



Telstra SMS Access Manager

Technical Guide

01 Introduction



The purpose of this document is to provide specific details of how to interface to Telstra for submission and reception of SMS messages.

SMS Access Manager has two distinct product offerings.

Dial-up allows a user to send SMS messages using the Telocator Alphanumeric Protocol (TAP)/Paging Entry Terminal (PET) protocols.

The broader SMS Access Manager offering Short Message Peer to Peer (SMPP) will allow users to send and receive SMS messages in bulk using the SMPP protocol.

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02 What is SMS?

SMS stands for Short Message Service. It is a technology that allows for the sending and receiving of SMS between Person to Person (P2P) and Application to Person (A2P).

SMS is specified by 3GPP. SMS to and from a mobile is specified by 3GPP TS 23.040 (and earlier in GSM 03.40).

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03 What is SMS Access Manager?

SMS Access Manager provides a carrier grade access medium to Telstra's mobile network and messaging gateways. It can facilitate the rapid, reliable sending and receiving of large volumes of SMS messages using a PC or specific SMS application.

The customer must provide messaging software capable of interfacing with Access Manager to generate the SMS messages.

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Dial-up Access

PET or TAP are the protocols that are available for use via dial-up access.

SMPP Access

SMPP is the protocol that is available for use here.

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5.1 Dial-up Access

This method provides access via a computer equipped with a modem. This solution provides multi-message dial-up, and this level of access is designed to allow connection of your own message sending software based on the TAP or PET protocol.

This product does not offer reply path and cannot make use of the alpha numeric source address capability. It requires a separate telephone line and modem, and will attract additional fixed network connection charges and connection time per call/connection to Telstra.

5.2 SMPP Access

This method provides access via TCP/IP. It utilises an open protocol called the Short Message Peer to Peer protocol (SMPP) to allow sending and receiving of messages with advanced delivery options.

Consider the following TCP/IP connection methods:

Internet VPN (Client) Connection

This connection method lets you use your existing Internet connection (dial-up modem, cable, ADSL and in conjunction with the provided VPN configuration to securely connect into the SMS network.

Access is via VPN client or IPSEC LAN 2 LAN.

The VPN client is an ideal solution for customers without IPSEC capable routers or firewall devices.

The throughput of the client method is less than that of a LAN 2 LAN IPSEC solution.

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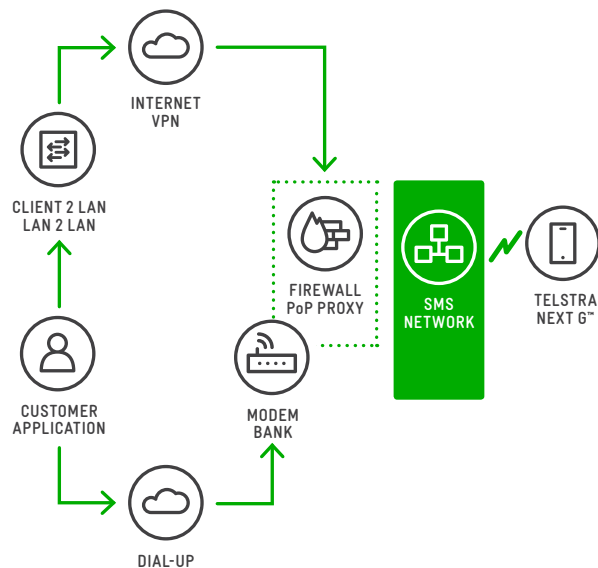
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Depending on the chosen method of access, you will require some of the following.



6.1 Dial-up Access

- PC/server running client software supporting the TAP or PET.
- PC modem.
- PSTN line service* (eg Telstra HomeLine).

6.2 SMPP Access

Connection is via Internet VPN.

- PC/server running client software supporting the SMPP Protocol.
- IPSEC capable router or firewall device which supports IPSEC.
- VPN clients which supports IPSEC and protocols.

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7.1 Dial-up Access

The multi message dial-up option provides up to 100 messages per phone call and a maximum connection time of ten minutes. This access method should be used for existing TAP or PET equipment and cannot be used to receive SMS messages.

