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(71) Applicant: **TURKCELL TEKNOLOJI ARASTIRMA VE GELISTIRME ANONIM SIRKETI** [TR/TR]; Yeni Mahalle Pamukkale Sokak No:11, Soganlik, Kartal/Istanbul (TR).

(72) Inventor: **SEZEN, Alper**; Aydinevler Mah. Inonu Cad. No:36, Kucukyali Ofispark, Maltepe/Istanbul (TR).

(74) Agent: **TRITECH PATENT TRADEMARK CONSULTANCY INC.**; Cankaya Mahallesi Mahmut Yesari Sokak No:8/5, 06690 Cankaya/Ankara (TR).

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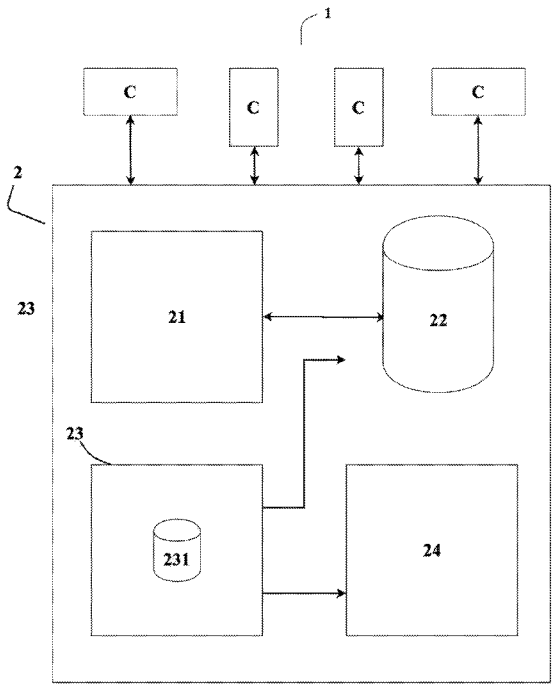
(54) Title: A SYSTEM OPTIMIZING USE OF CLIENT SOURCE FOR COMMUNICATION IN DATA GATHERING SERVICES

Figure 1



(57) Abstract: The present invention relates to a system which comprises solution techniques such as analysing general resources and server client connections of the server where the service requiring multiple connection runs, by means of machine learning techniques continuously; parking the connections detected as problematic; suspending them temporarily and prepares problem reports.

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A SYSTEM OPTIMIZING USE OF CLIENT SOURCE FOR COMMUNICATION IN DATA GATHERING SERVICES

Technical Field

The present invention relates to a system which comprises solution techniques such as analysing general resources and server client connections of the server where the service requiring multiple connection runs, by means of machine learning techniques continuously; parking the connections detected as problematic; suspending them temporarily and prepares problem reports.

Background of the Invention

Data gathering systems enables to gather and save all kinds of client outputs in projects to be gathered single or multi-channel. Data gathering systems have characteristics such that they can be controlled by servers remotely and can transfer real-time records to the center. It has been started to produce different solutions for problems between server and processor upon increase of use of data gathering systems. These solutions are generated for bad connections or malicious connections however low connection states are not taken into account.

The United States patent document no. **US20030145101**, an application in the state of the art, discloses a method that can be implemented when the system is under attack. The invention increases resource consumption of the system, bring it to the maximum limit and makes it non-functional. Thus, it creates a solution against attacks. The inventive method does not aim to reduce consumption of resource existing in the main flow of the system.

The invention stated in the United States patent document no. **US9525701**, another application in the state of the art, discloses a method for resource use in embedded systems with low RAM capacity. The invention aims to reduce the size of the package being carried in networks by means of an algorithm in order to optimize resource use.

Summary of the Invention

An objective of the present invention is to realize a system which comprises solution techniques such as analysing general resources and server client connections of the server where the service requiring multiple connection runs, by means of machine learning techniques continuously; parking the connections detected as problematic; suspending them temporarily and prepares problem reports.

Detailed Description of the Invention

"A System Optimizing Use of Client Source for Communication in Data Gathering Services" realized to fulfil the objective of the present invention is shown in the figure attached, in which:

Figure 1 is a schematic view of the inventive system.

