US 20050191989A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2005/0191989 A1

Plush et al. (43) Pub. Date: Sep. 1, 2005

(54) METHOD AND APPARATUS FOR GENERATING BILLING DATA IN A TELECOMMUNICATIONS SYSTEM

(76) Inventors: **Christopher Plush**, Kingston Bagpuze (GB); **Shelaine Green**, Ware (GB); **David Roat**, St. Albans (GB); **Michael Ferguson**, Bristol (GB); **Brian Carr**, Solihull (GB)

Correspondence Address:
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614 (US)

(21) Appl. No.: **11/112,923**

(22) Filed: **Apr. 22, 2005**

Related U.S. Application Data

(63) Continuation of application No. 10/023,037, filed on Dec. 6, 2001, which is a continuation of application No. 09/721,784, filed on Nov. 22, 2000, now abandoned, which is a continuation of application No. 08/966,800, filed on Nov. 10, 1997, now Pat. No. 6,173,171.

(30) **Foreign Application Priority Data**

May 23, 1997 (GB) 9710730.4

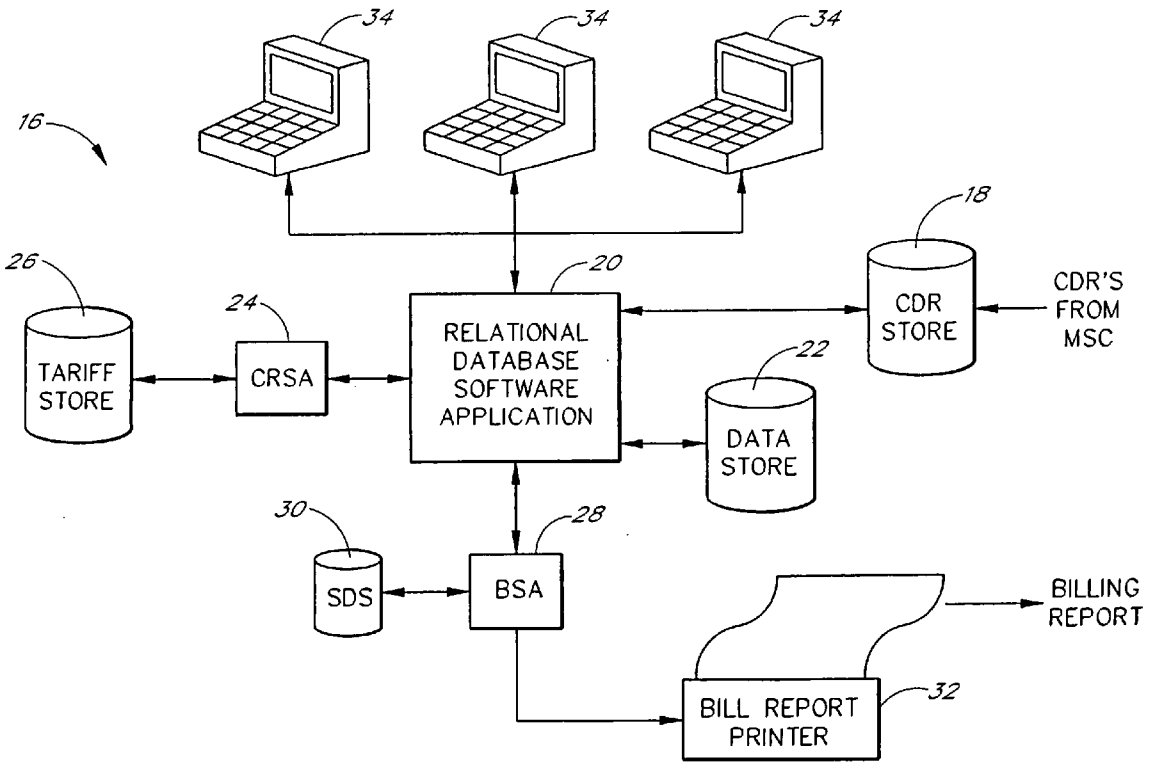
Publication Classification

(51) **Int. Cl.**[7] **H04M 15/00**; H04M 11/00

(52) **U.S. Cl.** **455/406**; 379/114.01

(57) **ABSTRACT**

A billing center for a mobile communications system is described which allows groups of subscribers sharing a single account to be identified both during the call rating procedure, during which call detail records are related to add a charge to the call detail record, and/or to add a usage of a pre-paid usage allocation to be added to the call detail records, and during the production of billing details at the end of a billing period.



