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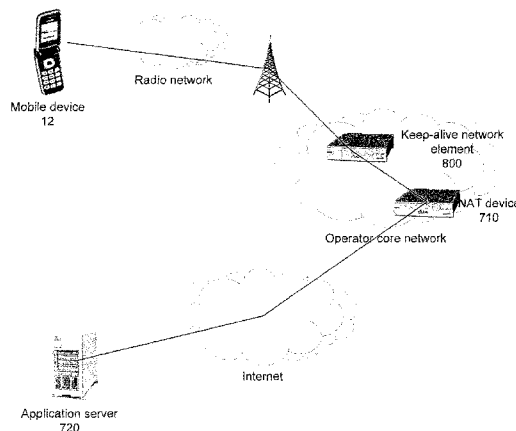
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(54) Title: SENDING KEEP -ALIVE MESSAGES ON BEHALF OF ANOTHER DEVICE VIA KEEP -ALIVE PROXY



(57) Abstract: A system and method of maintaining an always-on application client communication is provided. An application programming interface implemented on a device hosting an always-on application client determines if network-based keep-alive functionality exists in a network where the device operates. If network-based keep-alive functionality exists, a network element is instructed to transmit keep-alive messages to the application server on behalf of the device. The network element can be implemented in or as a variety of existing network elements, e.g., as a GPRS gateway serving node or a standalone keep-alive network element. Alternatively, an application server communicatively connected to the always-on application client may query whether network-based keep-alive functionality exists. If network-based keep-alive functionality exists, the application server negotiates with the always-on application client to determine an application-specific mechanism for implementing the network-based keep-alive functionality. When an application server queries for network-based keep-alive functionality, an application programming interface need not be utilized.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2007/053320

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: H04L, H04Q

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

SE,DK,FI,NO classes as above

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

EPO-INTERNAL, WPI DATA, PAJ, INSPEC, INTERNET

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1622400 A1 (RESEARCH IN MOTION LIMITED), 1 February 2006 (01.02.2006), column 1 - column 7, abstract, Amended claims 1-4,14,32-33 --	1-4,7-8, 10-11,13-19, 22,24-30, 32-34,36-38
X	US 6405262 B1 (VOGEL, K R ET AL), 11 June 2002 (11.06.2002), column 2 - column 4, figures 2-3, claims 1-3, abstract --	1,16,37-38
A	--	2-15,17-36
A	US 20050188098 A1 (DUNK, C A), 25 August 2005 (25.08.2005), claim 10, abstract, paragraphs [0004]-[0008], [0025]-[0026], [0041] --	1-38

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

19 March 2008

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Name and mailing address of the ISA/

Swedish Patent Office

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2007/053320**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

A posteriori, in view of D1: EP 1622400 A1 or D2: US 6405262 B1, the following separate inventions were identified:

1: Claims 1-4, 7-8, 16-19, 22, 27 and 37-38, directed to transmitting keep-alive messages from a network element to an application server, on behalf of a device.

.../...

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

Box III

2: Claims 5-6, 9, 20-21 and 23, directed to transmitting keep-alive messages from a network element to an application server, on behalf of a device, and furthermore filter out application server messages not to be forwarded to the device or keep-alive messages not to be sent from the device.

3: Claims 10-12, directed to transmitting keep-alive messages from a network element to an application server, on behalf of a device, and furthermore negotiating an application-specific mechanism for the network-element-based keep-alive messaging.

4: Claims 13-15 and 24-26, directed to transmitting keep-alive messages from a network element to an application server, on behalf of a device, and furthermore specifying the network element.

5: Claims 28-36, directed to transmitting keep-alive messages from an application server to a device and receiving automated reply messages.

The present application has been considered to contain 5 inventions which are not linked such that they form a single general inventive concept, as required by Rule 13 PCT.

No further feature can be distinguished, either from the claims or the description, which can be considered as the same or corresponding special technical feature, establishing a technical link between the groups of solutions, in the sense of Rule 13.2 PCT.

Consequently, the application lacks unity of invention.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2007/053320

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6212175 B1 (HARSCH, T B), 3 April 2001 (03.04.2001), column 4 - column 5, abstract --	1-38
P,X	WO 2007083000 A1 (TELIA-SONERA AB), 26 July 2007 (26.07.2007), page 2; page 5 - page 6; page 8, figure 1, claims 1-12, abstract -- -----	1-4,7-8, 10-11,13-19, 22,24-30, 32-34,36-38

International patent classification (IPC)**H04L 29/06** (2006.01)**H04L 29/08** (2006.01)**Download your patent documents at www.prv.se**

The cited patent documents can be downloaded at www.prv.se by following the links:

- In English/Searches and advisory services/Cited documents (service in English) or
- e-tjänster/anförda dokument (service in Swedish).

Use the application number as username.

The password is **LOVMWXDLGI**.

Paper copies can be ordered at a cost of 50 SEK per copy from PRV InterPat (telephone number 08-782 28 85).

Cited literature, if any, will be enclosed in paper form.

INTERNATIONAL SEARCH REPORT

Information on patent family members

26/01/2008

International application No.

PCT/IB2007/053320

EP	1622400	A1	01/02/2006	AT	359680	T	15/05/2007
				CA	2512343	A	26/01/2006
				DE	602004005847	D,T	06/09/2007
				HK	1089606	A	29/06/2007

US	6405262	B1	11/06/2002	NONE			
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US	20050188098	A1	25/08/2005	NONE			
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US	6212175	B1	03/04/2001	US	7088698	B	08/08/2006
				US	20070058599	A	15/03/2007

WO	2007083000	A1	26/07/2007	FI	20065041	A	21/07/2007
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