NEC

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.

SL1100 (From R5.12)

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If a Provider is no longer mentioned in the Index then the Compatibility Report has been withdrawn and connection will no longer be supported by NEC Enterprise Solutions.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:	28/03/2015
Test Location:	**NEC UK**
Name of Provider:	BT Wholesale
Website:	www.btwholesale.com
System Tested:	SL1100
Software Version:	V5.12
SIP Connection Mode:	Networking Mode
Test Plan Version:	5.0

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**

SL1100

CCPU v5.12

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 > IP Addressing > CCPU IP Network Setup	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 > General Settings > IP Addressing > CCPU IP Network Setup >VOIP Resource IP Address	84-26-01	VoIP Gateway IP Address	Set according to customers network SL1100 requirements. VoIPDB requires 1 x static IP address for the DSP resources.
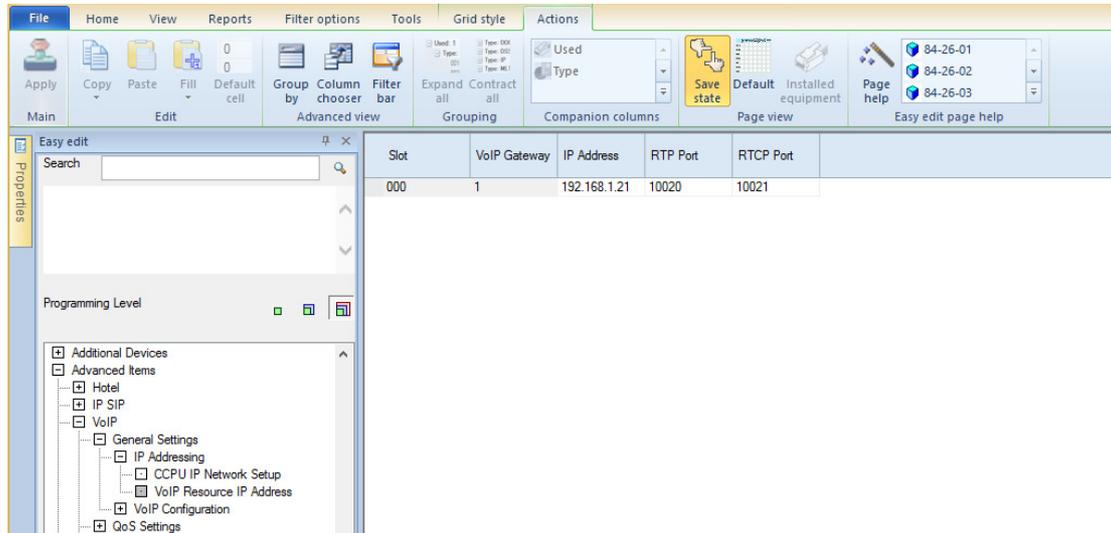
Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >SIP Networking> SIP IP Trunk Assignment	10-68-01	Trunk Type	Set to SIP