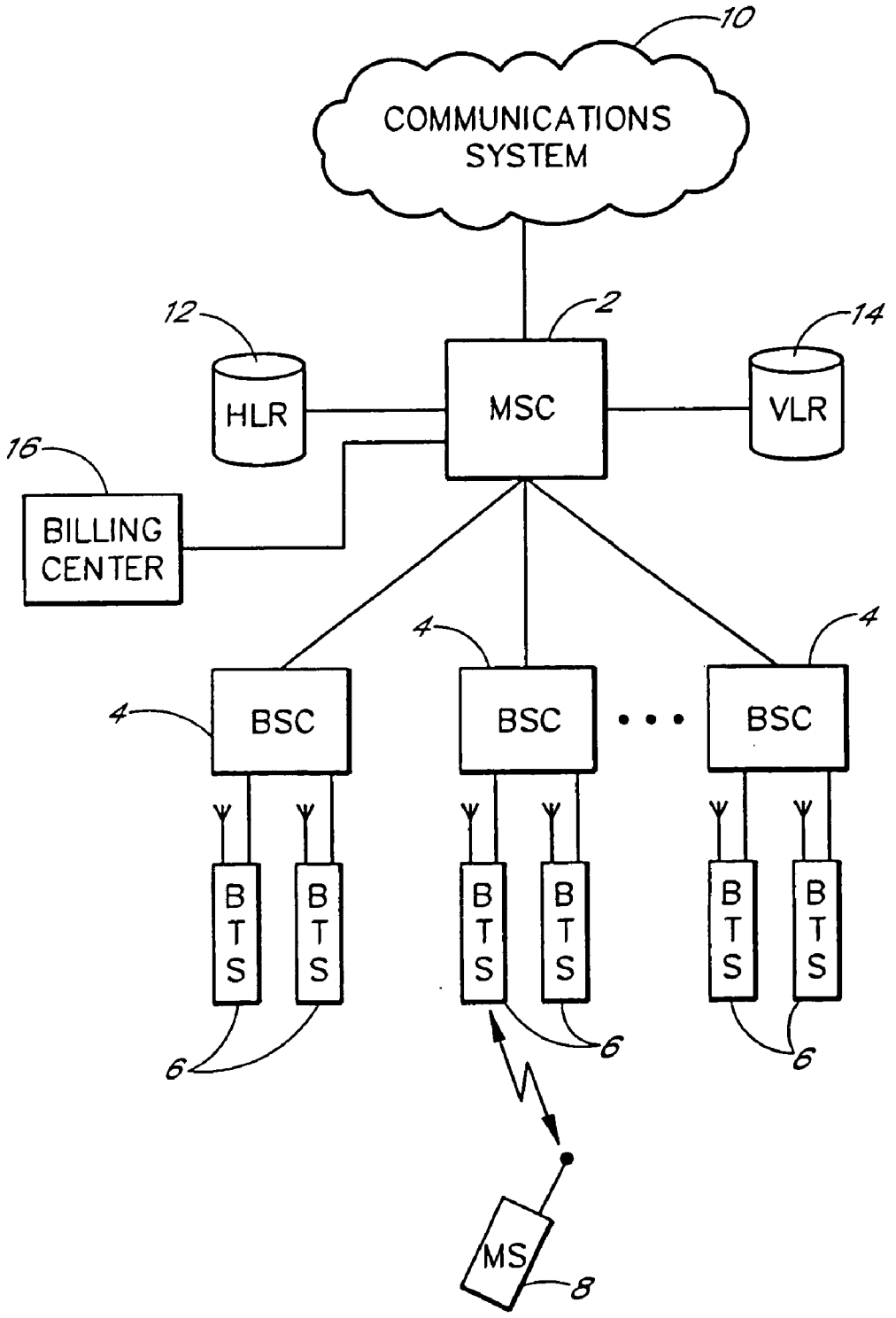

10
COMMUNICATIONS SYSTEM
12
HLR
2
MSC
14
VLR
16
BILLING CENTER
4
BSC
BSC
BSC
BTS
6
MS
8

FIG. 1

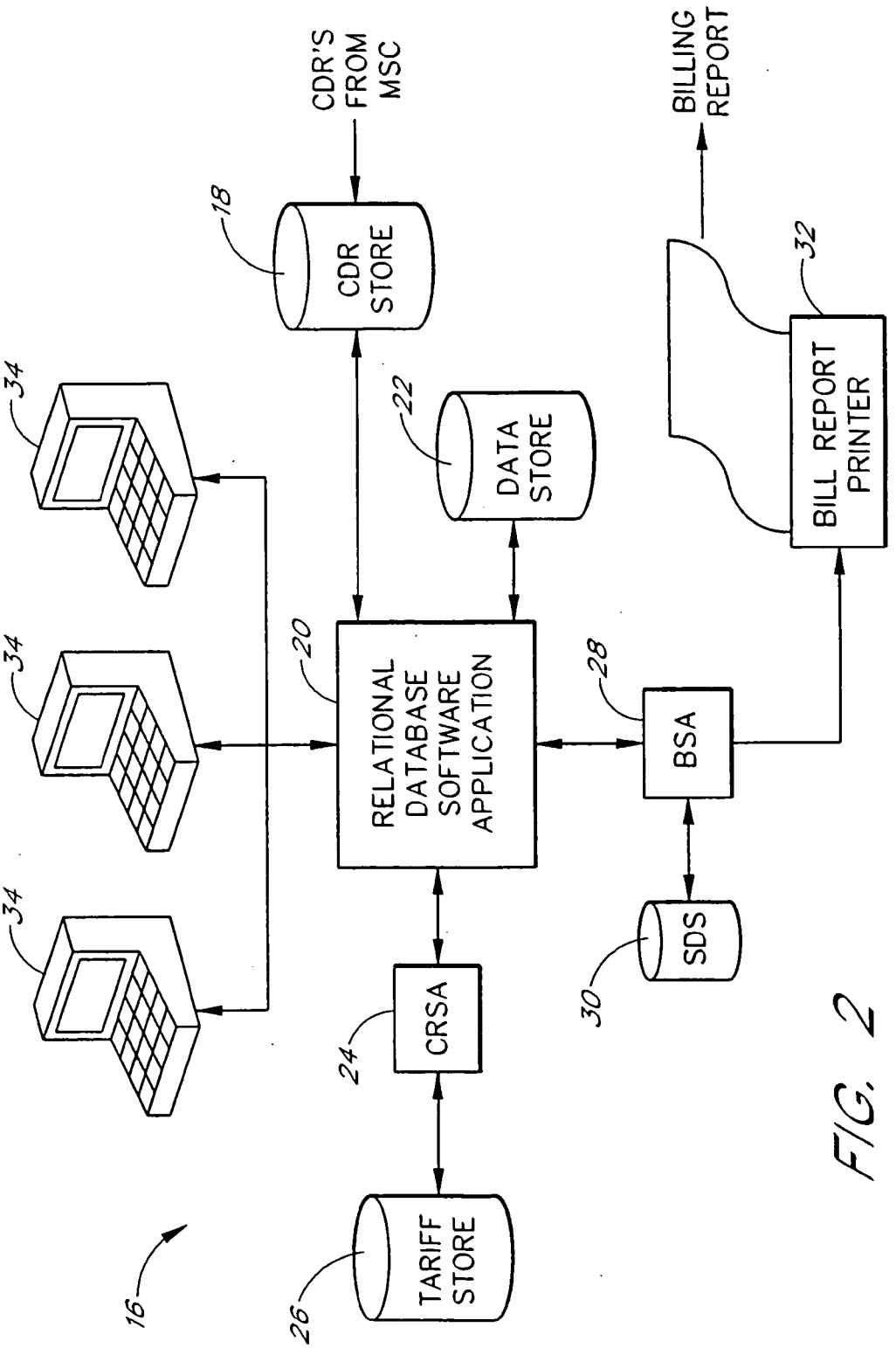

CDR'S FROM MSC
BILLING REPORT
18
CDR STORE
22
DATA STORE
32
BILL REPORT PRINTER
34
34
34
20
RELATIONAL DATABASE SOFTWARE APPLICATION
28
BSA
CRSA
24
SDS
30
TARIFF STORE
26
16

