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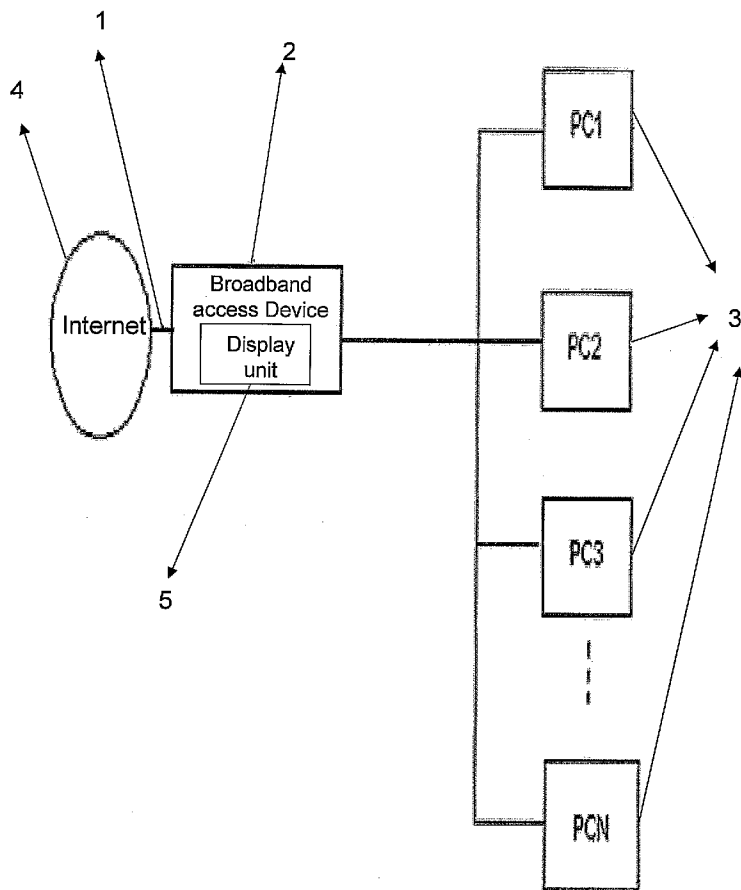
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[Continued on next page]

(54) **Title:** DATA COUNTER FOR BROADBAND ACCESS



(57) **Abstract:** This invention is related to a data counter and computer software related to this data counter, which count and store and display to the user the information showing amount of data passing through broadband access point. The data counter for broadband access developed in this invention is characterized as consisting of main components as ADSL, processor, Ethernet, display unit, data storage unit and RAM memory, including two pieces of software one on the device and one on the computer that is connected to the Internet, the software on the device counting and recording the total amount of data transfer periodically and if necessary displaying it on the display unit on itself, the software on the computer displaying the information recorded on the device.

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DATA COUNTER FOR BROADBAND ACCESS

SUBJECT OF THE INVENTION

This invention is related to a data counter (embedded in a system) that counts and records the total amount of data that passes through the connections of point to point or point to multi point connections (e.g. ADSL line or cable internet connection) of a broadband access device (e.g. ADSL or Cable modem) and displays the recorded information to the user and set of computer software that is related to it.

THE OBJECTIVES

The objectives of developing data counter for broadband access devices are:

- 10 • To display the total amount of data that was received or transmitted between predetermined time and date for broadband subscribers with limited data transfer service (such as Turkish Telekom's or any other telecom operators limited ADSL tariffs)
- To measure the instantaneous or periodical amount of data transfer,
- 15 • To record measured data for past periods,
- To help users estimate the total payment that the user needs to make to service providers and not to exceed the predetermined quotas.
- To help users determine the efficiency of the service they are getting,
- To help users identify the most appropriate and economical payment plan

20 The main feature of the data counter for broadband access that was developed in this invention is that the counter records the values of the amount of data transfer in non-volatile memory of a device like modem that is not a computer, and classify and display it to a user within desired periods.

