

PROVIDING A NETWORK NODE WITH SERVICE REFERENCE INFORMATION

FIELD OF THE INVENTION

[0001] The invention relates to relaying service reference information with an IP (Internet Protocol -based) telephony signalling protocol used in IP-based networks. One example of service reference information is CAMEL-related information. CAMEL (Customized Applications for Mobile network Enhanced Logic) is an intelligent network-based solution standardized by ETSI (European Telecommunications Standards Institute) as one of the GSM (Global System for Mobile communications) phase 2+ services. One example of an IP telephony signalling protocol is SIP (Session Initiation Protocol) which is developed by IETF (Internet Engineering Task Force).

BACKGROUND OF THE INVENTION

[0002] Transferring data associated with various time-critical applications in IP-based networks has been an attractive topic in recent years. It has also been one of the main goals in the development of the mobile communications systems, and especially in so-called third generation mobile communications systems, such as UMTS (Universal Mobile Communications System). A mobile communications system refers generally to any telecommunications system which enables wireless communication when users are moving within the service area of the system. A typical mobile communications system is a Public Land Mobile Network (PLMN).

[0003] One UMTS system based on IP technology is the so-called 3GPP AII-IP system, which is defined in the 3rd generation partnership project 3GPP. One standard used for IP telephony implementation in 3GPP AII-IP is SIP. SIP is an application-level control protocol which allows the establishment, alteration and interruption of multimedia connections and voice over IP connections. IP telephony is a general term covering services from standard voice telephony utilizing an IP protocol (VoIP, Voice over IP) to multimedia applications using IP data, voice and video.

[0004] In the 3GPP AII-IP system, the intelligent network service implementation may be based on the CAMEL architecture. One of the problems to be solved when implementing CAMEL to the network using SIP, is how to transfer at least mandatory CAMEL-related information used for charging purposes between network nodes/functions using SIP. In the GSM system CAMEL-related information is obtained by sending a routing number request. However, in SIP such mechanism does not exist.

[0005] One solution to the above problem is to provide SIP with a routing number request mechanism corresponding to the one used in GSM to transfer CAMEL-related information. A problem with this kind of a solution is -that it would require new messages in SIP.

BRIEF DESCRIPTION OF THE INVENTION

[0006] An object of the present invention to provide a method and an apparatus for implementing the method so as to solve the above problem. The object of the invention is achieved by a method and an arrangement which are characterized by what is stated in the independent claims. The preferred embodiments of the invention are disclosed in the dependent claims.

[0007] The invention is based on realizing the problem and solving it by the idea of modifying an existing IP telephony signalling protocol message, such as a SIP INVITE message or a message acknowledging it, so that the service reference information, such as CAMEL-related information, is transmitted in the IP telephony signalling protocol message. An advantage of the invention is that by modifying an existing IP telephony signalling protocol message service reference information will be transmitted without any new messages.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] In the following the invention will be described in greater detail by means of preferred embodiments with reference to the accompanying drawings, in which

[0009] **FIG. 1** is a block diagram illustrating a simplified network architecture; and

[0010] **FIG. 2** illustrates signalling according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0011] The present invention can be applied to any communications system where service reference is to be transferred between network nodes using an IP telephony signalling protocol. Such systems include 'the third generation mobile communications systems', such as UMTS, the corresponding mobile communications systems and combination systems utilizing mobile user equipment and a fixed IP-based network. The service reference information may be CAMEL-related information, OSA-related (Open Service Architecture) information or Parlay API-related (Application Protocol Interface) information, for example. Examples of IP telephony signalling protocols are H.323, SIP and a SIP evaluation called SIP+. In the following the invention will be described by using the 3GPP AII-IP system utilizing CAMEL and SIP as an example without restricting the invention thereto. The specifications of mobile communications systems, and the third generation mobile communications systems in particular, progress quickly. This may require additional changes to the invention. Therefore, all words and expressions should be interpreted broadly and they are intended for illustrating, and not restricting the invention.

[0012] **FIG. 1** shows a simplified network architecture and illustrates only those elements of the communications system **1** relating to a called subscriber B that are essential for understanding the invention. Network nodes shown in **FIG. 1** are logical units the implementation of which may differ from what is described here. It is obvious to a person skilled in the art that the system **1** also comprises other functions and structures, which need not be described in greater detail here.

[0013] In the 3GPP AII-IP system **1**, a difference is made between an access layer and a telephony layer, which may both have their own operators. Usually the access layer provides the user with a wireless access to external networks, such as IP networks (Internet Protocol), and the services thereof, such as Internet telephony (IPT, IP Telephony), such that the telephony layer is responsible for control. The IP telephony is in practice invisible to network