

instead de-activate the PDP context with the PDP Context Deactivation Initiated by MS procedure.

[0049] 5) In UMTS, radio access bearer modification may be performed by the RAB Assignment procedure.

[0050] 6) If BSS trace is activated while the PDP context is active, then the SGSN shall send an Invoke Trace (Trace Reference, Trace Type, Trigger Id, OMC Identity) message to the BSS or UTRAN. Trace Reference, and Trace Type are copied from the trace information received from the HLR or OMC.

[0051] FIG. 4, also provided for exemplary purposes only, illustrates the GGSN-initiated PDP context modification procedure and corresponds to FIG. 69 of the aforecited Technical Specification. The following discussion of the steps of FIG. 4 are also contained therein.

[0052] 1) The GGSN sends an Update PDP Context Request (TEID, NSAPI, PDP Address, QoS Requested) message to the SGSN. QoS Requested indicates the desired QoS profile. PDP Address is optional.

[0053] 2) The SGSN may restrict the desired QoS profile given its capabilities, the current load, the current QoS profile, and the subscribed QoS profile. The SGSN selects Radio Priority and Packet Flow Id based on QoS Negotiated, and sends a Modify PDP Context Request (TI, PDP Address, QoS Negotiated, Radio Priority, Packet Flow Id) message to the MS. PDP Address is optional.

[0054] 3) The MS acknowledges by returning a Modify PDP Context Accept message. If the MS does not accept the new QoS Negotiated it shall instead de-activate the PDP context with the PDP Context Deactivation Initiated by MS procedure.

[0055] 4) In UMTS, radio access bearer modification may be performed by the RAB Assignment procedure.

[0056] 5) Upon receipt of the Modify PDP Context Accept message, or upon completion of the RAB modification procedure, the SGSN returns an Update PDP Context Response (TEID, QoS Negotiated) message to the GGSN. If the SGSN receives a Deactivate PDP Context Request message, it shall instead follow the PDP Context Deactivation Initiated by MS procedure.

[0057] FIG. 5, also provided for exemplary purposes only, illustrates the MS-initiated PDP context modification procedure and corresponds to FIG. 70 of the aforecited Technical Specification. The following discussion of the steps of FIG. 5 are also contained therein.

[0058] 1) The MS sends a Modify PDP Context Request (TI, QoS Requested, TFT) message to the SGSN. Either QoS Requested or TFT or both may be included. QoS Requested indicates the desired QoS profile, while TFT indicates the TFT that is to be added or modified or deleted from the PDP context.

[0059] 2) The SGSN may restrict the desired QoS profile given its capabilities, the current load, and the subscribed QoS profile. The SGSN sends an Update

PDP Context Request (TEID, NSAPI, QoS Negotiated, TFT) message to the GGSN. If QoS Negotiated and/or TFT received from the SGSN is incompatible with the PDP context being modified (e.g., TFT contains inconsistent packet filters), then the GGSN rejects the Update PDP Context Request. The compatible QoS profiles are configured by the GGSN operator.

[0060] 3) The GGSN may further restrict QoS Negotiated given its capabilities and the current load. The GGSN stores QoS Negotiated, stores, modifies, or deletes TFT of that PDP context as indicated in TFT, and returns an Update PDP Context Response (TEID, QoS Negotiated) message.

[0061] 4) In UMTS, radio access bearer modification may be performed by the RAB Assignment procedure.

[0062] 5) The SGSN selects Radio Priority and Packet Flow Id based on QoS Negotiated, and returns a Modify PDP Context Accept (TI, QoS Negotiated, Radio Priority, Packet Flow Id) message to the MS.

[0063] NOTE: If the SGSN does not accept QoS Requested, then steps 2 and 3 of this procedure are skipped, and the existing QoS Negotiated is returned to the MS in step 4.

[0064] In spite of the numerous details provided in the aforecited Technical Specification, many features associated with mobile networks have not been dealt with. Namely, techniques for providing announcements in mobile-originated calls have yet to be incorporated in the aforecited technical specification and it is these details to which the present invention is directed.

#### SUMMARY OF THE INVENTION

[0065] In the present invention, the signaling exchanged by the application layer in the MS is arranged in accordance with the procedure/messages that need to be performed by the transport levels in the MS and in the network in order to set up IP multimedia calls.

[0066] When the application level in the MS sends a setup message to set up an IP multimedia call, before or after sending such a message over the radio interface, the MS performs the appropriate procedures, depending on the type of access adopted, to set up the appropriate bearers over the radio interface and in the network to satisfy the call requirements specified by the application level in the setup message.

[0067] The technique of the present invention applies to the case of mobile-originated calls, the MS performing the above-noted transport level procedures before or after sending a setup message and before sending a confirmation/call acceptance message back to the called party.

[0068] In the technique in accordance with the present invention, for a mobile-originated call to be responded to by an announcement, the MS is informed of the transport address of the node which will play the announcement and the MS then initiates a PDP context modification procedure to set the Traffic Flow Template (TFT) according to the Transport Address (TA) of the node.