



Inter-Connect SMS Gateway Implementation Guide

Version 1.0

Inter-Connect SMS Gateway Implementation Guide v1.0 12-December-2002

©1999-2002 SMS Forum.

COPYRIGHT

All rights reserved. This document or any part thereof may not, without the prior written consent of SMS Forum, be copied, reprinted or reproduced in any material form including, but without prejudice to the foregoing and not by way of exception photocopying, transcribing, transmitting or storing in any medium or translating into any language, in any form or by any means, including but not limited to, electronic, mechanical, xerographic, optical, magnetic, digital or other methodology.

DISCLAIMER

WHILST THE GREATEST CARE HAS BEEN TAKEN TO ENSURE THE ACCURACY OF THE INFORMATION AND DATA CONTAINED HEREIN, SMS FORUM DOES NOT WARRANT THE ACCURACY OR SUITABILITY OF SAME FOR ANY SPECIFIC USE. SMS FORUM EXPRESSLY DISCLAIMS ALL AND ANY LIABILITY TO ANY PERSON, WHETHER A PURCHASER OR OTHERWISE, IN RESPECT OF ANY CONSEQUENCES OF ANYTHING DONE OR OMITTED TO BE DONE BY ANY SUCH PERSON IN PARTIAL OR TOTAL RELIANCE UPON THE WHOLE OR ANY PART OF THE CONTENTS OF THIS PUBLICATION OR ANY DERIVATIVE THEREOF.

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE AND RELIABLE. HOWEVER, SMS FORUM ACCEPTS NO RESPONSIBILITY FOR ITS' USE BY ANY MEANS OR IN ANY WAY WHATSOEVER. SMS FORUM SHALL NOT BE LIABLE FOR ANY EXPENSES, COSTS OR DAMAGE THAT MAY RESULT FROM THE USE OF THE INFORMATION CONTAINED HOWSOEVER ARISING IN THIS DOCUMENT OR ANY DERIVATIVE THEREOF.

NOTE 1: THE INFORMATION CONTAINED IN THE WITHIN DOCUMENT AND ANY DERIVATIVE THEREOF IS SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE 2: THE CORPORATE NAME OF SMS FORUM IS NORTHGROVE LIMITED, COMPANY NUMBER 309113, REGISTERED OFFICE GARDNER HOUSE, WILTON PLACE, DUBLIN 2.

Table Of Contents

1	Introduction	Error! Bookmark not defined.
2	Change Log	Error! Bookmark not defined.

List Of Tables

Table 1-1 Acronyms and Abbreviations	6
Table 1-2 Reference documents	6
Table 2-1 <i>submit_sm</i> Field Values	11
Table 2-2 <i>deliver_sm</i> Field Values	12

List Of Figures

Figure 2-1 Inter-Connect Model.....	10
Figure 3-1 ICSG Message Transmission	13

1 Introduction

1.1 Purpose

This document was designed to outline the technical functionality required to interconnect two inter-carrier gateways.

1.2 Scope

- Define the interface between ICSG Gateways, not ICSG to SMSC interface
- ICSGs will support the core feature set as defined by the SMS Forum
- Number portability will not be supported in Phase I
- Ability to address character set mapping
- Delivery Receipts supported but not mandatory
- Include collection of information to enable billing
- Trouble isolation and resolution
 - Retry and failure issues
- DATA_SM and Submit_Multi_SM will not be supported in phase I
- Cancel_SM, Query_SM, and Replace_SM will not be supported in phase I

1.3 Definitions, Acronyms, and Abbreviations

Acronyms and Abbreviations	Description
SMSC	Short Message Service Center
ESME	External Short Messaging Entity
ICSG	Inter-Carrier SMS Gateway
MO	Mobile Originated
MT	Mobile Terminated

Table 1-1 Acronyms and Abbreviations

1.4 Reference Documents

Document Title, Version #, Date	Description
SMPP Protocol Specification v3.4, 12-Oct-1999 Issue 1.2	SMPP Protocol Specification for Version 3.4
FCC 97-074	Second Report & Order
Inter carrier messaging feature set and interfacesV1.0 Feb 22 nd	CTIA Guidelines for Inter Carrier Messaging

Table 1-2 Reference documents

1.5 Document Structure

This document is based on the Institute of Electrical and Electronic Engineers (IEEE Std. 830). This document is segmented into the following sections:

Section 1 is an introduction to the requirements and covers the informative, non-technical aspects of the specification.

