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Contents

Foreword

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Introduction

In today's world there are many different types of messaging services available both in the wired and wireless worlds. Some messaging services are supported in both environments; others are only to be found in one. The expectations of the services differ in that some are designed to be used in what is perceived as 'real' time, whereas others are designed as a 'mailbox' service where the message is stored ready for collection or delivery at a later stage.

The 3GPP Technical Report TR22.940 identifies the issues and needs surrounding messaging solutions related to the 3GPP IP Multimedia Subsystem (IMS) taking into consideration use cases that illustrate the needs of both service providers and users. This Technical Specification takes the Technical Report into account when defining the requirements for the support of IMS Messaging.

IMS Messaging services incorporates one or more of the following messaging types Immediate messaging and Session based messaging. With Immediate messaging the sender expects immediate message delivery in what is perceived as real time. With Session based messaging a communications association is established between two or more users before communication can take place. In the simplest form Session based messaging maybe a direct communication between two users. This specification defines the requirements for both the Immediate message type and the Session based message type.

The specification provides the ability to develop interoperable messaging services that use Immediate and/or Session based message types.

1 Scope

The present document specifies the stage one description of the IMS Messaging services. Stage one is an overall service description and defines service requirements, primarily from the subscriber's and service providers' points of view, and does not deal with the details of the human interface itself.

The present TS includes information applicable to network operators, service providers and terminal, switch and database manufacturers.

The present TS contains the requirements for IMS Messaging services, which are sufficient to provide a complete service. The messaging types identified in this document are: immediate messaging and session based messaging.

It is highly desirable that technical solutions for IMS Messaging services should be sufficiently flexible to allow for possible enhancements. Additional functionalities not documented in this 3GPP TS may implement requirements which are considered outside the scope of this 3GPP TS. Such additional functionality shall not compromise conformance to the core requirements of the service.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
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[1] Void

[2] 3GPP TS 22.250: 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Stage 1, IMS Group Management

[3] RFC 2486: "The Network Access Identifier"

[4] 3GPP TS 21.133; 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; 3G Security; Security Threats and Requirements

[5] 3GPP TS 26.140; 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Multimedia Messaging Service (MMS); Media formats and codecs

[6] 3GPP TS 26.234: "End-to-end transparent streaming Service (PSS); Protocols and Codecs".

[7] 3GPP TS 22.228; 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Service requirements for the Internet Protocol (IP) multimedia core network subsystem; Stage 1

[8] 3GPP TS 26.244: "Transparent end-to-end packet switched streaming service (PSS); 3GPP file format (3GP)";

[9] 3GPP TS 26.245: "Transparent end-to-end packet switched streaming service (PSS); Timed text format".

3 Definitions, symbols and abbreviations

3.1 Definitions

Immediate messaging: A type of IMS Messaging service by which the sender expects immediate message delivery in (near) real time fashion

IMS Messaging services: A group of services, supported by capabilities of the 3GPP IP Multimedia Subsystem 3GPP TS 22.228 [7], that allows an IMS user to send and receive messages to other users. IMS messaging services comprise of one or more types: Immediate messaging and Session based messaging.

Session based messaging: A type of IMS Messaging service by which the sender expects immediate message delivery in (near) real time fashion . In addition the sender(s) and the receiver(s) have to join to a messaging session e.g. chat room, before message exchange can take place

3.2 Abbreviations

IP	Internet Protocol
IMS	IP Multimedia Subsystem
OMA	Open Mobile Alliance

4 Informative description of messaging services in the IMS

As 3GPP has developed the concept of IMS it is thought useful to consider how a SIP based IP network can be utilised to provide messaging capabilities. One of the chief characteristics of SIP is its ability to rapidly and efficiently create real-time sessions between groups of users. It therefore appears that SIP based messaging would be a potential candidate to provide the equivalent of “Chat Room” and “Instant Messaging” (IM) type services found on the Internet today. Typical characteristics instant messaging are instant delivery of the messages to the targeted recipient(s) and interaction with presence information where users are able to see who is on-line as well as their status.

