

Bookit Intelligent SMS

Architecture

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Change History

Revision	Date	Handled by	Comments
1.3	May 24 th 2006	Jouni Takala	First published draft of new architecture
2.0	June 3 rd 2006	Jouni Takala	First complete version of new architecture

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1. REFERENCES

- [1] BookIT Intelligent SMS Functional Description**
- [2] BookIT Intelligent SMS Hardware Configurations**
- [3] BookIT Intelligent SMS Implementation Requirements**
- [4] BookIT Intelligent SMS Software Components and Versions**
- [5] BookIT Intelligent SMS Enterprise Server Interface Specification**
- [6] BookIT Intelligent SMS Gateway Interface Specification**
- [7] BookIT Intelligent SMS Administration Guide**
- [8] BookIT Intelligent SMS Charging Interface Specification**
- [9] BookIT Intelligent SMS Monitoring**

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2. OVERVIEW

To further realize the benefits of SMS, enterprises have now the opportunity to mobilize their business processes with SMS, and integrate it into their existing IT systems. The **BookIT Intelligent SMS™** solution enables an interactive dialogue between an organization and their customers or employees – all with the goal to improve business.

A push SMS service is one that is **started by the enterprise's service application**, compared to the mobile user "pull" method of traditional SMS. A push service can be built when a customer or employee is registered as a user and has provided his mobile phone number to the application. The enterprise service can then initiate the dialogue with the customer when required. A typical example is to confirm an appointment to a medical doctor in order to avoid no-shows. As the application knows the tasks and data related to the customer, the dialogue with the customer can be kept simple and to the point. All the recipient has to do is choose their response from given options, and send.

The Intelligent SMS technology establishes a session with the user and manages the flow of SMS messages between the enterprise applications and users so that right responses are linked to the right application even if several simultaneous sessions are established.

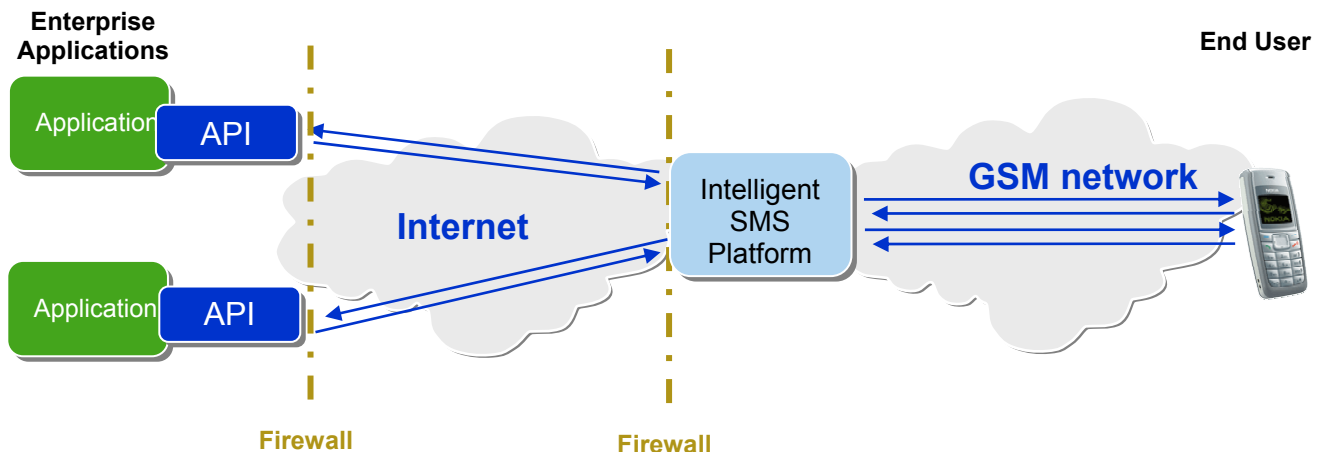


Figure 1. Intelligent SMS solution

Normal SMS network and phone technology is used as a carrier to send and receive messages. As SMS works on all phones with all networks there is no need for recipients to install additional software. This makes intelligent SMS an inexpensive and simple-to-use means of communicating with customers/employees. With Intelligent SMS, all user responses are given by selecting from predefined choices using the "single button" principle. Everybody familiar with sending and receiving SMS can easily use Intelligent SMS without any training. The Intelligent SMS service works with all mobile terminals (GSM/SMS), all SIM cards, with all domestic operators' end users.