	10-68-02	SIP Trunk Start Point	Enter the Trunk starting port. This may vary depending on other Trunk cards installed and must be from an un-allocated port.
	10-68-03	Number of ports	Enter the number of SIP Trunks required.
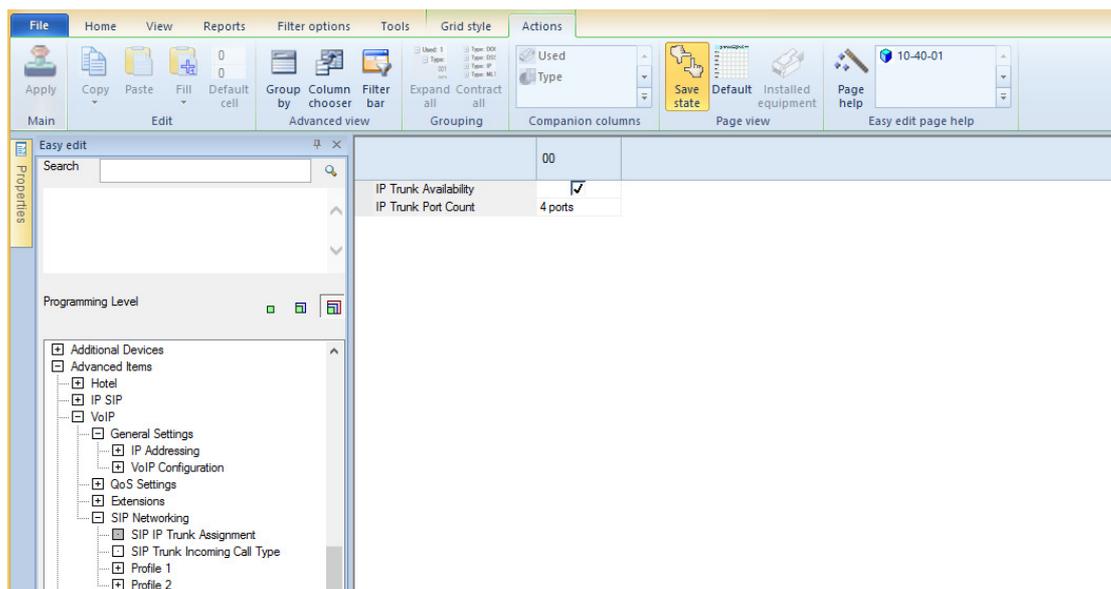
Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP > SIP Networking > SIP Trunk Incoming Call Type	14-18-01	Trunk Type	Should be set to SIP
	14-18-05	SIP Profile	Set to Profile 1 or alternative profile if multiple SIP Carriers are required.
	22-02-01	Incoming Call Mode	Set as DID
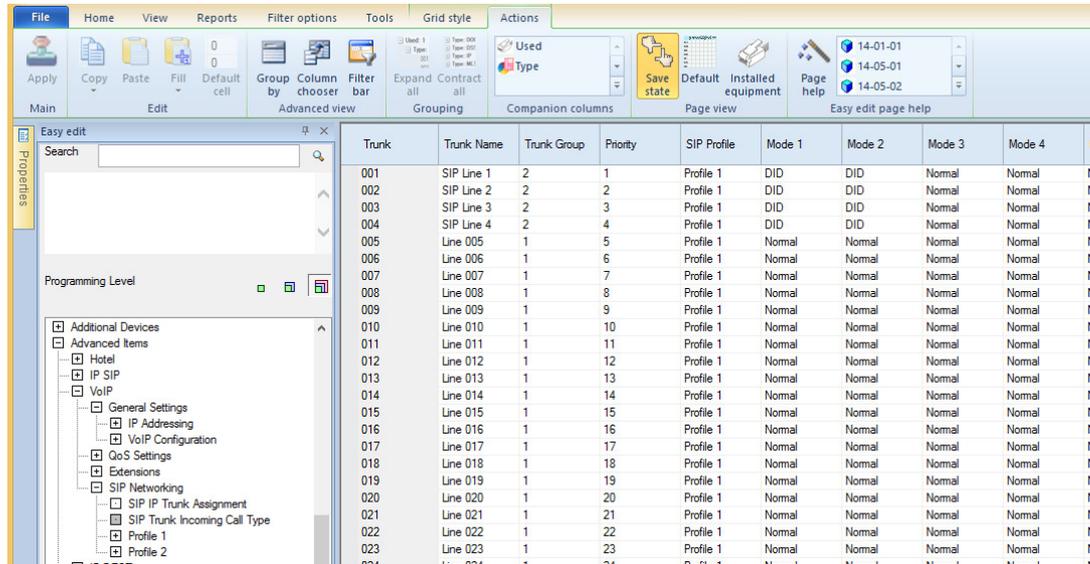
Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >SIP Networking > Profile X>SIP Profile X - Trunk General Settings>Trunk Basic Settings	84-14-07	Session timer value	Set to 900
	84-14-08	Minimum session timer value	Set to 600
	84-14-15	100rel Settings	Use Default Setting
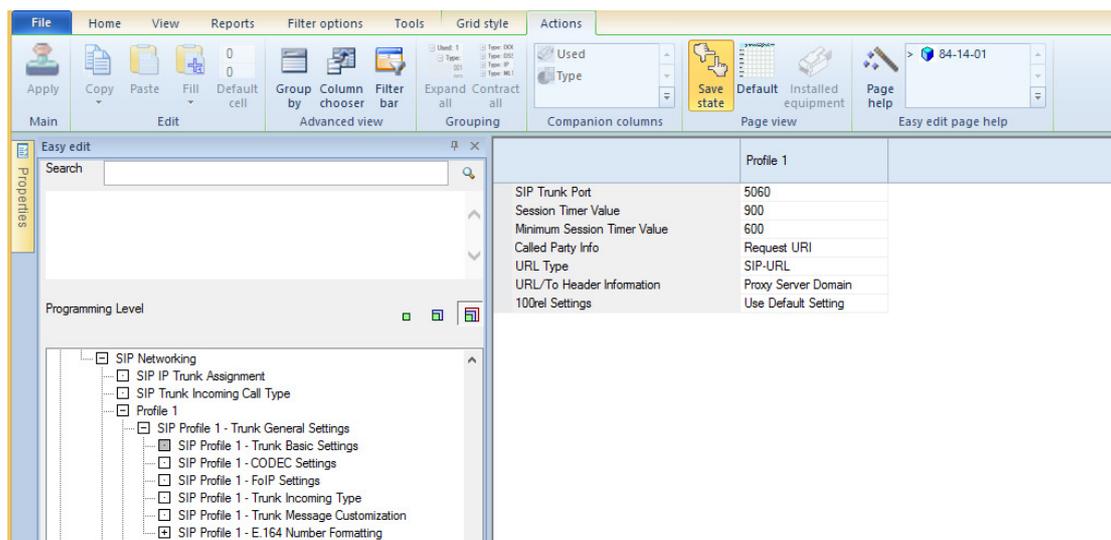
Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >SIP Networking > Profile X>SIP Profile X - Trunk General Settings>Codec Settings	84-13-28	Audio Capability Priority	Carrier supports G.729 and G.711
	84-34-01	DTMF Relay Mode	Set to RFC2833
	84-34-02	DTMF Payload Size	Set as 101
	84-13-49	RTP Filter	Set to disabled