FIG. 2

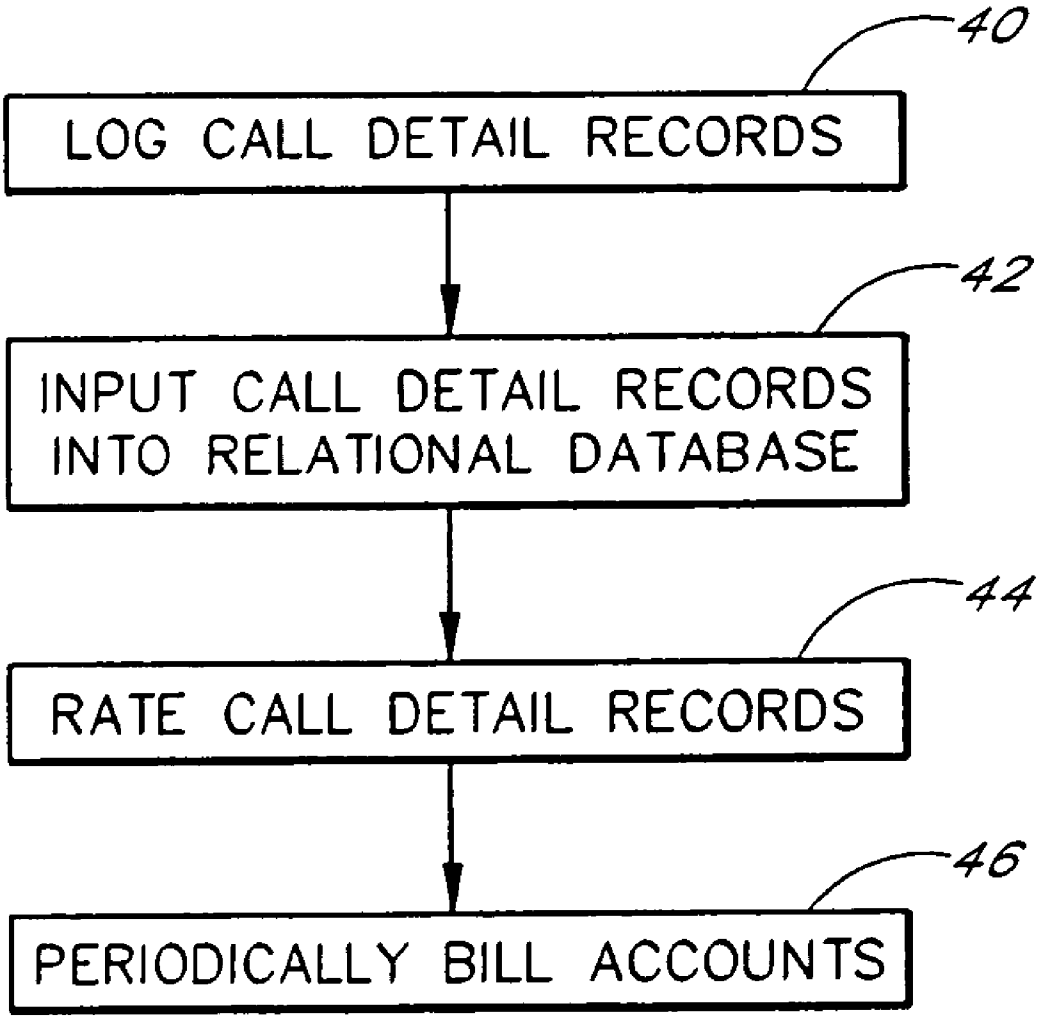

40
LOG CALL DETAIL RECORDS
42
INPUT CALL DETAIL RECORDS INTO RELATIONAL DATABASE
44
RATE CALL DETAIL RECORDS
46
PERIODICALLY BILL ACCOUNTS

