

# **Feature Description**

## **Multimedia Messaging Center (MMC)**

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## 1 Scope of the Document

The purpose of this document is to give a general description of the features available in the first release of MMC, the Multimedia Messaging Center solution from Ericsson, and is targeted at groups for which MMC Release 1.0 is primarily intended.

## 2 Introduction to Multimedia Messaging

Historically, Ericsson can boast a longstanding leadership role in many areas of the telecommunications technology market. This philosophy continues to be evidenced today through Ericsson's initiation and development of EDGE, GPRS, UMTS third generation mobile networks and Wireless Application Protocol (WAP). In order to provide complimentary network elements and provide Operators with end-to-end total solutions, Ericsson introduces their Multimedia Messaging Center (MMC).

With Ericsson channeling their expertise of networks and mobile terminals into the arena of Multimedia Messaging, partnering Operators are assured that Ericsson will lead them into taking full advantage of advanced network capabilities as well as assisting them in capturing all their messaging business opportunities.

The marriage of the Internet and mobile markets is bringing about revolutionary innovations on the mobile market, changing the behavior of the mobile subscriber. The mobile subscription, which used to be a complement to the standard telephony and telecommunication services, enabling anywhere-anytime reachability, now represents an access point to a person's total communication, information and transaction services needs.

Messaging services are rapidly becoming a vehicle for information and transaction services as well as personal productivity tools. In this scenario, *mobile phones become advanced terminals* and take mobile telephony into a new application era.

Multimedia messaging is the next step in the evolution of messaging services. Multimedia messaging service (MMS) will be a key application within mobile messaging and networks with improved bandwidth, such as GPRS and UMTS. The multimedia messaging service will allow users to send and receive messages by exploiting the wide array of media types that are available today; e.g. text, image, audio, email, video; while making it possible to support new media types as they become available and grow in popularity.

Multimedia messaging builds on the success of SMS-like messaging paradigm. Users that are both familiar and comfortable with SMS will eagerly adopt multimedia messaging as an enhancement to SMS that they are presently using on a day-to-day basis. In as multimedia messaging provides a stimulating and simple-to-use interface a greater quantity of message traffic and message users can be expected over present-day SMS usage.

### 3 Multimedia Messaging Service

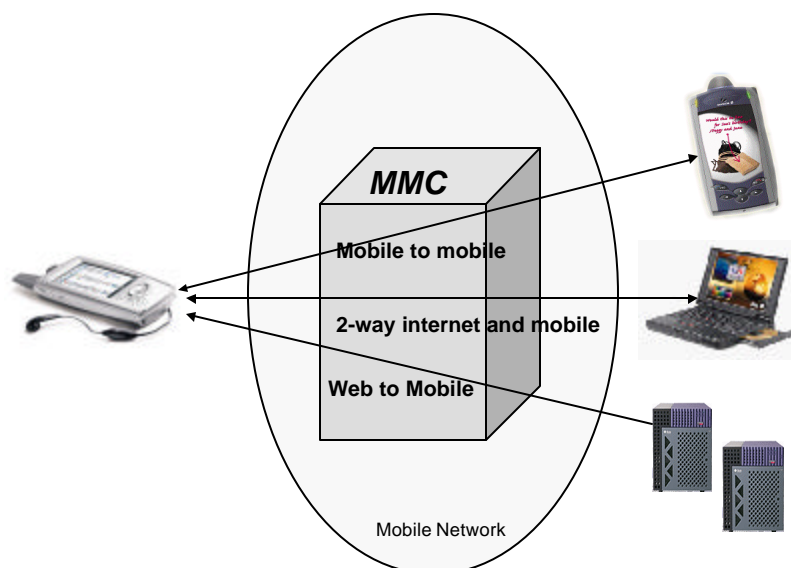
The Multimedia Messaging Service (MMS) makes it possible for mobile users to send multimedia messages from MMS enabled handsets to other mobile users with MMS enabled handsets and to email users. It also makes it possible for mobile users to receive multimedia messages from email users and from multimedia enabled applications. As such MMS builds on the success of SMS and enhances the communication possibilities for mobile users. As with SMS, multimedia messages are addressed using the MSISDN, allowing re-use of existing phone book entries.