Section 2 describes the general factors affecting the requirements such as product overview, interfaces, constraints, and assumptions. This section does not provide the development requirements for the specific features; instead, it provides background information for the requirements.

Section 3 contains the specific software requirements and is organized by feature or function.

1.5.1 Release Revisions

Versions of this document less than 1.0 (i.e. 0.3 or 0.98) are pre-release versions. Once reviews are completed and the sign-off sheet is executed the document it shall be released as Version 1.0. Subsequent changes to the document shall be version controlled with the same signatures required as a release 1.0. It is recommended that the author use the release revision table to cover pre-release as well as post-release versions. This provides an audit trail of ideas.

2 Functionality Requirements

2.1 ICSG Feature List

2.1.1 Mandatory Feature List

- General Requirement – MO and MT messages only
- Protocols – SMPP v3.4
- Destination & Reply addressing - international E.164 format.
- Short Message length– No maximum message length.
- Both the short_message field and message_payload TLV are supported.
- ASCII 7-bit character set
- Concatenated messages – Fragments passed as is. (No reassembly)
- Validity period – Period must be set to a minimum of 72 hours
- Priority – priority flags must be passed from the originating network, but there is no guarantee that the feature will be supported on the terminating side.
- Error Messages
- enquire_link
- bind_transceiver session(s)
- generic_nack
- Receipted_message_id, Message_state TLVs

2.1.2 Mandatory Operations

- enquire_link
- bind_transceiver session(s)
- generic_nack
- submit_sm
- deliver_sm

2.1.3 Conditional Feature List

- Registered Delivery (If specified must be relayed)
- Network_error_code (If specified shall be relayed)

2.1.4 Optional Feature List

- Character set Mapping – 7 bit ASCII - 7 bit GSM
- Distribution list – If the originating carrier supports distribution lists, then the originating Network is responsible for creating multiple messages.
- Call Back number – International E.164
- Binary Data or special User Data – originally, the scope of this project is text messages only, therefore the messages would be human readable text only
- Service Type (optionally preserved end to end)

2.1.5 Non-supported Feature List

- Scheduled Delivery Time
- Replace if present
- Default message ID

2.1.6 Non-supported Operations List

- bind_transmitter, bind_receiver
- cancel_sm/query_sm/replace_sm
- data_sm, submit_multi
- alert_notification

2.2 Inter-connection specifications

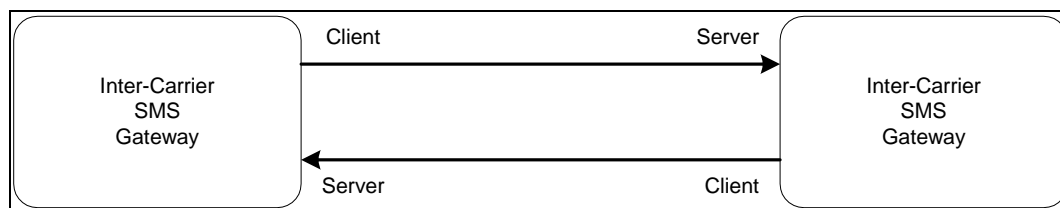


Figure 2-1 Inter-Connect Model

- Inter-Carrier SMS Gateways will be required to emulate both SMPP client and server.
 - SMPP V3.4 will be utilized for the interconnect between ICS Gateways.
 - Bind_Transceiver must be used as the binding process to be utilized between ICS Gateways
 - Generic _nack must only be utilized for messages that are unrecognized.
 - The SMPP client of each ICSG will establish all Binds.
 - Enquire_link must be utilized and supported to confirm link availability (both Client and Server)
 - Character mapping and message segmentation is the responsibility of the destination ICSG or network.
 - Source and destination numbers must be passed in E.164 international format
 - ICSG must provide unique message ID's outbound for two (or more) times the maximum validity period.
 - The maximum validity period must not exceed 7 days.
 - Throttling levels may be set by ICSG to ICSG agreements
 - The ICSG must not perform Store-and-Forward functionality; it is the responsibility of either the origination or destination network.
 - The Origination ICSG must set the validity period to NULL when passing to the destination ICS Gateway.
-
- SMPP Client Function
 - Initiates bind_transceiver sessions
 - Utilizes submit_sm and associated response

 - SMPP Server Function
 - Utilizes deliver_sm and associated response
 - Accepts bind_transceiver sessions

2.2.1 Submit_SM Field Values

The gateway will pass through all parameters not outlined below.