FIG. 3

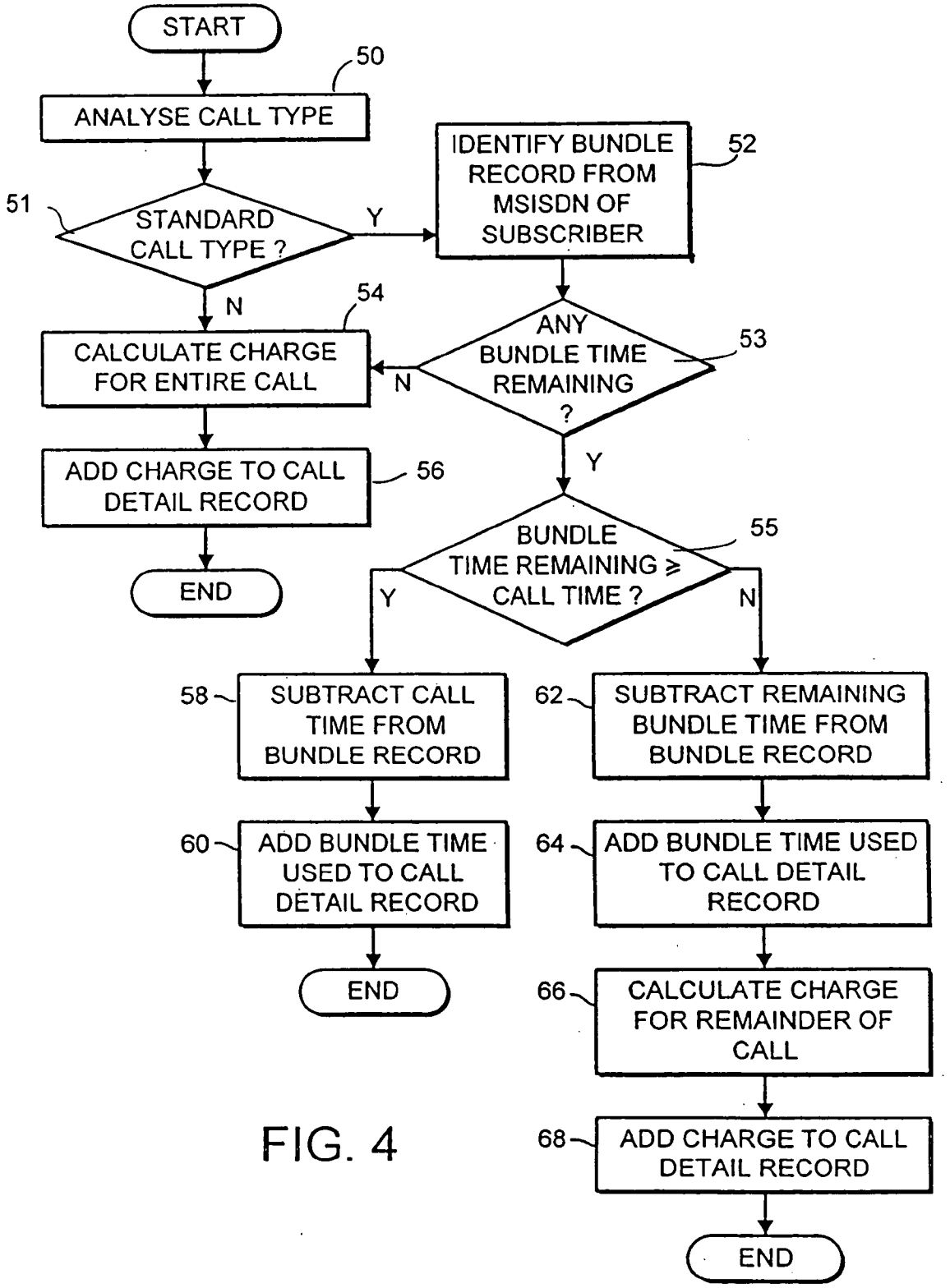

START
50
ANALYSE CALL TYPE
51
STANDARD CALL TYPE ?
Y
IDENTIFY BUNDLE RECORD FROM MSISDN OF SUBSCRIBER
52
N
54
CALCULATE CHARGE FOR ENTIRE CALL
N
ANY BUNDLE TIME REMAINING ?
53
ADD CHARGE TO CALL DETAIL RECORD
56
END
Y
BUNDLE TIME REMAINING ≥ CALL TIME ?
55
Y
N
58
SUBTRACT CALL TIME FROM BUNDLE RECORD
60
ADD BUNDLE TIME USED TO CALL DETAIL RECORD
END
62
SUBTRACT REMAINING BUNDLE TIME FROM BUNDLE RECORD
64
ADD BUNDLE TIME USED TO CALL DETAIL RECORD
66
CALCULATE CHARGE FOR REMAINDER OF CALL
68
ADD CHARGE TO CALL DETAIL RECORD
END

FIG. 4

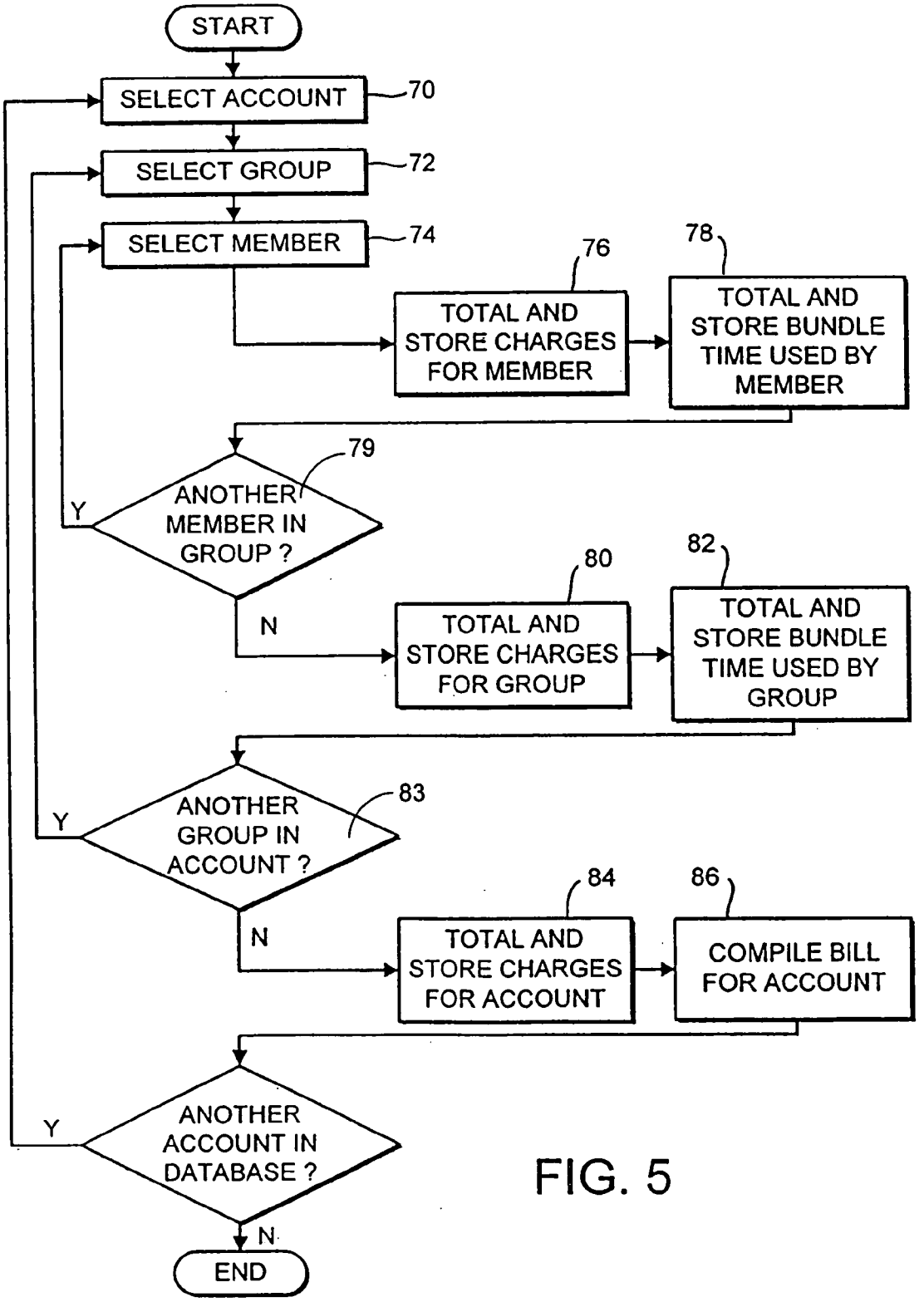

START
SELECT ACCOUNT
70
SELECT GROUP
72
SELECT MEMBER
74
76
TOTAL AND STORE CHARGES FOR MEMBER
78
TOTAL AND STORE BUNDLE TIME USED BY MEMBER
79
ANOTHER MEMBER IN GROUP ?
Y
N
80
TOTAL AND STORE CHARGES FOR GROUP
82
TOTAL AND STORE BUNDLE TIME USED BY GROUP
ANOTHER GROUP IN ACCOUNT ?
83
Y
N
84
TOTAL AND STORE CHARGES FOR ACCOUNT
86
COMPILE BILL FOR ACCOUNT
ANOTHER ACCOUNT IN DATABASE ?
Y
N
END

FIG. 5

METHOD AND APPARATUS FOR GENERATING BILLING DATA IN A TELECOMMUNICATIONS SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. patent application Ser. No. 10/023,037 entitled "METHOD AND APPARATUS FOR GENERATING BILLING DATA IN A TELECOMMUNICATIONS SYSTEM" and filed on Dec. 6, 2001, which is a continuation of U.S. patent application Ser. No. 09/721,784, filed on Nov. 22, 2000 (abandoned), which is a continuation of U.S. patent application Ser. No. 08/966,800, filed on Nov. 10, 1997, now U.S. Pat. No. 6,173,171. The disclosures of the above-described filed applications are hereby incorporated by reference in their entirety.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] This invention relates to telecommunications, and in particular apparatus and methods for generating billing data for subscribers in a telecommunications system.