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >SIP Networking> Profile X >SIP Profile X - Trunk General Settings>SIP Profile x - 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
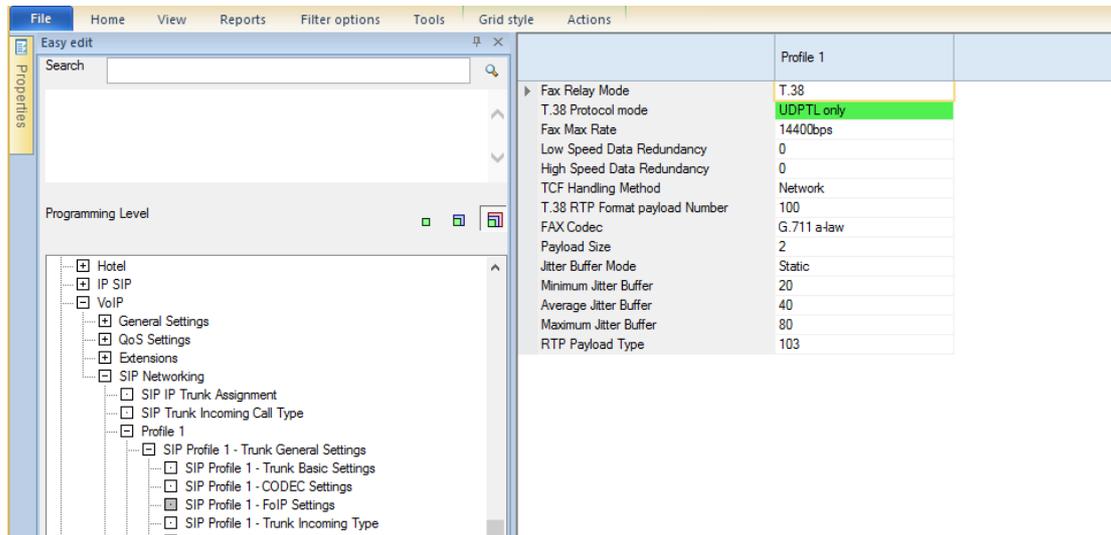
Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >SIP Networking> Profile X >SIP Profile X - Trunk General Settings>SIP Profile x - Trunk Incoming Type	14-01-01	Trunk Name	Label Trunks
	14-05-01	Trunk Group/Priority	Assign to Trunk Groups and set priority. You must remove all unused Trunks from the group selected.
	22-02	Incoming Call Trunk Setup	Set to DID
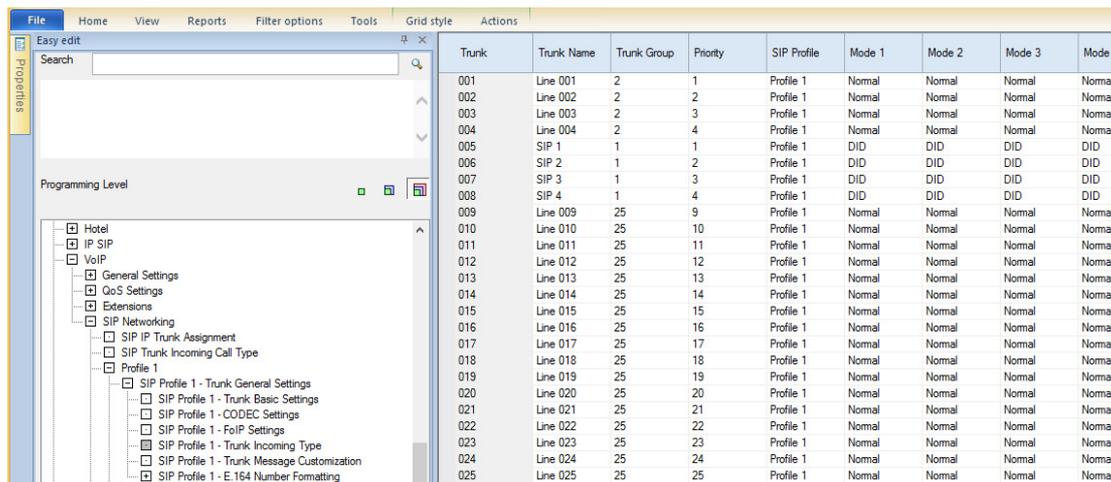
e.164 Number Formatting Support