A multimedia messages consists of one or more media elements (text, picture, photo, video, animation, speech, audio, etc...), which can be combined and synchronized as to context and time. Multimedia messages can for example be a photo or picture post card annotated with text and/or an audio clip, a synchronized playback of audio, text, photo and video emulating a free-running presentation or a video clip. It can also simply be a drawing combined with text.

MMS is not constrained for usage within a 3G network. MMS has the capability to operate with a variety of bearers (e.g. – GPRS, CSD, and HSCSD) within the standard 2G network; GPRS based network and UMTS 3G network. The network transport is transparently handled by WAP. The user experience will vary depending on the bandwidth of the used mobile network.

MMS represents the total solution, which consists of the MMS enabled handsets, and the Multimedia Messaging Center (MMC), plus the possibly of additional MMS applications. Ericsson has solution in all MMS related areas, thus being able to offer an end-to-end MMS solution.

Figure 1 below describes the relationship between the entities involved in the multimedia messaging service.



*Figure 1 Multimedia messaging service usage*

The mobile terminal may be a MMS enabled mobile telephone, Communicator, Personal Digital Assistant, etc. connected to the mobile network.

The Ericsson MMC implements the network side of MMS, and makes it possible for an operator to offer MMS to its mobile subscribers.

Multimedia messaging service functionality paves the way for numerous creative applications and content that can be pushed to the users mobile terminal.

Ericsson is actively participating in specifying MMS in 3GPP and WAP Forum, thus being able to anticipate new required functionality and always being able to offer the latest functionality.

## **4 Multimedia Messaging Center System Features**

### **4.1 Overview**

The Ericsson Multimedia Messaging Center (MMC) implements the network side of MMS, and makes it possible for an operator to offer MMS to its mobile subscribers. The MMC is a highly flexible system, which can be adapted to the needs of the operator and the particular end users involved. The MMC manages different sources to/from mobile terminals, supporting a wide range of standard interfaces. The use of open standards and protocols such as SMTP, and HTTP allows the operator to build other value-added services to compete in the ever-changing telecom world of tomorrow.

The main features of the MMC includes:

- Submission of multimedia messages from mobile users, email users and Internet based application servers.
- Delivery of multimedia messages to mobile users and Internet destinations. Delivery to the destination terminal is initiated via WAP push.

The MMC also offers functionality such as store and forward capabilities, guaranteed delivery, subscriber preferences, operator constraints, billing information. The MMC features are further described below.

All components of the messaging network are designed to run on commercial off-the-shelf hardware. This means that equipment can be selected to meet the unique performance requirements of the operator. It also means that the operator has the opportunity to take advantage of the fast price/performance evolution in the Information Technology (IT) industry. As the number of end users grows, the MMC can be easily expanded to meet the need for higher capacity. An optimum combination of built-in hardware redundancy, distributed architecture, Simple Network Management Protocol monitoring and safe-message storage software design ensures that the MMC will meet the demands of the operator.

New releases of the MMC will follow the latest WAP and 3GPP Forum standards as well as they will include new market requirements.

## **4.2 Features - Present**

### **4.2.1 Addressing**

The MMC supports different addressing formats to identify the sender and recipient.

MMC will support the use of e-mail addresses or MSISDN to address the recipient of a multimedia message. In the case of e-mail addresses, standard Internet message routing will be used.

The usage of MSISDN for addressing a recipient in a different MMC service provider's domain is possible. For that, the need for MSISDN translation to a routable address has been identified. The mapping for the MSISDN to the correct recipient's MMC Relay or Server is under development. Within the standardization forum, Ericsson is an active member of the standardization forum and will present solutions to this issue. A method for routing will be developed in conjunction with the core network capabilities to achieve an open solution.