PRIOR ART

25 There are some existing software solutions that measure the amount of data that passes through a single computer. Dumeter is an example of that. However, computer programs like Dumeter, does not include the features of this invention such as measuring the total amount of data generated by the whole network and recording the measurement data that was collected in the past.

There was no other patent applications encountered that was filed in the past.

FIGURES AND DESCRIPTION OF THE COMPONENTS

The figures, that were prepared to help explain the data counter for broadband
5 access, are attached. The descriptions of the figures are as follows:

Figure 1- Example system diagram

Figure 2- Screen shot

Figure 3- Block diagram of a broadband access device

Figure 4- Flow diagram

10 In order to explain the data counter for broadband access in this invention, all the components that appear in the figures are numbered separately and the description of every numbered item is given below.

1- Broadband connection

2- Broadband access device

15 3- Computers

4- Internet

5- Display device – Display unit

6- Screen appearance

7- ADSL

20 8- Processor

9- Ethernet

10- Data storage unit

11- RAM (memory)

12- Data flow control in a Modem

25 13- Received-transmitted data counter increment

14- Data counter disc recording control

15- Record data to the disc

16- Month change control

17- Record month change, switch to the new month

DETAILED DESCRIPTION OF THE INVENTION

The block diagram of the invention, data counter for broadband access, is shown in
5 Figure 3.

The main components of this invention, data counter for broadband access, are ADSL (7), processor (8), Ethernet (9), display unit (5), flash memory (data storage unit) (10) and RAM memory (11)

Besides the main components of this, the invention, data counter for broadband
10 access, includes two separate software pieces. One piece resides on the device (2); the other is on one of the computers (3) that is connected to the device (2) and the Internet (4)

The software on the device (2) counts the periodical amount of data transfer, records the counted amount and if needed displays it on its display unit (5).

The software on the computer (3) reads and displays the data stored on the device
15 (2)

The data can be displayed by a display unit (5) (e.g. LCD display) that is located on the device (2) or displayed on the computer (3) by the software that runs on the computer (3) and communicates with the counter (2).

This invention, data counter for broadband access, can be explained as a modem
20 counting, periodically recording and displaying the amount of data transfer and additionally displaying it on the computer (3) that is connected to it.

An ADSL modem connected to the Internet is used in the application shown in Figure 3. A cable modem can also be used in this example. As Counter (2) can be the modem itself, it can also be separate from the modem.

25 ADSL modem uses ADSL (7) interface in order to connect to the Internet. Counter (2) collects its information by referencing the amount of data coming from its ADSL (7) interface. Computers (3) are connected through Ethernet (9) interface. The amount of data passing through ADSL (7) is continuously counted by the processor (3) with software running on it. The counter value is stored at certain time periods (every minute, every hour
30 or every day) in a non-volatile memory such as flash disc or any other data storage unit.

For example, at the beginning of each month the amount of data, that was downloaded or uploaded, is recorded into the previous month's field and it cannot be changed after that time.

In the new month, that month's data transfer information is updated at certain period (e.g. every hour). That information is saved in the non-volatile memory which is the data storage unit (10). During the data counting phase, the data is stored in RAM (10) memory. The data in the nonvolatile memory (data storage unit) (10) is displayed by the display unit (5) on the device (2).

The user can see the data stored for certain periods (e.g. monthly, weekly or daily) on the display unit (5) on the device(2) or on the computer (3) screen.

The flow diagram showing the operation of counting and storing the amount of data transfer is shown in Figure 4.

The software that runs on the device (2) continuously checks the data flow (12) from or towards the Internet (4). If there is data flow it increments its counters (13) continuously. At that moment, time is determined and compared to time for recording (14). If the time for recording condition is satisfied the counter values (15) are stored. If the condition is not satisfied the program returns to the beginning.

Month change check is done at the end (16). If there is a month change previous months information is archived (17), the counter values are reset and next months data is started.

The operation method of this invention, data counter for broadband access, is explained below.