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Although sounding simple, Intelligent SMS™ is based on the patented Dynamic Dialog Matrix™ (DDM) technology which includes unique session management functionality to link applications and mobile phones in a managed way. It is based on industry-standard SMS messaging technology and thus works with any phone in any GSM network. User authentication is embedded and automatic in Intelligent SMS solutions.

The Dynamic Dialogue Matrix™ method includes session management and automatic secure user authentication to enable secure transactions between applications and mobile phones. It enables long-term asynchronous sessions. Each user can have multiple active mobile dialogs. The Dynamic Dialog Matrix holds persistently the state information of each user, authentication, session, dialogue, and transaction.

This document describes the BookIT Intelligent SMS™ technical architecture and main functions of the components. Detailed description of the functionality is presented in reference [1].

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3. COMPONENTS AND THEIR FUNCTIONS

3.1 General

The iSMS system consists of the following components:

1. *Intelligent SMS Enterprise Server / Communication Server*
2. *Intelligent SMS Service Center*
3. *Intelligent SMS Service Gateway*

The components and their relations are illustrated in Figure 2.

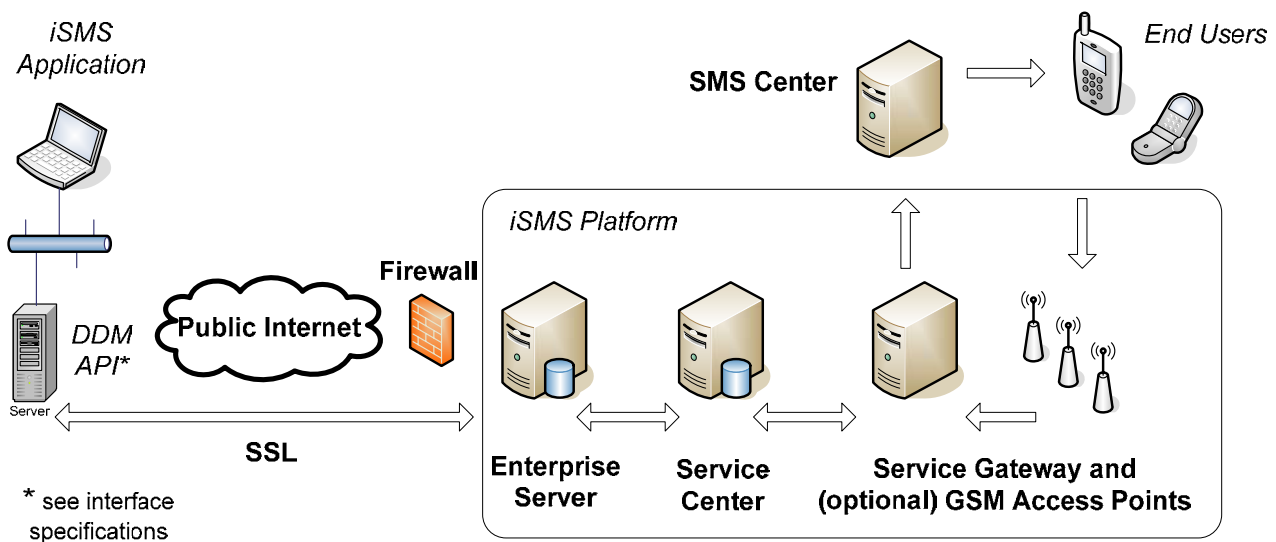


Figure 2. iSMS Components

In the early iSMS documentation the role of Enterprise Server has been slightly different; It could reside either at the enterprise side or at the operator. The current architecture (v2) defines the Enterprise Server as an integral part of the iSMS platform, and no special requirements are left for the server equipment at the enterprise side. This makes the iSMS platform easier to manage and upgrade.