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
Advanced Items > VoIP >SIP Networking> Profile X >SIP Profile X -Trunk General Settings>SIP Profile X – E.164 Number Formatting> SIP Profile x – 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 >SIP Networking> Profile X >SIP Profile X -Trunk General Settings>SIP Profile X – E.164 Number Formatting> SIP Profile x 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
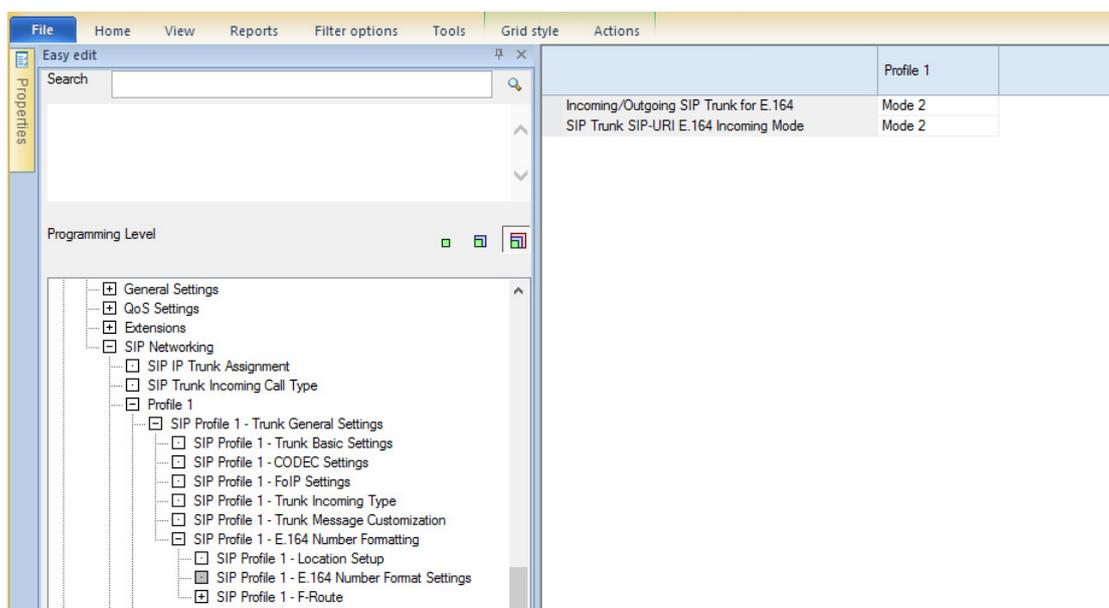
Also configure LCR to convert the dialed digits to add 0044 infront of the number so the customer can still dial using the national format when dialing. LCR also converts numbers dialed from the Speed Dial tables & Caller History from key sets. Please set LCR as per the table below and enable Trunks required.

