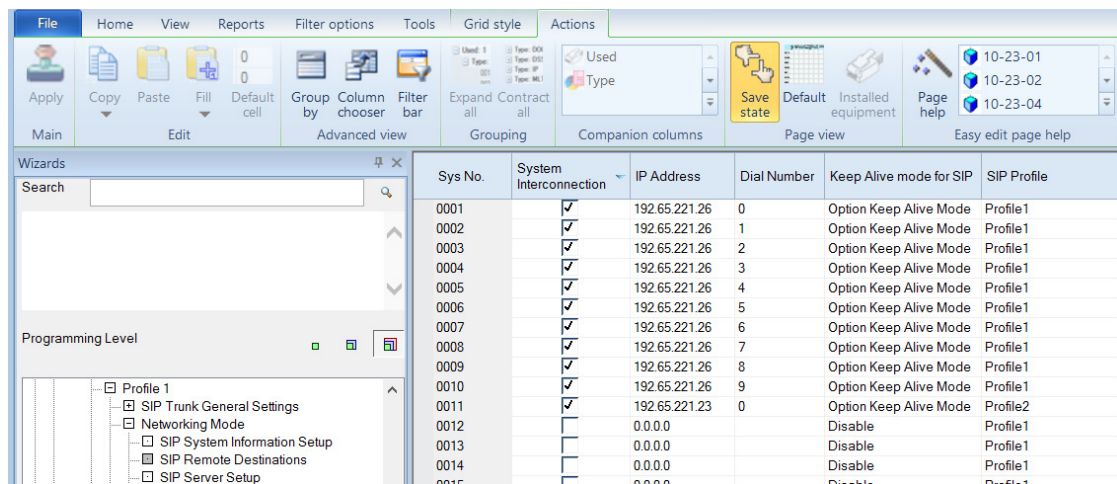
Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > Profile 1>Networking Mode>SIP Server Setup	10-28-05	Domain Assignment	Set to IP Address
	84-14-17	Call Forward Moved Temporarily Support	Not supported. Use standard forwarding methods if external divert is required
	10-29-05	SIP Carrier Choice	Set to carrier format B (See comments for more information why this format is required).
	10-29-16	Register Sub Mode	Set to disabled
	10-12-06	NAPT Router	Enable if required
	10-29-21	NAPT Router IP Address	Enable if Router if configured for port forwarding to modify the contact header from private to public IP address
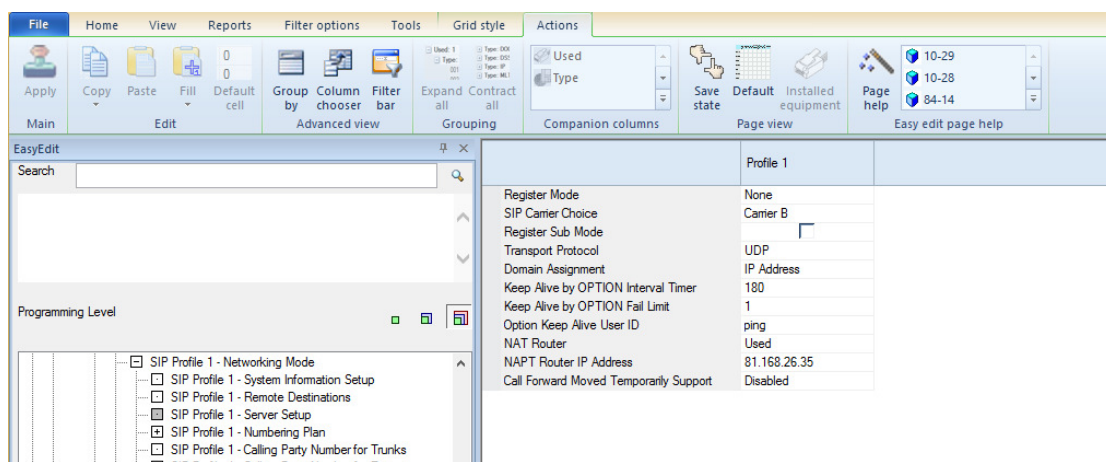
Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >Networking>SIP Networking > Profile 1> Carrier Mode (Domain Name)>SIP Calling Party Number for Extensions	21-19	SIP Extension CPN Number	Enter the full number including the area code
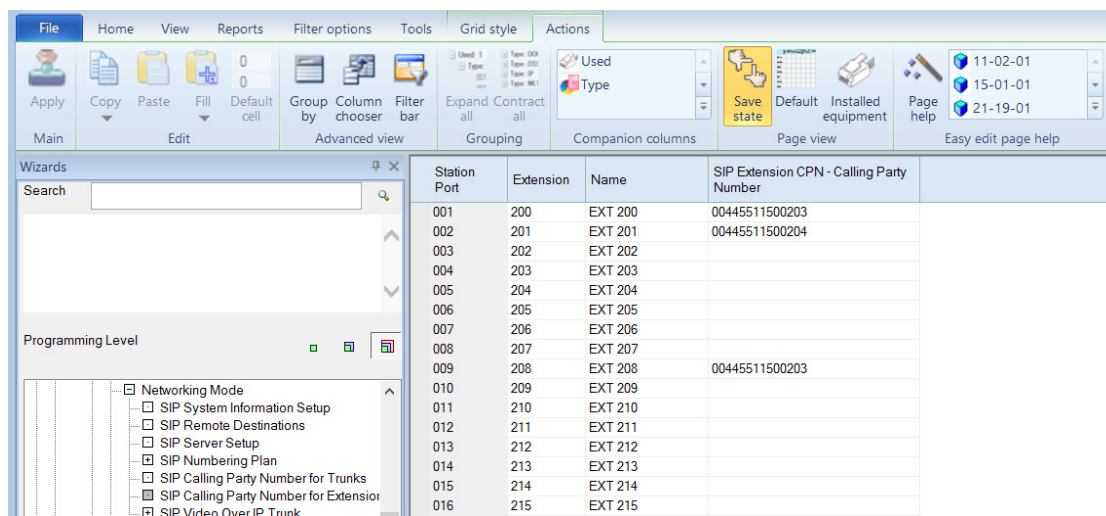
Network Configuration