Field Name	Value
Source_addr_ton	00000001 - International
Source_addr_npi	00000001
Source_addr	The handset that originated the message. The number must be in international E.164 format.
Dest_addr_ton	00000001 – International
Dest_addr_npi	00000001
Destination_addr	The destination handset number. The number must be in international E.164 format.
Schedule_delivery_time	Not supported (set to NULL for phase I)
Validity_period	NULL
Registered_delivery ¹	<p>The registered delivery receipt if requested must contain the following TLVs:</p> <ul style="list-style-type: none"> • User_message_reference • Receipted_message_id • Message_state • Network_error_code (optional) <p>The short_message field or message_payload field shall be ignored.</p>
Replace_if_present_flag	Not supported (set to NULL for phase I).
Sm_default_msg_id	Not supported (set to NULL for phase I).
TLV	
Message_payload	If populated supersedes the short_message field.

Table 2-1 submit_sm Field Values

¹ When delivery receipt is implemented, the ICSGs must use these parameters.

2.2.2 Deliver_SM Field Values

- The gateway will pass through all parameters not outlined below.
- For deliver receipt passing only

Field Name	Value
Source_addr_ton	00000001 – International
Source_addr_npi	00000001
Source_addr	The handset that originated the message. The number must be in international E.164 format.
Dest_addr_ton	00000001 – International
Dest_addr_npi	00000001
Destination_addr	The destination handset number. The number must be in international E.164 format.
Schedule_delivery_time	Not supported (set to NULL for phase I)
Validity_period	NULL
Registered_delivery ¹	Not supported (set to NULL for phase I)
Replace_if_present_flag	Not supported (set to NULL for phase I).
Sm_default_msg_id	Not supported (set to NULL for phase I).
TLV	
Received_message_id	Mandated (as provided to the neighboring ICSG in response to the submitting message)
Message_state	Mandated
Network_error_code	Optional

Table 2-2 *deliver_sm* Field Values

2.2.3 Command Status Transmission

- When a link is temporarily down to a destination network, the destination ICSG will pass an ESME_RX_T_APPN (0x00000064) to identify that the link is temporarily down.
- When a destination ICSG receives command_status information from the destination SMSC in an acknowledgement, the command_status should be passed to the origination ICS Gateway.
- All standard responses, as outlined in the SMPP V3.4 specifications, will be utilized for all other types of message status.

3 Message transmission with Delivery Acknowledgement

All messaging between ICS Gateways will be passed utilizing best effort. ICS Gateways will only guarantee that messages have been delivered to the destination ICS Gateway. If the originating operator requires additional delivery confirmation, they must request a delivery receipt.

