

ever, to provide a quality of service that is better than best effort, other parameters such as UDP source and destination ports and protocol type number may also be additionally used for routing. The UDP header identifies UDP source and destination ports, and the RTP header identifies characteristics of the real-time data in the payload. In the context of **FIG. 1**, the mobile station is one endpoint that is capable of participating in a packet-switched communications session with another endpoint (e.g., one of devices **30, 32** coupled to the packet data network **28**, the media gateway **34**, or another mobile station).

**[0038]** To enable construction of the protocol header information, the IP, UDP, and RTP header information is communicated in configuration messages exchanged over the air interface between a mobile station and a radio network controller as part of the call setup procedure. The RTP, UDP, and IP information carried in the configuration messages is stored by the mobile station and/or radio network controller. The stored information enables the mobile station and/or radio network controller to construct the RTP, UDP, and IP header information in response to the mobile station and/or radio network controller receiving bearer traffic (e.g., voice data or other form of real-time traffic). Thus, for example, in the uplink direction, the mobile station removes (or does not generate) the RTP, UDP, and IP headers and sends only bearer traffic over the air interface to the radio network controller. Upon receiving the bearer traffic from the mobile station, the radio network controller accesses the stored configuration information to construct the IP, UDP, and RTP headers, with which IP packets carrying RTP payload can be constructed. Similarly, on the downlink, the radio network controller removes the RTP, UDP, and IP headers and transmits only bearer traffic over the air interface to the mobile station. According to one embodiment, the mobile station accesses stored configuration information to reconstruct the RTP, UDP, and IP header information for recreating IP packets. In another embodiment, the mobile station does not need to reconstruct the RTP, UDP, and IP header information.

**[0039]** In one example, the configuration messages exchanged between the mobile stations and radio network controllers include the following: UPLINK PROTOCOL HEADER CONFIGURATION message, UPLINK PROTOCOL HEADER CONFIGURATION COMPLETE message, DOWNLINK PROTOCOL HEADER CONFIGURATION message, DOWNLINK PROTOCOL HEADER CONFIGURATION COMPLETE message, DOWNLINK PROTOCOL HEADER RECONFIGURATION message, and DOWNLINK PROTOCOL HEADER RECONFIGURATION COMPLETE message.

**[0040]** The UPLINK PROTOCOL HEADER CONFIGURATION message is sent by a mobile station to a radio network controller and contains various predetermined RTP, UDP, and IP header information that are to be part of the RTP/UDP/IP headers in packets communicated in packet-switched communications. The information in the UPLINK PROTOCOL HEADER CONFIGURATION message is used by the radio network controller to reconstruct the RTP/UDP/IP headers to add to packets originated by the mobile station. The UPLINK PROTOCOL HEADER CONFIGURATION message contains the following information elements:

INFORMATION ELEMENT/GROUP NAME	NEED
Message Type	MP
<u>INFORMATION ELEMENTS</u>	
Identity	MP
<u>TP/UDP/IP HEADER INFORMATION ELEMENTS</u>	
Version	MP
Source IP Address	MP
Destination IP Address	MP
DiffServ Code Point (DSCP)	OP
Source UDP Port	MP
Destination UDP Port	MP
RTP Version	OP
RTP Payload Type (PT)	MP
RTP Synchronization Source Identifier (SSRC)	MP
RTP Sequence Number	MP
RTP Timestamp	MP
RTP Clock Frequency	OP

**[0041]** The first column identifies the information elements and the second column identifies whether each information element is mandatory (MP) or optional (OP). A Message Type information element identifies the type of message, which in this case is the UPLINK PROTOCOL HEADER CONFIGURATION MESSAGE. An RB Identity information element identifies the radio bearer.

**[0042]** The remaining information elements of the UPLINK PROTOCOL HEADER CONFIGURATION message are information elements carrying RTP, UDP, and IP header information. An IP Version information element indicates the format of the IP header (e.g., IPv4 or IPv6). A Source IP Address information element contains the IP address of the source endpoint, in this case the mobile station. A Destination IP Address information element identifies the IP address of the destination endpoint, which can be the media gateway **34**, an endpoint coupled to the packet data network **28**, or another mobile station.

**[0043]** A Diff-Serv Code Point (DSCP) information element identifies the DSCP value. According to the differentiated services (Diff-Serv) quality of service (QoS) framework, the DSCP selects the per-hop behavior that a packet experiences at each node (e.g., a router) along a network path. The value of DSCP that is contained in each IP packet specifies a desired level of services. The Diff-Serv model employs a reservation-less mechanism for providing differentiated classes of services for network traffic. Diff-Serv is described in RFC 2474, entitled "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers," dated December 1998; and RFC 2475 entitled "An Architecture for Differentiated Services," dated December 1998.

**[0044]** A source UDP Port information element specifies the UDP port of the source endpoint (the mobile station). A Destination UDP Port information element specifies the UDP port of the destination endpoint.

**[0045]** Several RTP information elements are also carried in the UPLINK PROTOCOL HEADER CONFIGURATION message. An RTP Version information element contains the version (V) field that identifies the version of RTP. An RTP Payload Type (PT) information element contains