The data passing through the broadband connection to the Internet (4) is continuously counted by the program that runs on the broadband access device (2). The data counter values are stored periodically (e.g. monthly, weekly or daily) in non-volatile memory of the device (2). These amounts for certain periods are stored in separate fields for each month and they cannot be changed after that. For example at the beginning of each month, the amount of data that was downloaded or uploaded in the previous month is recorded in previous month's field. In the new month, the amount data for the new month is updated at certain periods (such as every hour). The amount of download and upload data for each month is stored separately for each month.

The user can use one or more computers in order to access the stored values. The stored data can be retrieved by a software running on the computer using a protocol (e.g. SNMP: Simple Network Management Protocol) that is supported by the user's system. The retrieved information can be displayed to the user on a screen (6) in a graphical or
5 alphanumeric format. The information displayed is updated periodically.

If the user desires, he/she can see the instantaneous data transfer rate and the total amount of periodical (e.g. monthly) data upload or download separately or together on a screen (6). Periodical amount of data transfer can be displayed on a screen (6) monthly, weekly, daily or hourly.

10 The data counter for broadband access that was developed in this invention, can generate the information even without a display unit on the device (2) or in a separate application. It can display the information to the user using a display unit (5), such as LCD display, on itself. The data stored on the device can else be sent to the display unit continuously or when requested. The user can access to this information visually.

15 The advantage of this invention is helping users, who chose limited usage broadband access service, select the most cost effective tariff for their service by showing them the periodical amount of data that is downloaded and uploaded. That way the users can switch to the most economical payment plan based on their broadband usage. In addition to that, the users can measure their instantaneous broadband speed and verify the
20 quality of service they are receiving. There may be one or more computers in the network generating traffic. Since the data counter measures the data amount passing through the main broadband connection, the total amount of data that was downloaded or uploaded by all the devices in the network is recorded.

25

CLAIMS

- 1- Data counter for broadband access characterized by consisting of main components of ADSL (7), processor (8), Ethernet (9), display unit (5), flash memory (data storage unit) (10) and RAM memory (11), including two pieces of software one on the device (2) and one on one the computers (3) that are connected to the Internet (4), the software on the device (2) recording the total amount of data transfer periodically and if necessary displaying it on the display unit (5) on itself, the software on the computer (3) displaying the information recorded on the device (2).
- 2- Data counter for broadband access as claimed in Claim 1 and characterized in that device (2) is an ADSL modem or a Cable modem.
- 3- Data counter for broadband access as claimed in any of the preceding claims and characterized in that the data passing through the modem is counted continuously by a processor (8) with the software on itself, stored the counted data periodically in every minute, every hour, every day or any period in a flash disc or any other data storage unit (5), which is the non-volatile memory of the device (2).
- 4- Data counter for broadband access as claimed in any of the preceding claims and characterized by displaying the information stored in flash memory (data storage unit) (10) being non-volatile memory, on a display unit (5) on the device.
- 5- Data counter for broadband access as claimed in any of the preceding claims and characterized in that the software on the device determining the existence of data flow (12) from or towards the Internet (4), if the existence of data flow is determined, incrementing incoming and outgoing data counters (13), determining the time and comparing it with configured time periods (14), if the condition for recording is satisfied storing the counted values (15), if the condition for recording is not met returning to the beginning.
- 6- Data counter for broadband access as claimed in any of the preceding claims and characterized in that the software checks if there is a month change or not (16), if the month changed it archives (17) the previous months counter information.