A chat room is a "place" where multiple persons can join, follow and contribute to the ongoing discussion and leave the "room" at any time. Chat rooms are more permanent in nature when compared to IM exchanges and may be created by users or service providers. Additionally, chat rooms can be further divided to the private and public chat rooms. Normally, users who are participating in chat room will receive all the messages that are sent by the other participants. Similarly, the users are also able to send private messages to the chat room or even privately to some participant.

Unfortunately, the most popular internet based instant messaging services are usually based upon closed and proprietary protocols which has made it impossible for different service providers to allow interoperable messaging between their respective users. Additionally, internet based services do not take into consideration the wireless environment and the needs of operators to provide services that are commercially viable by for example, providing support for charging. This technical specification will further elaborate the essential messaging characteristic of these services and state how they may be enhanced, e.g. operators may be able to create and then advertise chat rooms containing specific content where users who join the room may be charged an 'entrance' fee,

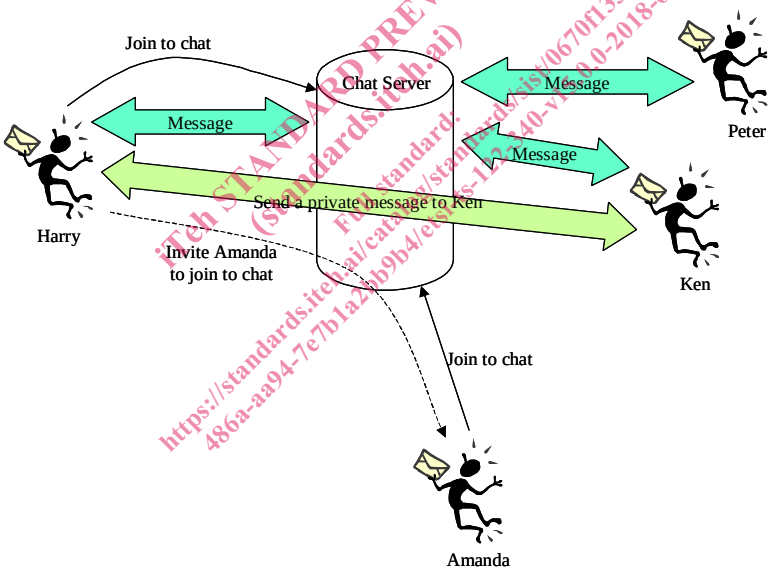

Figure 1. Example IMS Messaging service: Chat room

5 Informative description of messaging types

Messaging can be divided to two different main classes based on the expectation of the sender. The sender either expects the message to be delivered immediately or he does not care so much whether the message is delivered immediately or later.

The immediate case can be further divided to two different sub-classes based on the actions required form the user before he can engage in a communication. The user can both send and receive messages without any prior actions or he may be required to join to a messaging session before the message exchange can take place.

The messaging types considered in this specification are

- **Immediate messaging**:

Typically, sender is aware of the availability of the recipient(s) (possibly through the use of the Presence service) before sending this type of message as, if the recipient is not available, the message may be discarded or deferred. An immediate message may be deferred by the recipient's network based on the message filtering settings defined by the recipient or by the recipient's IMS service provider.

- **Session based messaging**:

  The sender and recipient expect near real time message delivery. Typically, recipients of the session based messaging that are not joined to a group or are not available will not receive the messages. Typically, a sender may send a message to all participants in the messaging session without addressing them individually.

6 Immediate messaging requirements

6.1 General requirements

Network operators have different network configuration and commercial requirements. IMS Messaging shall be supported in a manner that meets the operator's IMS requirements. Thus, an identified set of functionalities and formats shall be standardized to ensure interoperability across networks and terminals to support IMS Messaging.

