Multimedia Messaging Center (MMSC)

Technology Overview

MMS technology becomes a development of SMS-technology which has a great success all over the world. It is expected that using MMS will bring the same benefits in 2,5-and 3-rd generation networks, as SMS in 2-nd generation networks.

MMS technology allows transmitting over the mobile networks not only text messages, but also graphics, facsimiles and/or audio information, in this MMS-message can be simply a text file with attachments or photo-, audio- and text components can be synchronously replayed forming a unified multimedia presentation. Video clips' formats are also supported in MMSC Protei. Mobile phones, PDA and PCs can take part in MMS-messages exchange.

Subscribers of mobile networks supporting MMS-services have an opportunity to order multimedia-resources at content-providers. For this content-provider applications should be connected to Multimedia Messaging Service Center (MMSC). MMS technology is independent of the bearer transport. MMS-messages can be transferred over existing GSM networks (over WAP), over GPRS networks, and later on over 3-rd generation networks (WCDMA).

There are no severe restrictions in MMS specifications on data types used in MMS-messages. However, there are several formats recommended by specifications for using in MMS-messages: US-ASCII for text information, graphic formats JPEG, GIF, videoformat MPEG 4, audioformats , MIDI, WAV, format AMR for speech coding and some others.

The MMS-message can also be sent to the subscriber, whose mobile phone does not support MMS. SMS-notification of the multimedia message reception with HTTP or a WAP link can be send to owners of such phones, so they can see that message on the specified Internet page.

Today more than 5 million subscribers in all over the world use MMS, by the end of 2003 their number can come to 10 % of user's base, and number of produced phones supporting MMS, in 2003 has exceeded 90 % of all number of the produced models. The operators, who offer their subscribers MMS-service, will provide themselves firm position and competitive advantages at telecom's market.

Operator Benefits

- Effective use of GPRS and 3G technology opportunities for increasing data traffic in advances networks and providing new profitable services;

- Provide the subscribers on the demand or by the subscription multimedia news, weather forecast and sport's reports. For example, to organize sport competitions' MMS-translations by sending photo and video clips with the most interesting moments;

- Offer new types of services using MMS: interactive videogames by Internet, an opportunity to decorate the usual text message with the sound effects or animation, sending of MMS greeting cards and etc;

- Stimulate subscribers using information and entertainment multimedia services, data storage services and other Value-added services (VAS) related with salling of MMS-content - both own, and received from contents-providers;

- Use MMS for advertising;

- Encourage the subscribers using MMS-services by organizing various marketing programs. For example, reduce outgoing message cost but for that include in the message body some advertising information, so a part of cost is paid by advertiser.

Principle of operation

Protei MMS enables GSM operators to provide their customers with a whole range of multimedia messaging between the subscriber's mobile phones, and also between mobile phones and computers. Also using MMSC subscribers can order multimedia resources from content providers. PROTEI MMSCallows using external WAP gateways, supports wide range of standard interfaces; provide an open interface to the external content conversion systems and profile management systems. Embedded push-proxy gateway allows easy interconnection with third-party SMSC.

MMS-message sent from the mobile terminal comes in Operator's MMSC through the WAP-gate. Recipient phone's opportunities are defined based on the information from MMS-center subsystem, which responsible for work with subscribers' profiles.

If the recipient's mobile phone supports MMS-technology then MMSC sends through the operator's SMSC a special short message (WAP-push), containing the WAP-link to the address where MMS-message is stored. After WAP-push message receiving, the recipient's mobile phone send the request for message reception and then MMSC delivers MMS-message to the addressee.

Protei MMSC also provides MMS-message sending to phones which doesn't support MMS. In this case MMS-center saves message as a Web-page and sends on phone SMS-message containing the reference to HTTP-address of this page in Internet.