- 7- Data counter for broadband access as claimed in any of the preceding claims and characterized by recording the information stored on the counters for a period of a day, a week or a month.
- 8- Data counter for broadband access as claimed in any of the preceding claims and characterized by reading the recorded data on the counter by the software on the user's computer (3) by using an appropriate protocol and displaying the information read on the screen (6) graphically or alphanumerically.
- 9- Data counter for broadband access as claimed in Claim 8 and characterized in that the protocol is SNMP (Simple Network Management Protocol)
- 10- Data counter for broadband access as claimed in any of the preceding claims and characterized in that the software on the user's computer (3) displays instantaneous data transfer speed or amount of downloaded or uploaded data for certain periods (e.g. monthly) separately or together on the screen (6).
- 11- Data counter for broadband access as claimed in any of the preceding claims and characterized by not having a display unit (5) on itself.
- 12- Data counter for broadband access as claimed in any of the preceding claims and characterized in that display unit (5) is LCD.

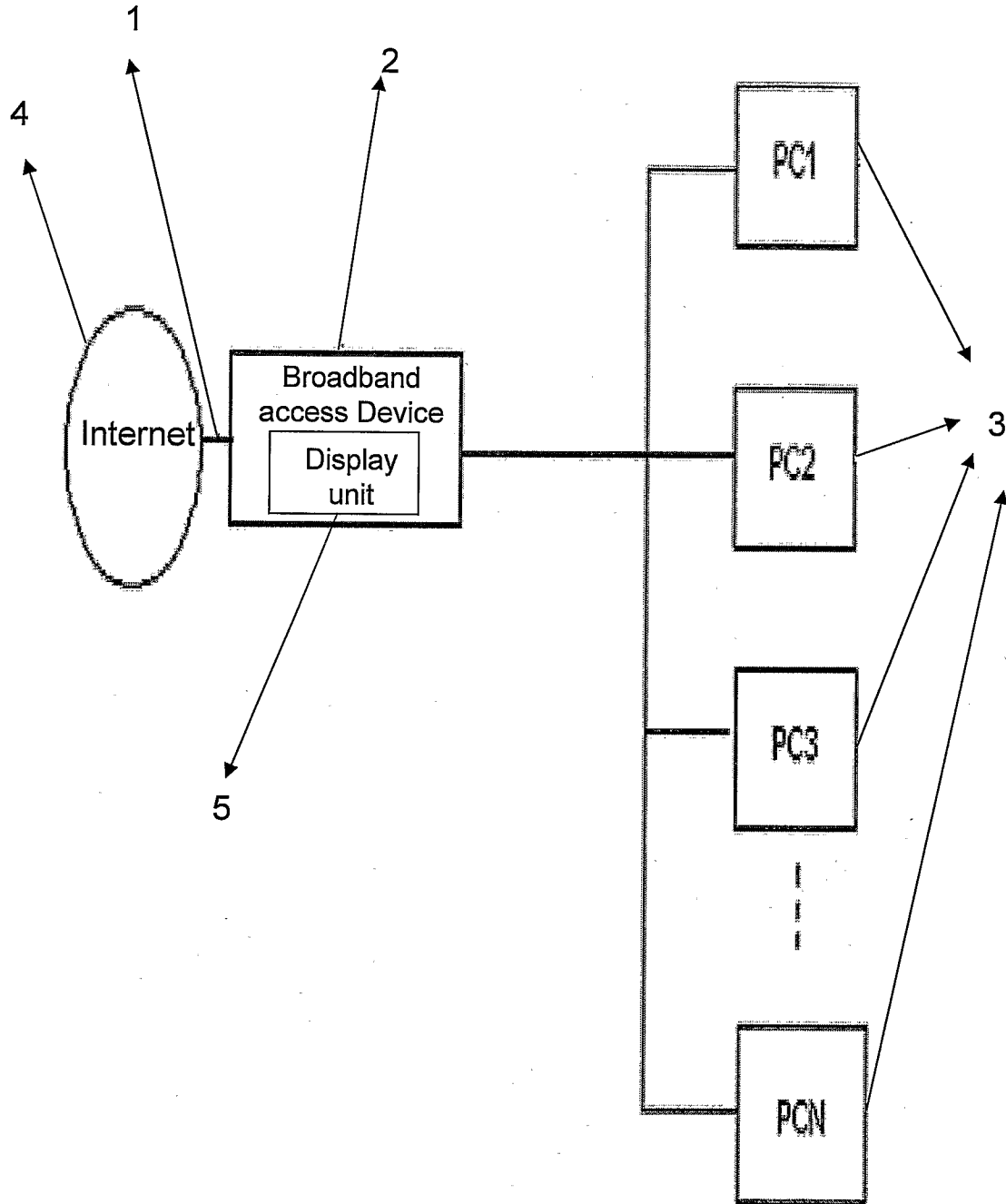


Figure - 1

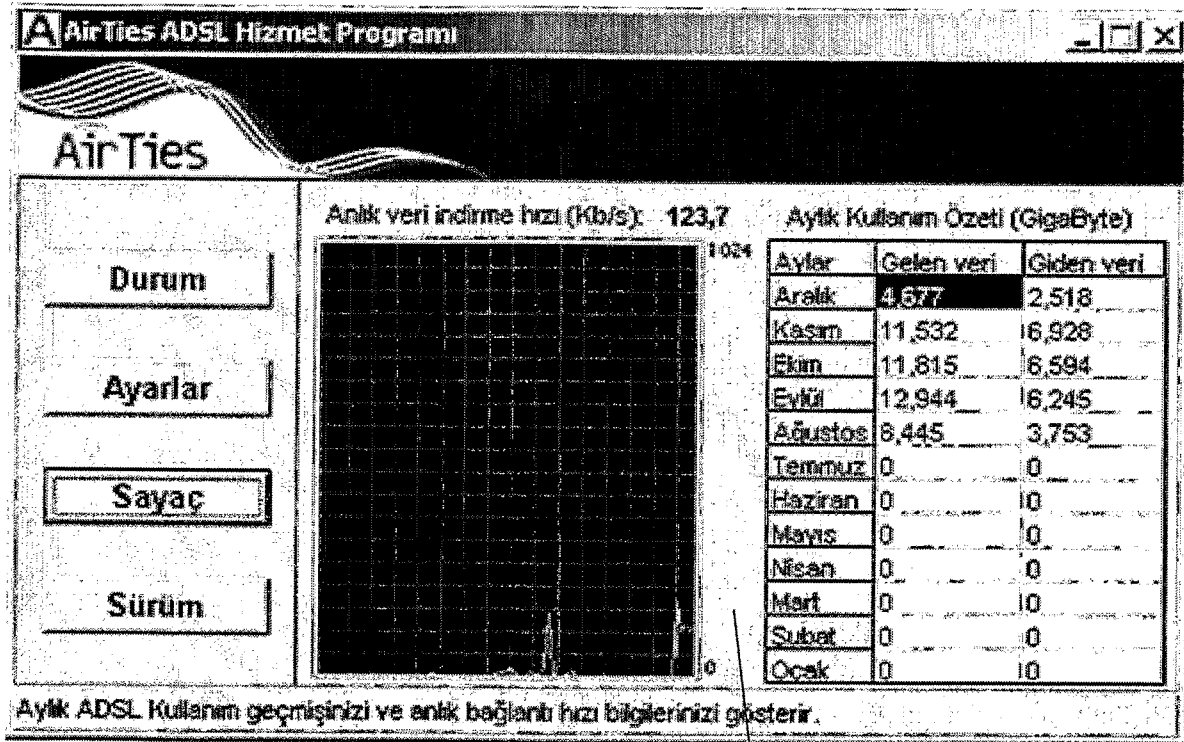


Figure - 2

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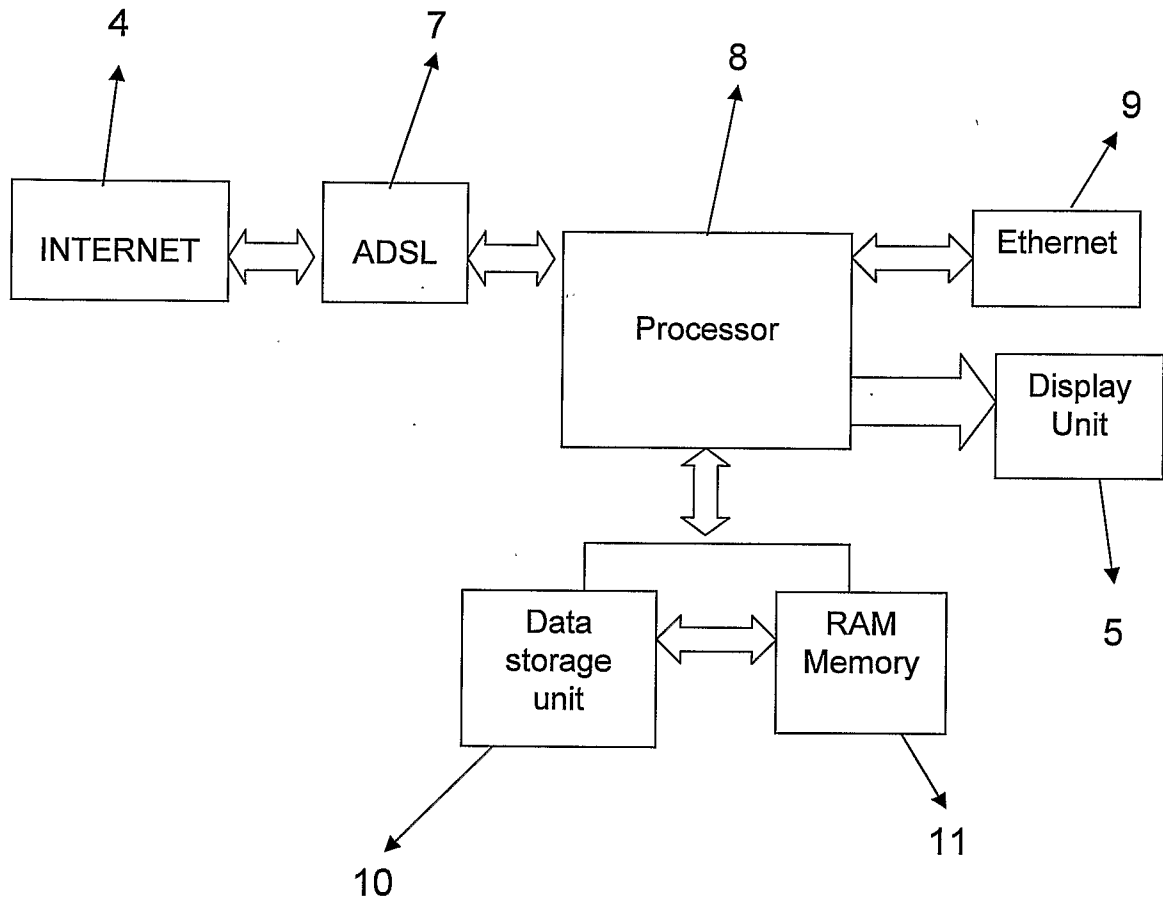


