

# Short Message Peer to Peer

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## Introduction to SMPP

Short Message Peer to Peer (SMPP) protocol is an open industry standard messaging protocol created to allow integration of data applications and GSM, CDMA, TDMA, and UMTS mobile networks. SMPP is frequently used to connect voicemail systems, WAP, and e-mail services to mobile networks. It allows these systems to deliver short messages to mobile users over a variety of different mobile network types using the same protocol.

SMPP is well suited to be a transport for the Enhanced Message Service (EMS) and Multimedia Message Service (MMS), which are next generation message services, allowing mobile users to send sound bytes, icons, and with the help of GPRS, pictures and videos.

SMPP is the protocol used over IP or X.25 to connect an External Short Message Entity (ESME) to a Short Message Service Center (SMSC).

SMPP is now maintained by the SMS forum. For more information, go to <http://smsforum.net/>.

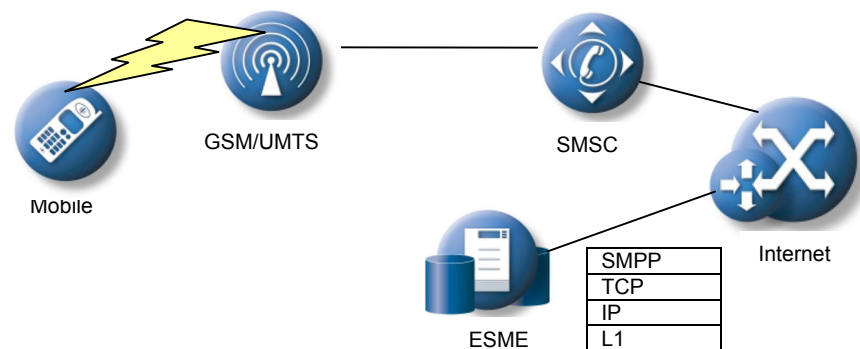


Figure 1: Sample SMPP Network Topology.

### 1.0 SMPP Transport

SMPP normally runs over the TCP/UDP port 2775. Many operators choose to implement more than one link between the same two endpoints. Links are kept separate by assigning multiple network specific port values, and running SMPP over them. Testing these links will require knowledge of which ports are being used for SMPP.

### 2.0 SMPP Protocol Example

The following figure shows a typical text message exchange between the SMSC and the ESME.

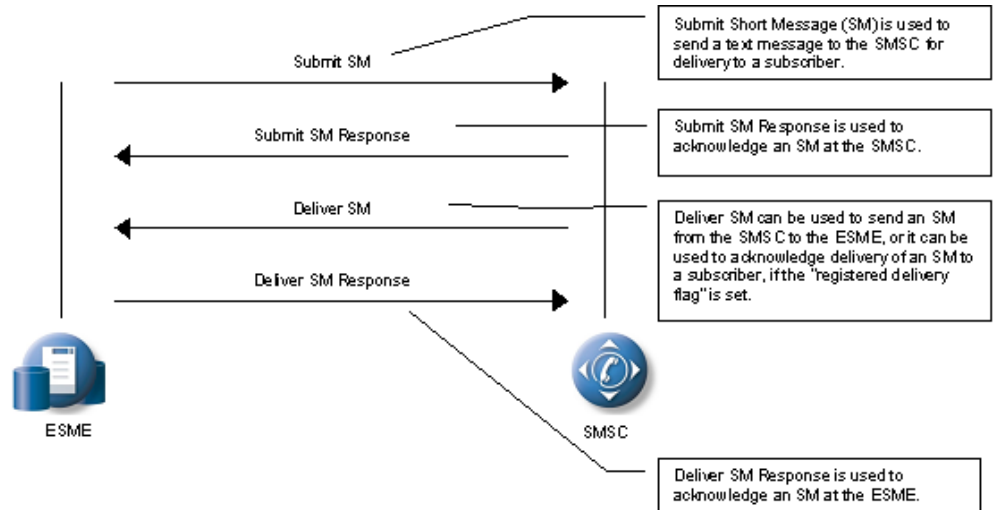


Figure 2: SMS Protocol Example.

There are several other message sequences, including:

- **Submit Multi**  
Used for sending SMS messages to a group of subscribers
- **Replace SM**  
Used for updating a message that has already been sent to a subscriber, for instance "You have 2 new voicemail messages" to replace "You have 1 new voicemail message"
- **Cancel SM**  
Used for canceling a message
- **Enquire Link**  
Used by one side of the link to query the other to see if it is up and running

Messages can optionally be sent in such a way that their delivery to the end subscriber will be acknowledged. This is controlled with the Registered Delivery Flag mentioned in the figure above, and acknowledged with the Deliver SM message.

### 3.0 Testing SMPP

There are a number of different things that can go wrong in an SMPP network. Links can fail, messages can go undelivered, and message delivery times may become unacceptably long.

**Connectivity** - If an SMPP entity fails, or the connection between the two entities is broken, the *Enquire Link* messages will go unacknowledged by the other side. *Enquire Link* messages are normally acknowledged by *Enquire Link Resp* messages. In this situation, if the network entities appear to be functioning normally, the physical, transport and network layers must be tested to ensure data connectivity.

**Test Messaging Performance** – The time taken to deliver text messages is extremely important. For example, in the case of voicemail systems, timely notification of voice messages to customers is important. Notifications that take significant amounts of time will not be acceptable to the mobile subscriber. The performance of message deliveries can be measured in SMPP.

**Registered Delivery Flag** - In the case where the Registered Delivery Flag is set, delivery time to the end subscriber can be measured. The time taken to deliver the message by the mobile network is the time between the observation of the *Submit SM* message and corresponding *Deliver SM* message.

**Interworking** – When operation of SMPP in conjunction with a mobile network fails, network operators need to be able to isolate the part of the network that is causing the problem. Determining whether or not messages are being lost or delayed in the SMPP portion of the network or in the mobile network itself will require testing of both sets of interfaces simultaneously.

As an example, an SMPP entity connected to a GSM SMSC would be tested by connecting to both the SMPP interface and the A interface, and observing the protocol transaction to determine the failure point during message transmission.

#### 4.0 SMPP Users

SMPP is used by many devices to gain access to the popular text messaging features of mobile networks. Many vendors of equipment such as voicemail systems and web e-mail software use SMPP to abstract their implementations from any specific mobile network technology. Some network operators allow web based users to send SMSs to their subscribers through their web pages.

Logica (<http://www.logica.com>), the creator of the SMPP protocol, offers development tools that are used by various vendors to develop SMPP enabled entities.

Comverse (<http://www.comverse.com>) use SMPP technology in their voicemail systems to tell mobile customers they have new voice messages.

For a list of additional companies that use SMPP technology, please visit <http://www.smsforum.com>.



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