Advanced Edit	PRG	Item	Setting
	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.
Advanced Items > LCR>LCR Dial Data	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

Trunk	Trunk Name	Least Cost Routing	Dial Data	Carrier Table Entry	Delete digits	Access Code (add digits)	Authorization Code Table Entry	Cost Centre Code
001	BRI 1	Off	00	1	0		0	
002	BRI 2	Off	01	2	1	0044	0	
003	BRI 3	Off	02	2	0	0044115	0	
004	BRI 4	Off	03	2	0		0	
005	BRI 5	Off	04	2	0		0	
006	BRI 6	Off	05	2	0		0	
007	BRI 7	Off	06	2	0		0	
008	BRI 8	Off	07	2	0		0	
009	SIP 1	On	08	2	0		0	
010	SIP 2	On	09	2	0		0	
011	SIP 3	On	112	1	0		0	
012	SIP 4	On	1	3	0		0	
013	Line 013	Off	2	3	0		0	
014	Line 014	Off	3	3	0		0	
015	Line 015	Off	4	3	0		0	
016	Line 016	Off	5	3	0		0	
017	Line 017	Off	6	3	0		0	
018	Line 018	Off	7	3	0		0	
019	Line 019	Off	8	3	0		0	
020	Line 020	Off	999	1	0		0	
021	Line 021	Off	90	3	0		0	
022	Line 022	Off	91	3	0		0	
023	Line 023	Off	92	3	0		0	
024	Line 024	Off	93	3	0		0	
025	Line 025	Off	94	3	0		0	
026	Line 026	Off	95	3				

Least Cost Routing 14-01-23
Dial Data 26-02-01
Carrier Table Entry 26-02-06
Delete Digits 26-05-01
Access Code (add digits) 26-05-02

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >SIP Networking> Profile x > SIP Profile X - Networking Mode>SIP Profile x – 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)

1 0

Advanced Edit	PRG	Item	Setting
Advanced Items > VoIP >SIP Networking> Profile x > SIP Profile X - Networking Mode>SIP Profile x – 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 >SIP Networking> Profile x > SIP Profile X - Networking Mode>SIP Profile x – 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 >SIP Networking> Profile x > SIP Profile X - Networking Mode>SIP Profile x – 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 SL1100 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 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 SL1x000 platform also includes 4 SIP Trunk licenses when a VoIP DB card has been installed but additional SIP Trunk licenses for each Trunk thereafter. The SL supports up to 32 SIP Trunks.

Comments / Known Limitations

- 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 SL1100
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.

TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT SHALL NEC ENTERPRISE SOLUTIONS BE LIABLE FOR PERSONAL INJURY OR ANY INCIDENTAL, SPECIAL, DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES WHATSOEVER, INCLUDING WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, LOSS OF DATA, BUSINESS INTERRUPTION OR ANY OTHER COMMERCIAL DAMAGES OR LOSSES ARISING OUT OF OR RELATED TO YOUR USE OF THIS REPORT, HOWEVER CAUSED REGARDLESS OF THE THEORY OF LIABILITY

(CONTRACT, TORT OR OTHERWISE) AND EVEN IF NEC ENTERPRISE SOLUTIONS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, DUE TO THE POSSIBILTY OF PROVIDERS MAKING SYSTEM CHANGES WHICH PROCEED THE COMPATIBILITY TESTING DETAILED IN THIS REPORT.

IN NO EVENT SHALL NEC ENTERPRISE SOLUTIONS TOTAL LIABILITY TO YOU FOR ALL DAMAGES (OTHER THAN AS MAY BE REQUIRED BY APPLICABLE LAW IN CASES INVOLVING PERSONAL INJURY) EXCEED THE AMOUNT OF SEVENTY FIVE POUNDS (£75).

THE FOREGOING LIMITATIONS WILL APPLY EVEN IF THE ABOVE STATED REMEDY FAILS OF ITS ESSENTIAL PURPOSE.