Title: Real Time Pre-Paid Call Access System

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ABSTRACT

A call access system operating in real time; wherein a call from a subscribing caller passes from a base provider network into a pre-paid system network; said subscriber maintaining a notional credit balance in a real-time account in a pre-paid database of said pre-paid system network, and wherein funds are drawn down from said account during said call from said subscriber; said subscriber pre-selected for said pre-paid system network on a designated line.
AUSTRALIA

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COMPLETE SPECIFICATION

FOR A STANDARD PATENT

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Invention Title: Real Time Pre-Paid Call Access System

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The following statement is a full description of this invention, including the best method of performing it known to us.
REAL TIME PRE-PAID CALL ACCESS SYSTEM

The present invention relates to a real time pre-paid call access system via pre-selection and, more particularly, but not exclusively, to such a system adapted for access to timed phone calls and/or national, international, calls to mobiles.

BACKGROUND

The following background description, nor any part of it, is to be taken as an admission of what may constitute common general knowledge in any jurisdiction.

Historically in many countries, a base provider local telephone company provides all telephony services to its subscribers. It really didn’t matter what number was dialed, be it local, national long distance or even international, the one carrier handled everything.

Since the advent of competition within the telecommunications marketplace a number of competitors now provide some or all of the services previously available only from the base provider with the market for Long Distance being probably the most contested.

Most alternate providers of Long Distance services have largely relied upon the Preselection process to gather traffic from their Subscribers. Preselection is the process whereby a subscriber connected to a base provider selects another carrier they prefer to carry their long distance
calls. Typically the base provider is obligated under the regulatory regime to pass these long distance calls from their own network to the competing network via a so-called interconnection arrangement.

At this point of interconnection not only is the actual call handed over to the preselected carrier but there are also signaling messages conforming to international standards that indicate to the preselected carrier the telephone number of the person making the call (A Party) as well as the number they dialed (B Party).

Most telephone services are still physically connected to a base provider's local exchanges but anyone who wishes to use a different long distance provider can have their line preselected to their carrier of choice. When they dial a National, International or Fixed To Mobile call, their local base provider exchange automatically hands the call to the preselected carrier for termination.

A commercial agreement for this long distance traffic exists between the end subscriber and the alternative provider. The fact that the base provider may be the local carrier for that subscriber and that the base provider charges the alternate provider a so-called interconnect fee for the use of their network, is transparent to the subscriber. The base provider receives this interconnection fee from the alternative provider for the use of their local exchange, interconnection facilities and the like.
it is the alternative provider that rates and bills the long
distance call to the end subscriber.

With the exception of this bill however, the operation
and facilities available from alternative providers are near
enough to identical to the service provided by the base
provider. Indeed the fundamental difference between the
carriers is related to the price of the call rather than
feature or functional matters relating to the call. The bill
arrives either monthly or quarterly and the account is paid
in arrears. The fundamental nature of the service is
unchanged in that it is still a post-paid arrangement.

A problem with this arrangement is that call costs can
rapidly mount, particularly in respect of timed calls, to
the extent that the caller may feel as though they have no
real control over the charging and certainly have no way of
monitoring the charges sufficiently closely that they feel
as though there is some control being exerted over the
charges being incurred.

It is an object of the present invention to address or
ameliorate one or more of the above mentioned disadvantages.

BRIEF DESCRIPTION OF INVENTION

Accordingly, in a first broad form of the invention, there
is provided a call access system operating in real time;
wherein a call from a subscribing caller passes from a base provider network into a pre-paid system network; said subscriber maintaining a notional credit balance in a real-time account in a pre-paid database of said pre-paid system network, and wherein funds are drawn down from said account during said call from said subscriber; said subscriber pre-selected for said pre-paid system network on a designated line.

Preferably, said call is a timed call.

Preferably, said call is a national call, international call or call to a mobile.

Preferably, said call is initiated via a base provider network and which call is passed by said base provider network to said pre-paid system network on confirmation of a specified criterion.

Preferably, said criterion comprises said call being a timed call.

In another broad form of the invention, there is provided a real time pre-paid call access system wherein a pre-paid call subscriber accesses a pre-paid system network which is associated with a pre-paid system database; said pre-paid system network maintaining a pre-paid account for said subscriber as a pre-paid data record in said pre-paid system database; said subscriber enabled to make a call via said
pre-paid system network while said pre-paid data record indicates funds are available to apply to the cost of said call; said subscriber pre-selected for said pre-paid system network on a designated line.

5 Preferably, said call is a timed call.
Preferably, said call is a national call, international call or call to a mobile.
Preferably, said call is to a mobile or cellular telephone.
Preferably, said call is initiated via a base provider network and which call is passed by said base provider network to said pre-paid system network on confirmation of a specified criterion.
Preferably, said criterion comprises said call being a timed call.

10 Preferably, said criterion is said call is a national call, international call or a call to a mobile.
Preferably, said criterion is said call is to a mobile telephone.
Preferably, said criterion includes a code string appearing in said call.
Preferably, said code string comprises a PIN number.
Preferably, said PIN number identifies a specified subscriber associated with a specified pre-paid data record.
Preferably, said Subscriber is pre-selected for said Pre-Paid system network on a designated line.

