

(12) 按照专利合作条约所公布的国际申请

(19) 世界知识产权组织  
国际局



(10) 国际公布号  
WO 2012/126177 A3

(43) 国际公布日  
2012年9月27日 (27.09.2012)

- (51) 国际专利分类号:  
G06F 17/30 (2006.01)
- (21) 国际申请号: PCT/CN2011/072035
- (22) 国际申请日: 2011年3月22日 (22.03.2011)
- (25) 申请语言: 中文
- (26) 公布语言: 中文
- (71) 申请人 (对除美国外的所有指定国): 青岛海信传媒网络技术有限公司 (QINGDAO HISENSE MEDIA NETWORKS LTD.) [CN/CN]; 中国山东省青岛市崂山区香港东路248号131室, Shandong 266071 (CN)。
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- (81) 指定国 (除另有指明, 要求每一种可提供的国家保护): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW。
- (84) 指定国 (除另有指明, 要求每一种可提供的地区保护): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), 欧亚 (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), 欧洲 (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)。

本国际公布:

— 包括国际检索报告(条约第21条(3))。

(88) 国际检索报告公布日期: 2012年11月22日

(54) Title: METHOD AND APPARATUS FOR READING DATA FROM DATABASE

(54) 发明名称: 从数据库中读取数据的方法及装置

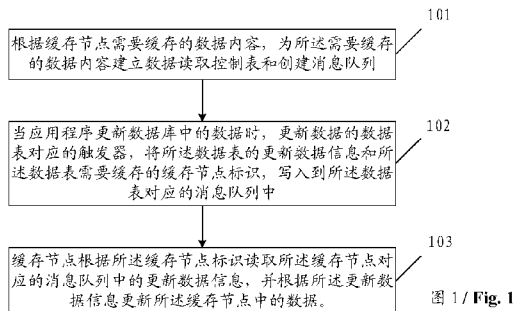


图1 / Fig. 1

101 ACCORDING TO THE DATA CONTENTS WHICH NEED TO BE CACHED BY A CACHE NODE, A DATA READ CONTROL TABLE IS ESTABLISHED AND A MESSAGE QUEUE IS CREATED FOR THE DATA CONTENTS WHICH NEED TO BE CACHED

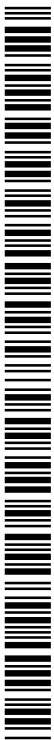
102 WHEN AN APPLICATION PROGRAM UPDATES THE DATA IN A DATABASE, A TRIGGER CORRESPONDING TO THE DATA TABLE OF THE UPDATE DATA WRITES THE UPDATE DATA INFORMATION OF THE DATA TABLE AND THE IDENTIFIER OF THE CACHE NODE INTO WHICH THE DATA TABLE NEEDS TO BE CACHED INTO THE MESSAGE QUEUE CORRESPONDING TO THE DATA TABLE

103 THE CACHE NODE READS THE UPDATE DATA INFORMATION FROM THE MESSAGE QUEUE CORRESPONDING TO THE CACHE NODE IDENTIFIER, AND UPDATES THE DATA IN THE CACHE NODE ACCORDING TO THE UPDATE DATA INFORMATION

(57) Abstract: The embodiments of the present invention disclose a method and an apparatus for reading data from a database, which relate to databases, achieve the real-time update of caches, and reduce the complexity of overall application system development. The method of the present invention includes: according to the data contents which need to be cached by a cache node, a data read control table is established and a message queue is created for the data contents which need to be cached; when an application program updates the data in a database, a trigger corresponding to the data table of the update data writes the update data information of the data table and the identifier of the cache node into which the data table needs to be cached into the message queue corresponding to the data table; the cache node reads the message queue corresponding to the cache node according to the cache node identifier, and updates the data in the cache node according to the update data information. The embodiments of the present invention are mainly used in the process that the cache system reads data from a database and updates the cache.

(57) 摘要:

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本发明实施例公开了一种从数据库中读取数据的方法及装置，涉及数据库，实现了缓存的实时更新，并且降低了整个应用系统开发的复杂性。本发明的方法包括：根据缓存节点需要缓存的数据内容，为所述需要缓存的数据内容建立数据读取控制表和创建消息队列；当应用程序更新数据库中的数据时，更新数据的数据表对应的触发器，将所述数据表的更新数据信息和所述数据表需要缓存的缓存节点标识，写入到所述数据表对应的消息队列中；缓存节点根据所述缓存节点标识读取所述缓存节点对应的消息队列，并根据所述更新数据信息更新所述缓存节点中的数据。本发明的实施例主要用于缓存系统从数据库读取数据并更新缓存的过程中。