Communication Line Parameters

Line Parameter	Value
Character Set	ASCII
Duplex	Full Duplex
Mode	Asynchronous
Dial-up Number	125107
Data Bits	7
Start Bits	1
Parity	Even
Stop Bits	1
Bit Rate	9600
Modem Standards	V21, v22, v22bis, v34, v90

Modem Parameters

Carrier Detect	DCD signal responds to remote modem AT&C1
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7.2 SMPP Access

Connection via Internet VPN

Two types of Internet VPN are available:

Client VPN	Allows a single machine to remotely access this service (client to LAN VPN) over shared infrastructure (the Internet).
IPSEC VPN	Allows a corporate Intranet to access this service over (LAN to LAN VPN) shared infrastructure (the internet).

Note: Note: IPSEC VPN requires a public peer IP, the host address ranges can be private. Customers are required to Network Address Translation (NAT) behind their public interface.

Security Details

Telstra uses the following protocols for VPN encryption and authentication:

Authentication	ESP/MD5/HMAC-128
Encryption	3DES-168
IKE Proposal	IKE-3DES-MD5

All certificate keys are 168bits.

Access or Client VPN

Consider the following steps and system requirements:

- ensure that the appropriate ports are open to the Internet with respect to firewalls rules and other network elements.
- once connected, Telstra will allocate an IP Address from its VPN Client pool.
- ensure that you are not using NAT.
- configuration details and client VPN software will be provided but it is the responsibility of the customer to load and configure the client accordingly.

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IPSEC VPN

Consider the following steps and system requirements. You will need to ensure that:

- your intranet has a connection to the internet
- you have a static, internet routable IP address for each machine within the LAN wishing to access the SMS Network. Alternatively, if private addressing is used locally, NAT must be used, so that an internet routable IP address is presented to Telstra
- you have an IPSEC capable device
- you have altered your firewall (if any) to allow access to all the ports used by the VPN tunnel
- you have not installed any application level proxy servers between your LAN and the internet. Ensure that you record the following:
 - the static, internet routable IP address for each machine within the LAN which will be accessing the internet VPN;
 - the IPSEC router's static, internet routable IP address;
 - the LAN's static Netmask.

7.3 Bandwidth Requirements

This table provides guidelines as to what bandwidth you need to provision between your site and the Telstra SMS network to cope with a given message transmission rate.

This message rate is not the end-to-end message rate, only the message rate between your site and the SMS Network. Actual end-to-end message rate will be affected by traffic congestion, quality of service parameters and other issues.

Quick Reference Table

Access Method	Bandwidth (typical)	Approx. Messages per second
Dial-up Access	N/A	Varies according to product feature selection
Dial-up modem	28.8Kbit/s	5
Internet VPN	Take any access method and allow for reduction factor	Varies according to Internet Access method

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8.1 SMPP

The SMPP protocol is an open standard protocol designed to provide a flexible data communications interface for the transfer of short messages. It has been specifically designed to enable applications and value added products to communicate with an access gateway. For a more comprehensive discussion of the SMPP protocol please refer to the specification at <http://opensmpp.org/specifications.html>

Document	SMPP (Short Message Peer To Peer) Protocol Specification v3.4
Document Version	12 October 1999 Issue 1.2

8.1.1 Feature Set

The following table details the SMPP operations supported by SMS Access Manager. Please note there may be instances where the usage of unsupported features will be permitted. Please consult your Telstra Mobile Representative for further information. Features not listed here are not supported.

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Item	Functional Unit/Description	SMPP REF	Support
PDU-OUTBIND	Is the outbind PDU supported?	4.1.7	✗
PDU-BIND-TRANSMITTER	Is the bind transmitter PDU supported?	4.1.1, 4.1.2	✓
PDU-BIND-RECEIVER	Is the bind receiver PDU supported?	4.1.3, 4.1.4	✓
PDU-BIND-TRANSCIEVER	Is the bind transceiver PDU supported?	4.1.5, 4.1.6	✗
PDU-UNBIND	Is the unbind PDU supported?	4.2.1, 4.2.2	✓
PDU-ESME-GENERIC-NACK	Is the generic_nack PDU initiated by the EMSE supported?	4.3.1	✓
PDU-SMSC-GENERIC-NACK	Is the generic_nack PDU initiated by the SMSC supported?	4.3.1	✓
PDU-SUBMIT-SM [refer to 5.1.1.1]	Is the submit_sm PDU supported?	4.4.1, 4.4.2	✓
PDU-SUBMIT-MULTI	Is the submit_multi PDU supported?	4.5.1, 4.5.2	✗
PDU-DELIVER-SM [refer to 5.1.1.2]	Is the deliver_sm PDU supported?	4.6.1, 4.6.2	✓
PDU-ESME-DATA	Is the data_sm PDU initiated by the EMSE supported?	4.7.1	✗
PDU-SMSC-DATA	Is the data_sm PDU initiated by the SMSC supported?	4.7.1	✗
PDU-QUERY*	Is the query_sm PDU supported?	4.8.1, 4.8.2	✗
PDU-CANCEL*	Is the cancel_sm PDU supported?	4.9.1, 4.9.2	✗
PDU-REPLACE*	Is the replace_smPDU supported?	4.10.1, 4.10.2	✗
PDU-ESME-ENQUIRE-LINK	Is the enquire_linkPDU initiated by the EMSE supported?	4.11.1, 4.11.2	✓
PDU-SMSC-ENQUIRE-LINK	Is the enquire_linkPDU initiated by the SMSC supported?	4.11.1, 4.11.2	✓
PDU-ALERT	Is the alert_notification PDU supported?	4.12.1	✗