The following general requirements shall be supported by Immediate messaging.

a) It shall be possible for the UE and the network to differentiate between immediate messages from other messaging types.

b) Within the capabilities of networks and terminals, the user shall have a consistent experience regardless of the access network e.g. 3GPP systems, fixed networks, the Internet.

c) Immediate messaging shall support a minimum set of functionality for message delivery, management and filtering to ensure interoperability between different terminals and networks.

d) Immediate messaging shall be able to support the ability of the recipient's network to take into account the recipient's terminal capabilities. In addition, the originating network/terminal may also be able to take into account recipient's terminal capabilities. Specifically the recipient's terminal capabilities that may be taken into account at a minimum include:

   1) Display capabilities (including screen size, number of colours, number of lines of text, etc);

   2) Media content types supported (Audio, Video etc);

   3) Media content formats supported (JPEG, GIF, etc);

   4) Media Storage capacity;

   5) Encryption/Security mechanisms supported

   The capabilities of the user's terminal may be reflected in the message filtering and corresponding actions as identified in clause 6.7.

e) Immediate messaging should be able to take into account the availability and changes of the state of availability of the terminal. Immediate messaging shall be able to make use of the Presence Service, if provided by the network.

f) It shall be possible to store in the ISIM a number of sets of configuration information to allow access to Immediate messaging services. One of these sets of configuration information is preset by the issuer of the ISIM. Such preset configuration information set shall only be configurable by issuer of the ISIM. The preset configuration information is selected unless otherwise specified by the user. It shall be possible to retain the configuration information when the UICC is used in different terminals.

g) It shall be possible to send and receive immediate messages without prior establishing a messaging session.

h) It shall be possible for the network operator providing the Immediate messaging service to choose, wherever possible, the most suitable transport mechanism for carrying messages (e.g. signalling network, dedicated PDP context, other access technologies and so on…) both for UE originated and UE terminated messages.

i) It shall be possible for the network operator providing the Immediate messaging service to choose, wherever possible, the parameters used (i.e. QoS) both for UE originated and UE terminated messages.

6.2 Message content requirements

Following requirements are specific to content delivered with immediate messaging.

a) Content size shall not be limited by technology.

b) It shall be possible to carry different media including text, images, video and audio within a single message. Media types shall be MIME encoded.

c) Immediate messaging shall provide a minimum set of supported formats to ensure full interoperability between different terminals and networks (e.g. JPEG for pictures, AMR for speech, H.263 for video). The minimum set of supported formats shall be common to all IMS Messaging types. The minimum set of supported formats should be aligned with formats used in other 3GPP-defined services 3GPP TS 26.140 [5], 3GPP TS 26.234 [6].

d) Content formats shall be defined so that interworking with 3GPP and Internet messaging solutions is facilitated.

e) It shall be possible to compose message of either a single medium (e.g. voice) or multi-media (e.g. voice and video). The IMS Messaging service shall be able to support a request for media sequencing.

6.3 Management requirements

The following management requirements shall be supported.

a) The IMS service provider shall be able to enable/disable message delivery and submission.

b) Immediate messaging shall be able to support a request from the user to enable/disable message delivery.

c) Immediate messaging shall be able to support the user to manage his user service profile related to Immediate messaging (e.g. customize his messaging environment within the capabilities of the terminal, network and messaging application). This could be unconditional or conditional e.g. depending on roaming conditions or operator restrictions.

d) Immediate messaging shall allow an IMS service provider to configure Immediate messaging environment e.g. in such a way that submitted and/or incoming Immediate messages of a particular user are stored in a network based repository.

6.4 Message delivery requirements

Following requirements define the message delivery.

a) Message delivery shall be immediate i.e. messages are transported by the IMS system to the recipient's terminal (without notifications) subject to message filtering settings defined by the recipient or by the recipient's IMS service provider.

b) Messages shall not be stored by the network. If supported by the recipient's network as an application option messages may be stored in the recipients network.

c) It shall be possible for the sender to receive delivery acknowledgements (success/failure) for sent messages.

6.5 Storage requirements

The following storage requirements shall be supported.

a) It shall be possible for a sender to request to persistently store a sent Immediate message in a network based repository at the time of sending if the IMS service provider provides such application level service.

b) Immediate messaging shall be able to support a request from a user to retrieve messages that are stored in a network based repository.

c) Immediate messaging shall be able to support a request from a user to delete messages that are stored in a network based repository.