Figure - 3

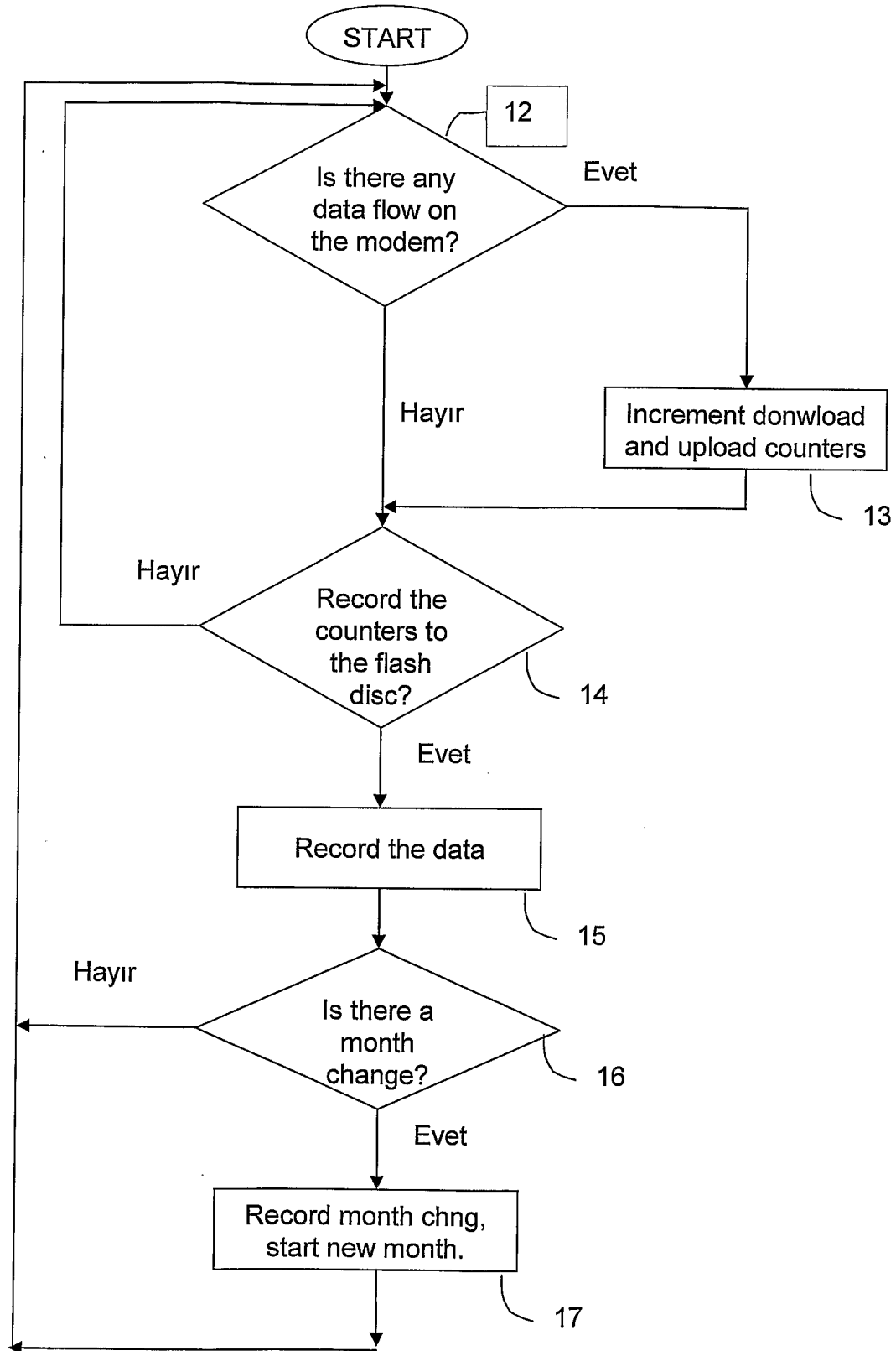


Figure - 4

INTERNATIONAL SEARCH REPORT

International application No

PCT/TR2007/000005

A. CLASSIFICATION OF SUBJECT MATTER
 INV. H04L12/24 H04L12/26

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

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 practical, search terms used)

EPO-Internal, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/123442 A1 (DRUCKER BENJAMIN T [US] ET AL) 3 July 2003 (2003-07-03) abstract figures 3,7 paragraph [0006] paragraph [0022] paragraph [0037] paragraphs [0041], [0042] paragraphs [0048], [0049] paragraph [0051]	1-12
X	US 5 615 323 A (ENGEL FERDINAND [US] ET AL) 25 March 1997 (1997-03-25) abstract figures 1,4-6 column 1, line 48 - column 2, line 28 column 3, line 18 - column 4, line 51 column 6, lines 1-32 column 8, lines 19-22	1-12

Further documents are listed in the continuation of Box C.

See patent family annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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