[0004] 2. Description of the Related Technology

[0005] In mobile communications systems, such as cellular telephone networks, billing is conventionally carried out on a subscriber-by-subscriber basis. Herein, the term "subscriber" refers to the person authorised to access a mobile communications system, using a mobile station or a fixed station.

[0006] In a GSM system, when a subscriber utilises a mobile communications resource, such as conducting a voice call, sending a fax, retrieving voicemail messages, sending text messages, etc, a call detail record is produced in the network which is sent to a billing centre.

[0007] At the billing centre, the call detail records are logged on-line, and periodically transferred to an off-line billing system, for example on magnetic tapes. The call detail records are rated to attach a charge to each usage recorded in the call detail records. This charge depends on the type of service utilised, the length of a connection utilised, and may also depend on the particular type of subscription which the subscriber holds.

[0008] At the end of a billing period, for example at the end of each month, the rated call detail records are processed on a subscriber-by-subscriber basis to produce an individual bill for each subscriber.

[0009] However, this conventional method of billing implemented in the billing centre is not particularly convenient for customers having multiple subscribers utilising the mobile communications system. It can be difficult to manage costings for a group of subscribers when individual bills are separately received.

[0010] U.S. Pat. No. 4,979,207 proposes a cellular telephone billing system which processes call detail records of calls made by subscribers belonging to multiple-subscriber customers to produce bills. The call detail records are processed to attach a key identification number for each subscriber. The key identification number and a chosen associated information format are used to select a type of billing report required by the customer so that it may be provided during billing. However, this only provides a way to produce a desired format of billing report for a customer, and does not affect the charge made to a customer.

[0011] It would be desirable to provide apparatus whereby charging structures which are flexible, easy to understand, and logical, may be implemented for associated groups of subscribers in a mobile communications system.

SUMMARY OF CERTAIN INVENTIVE EMBODIMENTS

[0012] In accordance with one aspect of the invention there is provided a method of processing usage of telecommunications resources in relation to subscribers in a telecommunications system, the telecommunications system holding data identifying a plurality of groups of subscribers, each group having data identifying network resource usage criteria associated therewith, the method comprising:

[0013] allocating an amount of network usage to at least one group, the allocated network usage being for use in offsetting actual usage of network resources and being shared by subscribers in the group;

[0014] analysing data indicative of actual usage of network resources by identifying a group associated with the actual usage and on the basis of network resource usage criteria associated with the allocated network usage; and

[0015] offsetting the actual usage against the amount of allocated network usage.

[0016] According to a further aspect of the invention there is provided a method of processing usage of telecommunications resources in relation to subscribers in a telecommunications system, the telecommunications system holding data identifying a plurality of groups of subscribers, each group having data identifying network resource usage criteria associated therewith, the method comprising:

[0017] allocating an amount of network usage to at least one group, the allocated network usage being for use in offsetting actual usage of network resources up to and including the amount and being shared by subscribers in the group;

[0018] analysing data indicative of actual usage of network resources by identifying a group associated with the actual usage and in accordance with network resource usage criteria associated with the allocated network usage; and

[0019] accounting for the actual usage on the basis of an amount associated with the allocated network usage.

[0020] According to a yet further aspect of the invention there is provided a method of generating billing data for subscribers in a telecommunications system, the telecommunications system holding data identifying a plurality of groups of subscribers, each group having data identifying network resource usage criteria associated therewith, and an amount of network usage allocated thereto, the allocated network usage being for use in offsetting actual usage of

network resources up to and including the amount and being shared by subscribers in the group, the method comprising:

[0021] analysing data indicative of actual usage of network resources by identifying a group associated with the actual usage and on the basis of network resource usage criteria associated with the allocated network usage;

[0022] identifying a first charge for actual usage less than an available amount of said amount of allocated network usage, and a second charge for actual usage in excess of the available amount of allocated network usage; and

[0023] storing data indicative of said identified first or second charge for use in generating billing data.

[0024] According to a still further aspect of the present invention there is provided apparatus for processing usage of telecommunications resources in relation to subscribers in a telecommunications system, apparatus comprising:

[0025] a storage system for storing data identifying a plurality of groups of subscribers, each group having data identifying network resource usage criteria associated therewith;

[0026] an allocation system arranged to allocate an amount of network usage to at least one group and store data indicative of the same, the allocated network usage being for use in offsetting actual usage of network resources and being shared by subscribers in the group;

[0027] a processing system responsive to actual usage of network resources so as to identify a group associated with the actual usage and, on the basis of network resource criteria associated with the allocated network usage, to offset the actual usage against the amount of allocated network usage.

[0028] Embodiments of the invention allows a common charging tariff to be applied for each subscriber in a group for which a combined subscription is held, for example by a business concern; a usage allocation may be allocated not only to a single subscriber, but by groups of subscribers of various sizes, thereby allowing flexibility and the utilisation of usage allocations in accordance with the requirements of different groups of subscribers. Conveniently, by means of allocating an amount of network usage, the current amount of usage allocation remaining may be readily determined either during a billing period or at the end of a billing period.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] Further features and advantages of the present invention will be apparent from the following description of preferred embodiments of the invention, wherein:

[0030] **FIG. 1** is a block diagram schematically illustrating a mobile communications network in accordance with an embodiment of the invention;

[0031] **FIG. 2** is a block diagram schematically illustrating a billing centre in accordance with an embodiment of the invention;

[0032] **FIG. 3** is a flow diagram illustrating procedures carried out by the call billing centre of **FIG. 2**;

[0033] **FIG. 4** is a flow diagram illustrating a call rating procedure carried out by the billing centre of **FIG. 2**; and

[0034] **FIG. 5** is a flow diagram illustrating a billing procedure carried out in the billing centre of **FIG. 2**.