3.2 Enterprise Server

Intelligent SMS Enterprise Server (ES) provides a central access point for the enterprise applications that use the iSMS services. The ES contains protection methods that prevent the applications from overloading the Service Center (SC) in case of a malfunctioning application or human error. The purpose of the ES is to hide the complexity of the SC from the applications, and provide with a simple interface to iSMS system. A secure communication path (http over SSL) is configured between the enterprise applications and the ES. The enterprise may have several applications in physically separate locations communicating with a single ES that contains in its database information to route

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back the replies from the mobile end users to each application. The application can also reside in the ES if the operator wants to provide it as a service to enterprises.

3.3 Service Center

The Intelligent SMS Center (SC) is the core of the iSMS solution. It has the central database for information required to set up the sessions with end users, and to store the transaction details. Sending framework handles the send requests that come from the enterprise application. It allocates a dialogue id and channel to a dialogue before sending message to the wireless network.

Receiving framework handles the replies that come from wireless network, matches the reply with the corresponding dialogue and forwards the answer back to enterprise application via Enterprise Server. If the sending of the answer is not successful, the answer is handed over to the spooler framework. Common function to all frameworks is logging which stores detailed data of the message handling in the system including charging data needed for billing.

3.4 Service Gateway

The Intelligent SMS Gateway (SG) is a server that connects the SC to the Short Message Service Center (SMSC) of the mobile operators. The SG supports several SMSC protocols and, as a special case, GSM Access Points can be used for receiving text messages from GSM radio network.

On the sending side the SG converts the message send request coming as http-request from SC to one or more binary text-messages and sends them to the requested SMSC interface for further delivery to the recipient's phone.

On the receiving side the SG makes an http-request of an incoming SMS message to deliver the SMS-contents to the SC. The SG makes several retries if the first attempt is not successful. The SG produces log files of both outgoing and incoming messages. In the typical configuration outgoing messages are sent via an operator SMSC and incoming messages are received using GSM access points. GSM radio interface is used to receive reply messages from the end users in case the SMSC does not support routing messages back to SG. If it does, the same interface can be used in both sending and receiving direction. The required amount of access points is discussed in detail in reference [2].

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4. INTERFACES

4.1 Physical Interfaces

The physical and electrical interfaces and environmental requirements of the iSMS platform are described in the Implementation Requirements document, reference [3]. The external and internal SW protocols are shortly discussed here. More detailed description of the hardware and software components are presented in references [2] and [4]

4.2 Enterprise Server

The interface to the Enterprise Server is described in detail in the reference [5]. Both XML and HTML interfaces are supported. In addition, Java API:s are supported to allow easy linkage to business applications.

The iSMS system can be used in push and poll modes. In push mode the answers are proactively delivered to the sending system. In poll mode the sending system uses the status request message to get status of each dialogue. The poll mode is relevant in a scenario where the results are post processed once to make a report of the answers. In poll mode the application structure is simpler because no answer post handler is needed.

4.3 Service Center

The iSMS Service Center has internal interfaces to ES and SG, and external management and charging interfaces (see 4.5 and 4.6). The internal interfaces are simple http-GET requests with parameters for recipient, message content etc.

4.4 Service Gateway

The Service Gateway (SG) has the above mentioned http-interfaces to Service Center, a dedicated interface to the operator SMS Center (SMSC), and an optional GSM radio interface. The currently supported SMSC interfaces are described in reference [6].

4.5 Management Interface

The management of the customer data is performed with general purpose database management tools. When a new customer is added, relevant sender records with id's, shared secrets, reply url-addresses etc are inserted to the database. The management interface is described in reference [7]. Shell-scripts can be used to make backups of the database and log-files. The scripts will be adapted to the customer specific environment in the customisation phase of the installation.

4.6 Charging Interface

The charging interface is described in reference [8]. Detailed logs of all transactions are saved in the transaction database. Database management tools can be used to create summary reports that can be further processed to invoices for enterprise users.

The iSMS platform supports transaction based billing. Several transaction types can be defined, and the usage of each transaction type can be monitored separately.

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4.7 Monitoring

The operator of iSMS platform can monitor the components and services with SNMP. Supported MIB's (Management Information Base) are described in reference [9].