

TECHNIQUE FOR PROVIDING ANNOUNCEMENTS IN MOBILE-ORIGINATED CALLS

BACKGROUND OF THE INVENTION

[0001] The present invention relates to mobile networks and more particularly, the present invention relates to a technique for providing announcements for mobile-originated calls in a mobile network using an IP (Internet Protocol) transport mechanism. In general, packet switched wireless networks provide communications for mobile terminals with no physical connection required for network access. The General Packet Radio Service (GPRS) in the Global System for Mobile communications (GSM) and the Universal Mobile Terrestrial System (UMTS) have both been developed to provide wireless communications networks with a packet switched side as well as a circuit switched side.

[0002] As noted in their WebSite, <http://www.3gpp.org>, the Third Generation Partnership Project, normally known by their acronym 3GPP, is an organization whose Partners have agreed to cooperate in the production of globally applicable Technical Specifications and Technical Reports for a 3rd Generation Mobile System based on GSM core networks and the radial access technologies that they support (i.e., Universal Terrestrial Radio Access (UTRA) both Frequency Division Duplex (FDD) and Time Division Duplex (TDD) modes).

[0003] The 3GPP Partners have further agreed to cooperate in the maintenance and development of Global System for Mobile communication (GSM) Technical Specifications and Technical Reports including evolved radial access technologies (e.g., General Packet Radio Service (GPRS) and Enhanced Data rates for GSM Evolution (EDGE)).

[0004] The 3GPP thus issues various Technical Specifications which are then utilized by the telecommunications industry to produce mobile terminals and associated systems which have been standardized such that a mobile terminal of one manufacturer can communicate with a system or mobile terminal of another manufacturer. These Technical Specifications are constantly revised in accordance with agreements by the 3GPP Partners to allow for changes and improvements in technology.

[0005] Technical Specification TS 23.0.60, Version V3.3.0, was issued in January, 2001 by the 3GPP and defines the stage-2 service description for the packet domain, which includes the GPRS in GSM and UMTS. This technical specification is incorporated by reference herein in its entirety. The description of various elements and their functions incorporated by reference herein merely constitute a non-limiting example of packet switched wireless communication networks and it is to be understood that the present invention is not limited to such networks.

[0006] A network subscriber can have one or more (PDP) addresses. Each PDP address is described by one or more PDP contexts in the Mobile Station (MS), the Service GPRS Support Node (SGSN), and the Gateway GPRS Support Node (GGSN). A GGSN is a gateway to an external network. Each PDP context may have routing and mapping information for directing the transfer of data to and from its associated PDP address and a Traffic Flow Template (TFT) for reviewing the transferred data.

[0007] Each PDP context can be selectively and independently activated, modified, and deactivated. The activation state of the PDP context indicates whether data transfer is enabled for a corresponding PDP address and TFT. If all PDP contexts associated with the same PDP address are inactive or deactivated, all data transfer for that PDP address is disabled. All PDP contexts of a subscriber are associated with the same Mobility Management (MM) context for the International Mobile Subscriber Identity (IMSI) of that subscriber. Setting up a PDP context means setting up a communication channel between the MS and the GGSN.

[0008] FIG. 1, provided for exemplary purposes only, illustrates the PDP context activation procedure between an MS and a GGSN in a UMTS system and corresponds to FIG. 62 of the aforesaid Technical Specification. The following discussion of the steps of FIG. 1 are also contained therein.

[0009] 1) The MS sends an Activate PDP Context Request (NSAPI, TI, PDP Type, PDP Address, Access Point Name, QoS Requested, PDP Configuration Options) message to the SGSN. The MS shall use PDP Address to indicate whether it requires the use of a static PDP address or whether it requires the use of a dynamic PDP address. The MS shall leave PDP Address empty to request a dynamic PDP address. The MS may use Access Point Name to select a reference point to a certain external network and/or to select a service. Access Point Name is a logical name referring to the external packet data network and/or to a service that the subscriber wishes to connect to. QoS Requested indicates the desired QoS profile. PDP Configuration Options may be used to request optional PDP parameters from the GGSN (see GSM 09.60). PDP Configuration Options is sent transparently through the SGSN.

[0010] 3) In UMTS, RAB setup is done by the RAB Assignment procedure, see subclause "RAB Assignment Procedure".

[0011] 5) The SGSN validates the Activate PDP Context Request using PDP Type (optional), PDP Address (optional), and Access Point Name (optional) provided by the MS and the PDP context subscription records. The validation criteria, the APN selection criteria, and the mapping from APN to a GGSN are described in annex A.

[0012] If no GGSN address can be derived or if the SGSN has determined that the Activate PDP Context Request is not valid according to the rules described in annex A, then the SGSN rejects the PDP context activation request.

[0013] If a GGSN address can be derived, the SGSN creates a TEID for the requested PDP context. If the MS requests a dynamic address, then the SGSN lets a GGSN allocate the dynamic address. The SGSN may restrict the requested QoS attributes given its capabilities, the current load, and the subscribed QoS profile.

[0014] The SGSN sends a Create PDP Context Request (PDP Type, PDP Address, Access Point Name, QoS Negotiated, TEID, NSAPI, MSISDN, Selection Mode, Charging Characteristics, Trace Reference, Trace Type, Trigger Id, OMC Identity, PDP Configuration Options) message to the affected GGSN. Access Point Name shall be the APN