DETAILED DESCRIPTION OF CERTAIN INVENTIVE EMBODIMENTS

[0035] **FIG. 1** shows a cellular communications network, such as a GSM network, which is in itself known and will now be described in detail. A mobile switching centre (MSC) **2** is connected via communications links to a number of base station controllers (BSCs) **4**. The BSEs **4** are dispersed geographically across areas served by the MSC **2**. Each BSC **4** controls one or more base transceiver stations (BTSs) **6** located remote from, and connected by further communications links to, the BSC. Each BTS **6** transmits radio signals to, and receives radio signals from, mobile stations **8** which are in an area served by that BTS. That area is referred to as a "cell". A mobile communications network is provided with a large number of such cells, which are ideally contiguous to provide continuous coverage over the whole network territory.

[0036] The MSC **2** is also connected via communications links to other MSCs in the remainder of the communications system **10**, and to a public services telephone network (PSTN), ISDN lines, etc, which are not illustrated. The MSC is provided with a home location register (HLR) **12** which is a database storing subscriber authentication data, and a visitor location register (VLR) **14** which is a database temporarily storing subscriber authentication data for mobile stations active in its area.

[0037] When the user of the mobile station **8** utilises a telecommunications service provided by the mobile communications network, for example by initiating a voice call, sending a fax, sending data, sending text messages, or retrieving voicemail, etc, a call detail record is generated in the network, which is sent to a billing centre **16**.

[0038] The call detail records include, amongst other information, the international mobile subscriber identity (IMSI) and the telephone directory number (MSISDN) used for the call, along with data allowing the computation of a charge for the call. This data includes the date and time of the beginning of the call, its duration, the nature of the service provided during the call (voice, data, short messages, etc) the called party number, and in the case of packet services, the volume of transmitted data.

[0039] Table 1 illustrates a set of subscription types and charging structures which may be implemented in the billing centre **16** in accordance with this embodiment of the

Subscription type	1st handset monthly charge	Monthy charge per additional handset	Number of users allowed	Shared bundle	peak n/min	off-pk n/min
1	N	N/2	1–2	60 mins	10n	5n
2	2N	N/2	1–3	200 mins	9n	4n
3	3N	N/2	1–4	360 mins	8n	4n
4	4N	N/2	1–5	540 mins	7n	3n

-continued

Subscription type	1st handset monthly charge	Monthy charge per additional handset	Number of users allowed	Shared bundle	peak n/min	off-pk n/min
5	7N	N/2	1–10	1000 mins	7n	3n
6	18N	N/2	1–25	2500 mins	7n	3n
7	36N	N/2	1–50	5000 mins	7n	3n

[0040] As indicated, seven subscription types are provided having varying charging details. The charges shown are in cost units N and n for illustrative purposes.

[0041] Any number of subscribers (from a single subscriber to a group of 50, or more if desired) may be allocated to a single subscription, depending on the subscription type held. In each subscription type, a "bundle" of pre-paid call time usage allocation is provided for use during a single month. A monthly subscription charge is levied for the first subscriber according to the subscription type held, and a set monthly subscription charge is charged for every further subscriber added to the subscription. Subscribers pay call charges for non-bundle-time calls at peak times, and off-peak times, according to the subscription held.

[0042] From table 1, it will be apparent that the choice of a different subscription alters the characteristics of the subscription type as follows:

[0043] 1. The monthly subscription charge for a single subscriber subscription generally increases.

[0044] 2. The monthly subscription charge for a group subscription generally increases.

[0045] 3. The number of subscribers allowed in a group subscription generally increases (from 2 to 50).

[0046] 4. The bundle of pre-paid usage allocation (call time) generally increases.

[0047] 5. The call charging tariffs, for both peak and off-peak calls, generally decrease.

[0048] It is also a feature of this embodiment of the invention that an account holder may have multiple subscriptions, including group subscriptions and/or individual subscriptions, in a single account managed by the billing centre **16**.

[0049] **FIG. 2** illustrates features of the billing centre schematically. The billing centre includes a call detail record logging store **18**, a relational database software application **20** and its associated data store **22**, a call rating software application **24** and its associated tariff data store **26**, a billing software application **28** and its associated subscription data store **30**, and a billing report printing apparatus **32**.

[0050] Each of the software applications **20**, **24**, **28** is implemented in an appropriate data processing means, such as a mainframe computer or a computer workstation. The data store **18** may consist of magnetic tape data storage, and/or other suitable storage media, such as hard disks.

[0051] Also connected to the relational database application **20** is a set of customer service workstations **34**, allowing for on-line data input and retrieval of subscriber, group and account details from the relational database.

[0052] **FIG. 3** illustrates procedures carried out in the billing centre **16**. The call detail records are received continually, in real time, from the MSC to which the billing centre is connected and logged in logging store **18**, step **40**. These logged call detail records are then periodically input in batches into the relational database **20**/**22**.

[0053] The call detail records, once in the relational database **20**/**22**, are then rated in date and time order by the rating application **24**, referring to the tariff store **26** to attach an appropriate charge to each call detail record. The attached charge is stored in the relational database **20**/**22**.

[0054] The relational database **20**/**22** holds not only call detail records but also subscriber detail records, bundle records (to be described below), group records and billing account records. The relational database holds subscriber data for each subscriber identifying the billing account to which the subscriber belongs, and if the subscriber is an individual subscriber, details identifying the subscription type which the subscriber holds, or if the subscriber belongs to a group, data identifying the group to which the subscriber belongs. The group records indicate the type of subscription held for the group. The relational database is configured so that any details relating to a billing account held in the database may be retrieved by selecting the appropriate billing account, any details relating to a group held on the database may be retrieved by selecting the appropriate group, and any details relating to a particular subscriber held in the database may be retrieved by selecting the appropriate subscriber.

[0055] Each bundle record is associated with a particular subscription, whether that is an individual subscriber subscription or a group subscription. Each bundle record holds data indicating an amount of pre-paid allocated call-time usage (referred to as a call time "bundle" herein) allowed for the subscription during each billing period, and data indicating the amount of that usage allocation remaining during a billing period. In this embodiment of the invention, the usage allocation is a duration of call time. In the case of a single-subscriber subscription, the bundle is related to a single directory number (MSISDN) and may be used by that subscriber only. In the case of a group subscription, the bundle is related to a number of directory numbers (MSISDNs) and may be used by any subscriber in the group in part or in whole.