### **4.2.2 Charging**

The MMC supplies a wealth of charging information to the Operator. This provides the Operator with the flexibility to tariff and market multimedia messaging services in a variety of methods.

The MMC will generate charging data records in the following situations:

- Receiving multimedia message from MMS client (MO)
- Receiving multimedia message from another MMS Relay
- Receiving multimedia message from email system
- Sending multimedia message to another MMS Relay
- Deliver multimedia message to MMS client (MT)
- Multimedia message notification
- Multimedia message delivery
- Multimedia message read report
- Sending multimedia message to email system
- Copy/forward on receipt of message to subscriber in this MMC
- Multimedia message is rejected, undeliverable or expired

The MMC charging data records will include the following:

- Date/Time stamp

- CDR id
- MMC id
- Originator MSISDN/email address/SMTP port number
- Receiving MSISDN(s)/email address(es)
- Message content types
- Message size
- CDR type
- Message class
- Message status

#### **4.2.3 Copy Multimedia Message**

“Copy” allows the mobile subscriber to send a copy of every multimedia message originated and/or received to a Unified Messaging System (UMS) or an E-mail address. This allows the subscriber to store the message on a “long term” basis for future reference.

#### **4.2.4 Forward Multimedia Message**

“Forward” allows the mobile subscriber re-route every multimedia message targeted to a mobile terminal to a UMS or an E-mail address. This is very convenient for subscribers who travel to areas where multimedia messaging service is not available. One of the main differences between a “copy” and a “forward” is that a “forward” deletes the multimedia message from the MMC message store upon successful delivery to the UMS or E-mail address.

#### **4.2.5 Future Delivery**

Provides the subscriber with the ability to send a message at a future date and time. This is convenient for holiday greetings and the like.

#### **4.2.6 Interworking with Other Network Nodes**

The MMC can interwork with Ericsson’s Unified Messaging System and Wireless E-mail System for deposit of multimedia messages and notification preferences. A system wide white list is utilized to allow only authorized SMTP connections with the MMC. In addition, the MMC may interwork with email systems fulfilling the interfaces specified in section **Error! Reference source not found.**

The MMC supports both Ericsson’s and other WAP Gateway/Proxies that support WAP 1.2.1 standards plus large data transfer as a delivery mechanism.

#### **4.2.7 Legacy Terminal Support**

The MMC provides the ability to send an Operator configured SMS text message to a mobile terminal in the event that it is determined that the recipient terminal is non-MMS capable. The text message is sent to the non-MMS capable terminal via an SMS-C utilizing the SMPP Version 3.4 interface provided by the MMC. As an example the Operator may configure the message as “Someone has sent you a multimedia message which your phone is not capable of receiving. To find out how you can receive these messages please contact a Sales Representative at \*3333”.

In addition, when MMC is used in conjunction with Ericsson’s Multimedia Message Client Proxy (MMCP) product, the non-MMS capable terminal may receive an Operator configurable SMS text message including a URL where the message is stored. The user may then “surf” to the URL via a Web or WAP browser and view the message, which is adapted to the capabilities of the device used for retrieval.

#### **4.2.8 Message Delivery to Internet Destination**

Messages to Internet destinations are delivered using the SMTP protocol. In this case the multimedia message is addressed using an email address.

#### **4.2.9 Message Delivery to Mobile Terminal**

Multimedia messages are delivered to the MMS capable mobile terminal using the following process. The purpose of these events is to reduce the required processing and air interactions of the mobile terminal. These events and the sequence in which they occur are summarized below.

- The service notifies the mobile terminal of an incoming message
- The mobile terminal sends a request to the service to send the multimedia message
- The service sends the multimedia message to the mobile terminal

In case the first delivery attempt of a message fails, the message is placed in a retry queue where subsequent delivery attempts are made according to a configurable retry schedule.

This process ensures safe, secure and guaranteed delivery of the multimedia messages to the recipient.

#### **4.2.10 Message Delivery Notification**

When submitting a message, the message submitter may make a request to be notified when the message has been delivered to the recipient mobile terminal.