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PDU-Submit

Item	Functional Unit/Description	SMPP REF	Support
SUBMIT-1	Is the use of different values in the service_type field allowed?	5.2.11	✗
SUBMIT-2	Is the use of default values in the source_addrfields supported?	5.2.8	✓
SUBMIT-3	Is scheduled_delivery supported?	5.2.15	✗
SUBMIT-4	Is the replace_if_present functionality supported?	5.2.18	✓
SUBMIT-5	Are pre-defined short messages supported?	5.2.23	✗
SUBMIT-6	Is the use of the validity_period field supported?	5.2.16	✓
SUBMIT-26	What is the maximum length of message_payload data supported?	5.3.2.32	140 Binary Octets or 160 ANSI Characters

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Consider the following specific questions relevant to PDU-Submit:

SMPP field	Issue and question	SMPP REF.	Answer
Submit-Field1	What, if any restrictions are imposed upon the value used in the service_type field?	5.2.11	Must be MHS or as assigned by Telstra. This value is overwritten in the incoming SMPP packet to enforce this
Submit-Field2	What values in the esm_class field are supported, and in what circumstances?	5.2.12	<ul style="list-style-type: none"> SMSC Delivery Receipt UDHI Indication Reply Path Indication
Submit-Field3	What values in the protocol_id field are supported, and in what circumstances?	5.2.13	Described in Engineering Document SMI091
Submit-Field4	What values in the priority field are supported, and in what circumstances?	5.2.14	Must be Level 1 Priority. This value is overwritten in the incoming SMPP packet to enforce this
Submit-Field5	What, if any restrictions are imposed upon the value used in the schedule_delivery_time field?	5.2.15	Must be NULL. This value is overwritten in the incoming SMPP packet to enforce this
Submit-Field6	What, if any restrictions are imposed upon the value used in the validity_period field?	5.2.16	Maximum of 7 days. The message is 'Expired' after this time
Submit-Field7	Which values in the registered_delivery field are supported?	5.2.17	<ul style="list-style-type: none"> No SMSC Delivery Receipt requested SMSC Delivery Receipt on success and failure
Submit-Field8	Are there any restrictions set upon the values specified in the data_coding field?	5.2.19	No
Submit-Field9	How many canned messages are supported via the sm_default_allowed field?	5.2.20	Function not supported

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PDU – Deliver

Item	Functional Unit/Description	SMPP REF	Support
Deliver – 1*	Is the use of different values in the service-type field allowed?	5.2.11	✗
Deliver – 16	What is the maximum length of message_payload data supported?	5.3.2.32	140 Binary Octets or 160 ANSI Characters

Consider the following specific questions relevant to PDU-Deliver:

SMPP field	Issue and question	SMPP REF.	Answer
Deliver-Field1	What, if any restrictions are imposed upon the value used in the service_type field?	5.2.11	Must be MHS or as assigned by Telstra. This value is overwritten in the outgoing SMPP packet to enforce this
Deliver-Field2	What values in the esme_class field are supported, and in what circumstances?	5.2.12	<ul style="list-style-type: none"> • SMSC Delivery Receipt • UDHI Indication • Reply Path Indication
Deliver-Field3	What values in the protocol_id field are supported, and in what circumstances?	5.2.13	Described in Engineering Document SMI091
Deliver-Field4	What values in the priority field are supported, and in what circumstances?	5.2.14	Must be Level 1 Priority. This value is overwritten in the outgoing SMPP packet to enforce this
Deliver-Field5	Which values in the registered_delivery field are supported?	5.2.17	<ul style="list-style-type: none"> • No SMSC Registered Message requested • SMSC Registered Message on success and failure
Deliver-Field6	Are there any restrictions set upon the values specified in the data_coding field?	5.2.19	No