[0056] In this embodiment no charges are made by the network operator for usage of the bundle time, and therefore it is desirable for subscribers to utilise all of their bundle time during a billing period.

[0057] **FIG. 4** illustrates the rating procedure carried out by the rating application **24** for a single call detail record. The call detail record is first analysed to determine whether the call made is of a standard call type, step **50**. For example, standard calls may include national fixed-line terminating calls, whereas calls made to other mobile stations, premium rate services or international calls will be treated as non-standard, since they are generally more costly.

[0058] If the call type indicated in the call detail record is non-standard (step **51**), the rating application **24** proceeds to calculate a charge for the entire call, by retrieving non-standard tariff charging details held in the tariff store **26**, step **54**. When the charge has been calculated, data indicating the charge is added to the call detail record, **56**, to allow the call to be billed at a later stage.

[0059] If in steps **50** and **51** the call is identified as a standard call type, it is determined that the call duration may be subtracted from any available bundle time, rather than being charged for directly. In order to identify the bundle record holding the appropriate usage allocation data, the rating application **24** determines the directory number (MSISDN) from which the call was conducted, whereby the bundle record is identified by association in the relational database **20**/**22**, step **52**.

[0060] If the bundle record indicates that all of the bundle time originally available at the start of the billing period has been used already (step **53**), the rating application **24** proceeds to retrieve data indicating the subscription type of the subscriber from the relational database **20**/**22** and standard tariff charges for that subscription type from the tariff store **26**, and thereby to calculate the charge for the entire call, step **54**. The calculated charge is added to the call detail record, step **56**.

[0061] If however there is bundle time remaining, it is checked whether the bundle time remaining is greater than or equal to the duration of the call (step **55**). If so, the duration of the call is subtracted from the remaining bundle time in the bundle record, step **58**, and data indicating the bundle time used is added to the call detail record, step **60**, for use in subsequent billing of the call. No charge is attached to the call detail record.

[0062] If the bundle time remaining is less than the duration of the call, the remaining bundle time is subtracted from the remaining usage allocation in the bundle record (then no usage allocation remains) and data is added to the call detail record indicating the bundle time subtracted, steps **62** and **64**.

[0063] Next, the charge for the remaining duration of the call is calculated by retrieving the subscription type held in the relational database **20**/**22**, and the appropriate standard charging tariff details held in the tariff store **26**, step **66** billing application stores data including the charge to be billed for that subscriber and the amount of bundle time used by the subscriber.

[0064] The billing application **28** then proceeds to perform step **74**, **76** and **78** for each subscriber in the selected group (step **79**), until charging and bundle time data has been totalled for each subscriber in the selected group. Then, the charges stored for each subscriber in the group are totalled and data indicating the total charge for the group is stored, step **80**, and the bundle time used by each subscriber is totalled and data indicating the total bundle time used by subscribers in the group is stored, step **82**. By means of step **83** the procedure returns to step **72** if the account consists of a number of groups, until there are no more groups remaining in the account.

[0065] Next, the total group charges calculated in step **80** are totalled and a total charge for the account is calculated and stored, step **84**.

[0066] In step **86**, the billing details for the account are compiled, using the charges and bundle times calculated by the billing application **28**, and using other data in the call detail records retrieved by the billing application **28**. The billing details include the subscription charges levied, the usage charges incurred, and the amount of the subscriber's group's allocation of bundle time used, for each subscriber in the account, the total subscription charges levied, the total usage charges incurred, and the total usage allocation used by each group, the total charge to be posted to the account, and individual call itemisation details indicating the date, time, duration, cost and terminating point for each call made by subscribers in the account during the preceding billing period.

[0067] Once the billing details have been compiled for an account, the billing details may be transmitted to the billing report printing apparatus, **32**. The billing report printing apparatus **32** formats the billing details to generate an invoice for the account on one page, a group billing report on one or more further pages, and an individual call itemisation report on one or more further pages. The invoice specifies the total charges for the account to be paid by the account holder. The group billing report indicates for each group in the account the total subscription charges incurred for the group and the total bundle time used by the group, along with the total subscription charges and the total bundle time used by each subscriber in the group. This allows the account holder to readily understand the charges incurred by each group in the account. The individual call itemisation report shows the date, time, duration, charge and terminating point for each call made by every subscriber in the account.

[0068] The embodiment of the present invention described provides a billing apparatus, in the form of a billing centre, for example similar to that shown in **FIG. 2**, whereby charging structures allowing associated groups of subscribers belonging to the same account, and consisting of various numbers of subscribers, to be allocated collective charging tariffs, and/or a shared allocation of pre-paid usage. Furthermore, by calculating the usage allocation for each group actually used by each subscriber in a group, and by the group as a whole, during a billing period, and indicating those figures in the billing report generated for an account holder, the account holder is readily able to monitor the usage of the pre-paid allocations for groups in the account. In case the account holder finds that one or more groups of subscribers in the account are not using their subscription effectively, the account holder can ask the network operator to transfer the group to a different subscription type.

[0069] A billing centre for a mobile communications system is provided which allows groups of subscribers sharing a single account to be identified both during the call rating procedure, during which call detail records are to add a charge to the call detail record, and/or to add a usage of a pre-paid usage allocation to the call detail records, and during the production of billing details at the end of a billing period.

[0070] A relational database holds usage allocation records which pertain either to a single subscriber, or to a group of subscribers. The group of subscribers may consist of any of 2 to 50, or more, subscribers, depending on the subscription type held by the group.

[0071] It is to be mentioned that the elements of the billing centre illustrated in **FIG. 2** need not be located at a single centre. For example, the billing data produced by the billing application **28** may be transferred to magnetic tapes and transported to a printing centre for printing by the billing report printing apparatus **32**.

[0072] In the case of subscriptions being taken through a service provider, rather than the network operator, the call

detail records held in the relational database **20**/**22** for the proceeding billing period, once rated, may be sent to the service provider for processing using a billing application belonging to the service provider. Alternatively, the billing details may be generated by the billing application **28**, and the billing details transmitted to the service provider for the production of billing reports by the service provider.

[**0073**] In the embodiment described above, the usage allocation consists of a call time bundle. However, other usage allocations may be provided, such as a bundle consisting of a number of short messages, a number of pages of fax transmission, an amount of data, etc. Furthermore, the usage allocation need not be pre-paid in entirety—the bundle resource used may for example be charged at a reduced tariff.