#### **4.2.11 Message Deposit**

The MMC supports message deposit from various sources: mobile users, email users, and Internet-based multimedia applications.



Upon receipt of the message the MMC checks the validity of the message. If the multimedia message passes these tests, the message is queued for delivery. Otherwise a reject notification is sent to the originator of the message.

#### **4.2.12 Message Store and Forward**

A key feature in the MMC is the Store and Forward mechanism. It ensures that no message is lost. When a message is submitted, the MMC stores it on the mirrored hard disk array before confirming to the submitter that the message has been received. Depending on the conditions set up for the message and media type, an attempt can now be made to deliver it. Not until the MMC has received a confirmation from the recipient does the MMC consider the message successfully delivered.

In combination with fault tolerant components, such as power supplies and mirrored hard disks, the Store and Forward method secures messages in fault situations, including loss of power and hard disk crash.

#### **4.2.13 Multiple Address Destinations**

Enables the subscriber to submit one message to multiple addresses. Analogous to addressing an e-mail, the multimedia service contains address fields specifying: To, Carbon Copy (CC:), Blind Carbon Copy (BCC:). This allows the subscriber to utilize their time efficiently rather than forcing the subscriber into sending the same message on a one-message-at-a-time basis.

#### **4.2.14 Notification Retry Queue**

In case the first delivery attempt of a message notification fails, the message notification can be placed in a retry queue where subsequent delivery attempts are made according to a configurable retry schedule.

#### **4.2.15 Operation and Maintenance**

MMC includes different Management Information Bases (MIBs), and provides Simple Network Management Protocol including accesses traps, monitoring (read-only), and configuration (read-only or read-write variables). The O&M application correlates the traps to minimize the number of alarms and to display the root cause. In addition, the O&M application monitors different parameters such as disk utilization, traffic activity and application status.

The SNMP interface is available for an external network management system. For more detailed O&M activities a WWW interface and/or console may be utilized.

#### **4.2.16 Operator Services**

Operator services provide the MMC operator with an easy to use Graphical User Interface (GUI) for system-level parameter configuration.

#### 4.2.17 Read Reply

A programmable parameter, which allows the message originator to make a request to receive a reply indicating that the message was read by the recipient. This feature is only applicable to mobile-to-mobile multimedia messaging.

#### 4.2.18 Subscriber Preferences

Subscriber Preferences contain profiles of each of the subscribers. Subscriber profiles consist of information controlling the features and functionality of the multimedia messaging subscription. An interface to the database allows the operator and/or the subscriber to perform provisioning of the subscriber profile.

#### 4.2.19 White List

An Operator configurable, system wide, white list is provided to allow only authorized SMTP connections into the MMC.

#### 4.3 Features – Future

See MMC Product Roadmap document.

### 5 Glossary

Acronym	Definition
2G	Second Generation Mobile Network
3G	Third Generation Mobile Network
3GPP	3G Partnership Project
BCC	Blind carbon Copy
CC	Carbon Copy
CDR	Call Data Record or Charge Data Record
CSD	Circuit Switched Data
GSM	Global System for Mobile Communications
GPRS	General Packet Radio Services
HSCSD	High Speed Circuit Switched Data
IP	Internet Protocol
IT	Information Technologies
LAN	Local Area Network
LDAP	Lightweight Directory Access Protocol
MIB	Management Information Base

MOI	Message Originator Identifier
MPS	Message Per Second
MS	Mobile Station
MSISDN	Mobile Station ISDN Number
O&M	Operation & Maintenance function
PAP	Push Access Protocol
SMIL	Synchronized Multimedia Integration Language
SMS-C	Short Message Service Center
SMPP	Short Message Protocol Peer to Peer
SMTP	Simple Message Transfer Protocol
SNMP	Simple Network Management Protocol
TCP/IP	Transaction Control Protocol/ Internet Protocol
UMS	Unified Messaging System
UMTS	Universal Mobile Telecommunications System
WAP	Wireless Application Protocol
WWW	World Wide Web