The components illustrated in the figure are individually numbered, where the numbers refer to the following:

1. System
2. Server
    21. Data gathering unit
    22. Source database
    23. Connection unit

231. Connection database

24. Reporting unit

C. Device

The system (1) optimizing use of client source for communication in data gathering services comprises:

- at least one server (2) which receives, stores the data incoming from the devices (C) and realizes requests of the devices (C);
- at least one data gathering unit (21) which is located within the server (2) and gathers the data incoming from different devices (C);
- at least one source database (22) which is located within the server (2) and stores the data gathered by the data gathering unit (21);
- at least one connection unit (23) which is located within the server (2) and analyses the connections established between the devices (C) and the server (2) in accordance with the information that it receives from the source database (22);
- at least one connection database (231) which is located within the connection unit (23) and stores the information of the connections established between the devices (C) and the server (2);
- at least one reporting unit (24) which is located within the server (2) and creates report by processing the analyses made by the connection unit (23).

The server (2) is a unit which communicates with the devices (C) by combining different network resources. The server (2) is a unit which shares the data stored on itself with the devices (C) and realizes requests of the devices (C). The server (2) comprises the data gathering unit (21), the source database (22), the connection unit (23) and the reporting unit (24).

The data gathering unit (21) is a unit which lists the devices whereto the server (2) can connect by means of TCP/IP and UDP protocols periodically. The data gathering unit (21) gathers the data incoming to the point of connection in accordance with requests of different devices (C). Requests comprise demand of a device (C) for an information kept on another device (C) or an information kept on the server (2).

The data gathering unit (21) transmits the list of devices (C) whereto the server (2) can connect and the data incoming to the point of connection to the source database (22) for storing. Similarly, it can also receive the other information stored in the source database (22).

The source database (22) is a unit which stores the list –that is updated by the data gathering unit (21) periodically– of devices (C) whereto the server (2) can connect, the data incoming from different devices (C) and the data sent by the data gathering unit (21).

The connection unit (23) is a unit which receives the general information about the current connections located on the source database (22). The connection unit (23) analyses connections according to the list of current devices (C) received. It marks whether connections are successful or not according to data flow by categorizing the connections whether they are TCP/IP or UDP.

The connection database (231) is a unit which is located within the connection unit (23) and its end of connection analysis are updated by the connection unit (23). The connection database (231) keeps the information about the connections as time, quality and number of repetition.

The connection unit (23) analyses quality of the device (C) source according to the information of repetition stored in the connection database (231). Number of

successful connections and number of unsuccessful connections are analysed and transmitted to the connection database (231) so as to be restored.

The reporting unit (24) is a unit which receives connection analyses of the device (C) sent by the connection unit (23). The reporting unit (24) is a unit which informs host system administrators by creating connection reports in accordance with analyses. The reporting unit (24) can suggest parking the connection for a specific period of time according to number that connections may fail. Parking period of connections among the devices (C) is detected according to the number of successful connection. The reporting unit (24) can suggest a complete disconnection by reporting the devices (C) that it cannot establish connection or get a response over a period determined.

In one embodiment of the invention, the reporting unit (24) analyses critical problems for the connections established with the devices (C) by using machine learning techniques and transmits their possible reasons and sample solutions to the host system administrator.

The reporting unit (24) transmits to the host system administrator that the use of resources must be reduced, the maximum connection capacity is reached and the optimum operating status of the data gathering system.

In another embodiment of the invention, the reporting unit (24) can analyse parking periods of connections by means of machine learning techniques according to the number of re-establishing successful connection in the past.

Within these basic concepts; it is possible to develop various embodiments of the inventive system (1); the invention cannot be limited to examples disclosed herein and it is essentially according to claims.

CLAIMS

1. A system (1) optimizing use of client source for communication in data gathering services; **comprising**
   - at least one server (2) which receives, stores the data incoming from the devices (C) and realizes requests of the devices (C);
   - at least one data gathering unit (21);
   - at least one source database (22);
   - at least one connection unit (23);
   - at least one connection database (231);
   - at least one reporting unit (24);

   and **characterized by**
   - at least one data gathering unit (21) which is located within the server (2) and gathers the data incoming from different devices (C);
   - at least one source database (22) which is located within the server (2) and stores the data gathered by the data gathering unit (21);
   - at least one connection unit (23) which is located within the server (2) and analyses the connections established between the devices (C) and the server (2) in accordance with the information that it receives from the source database (22);
   - at least one connection database (231) which is located within the connection unit (23) and stores the information of the connections established between the devices (C) and the server (2);
   - at least one reporting unit (24) which is located within the server (2) and creates report by processing the analyses made by the connection unit (23).