[**0074**] It will also be appreciated that various other modifications and variations may be employed in relation to the above-described embodiment without departing from the spirit or scope of the present invention.

[**0075**] While the above detailed description has shown, described, and pointed out novel features of the invention as applied to various embodiments, it will be understood that various omissions, substitutions, and changes in the form and details of the device or process illustrated may be made by those skilled in the art without departing from the spirit of the invention. The scope of the invention is indicated by the appended claims rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed is:

1. A method of processing usage of telecommunications resources in relation to subscribers in a telecommunications system, wherein the telecommunications system stores data identifying a plurality of groups of subscribers, wherein each group has data identifying a subscription type and network resource usage criteria associated therewith, the method comprising:

allocating an amount of network usage to at least one group, wherein the allocated network usage is predetermined in accordance with the subscription type associated with the group and is dedicated for use in offsetting actual usage of network resources and is shared by subscribers in the group;

analysing data indicative of actual usage of network resources by identifying a group associated with the actual usage, wherein the analysis is based at least in part on network resource usage criteria associated with the allocated network usage; and

offsetting the actual usage against the amount of allocated network usage.

2. The method according to claim 1, including modifying the amount of allocated network usage in dependence on the actual usage.

3. The method according to claim 1, including reducing the amount of allocated network usage in dependence on the actual usage, so as to modify the amount of allocated network usage.

4. The method according to claim 2, wherein the actual usage is offset against the amount of allocated network usage as modified on the basis of one or more previous instances of actual usage of network resources.

5. The method according to claim 2, wherein, in the event that the amount of allocated network usage is exhausted, the method includes applying one of a plurality of predetermined call charging tariffs in respect of the actual usage.

6. The method according to claim 1, including identifying a magnitude associated with the actual usage and subtracting the identified magnitude from the allocated network usage.

7. The method according to claim 1, wherein the amount of network usage is allocated to a given group in dependence on the number of subscribers associated with the given group.

8. The method according to claim 1, wherein the amount of network usage is allocated in dependence on the associated network service.

9. The method according to claim 8, wherein the network service is a data service.

10. The method according to claim 8, wherein the network service is one of a short message service, a facsimile service, and a voice service.

11. The method according to claim 1, including identifying a subscriber identity number associated with the actual usage of network resources so as to identify the group.

12. A method of processing usage of telecommunications resources in relation to subscribers in a telecommunications system, wherein the telecommunications system stores data identifying a plurality of groups of subscribers, and wherein each group has data identifying a subscription type and network resource usage criteria associated therewith, the method comprising:

allocating an amount of network usage to at least one group, wherein the allocated network usage is predetermined in accordance with the subscription type held for the group and is dedicated for use in offsetting actual usage of network resources up to and including the amount, and wherein the allocated network usage is shared by subscribers in the group;

analysing data indicative of actual usage of network resources by identifying a group associated with the actual usage, wherein the analysis is in accordance with network resource usage criteria associated with the allocated network usage; and

accounting for the actual usage based at least in part on an amount associated with the allocated network usage.

13. The method according to claim 12, including modifying the amount of allocated network usage in dependence on the actual usage.

14. The method according to claim 12, wherein the actual usage is accounted for in relation to the amount of allocated network usage as modified on the basis of previous instances of actual usage of network resources.

15. A method of generating billing data for subscribers in a telecommunications system, wherein the telecommunications system stores data identifying a plurality of groups of subscribers, wherein each group has data identifying a subscription type and network resource usage criteria associated therewith, and an amount of network usage allocated thereto, wherein the allocated network usage is predetermined in accordance with the subscription type held for the group and is dedicated for use in offsetting actual usage of network resources up to and including the amount, and

wherein the allocated network usage is shared by subscribers in the group, the method comprising:

analysing data indicative of actual usage of network resources by identifying a group associated with the actual usage, wherein the analysis is based at least in part on network resource usage criteria associated with the allocated network usage;

identifying a first charge for actual usage less than an available amount of the amount of allocated network usage, and a second charge for actual usage in excess of the available amount of allocated network usage; and

storing data indicative of the identified first or second charge for use in generating billing data.

16. The method according to claim 15, wherein the amount of allocated network usage is modified in accordance with the actual usage, and wherein the modified allocated network usage is available for offsetting against subsequent actual usage of network resources.

17. The method according to claim 15, wherein the second charge is selected from one of a plurality of predetermined call charging tariffs.

18. The method according to claim 15, wherein the first charge is zero.

19. The method according to claim 15, wherein the amount of network usage is allocated in dependence on the associated network service.

20. The method according to claim 19, wherein the network service is a data service.

21. The method according to claim 19, wherein the network service is one of a short message service, a facsimile service, and a voice service.

22. The method according to claim 20, including identifying a subscriber identity number associated with the actual usage of network resources so as to identify the group.

23. An apparatus for processing usage of telecommunications resources in relation to subscribers in a telecommunications system, the apparatus comprising:

a storage system for storing data identifying a plurality of groups of subscribers, wherein each group has data identifying network resource usage criteria associated therewith;

an allocation system configured to allocate an amount of network usage to at least one group and store data indicative of the same, wherein the allocated network usage is dedicated for use in offsetting actual usage of network resources and is shared by subscribers in the group;

a processing system responsive to actual usage of network resources so as to identify a group associated with the actual usage and configured to offset the actual usage against the amount of allocated network usage based at least in part on the network resource criteria associated with the allocated network usage.

24. An apparatus for generating billing data for subscribers in a mobile communications system, the apparatus comprising:

a data storage configured to store subscriber records and usage allocation records, wherein the usage allocation records are shared by respective groups of subscribers and correspond to a finite amount of network usage, and wherein each group comprises a plurality of subscribers; and

a processor configured to analyze call data and account for the usage allocation in a usage allocation record when the call data indicates that a subscriber in a group sharing the usage allocation record has made a call in the mobile communications system, such that the usage allocation record indicates the amount of usage allocation remaining after the call.

25. An apparatus for generating billing data for groups of subscribers in a mobile communications system, wherein each group has data identifying individual subscribers and network resource usage criteria associated therewith and a finite amount of network usage allocation allocated thereto, wherein the apparatus includes a data processing system configured to identify a group associated with actual usage of network resources, and, based at least in part on an amount available of the finite amount of allocated network usage, to identify a first charge for actual usage less than the amount available, and a second charge for actual usage in excess of the available amount, wherein the billing system is configured to store data indicative of the identified first or second charge for use in generating billing data.

* * * * *