

SMS and USSD Messaging Center

System Description

PROTEI SMSC is a well proven SMS and USSD messaging platform that receives, processes, stores, and sends all kinds of Short Messages (SMS) within a mobile network or between a mobile network and external applications (ESME). PROTEI SMSC also supports USSD services on the same software and hardware platform, widening the messaging services spectrum available for PROTEI SMSC customers.

PROTEI SMSC is a cost-effective, high performance and scalable solution with a wide range of features to suit both new and existing mobile operators and content providers. It also offers substantial cost savings to operators who have already deployed large scale SMSCs and are looking for a lower-cost or easier-to-use solution to maximise traffic revenues and profits.

PROTEI SMSC scalable architecture and flexible throughput licensing enables the operator to select a solution that not only mirrors the revenue stream of today, but can be used to meet his future needs.

The range of protocols supported allows PROTEI SMSC to be deployed in GSM or IS-41 (D-AMPS, CDMA) networks. SIGTRAN support allows easy integration into next generation mobile networks. Reach system functionality allows SMSC to be adapted to suit the operator's needs. Flexible delivery scenario management allows the operator to define message delivery scenarios on the base of Alert messages, or schedules on the base of the error code from a previous delivery attempt. Its embedded 'First Delivery Attempt' feature dramatically increases system throughput and reliability on the same hardware when compared with traditional solutions. PROTEI SMSC can efficiently work with queues up to 1 million messages in length. The policy management subsystem allows groups of numbers with different access rights (e.g. numbers that don't have access to SMS VAS) to be defined. Convenient licensing principles (no licensing by peak load) allow the operator to work efficiently during traffic peaks (like at New Year or other public holidays).

With no bottlenecks and no single point of failure, PROTEI SMSC constantly delivers dependable high performance.

Additional Messaging Applications

A wide range of additional applications is available to augment the spectrum of services available on the base of the PROTEI SMS/USSD messaging platform.

Customer Care Services

A Customer Care software package is available for PROTEI SMSC. It allows operators to provide standard customer care services such as balance information or voucher activation via USSD or SMS. Integration with the operator's billing system is carried out on installation.

Fixed Line SMSC

The Fixed Line SMS Center allows SMS messages to be exchanged within a fixed-line network and between fixed-

line and mobile phones. Superior functionality and flexible configuration ensure easy deployment and integration into existing systems.

Standalone USSD Server

Built for USSD message exchange between mobile subscribers and external applications in GSM networks, PROTEI's USSD server is the easiest and most effective way for mobile network operators to provide balance information, voucher activation and other customer services. The USSD server provides flexible message routing based on service key, message body and MSC source address.

Access policies and bandwidth allowances can be managed separately for each application. USSD phase 1 and phase 2 are supported, allowing interaction with USSD services via a multi-level USSD menu. Embedded tools aid the creation of flexible, user-friendly menus. The system supports open XML and/or ODBC interface for integration with external applications and databases.

SMPP Proxy/Router

Designed for use by network operators or content providers, the SMPP Proxy/Router transfers SMPP messages between one or more SMS/USSD centers and external applications. It is capable of flexible processing by message type, sender/recipient numbers, application IP address etc, making it a key element in access control systems for content providers.

SMS-to-ICQ Gateway

The SMS-to-ICQ service allows mobile subscribers and ICQ users to exchange messages via SMS. A selection of standard ICQ functions is supported (send/receive messages, manage online status, register as a new ICQ user, search for contacts using UIN or e-mail etc.) Connects to the SMSC using SMPP and with ICQ Servers using XML.

Global SMS Server

Provides access to SMS VAS services via a universal international number, accessible from any GSM network which has negotiated SMS messaging with the Global SMS service provider. All the operator's SMS VAS become available for inbound roaming visitors, in creating revenues both directly (revenue generation from SMS VAS usage) and indirectly (making the network more attractive for roamers).

E-mail SMS Gateway

The SMS-to-Email service allows mobile subscribers and e-mail users to exchange messages via SMS. A selection of basic e-mail functions is supported (send/receive messages, basic account management, etc.) Communicates with the SMSC via SMPP v3.4 and with e-mail servers via SMTP.

SMS Sender

SMS Sender is a powerful, user-friendly system for mass SMS distribution. SMS sending lists can be created from predefined lists and message bodies. Lists can be created automatically using information from external databases (for example, billing information) or manually by the system administrator. Individual parameters can be set for each sending list, such as delivery schedule and data source. A simple multilingual graphic interface makes the system easy for non-technical departments (e.g. marketing) to use.