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2011/072035

## A. CLASSIFICATION OF SUBJECT MATTER

G06F 17/30 (2006.01) i

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: G06F

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)

CPRSABS, CNTXT, CNKI, VEN: database, data base, buffer+, cach+, update+, modification, trigger+, queue, read+

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Wang Dong, etc. Large Database System Synchronization Scheme Based on MQSeries. Computer Applications. August 2001, Vol. 21, No. 8, pages 138-139	1-14
A	Zhang Pu. Cache Consistency Technology Based on Oracle DCN. Computer Engineering. November 2008, Vol. 34, No. 22, pages 46-48	1-14
A	CN101770484A (Founder Group, etc.), 07 Jul. 2010(07.07.2010), the whole document	1-14
A	JP4326464B2 (NOMURA RES INST LTD.), 09 Sept. 2009(09.09.2009), the whole document	1-14

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

* Special categories of cited documents:	“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
“A” document defining the general state of the art which is not considered to be of particular relevance	“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
“E” earlier application or patent but published on or after the international filing date	“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
“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)	“&” document member of the same patent family
“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	

Date of the actual completion of the international search <b>13 Dec. 2011(13.12.2011)</b>	Date of mailing of the international search report <b>19 Jan. 2012 (19.01.2012)</b>
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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
PCT/CN2011/072035

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN101770484A	07.07.2010	None	
JP4326464B2	09.09.2009	JP2006164075A	22.06.2006

国际检索报告

国际申请号  
**PCT/CN2011/072035**

<b>A. 主题的分类</b>		
G06F 17/30 (2006.01) i		
按照国际专利分类(IPC)或者同时按照国家分类和 IPC 两种分类		
<b>B. 检索领域</b>		
检索的最低限度文献(标明分类系统和分类号)		
IPC: G06F		
包含在检索领域中的除最低限度文献以外的检索文献		
在国际检索时查阅的电子数据库(数据库的名称, 和使用的检索词(如使用))		
CPRSABS, CNTXT, CNKI: 数据库, 缓存, 更新, 队列, 触发, queue, 读取, 缓存节点, 缓存设备, 缓存装置, 缓存服务器, 内存服务器		
VEN: database, data base, buffer+, cach+, update+, modification, trigger+, queue, read+		
<b>C. 相关文件</b>		
类 型*	引用文件, 必要时, 指明相关段落	相关的权利要求
A	王栋等. 基于 MQSeries 的大型数据库系统同步方案. 计算机应用. 8 月 2001, 第 21 卷第 8 期, 第 138-139 页	1-14
A	张璞. 基于 Oracle DCN 的缓存一致性技术. 计算机工程. 11 月 2008, 第 34 卷第 22 期, 第 46-48 页	1-14
A	CN101770484A (北大方正集团有限公司等), 07.7 月 2010(07.07.2010), 全文	1-14
A	JP4326464B2 (株式会社野村综合研究所), 09.9 月 2009(09.09.2009), 全文	1-14
<input type="checkbox"/> 其余文件在 C 栏的续页中列出。 <input checked="" type="checkbox"/> 见同族专利附件。		
* 引用文件的具体类型:		“T” 在申请日或优先权日之后公布, 与申请不相抵触, 但为了理解发明之理论或原理的在后文件
“A” 认为不特别相关的表示了现有技术一般状态的文件		“X” 特别相关的文件, 单独考虑该文件, 认定要求保护的发明不是新颖的或不具有创造性
“E” 在国际申请日的当天或之后公布的在先申请或专利		“Y” 特别相关的文件, 当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时, 要求保护的发明不具有创造性
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“O” 涉及口头公开、使用、展览或其他方式公开的文件		
“P” 公布日先于国际申请日但迟于所要求的优先权日的文件		
国际检索实际完成的日期 <b>13.12 月 2011(13.12.2011)</b>	国际检索报告邮寄日期 <b>19.1 月 2012 (19.01.2012)</b>	
ISA/CN 的名称和邮寄地址: 中华人民共和国国家知识产权局 中国北京市海淀区蓟门桥西土城路 6 号 100088 传真号: (86-10)62019451	受权官员  <b>吴斌</b>  电话号码: (86-10) <b>62412019</b>	

国际检索报告  
关于同族专利的信息

国际申请号  
**PCT/CN2011/072035**

检索报告中引用的 专利文件	公布日期	同族专利	公布日期
CN101770484A	07.07.2010	无	
JP4326464B2	09.09.2009	JP2006164075A	22.06.2006