If Public IP addresses are assigned to the SV9100 IPLE and VoIP Gateways, then there should be no network configuration required.

If there is one public IP address assigned, and NAT is used, it is necessary to configure Port Forwarding on the router and we recommend that SIP ALG is disabled:

- Port 5060 should be forwarded to the IPLE IP address as per command 10-12-09. If using multiple SIP Carriers then port 5062 should be used for the second profile in command 84-14-06. BT Wholesale WSIPT & One Voice Services has not been tested in this mode. SIP Carrier does not need to change their port as 5060 is still correct.
- Port 10020 – 10533 should be forwarded to the VoIP Gateway IP addresses as per command 84-26-01
- NAT Router should be enabled in PRG10-29-21 and the Public IP address should be entered into PRG10-12-07.

Licensing

The SV9100 system should be licensed for each SIP Trunk required. Four SIP Trunk licenses are included with new SV9100 systems. Set command 10-54-01 (Blade License Set Up) for Slot GCD-CP10 to the amount of DSP Licenses as per the feature activation page as per code 5103 (don't include the 8 that comes as default with IPLE).

Known Limitations/Comments

- SIP calls are sent "en bloc". This means that the External Call Interdigit timer (PRG21-01-03) must expire before the call is set up. This can be reduced, but will have an impact on ISDN trunks also. The user can dial # to indicate "end of dialling" instead if required.
- Command 20-25-02 to provide ring back tone for SIP to SIP calls.
- **BT SIP Accounts have a WEB portal where the SIP Settings can be amended as required. You will need to change the Caller ID presentation to use the From Header instead of the P-Asserted Identification field (default setting). This is required if the customer requires flexible CLIP using command 21-17 (Trunk Level) or 21-19 (Extension Level) to send an alternative CLI for outbound calls other than the base number. CLIP should be entered in international format 00441923610000 for example.**
- **SIP Carrier B format in 10-29-14 must be used for the BT WSIPT service as this format does not send the Privacy header that can override settings that can be applied using the BT web portal for example withheld CLIP at network level. Note comment above.**
- Fax over SIP Trunks has been tested using T.38 for both inbound and outbound. Please note that we cannot always guarantee fax over IP as this can fail due to the Fax Machines used or bandwidth / packet loss on the network. Command 15-03-03 must be set to special & 15-03-18 set to Fax for the SLT extensions used for Fax and Fax Relay Mode must be enabled in 84-13-50.
- Minimum and maximum session expiry timers need to be set as 600 for the minimum expiry timer (84-14-08) & 900 for the maximum (84-14-07) as required by BT Wholesale.
- Call Forward Moved Temporally with T302 return not supported with BT. If Call defection via SIP is required then Trunk to Trunk external forwarding will need to be configured.
- BT Wholesale provides a secondary SIP Server IP Address that can be used for back-up if their primary connection fails also referred to as SIP Proxy Fallback. This feature is not currently supported as the delay for fall-back is too long. We are looking into supporting this at a later date when the fall-back timer is more flexible but for now if required command 10-23-02 could be amended to their back up SIP Server address if the primary SIP Server not contactable.

NEC Enterprise Solutions cannot be held responsible for any regulatory non-compliance resulting from the use of this service.

Document History

Version	Date	Description
5.0	17/04/2015	Certification tests were completed using BT Wholesales SIP Certification Plan. This report is now released for the SV9100.
5.1	28/04/2015	Added comment regarding SIP Proxy Fallback
5.2	06/01/2016	Updated certification regarding Carrier Format B to be used instead of E so that the privacy header is not sent in the invite for outgoing calls. Comments added that the BT SIP Account will need to be updated to use the From Header instead of the PAID header for outgoing CLIP requirements.

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