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(54) Title: METHODS AND APPARATUS FOR ENHANCING CIRCUIT-SWITCHED CALL FALLBACK (CSFB) SERVICE FOR A SHARED NETWORK NODE

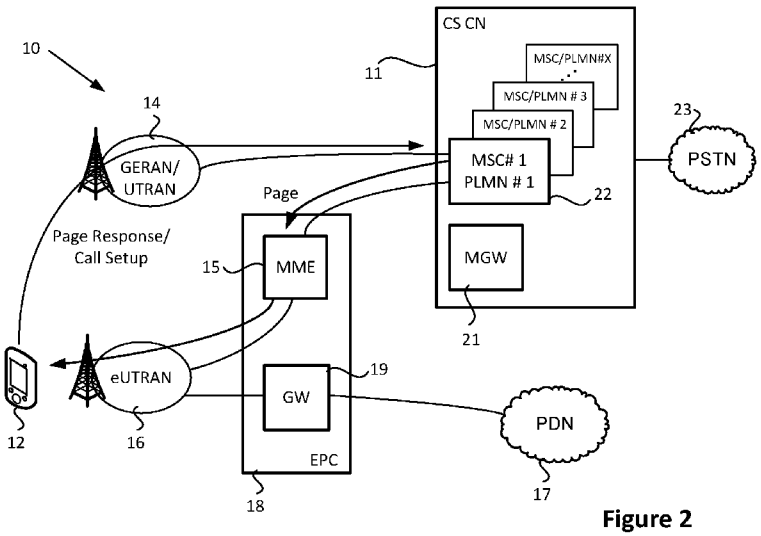


Figure 2

(57) Abstract: Methods and apparatus enhance a circuit-switched call fallback (CSFB) service for a user equipment (UE) currently connected to a source cell in a serving radio access technology (RAT) communications network. Multiple different mobile network operators share a target CSFB cell selected for CSFB from one or more circuit-switched capable cells that supports circuit-switched services. Each mobile network operator is associated with a corresponding mobile network identifier. The UE transmits a first message requesting a CSFB service to a source cell radio network node serving the source cell. The source node, in response to the first message, sends a second message to the UE including preferred mobile network identifier information and a target CSFB cell identifier. The UE transmits a third message to a target cell node serving the target CSFB cell to trigger the establishment of a circuit-switched call connection for the UE in the target CSFB cell. The target cell radio network node receives the third message, which includes preferred mobile network information to permit the target node to direct the third message to a core network node operated by one of the mobile network operators identifiable based on the preferred mobile network information. That core network node then initiates the requested CSFB service for the UE. Based on the preferred mobile network identifier information, the UE determines whether a location area update procedure must be performed in the target CSFB cell, and if so, transmits a fourth message to trigger the location area update procedure prior to triggering the establishment of a circuit-switched call connection.

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B. FIELDS SEARCHED

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2010/317347 A1 (BURBIDGE RICHARD CHARLES [GB] ET AL) 16 December 2010 (2010-12-16) paragraph [0090] - paragraph [0096]; figure 6	1-44
A	EP 2 421 302 A1 (VODAFONE HOLDING GMBH [DE]) 22 February 2012 (2012-02-22) paragraph [0003] - paragraph [0004] paragraph [0025] - paragraph [0027] paragraph [0034] - paragraph [0035] paragraph [0042] - paragraph [0050]; figures 1,2	1-44

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2006/062338 A1 (SAMSUNG ELECTRONICS CO LTD [KR]) 15 June 2006 (2006-06-15) abstract page 5, line 5 - line 42 page 6, line 21 - page 7, line 23; figures 1-5	1-44

A	"Universal Mobile Telecommunications System (UMTS); LTE; Network sharing; Architecture and functional description (3GPP TS 23.251 version 10.2.0 Release 10)", TECHNICAL SPECIFICATION, EUROPEAN TELECOMMUNICATIONS STANDARDS INSTITUTE (ETSI), 650, ROUTE DES LUCIOLES ; F-06921 SOPHIA-ANTIPOLIS ; FRANCE, vol. 3GPP SA 2, no. V10.2.0, 1 June 2011 (2011-06-01), XP014065845, paragraph [4.2.4]	1-44

INTERNATIONAL SEARCH REPORT

Information on patent family members

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