Protei MMSC supports range of additional features that increase system functionality and convenience of service usability:

- powerful profile management tools contain subscribers' profiles that are automatically corrected on the basis of MMS-messages information transfer. A profile can include information about the terminal features and class of service (maximum message size, service ability, etc.); the attribute of MMS-service ability activates by default after the first successful message sending from the subscriber's terminal;

- open interface for integration with external content adaptation system is supported for message converting into the format suitable for the recepient terminal;

- MMS interception function allows distributing MMS traffic between several MMSC by several routing criteria for load balancing without the necessity of changing the subscribers' terminal settings of WAP-gateway settings (e.g. one part of MMS traffic can be processed at Protei MMSC while another part of the traffic remains at the main Operator's MMSC) so Protei MMSC can be efficiently used for main Operstor's MMSC off-loading;

- messages Forwarding service: the subscriber can order MMS forwarding to other terminal or to e-mail address;

- interface with external e-mail server (SMTP-gate).

System Features

- **Messages receipt.** MMSC PROTEI can receive messages from mobile phones, by e-mail and from WEB-page;

- **Messages delivery.** Delivery of the messages is possible to the mobile phones, e-mail addresses or to WEB-pages;

- **Storage and postponed message delivery.** The received message is stored in the system's database till it will not be delivered to the recipient, or till the message will not be compulsorily removed by the System's Administrator or till the messages storage time
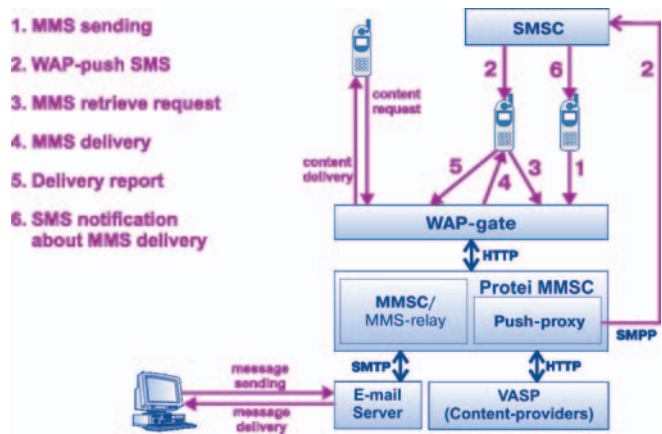
will not expired. The MMS- delivery scheme is defined as well as for SMS-service. Repeated attempts of message delivery are undertaken according to the predefined delivery scheme. The delivery scheme can depend on the error which have appeared at the first attempt of MMS-message sending (i.e. on the error which have appeared at delivery of WAP-push message, or on the mistake of MMS-message loading process);

- **Delivery report.** Similarly to SMS service the sender can order a delivery report so as receive the information about message delivery results. MMS-user has an opportunity of turning on and turning off delivery notifications;

- **Messages storage on WEB-page.** If the recipient's phone does not support MMS-technology the message will be saved as Web-page, and the subscriber will recieve SMS-message with Http-address of that page;

- **Messages forwarding.** The subscriber can order MMS-messages forwarding to the other terminal or to the e-mail address

- **Alias service.** The subscriber can order service, at which he will get number which is distinct from his user's number (generally, with smaller number of figures) or a symbolical name. Short number can be used for convenience of user's addressing or for hiding his user's number from other MMS-users;

- **Hidings address service.** If the subscriber orders this option the recipient will not see the number of MMS-sender

- **Multiple message addressing.** In MMSC PROTEI can be specified several recipient's addresses and addresses for transfer of copies;

- **Delivery over list of sending.** The message is automatically delivered to all subscribers included in the list of sending;

- **Working in different numbering plans.** System suports both in E.164 and e-mail addressing plans;

- **WEB administration tools.** System supports convenient WEB-based administration kit for configuration management, statistical information analysis and CDR viewing;

- **Wide range of standard inerfaces:**
  MM1 for WAP-gate connections;
  SMPP v3.4 for SMSC connection;
  MM7 for application connection;
  MM4 for another MMSC connection;
  SMTP for connection to the external e-mail servers.