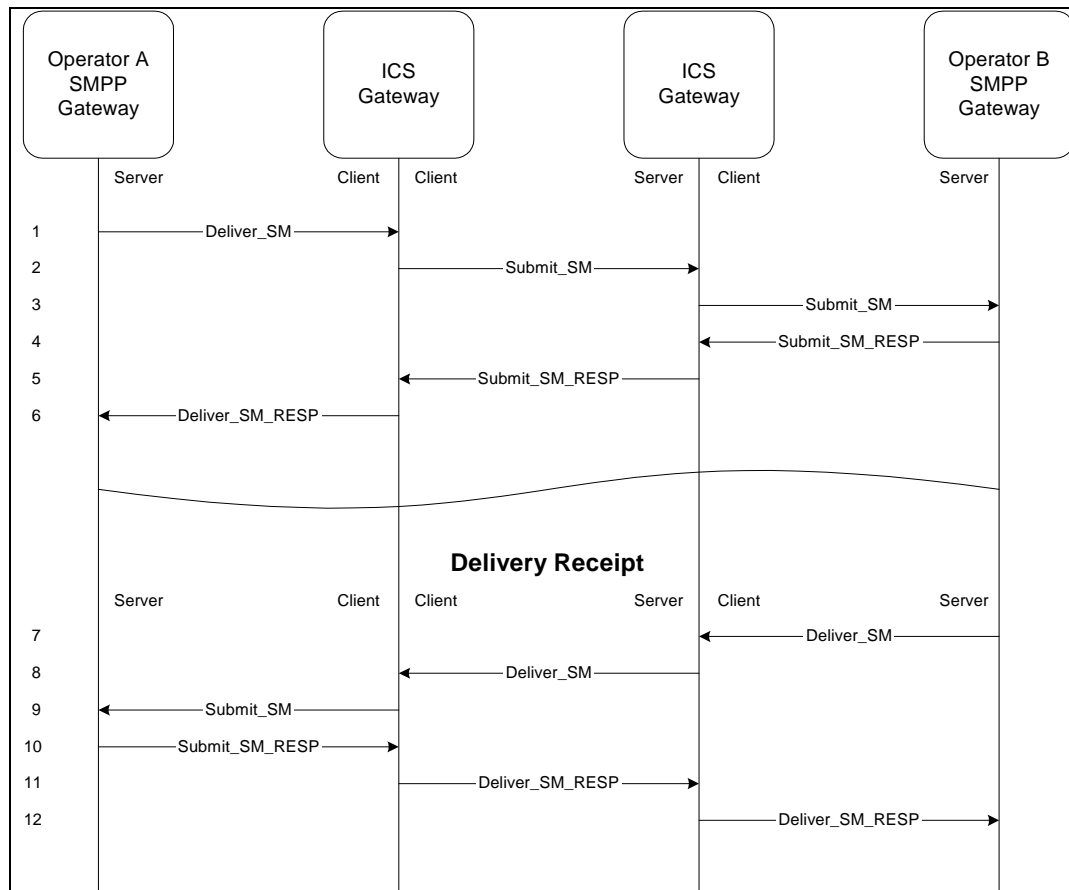


Figure 3-1 ICSG Message Transmission

1. The source operator issues a `deliver_sm` to its ICSG with a registered delivery request. The source ICSG emulates a SMPP client when receiving the message from the source operator. This is a recommendation but is not defined due to the scope of the document being between ICS Gateways.
2. The source ICSG issues a `submit_sm` to the destination ICSG with the registered delivery flag set. The source ICSG emulates a SMPP client and the destination ICSG emulates a SMPP server.
3. The destination ICSG issues a `submit_sm` to the destination operator. The destination ICSG emulates a SMPP client when issuing the message to the destination operator.

4. The destination operator responds to the destination ICSG with a submit_sm_resp.
5. The destination ICSG responds to the source ICSG with a submit_sm_resp. The source ICSG emulates a SMPP client and the destination ICSG emulates a SMSC.
6. The source ICSG responds to the source operator with a deliver_sm_resp. The source ICSG emulates a SMPP client.
7. After some time has passed the destination device receives the message and the destination operator issues the acknowledgement that the device has received the message. The destination operator issues a deliver_sm to the destination ICS gateway. The destination ICSG emulates a SMPP client.
8. The destination ICSG issues a deliver_sm to the source ICS gateway. The destination ICSG emulates a SMPP server when issuing the message to the source ICS gateway.
9. The source ICSG issues a submit_sm to the source operator. The source ICSG emulates a SMPP client.
10. The source operator responds to the source ICSG with a submit_sm_resp.
11. The source ICSG responds to the destination ICSG with a deliver_sm_resp.
12. The destination ICSG responds to the destination operator with a deliver_sm_resp.

4 Outstanding Issues

- Support for Number Portability and Number Pooling
- Circular Routing

Circular routing will become a potential issue when operators utilize multiple ICS Gateways for redundant operator routing paths. Various options need to be reviewed to prevent potential problems. A potential solution would incorporate a “hop count” to indicate the number of transition points utilized to deliver a message.

- Due consideration should be given to comparing existing implementations with this ICSG implementation guide.