TELSTRA BUSINESS SIP®

CUSTOMER DETAILED INTEGRATION GUIDE

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1. About this Document

The intention of this document is to communicate key information about the deployment and integration of the Business SIP® product.

The audiences may include Telstra pre-sales, Telstra partners and anyone involved with considering the Business SIP product.

> **Note:** This document does not constitute an IP Tel design but serves as a generic reference guide for the adoption of the Telstra Business SIP® product and applications only within the customer's environment.

1.1. Product architecture overview

The diagram below provides an overview of the Telstra Business SIP® product architecture.

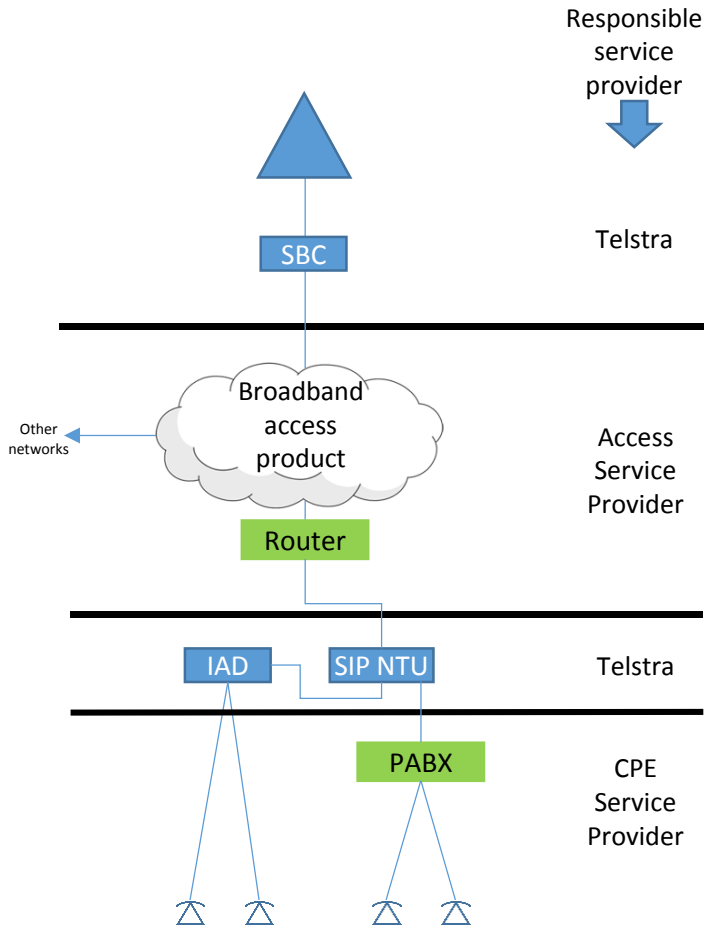

Figure 1 – Product architecture

The Telstra Business SIP® product is a voice-only product that resides over the top of a broadband access product. The broadband access product is a separately ordered product that should provide guaranteed voice bandwidth to ensure high quality of experience for calls.

Similarly, the PABX, phones and local networking environment is a separately ordered product. Only accredited providers/personnel should be involved in setting up the customer's local environment including performing installs and migrations.

The Telstra-supplied SIP NTU is a mandatory device for connecting ISDN or IP PBX's. Customers requiring an IAD for connecting analogue phones or voice-band data devices (e.g. fax) must order one of the available Telstra devices or use native capabilities of the PBX.

Due to the nature of the SIP protocol **only accredited IP PBX's can be connected**.

2. Customer environment

2.1. Bandwidth

The voice bandwidth of the broadband access product must be dimensioned using at least 100Kbit/s in each direction for each concurrent phone call provisioned on the service. See the table below for examples.

Number of concurrent calls	Minimum Downstream Voice Bandwidth	Minimum Upstream Voice Bandwidth
2	200 Kbit/s	200 Kbit/s
4	400 Kbit/s	400 Kbit/s
6	600 Kbit/s	600 Kbit/s
8	800 Kbit/s	800 Kbit/s
10	1 Mbit/s	1 Mbit/s
30	3 Mbit/s	3 Mbit/s
50	5 Mbit/s	5 Mbit/s
60	6 Mbit/s	6 Mbit/s
100	10 Mbit/s	10 Mbit/s
150	15 Mbit/s	15 Mbit/s

Table 1 – Bandwidth requirements

2.2. Router

2.2.1. Quality of Service

The WAN router must be designed and configured with a suitable QoS policy to categorise and prioritise VoIP traffic over data. The customer's access service provider is responsible for ensuring the router is appropriately configured. Where either a QOS aware gateway/router or Access QOS is not available, then it is recommended to dedicate the full link to Voice Only to maintain voice quality.

2.2.2. Router Configuration for Voice

Routers vary in their default configuration and implementation of the following features:

- Firewalls
- NAT (Network Address Translation)
- SIP ALG (SIP Application Layer Gateway)
- uPnP (Universal Plug and Play)
- Port Forwarding

There is no one size fits recommendation for all cases, but the following table has some examples and suggested steps when using different types of routers.

Example	Router / Gateway	SIP NTU Gets Config OK	SIP NTU Registers OK	Two Way Speech for Voice Calls OK	Remote Admin Works	Required Router Config Actions
1	Telstra Netgear V7610	Y	Y	Y	Y	No special action is required for Port forwarding or Remote Administration as these features are preconfigured
2	Generic Router	Y	Y	Y	N	Configure Remote administration (as per 2.2.4)
3	Generic Router	Y	Y	N	N	Enable SIP ALG + Configure Remote administration (as per 2.2.4)
4	Generic Router	Y	Y	N	N	Enable SIP ALG + uPnP + Add Port Forwarding (as per 2.2.3) + Configure Remote administration (as per 2.2.4)
5	Generic Router	Y	N	N	N	Disable SIP ALG + Add Port Forwarding (as per 2.2.3) + Configure Remote administration (as per 2.2.4)

Table 2 – Router configuration actions

2.2.3. Ports and Protocols

Avoid the use of Firewall devices before or after the SIP NTU device as they may cause issues such as One-way/No-way speech, SIP registration issues or block Telstra's remote access to the IAD which is used to assist with issues.