2. A system (1) according to Claim 1; **characterized by** the data gathering unit (21) which is a unit that lists the devices (C) whereto the server (2) can connect by means of TCP/IP and UDP protocols periodically.

3. A system (1) according to Claim 2; **characterized by** the data gathering unit (21) which gathers the data incoming to the point of connection in accordance with requests of different devices (C).

4. A system (1) according to Claim 2; **characterized by** the data gathering unit (21) which transmits the list of devices (C) whereto the server (2) can connect and the data incoming to the point of connection to the source database (22) for storing.

5. A system (1) according to Claim 2; **characterized by** the data gathering unit (21) which receives the information stored in the database (22) in accordance with requests of the devices (C) and transmits them to the devices (C).

6. A system (1) according to Claim 1; **characterized by** the source database (22) which stores the list –that is updated by the data gathering unit (21) periodically– of devices (C) whereto the server (2) can connect, the data incoming from different devices (C) and the data sent by the data gathering unit (21).

7. A system (1) according to Claim 1; **characterized by** the connection unit (23) which receives the general information about the current connections located on the source database (22).

8. A system (1) according to Claim 7; **characterized by** the connection unit (23) which analyses connections according to the list of current devices (C) received.

9. A system (1) according to Claim 7; **characterized by** the connection unit (23) which marks whether connections are successful or not according to data flow by categorizing the connections whether they are TCP/IP or UDP.

10. A system (1) according to Claim 1; **characterized by** the connection database (231) which is located within the connection unit (23) and its end of connection analysis are updated by the connection unit (23).

11. A system (1) according to Claim 10; **characterized by** the connection database (231) which keeps the information about the connections as time, quality and number of repetition.

12. A system (1) according to Claim 7; **characterized by** the connection unit (23) which analyses quality of the device (C) source according to the information of repetition stored in the connection database (231).

13. A system (1) according to Claim 7; **characterized by** the connection unit (23) which analyses number of successful connections and number of unsuccessful connections and transmits them to the connection database (231) so as to be restored.

14. A system (1) according to Claim 14; **characterized by** the reporting unit (24) which can suggest parking the connection for a specific period of time according to number that connections may fail.

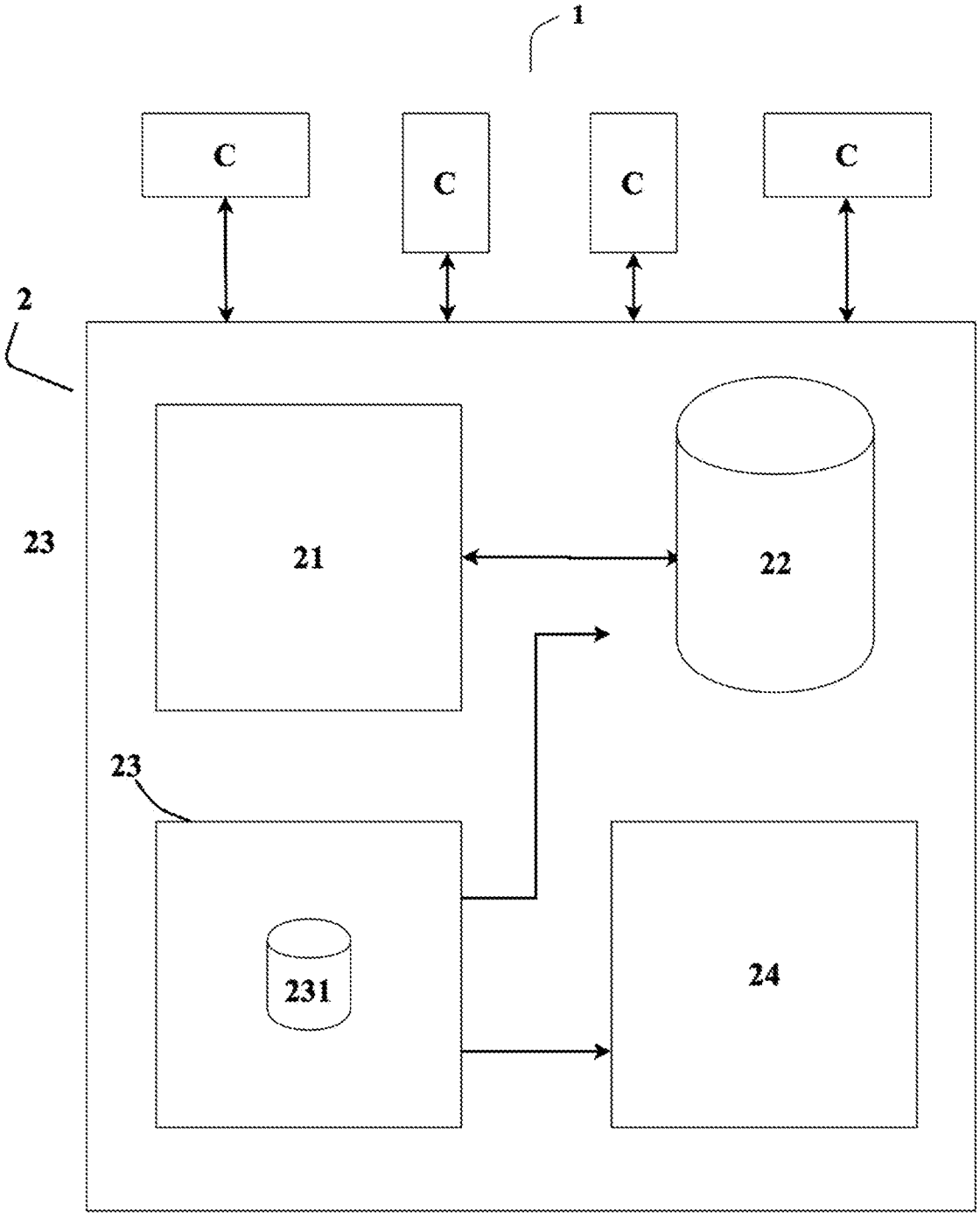
15. A system (1) according to Claim 14; **characterized by** the reporting unit (24) which detects parking period of connections among the devices (C) according to the number of successful connection.

