POST and GET methods, between mobile stations and multimedia messaging service centers (MMSCs) for multimedia message (MM) submission and delivery.

[0015] **FIG. 1** shows an exemplary MMSC system with message flow via an IETF-compliant MMS Interface as used 1) for the submission of a multimedia message (MM) from a user agent PC **101** to a service network's MMSC **120** within a wireless network, and 2) for the retrieval. (download) of the same MM to a recipient's user agent **102**, in accordance with the principles of the present invention.

[0016] In the disclosed embodiment, the user agents **101**, **102** are Pocket PCs. However, the end device can be any wired or wireless device that communicates (i.e., submitting a multimedia message, or getting a multimedia message) from or to the MMSC using HTTP. The description will be provided with respect to a Pocket PC embodiment.

[0017] In particular, as shown in **FIG. 1**, Pocket PC **1102** and Pocket PC **2102** each include an instance of an activated MMS User Agent (UA) **201**, **202**, which will be described in greater detail herein below. Each MMS User Agent (or simply "User Agent") includes an HTTP interface capable of connecting directly to the public Internet **104** via a service provider's wireless Internet access system.

[0018] Each MMS User Agent has MIME encapsulation logic within it, allowing it to send and receive MIME message bodies over the HTTP interface.

[0019] The MMSC **120** resides within a service provider's network and is connected to the public Internet **104** via an HTTP Server **134**. The MMSC **120** contains a routing and validation module, termed herein an "MMS Relay"**122**, and a media storage module termed herein an "MMS Server"**124**, as well as several other interfaces, e.g., an SMPP interface or server **130**, and an SMTP interface or server **132**.

[0020] In the disclosed embodiments, the MMSC **120** includes MIME message handling facilities, enabling it to send and receive MIME message bodies over several interfaces (including HTTP).

[0021] In effect, the HTTP server **134** takes the HTTP protocol methods that are most commonly used for browsing the Internet and adapts them for use as a messaging protocol for discrete, point-to-point or point-to-multipoint MIME multimedia entity transport.

[0022] As an example, as shown in steps 1 and 2 of **FIGS. 1 and 2**, the MMS User Agent on Pocket PC **1101** creates a multimedia message addressed to Pocket PC **2102**. The User Agent **201** on Pocket PC **1101** knows the IP address/URL of the serving MMSC **120** in advance. The subscriber might include message management details common to standard MMS (e.g., expiration time, earliest time of delivery, priority, etc) within the Multimedia Message via the User Agent **201**. The Multimedia Message (consisting of, for example, a MOV file, a JPEG image, a WAV audio file, and/or plain text) is encapsulated as a MIME multipart message by the User Agent **201**, which then uses an HTTP over TCP over wireless IP connection to POST the Multimedia Message to the MMSC **120** via the wireless network **110**, and Internet **104**.

[0023] The MMS Relay **122** accepts the POST command, processes the encapsulated Multimedia Message (including subscriber validation), returns the appropriate POST response (potentially with an encapsulated application layer status message as well), and stores the Multimedia Message within a message database **125** associated with the MMS Server **124**.

[0024] In steps 3 and 4 of **FIGS. 1 and 2**, the MMSC **120** sends an appropriate Notification message to the intended recipient's User Agent **202**. Multimedia Message Notification specifics are well known by those of ordinary skill in the art. The Multimedia Message Notification contains, among other things, a reference to the Multimedia Message stored in the database **125** of the MMS Server **124**.

[0025] As shown in steps 5 and 6 of **FIGS. 1 and 2**, to download the Multimedia Message from the MMSC **120**, the recipient User Agent **202** in the Pocket PC **2102** initiates an HTTP GET request to the MMSC **120** for the Multimedia Message reference received in the Notification.

[0026] In steps 7 and 8 of **FIGS. 1 and 2**, a GET Response from the MMSC **120** to the User Agent **202** in the Pocket PC **2102** then contains the Multimedia Message itself, having been retrieved from the MMS Server **124** and encapsulated within the message body of the GET response.

[0027] The User Agent **202** then interprets the MIME multipart data and allows the recipient to view/play the various components.

[0028] The all-HTTP feature of Multimedia Messaging in accordance with the principles of the present invention offers built-in extensibility for an MMSC-MMS User Agent Interface. Protocol data units encapsulated in the HTTP message bodies may be expanded and customized easily, as they are formed as plain text entities. Moreover, HTTP already has applications and sub-protocols that can be leveraged to cover the MMS-critical fields of Message Security (such as TLS) and Terminal Capability Negotiation (such as the X-RCAPABILITY header system).

[0029] More specific details of the MMS User Agent immediately follows, with a more specific description of the Multimedia Message Service Center (MMSC) following thereafter.

MMS User Agent (UA)

[0030] Network

[0031] The exemplary MMS User Agent client **201**, **202** resides on a Compaq IPAQ Pocket PC **101**, **102** equipped with a 1xRTT capable wireless access card. The IPAQ is registered with a Verizon Wireless Express Network (1xRTT Brand Name) and has an addressable MIN or IP Address for Verizon's network. Of course, other brand wireless devices, as well as other types of wireless devices and other service providers, are well within the scope of the present invention.

[0032] Settings Information

[0033] The MMS UA **201**, **202** preferably includes a provisionable (e.g., through a simple graphical user interface (GUI)) MMS Address (e.g., a Pocket PC/Aircard Mobile Phone Number) field for its own MMS Address. E.g. 4103036476. This MMS Address is preferably mapped to the "From" field of an outgoing MM.

[0034] The MMS UA **201**, **202** also preferably includes a provisionable (e.g., through a simple GUI) MMSC Address