The following table provides a list of the protocols and ports used by Telstra Business SIP®.

SERVICE	PROTOCOL	PORT	DESCRIPTION
SIP	UDP/TCP/TLS	5060/5061	Signalling protocol used by SIP NTU
RTP	UDP	16384 - 16672	Real-time Transport Protocol (Media) used to deliver audio between VoIP end-points.
SRTP	UDP	16384 - 16672	Secure Real-time Transport Protocol (Media) used to deliver encrypted audio between VoIP end-points.
RTCP	UDP/TCP	16384 - 16672	Real-time Transport Control Protocol used to provide QoS status to end-points.
SRTCP	UDP/TCP	16384 - 16672	Secure Real-time Transport Control Protocol used to provide encrypted QoS status to end-points.
HTTPS	TCP	443	Hyper Text Transfer Protocol Secure used to provide encrypted sessions from customer computer browser to the Telstra Business SIP® Web Portal.
SSH	TCP	22	Secure Shell used to provide encrypted sessions from Telstra support personnel to the SIP NTU.

Table 2 – Ports and Protocols

2.2.4. Remote administration

To enable Telstra support staff to remotely administer the SIP NTU, set up port forwarding on the router to the SIP NTU WAN IP address as follows:

TCP traffic inbound to port 59999, forward to SIP NTU IP Address, port 443

TCP traffic inbound to port 60999, forward to SIP NTU IP Address, port 22

For example, if the IP address of the SIP NTU was 192.168.190.2, then the port forwarding rule becomes:

TCP traffic inbound to port 59999, forward to 192.168.190.2:443

TCP traffic inbound to port 60999, forward to 192.168.190.2:22

It is highly recommended that a static DHCP assignment or fixed IP address be assigned to the SIP NTU to ensure the port forwarding is maintained. If this is not possible then power reset the router with no wired/wireless connections, then connect the SIP NTU and note the IP address assigned then use this as the IP referenced in the port forwarding. This will ensure the most likely IP to be assigned by DHCP after a power-reset of the router and SIP NTU is used.

2.2.5. DHCP Option to support IAD's

The following DHCP configuration is required for all routers (except the Telstra Netgear V7610) if connecting an IAD such as the One Access 8-Port or the Cisco SPA122 directly to a router, and not via the recommended connection to ports (0/2 and 0/3) of the SIP NTU.

If the One100 8-port IAD is being used then DHCP Options must be configured as shown in the table.

DHCP OPTION	FIELD FORMAT	VALUE
Option 160	ASCII	http://polydms.digitalbusiness.telstra.com/dms/bootstrapV4

If the SPA-122 2-port IAD is being used then DHCP Options must be configured as shown in the table.

DHCP OPTION	FIELD FORMAT	VALUE
Option 66	ASCII	dms.digitalbusiness.telstra.com

It is recommended that these devices are connected to the LAN ports of the SIP NTU. Note that only the 3rd and 4th ports (0/2 and 0/3) of the SIP NTU are DHCP-enabled so these are the ports to be used for the IAD's.

If the IAD is connected via the SIP NTU in the recommended configuration, DHCP Opt 66 and DHCP Opt 160 will be handled by the SIP NTU.

3. Web Portal

Telstra Business SIP® has a web portal, accessible through the internet, for configuring elements of the service.

The url is https://portal.mycalling.telstra.com/

Username/passwords are supplied by email to the customer administrator at the time of service establishment.

It is mandatory to access the portal for the following actions:

- Retrieving device credentials for OneAccess devices (SIP NTU, One100 IAD) needed for initial installation.
- Performing number migration from the old ISDN/PSTN service to the new Telstra Business SIP® service.
- Assigning purchased feature packs to individual numbers
- Configuring Hunt Group or Virtual Receptionist, if purchased
- Activation/deactivation of Encryption. By default voice is not encrypted. If you wish to change this, then activation is performed via the Portal. Activate encryption only where the broadband access product traverses untrusted networks, e.g. the internet. When Non-Telstra Access is used, then the voice will traverse the Internet.

4. Appendices

4.1. Appendix A: References

The following reference documents are available for installation and administration purposes.

DOCUMENT NAME	LINK
Business SIP Installation Guide	
One100 Installation and Configuration Guide	
Business SIP Portal - Administrator Guide	
Business SIP Portal - End User Guide	

4.2. Appendix B: Glossary

The following terms, acronyms and abbreviations are referred to in this document.

TERM	DEFINITION
AS	Application Server
DHCP	Dynamic Host Configuration Protocol
HTTP	Hyper Text Transfer Protocol
HTTPS	Hyper Text Transfer Protocol Secure
IAD	Integrated Access Device
IP	Internet Protocol
LAN	Local Area Network
NTU	Network Termination Unit
PABX	Private Automated Branch Exchange
PBX	Private Branch Exchange
PSTN	Public Switched Telephone Network
QoS	Quality of Service
RTCP	Real-time Transport Control Protocol
RTP	Real-time Transport Protocol
SBC	Session Border Controller
SIP	Session Initiation Protocol
sRTP	Secure Real-time Transport Protocol
TLS	Transport Layer Security
VoIP	Voice over Internet Protocol

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