System Features

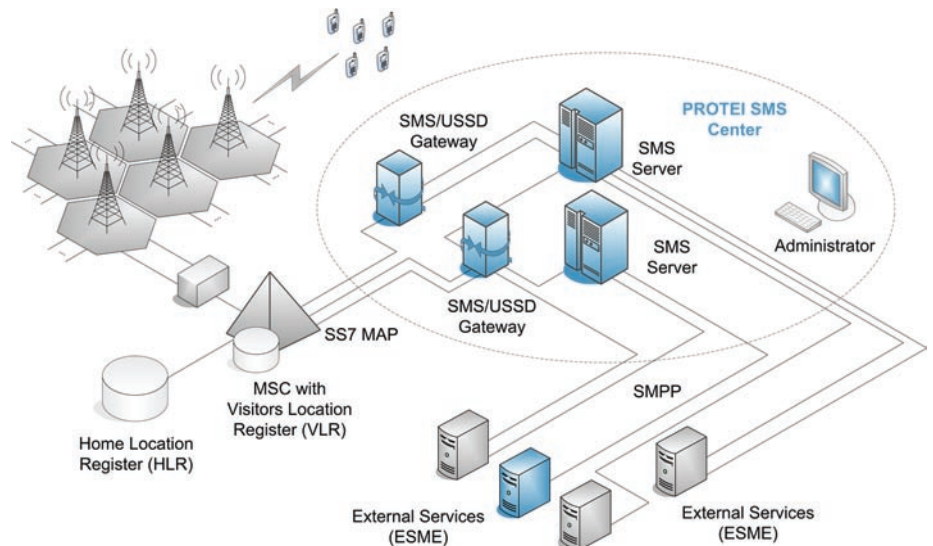
- Field-proven technology;
- Send/receive text and binary MO/MT SMS/EMS messages and MO/MT USSD messages between mobile subscribers and between mobile subscriber and application (ESME);
- Flexible postponed delivery scenarios;
- Alert_SC procedure support;
- EMS, Nokia Smart Messages and Siemens OTA messages compatibility;
- Fully functional SMPP v3.4 to ESMEs;
- Replace_SM and Cancel_SM procedures support;
- USSD stage 1 and stage 2 support;
- USSD service key analysis for message routing to ESME;
- Flexible SS7 configuration;
- Individual access rights configuration for each ESME;
- Several IP connections to the same ESME;
- Hundreds of simultaneously connected content providers;
- 'White' and 'black' lists for subscribers and ESMEs;
- Delivery notification to message originator;
- Email-to-SMS and SMS-to-email (SMTP);
- Up to 32 links per one SMS/USDD gateway;
- ETSI GSM 03.40 and 03.38 compatible;
- GSM MAP phase I, II, III* and IS41 support;
- Built-in location based service enabler (providing Cell ID information about subscriber on request from ESME);
- Scalable to match network growth;
- SNMP management alarms and E-mail/SMPP alarm notification;
- Supports bulk over-the-air activation and provisioning of mobiles (SIM updates);
- Horizontal scaling;
- Performance from tens to hundreds of messages per second per one unit;
- Available queue size – hundreds of thousands of messages;
- Powerful logging system (CDR generation);
- Dynamic system configuration.

System Architecture

PROTEI SMSC consists of several subsystems, each responsible for its own specific task.

PROTEI SMS/USDD Gateway is part of the PROTEI SMSC, where it is responsible for SS7 stack support, interaction with other PLMN components and MAP to SMPP conversion, thus the gateway can be used

PROTEI SMSC Architecture



as an independent device for providing an offload SMS delivery service to protect the SMSC from unnecessary traffic.

Often SMS messages addressed to PLMN subscribers who are already active in the network do not need to pass through the SMSC, since the message will be delivered immediately. Therefore SMS messages can be passed to the PROTEI SMS/USDD Gateway, which will attempt one delivery of the SMS to the specified subscriber. If unsuccessful, it will then send the message over SMPP to the executing mobile operators SMSC.

In the PROTEI SMS/USDD Gateway configuration system, the administrator can specify if the text message is to be passed to the SMSC on delivery failure, or if just the error code should be returned to the ESME. This functionality is often useful for SMS messages that contain information which is only relevant for a short time, such as stock quotes.

The Postponed Delivery Subsystem

implements postponed delivery functions including storage of delayed messages and message queuing.

Subsystem for Statistical and Accounting Information Collection

collects statistical and accounting information (CDR, message counters, error counters) related to system operation (SMS registration logs, SMS delivery attempts logs etc.).

The Administration and Maintenance Subsystem

is used for administering and configuring the system and also to monitor system performance (to receive event and alarm information from the system).

ESME Traffic Management

To guarantee high performance when working with external applications, traffic from external applications to the GSM network can be limited. Limitations can be applied to the rate of transfer or to the number of messages that can be sent during a specified time interval. The system will either accept or reject a new message from an ESME according to the limiting thresholds set by system administrator. This feature can also protect the message queue from overflow, even in the event that no messages can be sent.

System Scalability and Reliability

PROTEI SMSC is a horizontally scalable system; if the load on one of the subsystems (SS7 gateway, SMS server or reports and statistics server) reaches its set threshold, excess traffic is transferred to a free module. High redundancy ensures optimal system availability.

If a module fails, traffic is redistributed among other modules until the failed module becomes available again, with no interruption to service. Similarly, new modules can be put into operation without interrupting service flow.

System Hardware and Software

- Intel platform HP;
- Compact 19" rack mounting equipment – 2U high;
- Dual processor/PSU optionally available;
- High reliability with Raid 1 or Raid 5 SCSI HDD;
- Linux/XFS.

Regional Sales Offices

Europe and North Africa

Na Piskach 65
Praha 6, CZ-160 00
Czech Republic
Tel.: +420 2 333 21 808
www.mobitel.cz
E-mail: mobitel@mobitel.cz

Russia, ex-USSR, MEA

60A B.Sampsonievsky
Business Center "Telecom SPb"
St.Petersburg, 194044, Russia
Tel.: +7 812 449 47 27
www.protei.com
E-mail: info@protei.com

R&D Center

60A B.Sampsonievsky
Business Center "Telecom SPb"
St.Petersburg, 194044, Russia
Tel.: +7 812 449 47 27
www.protei.com
E-mail: info@protei.com