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Message Types

Item	Functional Unit/Description	SMPP REF	Support
TYPE-1	Are normal data messages transmitted?	2.11	✓
TYPE-2	Can SMSC Registered Message be requested and obeyed?	2.11	✓

8.2 Registered Messages

When a message enters the SMS network, it is forwarded to the mobile network for delivery. As the message passes through the network it change states – these states reflect the progress of message delivery. At a later date the SMSC will return a message (or final state notification), including the MessageID, to the source address that originally submitted the message – the following notifications are applicable:

While a final state notification can be supported within the Telstra Mobile Network, it may not be supported where the messages terminate on another network, an application or a destination that does not support receipts. In this regard, the full extent of functionality is limited, as Telstra is not responsible for the configuration and architecture of the terminating network.

Upon receipt of the final state notification, the onus is on the customer's application to match the notification message with the message originally submitted to the SMS network.

State	Description
Delivered	The message has been successfully sent to a mobile phone (for Telstra Mobile services) or has reached a final state (for non-Telstra Mobile services)
Undeliverable	A condition exists that prevents message delivery – that is, the SMSC does not know how to route the message to its destination (eg invalid mobile number)
Deleted	The message has been deleted by Telstra – for example, the PDU-CANCEL has been sent or the message has been manually deleted
Accepted	The message has been marked by Telstra as sent
Unknown	The message is in an invalid state
Rejected	The message is in a rejected state
Expired!	The message validity period has expired

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Please note, for this to be effective the following conditions apply:

- the source address must be a legitimate routable number (eg 614xxx);
- the customer's application must have a continuous receiver bind into the SMS network.

In the case of premium providers using 19 sources, a delivery report will NOT be routed back from the SMS Access Manager platform. It will be dropped on the Premium SMS platform.

Telstra Mobile SMSC Specific

Item	Functional Unit/Description	SMPP REF	Support
SMSC-1	Can a Store and Forward method of final delivery be used?	2.10	✓
SMSC-2	Can a Datagram method of final delivery be used?	2.10	✗
SMSC-3	Can a Transaction mode method of final delivery be used?	2.10	✗
SMSC-4	Can this initiate a session by using the outbind operation sequence?	2.2.1	✗
SMSC-5*	What is the maximum length of message_id supported in operations?	5.2.23	Not supported
IMP-SMSC-1	Is information in a bind PDU used for access control?		✓
IMP-SMSC-2	Can the information in the bind PDU be used for routing messages to the ESME?		✓
IMP-SMSC-3	In a cancel_sm received from an ESME, must the service_type field be set to the same value as the original message which is being canceled?	5.2.12	Not supported
IMP-SMSC-4*	In a replace_sm received from an ESME, must the service_type field be set to the same value as the original message which is being replaced?	5.2.12	Not supported

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SMS Numbering Requirements

Item	Functional Unit/Description	SMPP REF	Support
SMSC-Num-1	SMPP Originating Address/TPOA. This must be a valid ACIF assigned number. ACIF numbers assigned to Telstra must be in the standard E164 format (e.g. 614xxx). TON/NPI set to 1/1		✓
SMSC-Num-2	Alpha Codes – Source Addresses. This is an address containing non-numeric characters – '*' and '#' are considered non-numeric characters. TON/NPI set to 5/0. See 5.1.1.4.2		✓
SMSC-Num-3	Short Codes – Source and Destination Addresses. This is a number not in any of the assigned. ACIF number ranges. TON/NPI set to 2/0		✗
SMSC-Num-4	Extra Digits – Source and Destination Address. This is an ACIF number with up to 4 additional numeric digits on the end. This is only supported for sources and destinations within Telstra's network		✓

Alpha Source Addresses

Alphanumeric codes are supported. Some rules apply to the use of alpha codes.

- Max of 11 characters. Over 11 characters will be rejected.
- Some special characters (standard ASCII), including spaces are supported.
- The code must include at least one character of the type [A-Z | a-z].
- If message destined for a PSTN destination, the alpha source will be translated into all 0's.
- Reply path for Alpha Sources are not supported.
- You can not use alphanumeric codes with Dial-up access.

8.3 SMPP Toolkits

Please refer to <http://forum.smppserver.org/>

8.4 Consultancy Services

Telstra does not offer consultancy services to help with the development of your application.