16. A system (1) according to Claim 14; **characterized by** the reporting unit (24) which can suggest a complete disconnection by reporting the devices (C) that it cannot establish connection or get a response over a period determined by the server (2).

17. A system (1) according to Claim 14; **characterized by** the reporting unit (24) which analyses critical problems for the connections established with the devices (C) by using machine learning techniques and transmits their possible reasons and sample solutions to the host system administrator.

18. A system (1) according to Claim 14; **characterized by** the reporting unit (24) which analyses parking periods of connections by means of machine learning techniques according to the number of re-establishing successful connection in the past.

Figure 1



INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

G06F 11/34 (2006.01)i; H04L 29/06 (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)

H04L; G06F

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

Published patent and utility model applications of Turkey, 2005-2019

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

EPO Abstract & Fulltext Databases, WPI Data & Keywords: data gathering system, data collection system, DCS, reduce, consumption, resource, multiple connection, machine learning, park, connection, problem, suspend, temporary, report, server, database, optimize, source, time, quality, repetition, unsuccessful, fail, resource allocation, fault, TCP/IP, UDP, low connection, sunucu, veri toplama, iletişim, istemci, kaynak, kullanım, bağlantı, veritabanı, rapor, başarısız, zaman, kalite ve tekrarlanma

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 20010028500 A (LG INF & COMM LTD [KR]) 06 April 2001 (2001-04-06) EPODOC & WPI abstracts; Description pages 7-10; claims 3, 9; figures 1- 2	1-18
X	US 2016315993 A1 (AGORA LAB INC [US]) 27 October 2016 (2016-10-27) especially abstract; description paragraphs 15-16, 73-75, 80, 94-96; figure 1	1-18
X	WO 2015146381 A1 (AZBIL CORP [JP]) 01 October 2015 (2015-10-01) especially abstract; description summary of invention, pages 6-7; figures 1-2	1-18
X	CN 103870297 A (BEIJING TEAMSUN TECHNOLOGY CO) 18 June 2014 (2014-06-18) the whole document	1-18
A	JP 5942734 B2 (OKI ELECTRIC IND CO LTD,) 29 June 2016 (2016-06-29) the whole document	1-18

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

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"&" document member of the same patent family

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Turkish Patent and Trademark Office (Turkpatent)
Hipodrom Caddesi No. 13
06560 Yenimahalle
Ankara
Turkey

Telephone No. **(90-312) 303 11 82**
Facsimile No. **+903123031220**

Authorized officer

Mustafa Güney ÇALIŞKAN

Telephone No. **+903123031219**