09 Frequently Asked Questions

9.1 Does Telstra support DRM?

If messages are submitted with Digital Rights Management (DRM), Telstra will not alter this and deliver it to the end device. Results may vary when terminating to external carriers.

9.2 What should I do if the message is being rejected with invalid address?

Ensure the Mobile Subscriber Integrated Services Digital Network-Number (MSISDN) being used is in correct international format.

Ensure you have been authorised to use the Sender Address in the submission.

9.3 What version of SMPP should I be using?

Version 3.4 should be used.

9.4 Can I send messages overseas?

SMS Access Manager can be used to send messages to the countries listed here. Additional countries can be reached as required – consult your Telstra representative to confirm.

Country		
Afghanistan	Indonesia	Papua New Guinea
Algeria	Iraq	Peru
Argentina	Italy	Philippines
Austria	Japan	Russian Federation
Azerbaijan	Kazakhstan	Samoa
Bahamas	Kenya	Singapore

Country		
Bahrain	Kiribati	Slovakia
Bangladesh	Korea (Republic of)	Solomon Islands
Belgium	Kuwait	Solomon Islands
Bermuda	Lao People Democratic Republic	South Africa
Brunei Darussalam	Latvia	Spain
Burkina Faso	Madagascar	Sri Lanka
Cambodia	Malawi	Sweden
Cameroon	Malaysia	Taiwan (China)
Canada	Maldives	Tanzania
Cape Verde	Mali	Thailand
Cayman Islands	Mauritius	Timor-Leste
Chile	Micronesia	Tonga
China	Morocco	Tunisia
Colombia	Mozambique	Turkmenistan
Cote d'Ivoire	Nauru	Turks and Caicos
Cuba	Nepal	Uganda
Cyprus	New Caledonia	United Arab Emirates
Egypt	New Zealand	United Kingdom
Equatorial Guinea	Nigeria	United States
Estonia	Norfolk Island	Vanuatu
Fiji	Norway	Venezuela
Ghana	Oman	Viet Nam
Guam	Pakistan	Zambia
India	Palau	Zimbabwe

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9.3 What version of SMPP should I be using?

9.4 Can I send messages overseas?

9.5 Are delivery receipts supported? >

9.6 During model testing my messages are not terminating to my mobile handset?

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9.5 Are delivery receipts supported?

Delivery receipts are supported when sending messages to Telstra subscribers from a MSISDN source address. They are not supported when sending messages from non-MSISDN (e.g. alpha) sources when sending outside of the Telstra network.

Note: Additional charges will be incurred whenever a Delivery receipts is requested on submission of message.

9.6 During model testing my messages are not terminating to my mobile handset?

If testing using the model network does not connect to the radio network. The intention of model testing is to test between your receiver and transmitter locally. Once migrated to production, mobile handset termination will be possible

10 Glossary

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

Term	Definition
ACIF	Australian Communications Industry Forum. An industry body overseeing agreements and standards between carriers within Australia
ADSL	Asynchronous Data Subscriber Link. A method for high-speed data transfer over PSTN lines
CIR	Committed Information Rate. Represents bandwidth allocated to a Frame Relay connection
DLCI	Data Link Connection Identifier. Used to identify a connection point within a Frame Relay endpoint
DRM	Digital Rights Management
FNN	Full National Number. Used to identify a communications service
F/W	Firewall
GSM	Global System for Mobiles. One of the networks used in Australia to provide mobile phone services
HTTP	Secure Hyper Text Transfer Protocol
Internet Registered Business	An internet address which is registered on the internet but never actually used on the internet
IP	Internet Protocol
ISDN	Integrated Services Digital Network. The network used for data traffic
MSISDN	Mobile Subscriber Integrated Services Digital Network-Number
MT	Mobile Termination
NAT	Network Address Translation
PET	Paging Entry Terminal
POP	Point of Presence
PSTN	Public Switched Trunk Network. The network used for conventional voice and data traffic
PVC	Permanent Virtual Circuit

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Term	Definition
SIM	Subscriber Identity Module. A small card inserted into a device connecting to the GSM network to identify the owner
SMPP	Short Message Peer to Peer. A protocol for sending and receiving SMS messages over a session link
SMS	Short Message Service
SMSC	Short Message Service Centre. A component of the SMS network
TAP	Telocator Alphanumeric Protocol. A protocol for sending SMS messages using a dial-up terminal
TCP	Transmission Control Protocol
VPN	Virtual Private Network