Preferably, said designated line is a landline.

Preferably, said designated line is a mobile telephone line.

Preferably, incorporating least cost routing.

In still another broad form of the invention, there id provided a method of routing telephone calls from an A Party to a B Party by way of a first provider network and at least a second provider network operating in association with a pre-paid subscriber data base; said method including the step of said second provider receiving a call from said first provider; said call including at least the designation of a designated line characterizing calling Party A together with information identifying the line of called Party B; said second provider routing said call to Party B with reference to a Pre-Paid data base for the purpose of determining cost of and charging Party A for said call.

Preferably, further including the step of party A pre-selecting said party B for call routing and billing.

Preferably, further including party B determining said cost so as to optimise said cost with reference to a plurality of service providers.
BRIEF DESCRIPTION OF DRAWINGS

Embodiments of the present invention will now be described with reference to the accompanying drawings wherein:

Fig. 1 is a block, interconnected diagram of a real time pre-paid call access system in accordance with a first embodiment of the present invention;

Fig. 2 is an online application form screen suitable for use with an internet-enabled embodiment of the system of Fig. 1;

Fig. 3 is a screen arrangement at account entry level for the Internet enabled system of Fig. 2;

Fig. 4 is a call details summary screen in accordance with the internet-enabled embodiment of Fig. 2;
Fig. 5 is a recharge history screen suitable for use with the Internet enabled embodiment of Fig. 2;

Fig. 6 is a re-charge screen for use with the Internet enabled embodiment of Fig. 2;

Fig. 7 is a block diagram of the public switched telephone network and its interfaces to the pre-paid system according to a further embodiment of the present invention;

Fig. 8 is a logic flow diagram for the operation of the pre-paid system of Fig. 7 after a pre-paid system call is passed across the point of interconnection boundary.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

FIRST EMBODIMENT

With initial reference to Fig. 1 and in accordance with a first preferred embodiment of the present invention, a call model 11 in a real time prepaid call access system is implemented whereby a call from a subscribing caller A (12) is passed from the base provider network at base provider local exchange 13 into a pre-paid platform 14 whereby the subscriber 12 has a notional credit balance in a real-time account 16 and funds are drawn down from that account 16, again in real time, during a call.

The detailed call flow can be as follows:

- The subscriber 12 (A Party) lifts their handset and dials a long distance number CLI(B) as per usual. At their local exchange 13 the preselected status of the
line forces the call to be handed over from the base provider network to pre-paid network facilities, either directly or via an intermediate point of interconnection.

When the call arrives at the pre-paid system network it is accompanied by data that unambiguously identifies the phone number CLI(A) of the A Party and also the number CLI(B) that they dialed as a result of the interconnection method described above.

The account balance associated with CLI(A) is examined to determine if sufficient funds are available as stored in data record of real time account for completion of the call.

If there are sufficient funds available an announcement is made via pre-paid system responder to the caller advising of their monetary balance and the maximum time available for the call based upon that balance.

The call is then connected to the B Party (Caller B).

In the event that insufficient funds are available for the completion of the call, an announcement is made by system responder to the caller advising them of their low balance and inviting them to recharge their account.
If they elect not to recharge their account then the call is disconnected. If however they elect to recharge their account by depositing money into it, then their call is passed to the pre-paid system responder 20 where an operator (either human or automated) can perform a credit card transaction in real time to top-up their account.

- The caller 12 can then continue with the call - they do not have to hang up and dial again if they dial "#" at the end of the call.

- If during a call their real time balance approaches the minimum allowed, a warning tone is played via system responder 20.

- If during their call their real time balance reaches the minimum allowed the call is disconnected from the B party and the caller 12 is offered the recharge options described above. Alternative payment options are also available at any other time including Credit Card transactions via the Web or live operator, Bpay, Direct Debit, and OTC via Aust Post.

Because the account of the A party is being checked during the call set-up process via an intelligent network, a number of other value added features are available:

- Security Coding - the subscriber can register for a PIN and then is prompted during call set-up to prevent
Unauthorized users from accessing the account, if the customer opts for this when at home. This feature is always needed when away from home.

Multiple Accounts — each user of the same telephone number in say a shared accommodation environment can have an individual account linked to a secure PIN 21.

**Example 1**

A specific system specification implemented for communication via Internet 22 will now be described and wherein the real time pre-paid call access system 10 is denoted as “GOTalk”:

**System Features**

**GOTalk Features & Benefits**

**Why Choose GOTalk**

GOTalk is an exciting new long distance service provider that is prepaid. Now you can enjoy the benefits of prepaying your national, international and calls to mobile. With GOTalk you will have access to some of the lowest rates in the market.

With GOTalk you can enjoy the following benefits:

- **You keep your same phone number**
- **Low rates**
- **No more long distance bills**
- **Recharge when it suits you**
- **Auto Top Up**
View your account details online

Use GOtalk from any phone in Australia

Tired of paying for someone else's calls

Going overseas and want to call friends in Australia

5 Low balance Alert

Low talk time

You keep your same phone number - Your phone number does not change. You still remain with your current phone company for your line service and equipment. GOtalk looks after your international, national and calls to mobile.

Low rates - With GOtalk, you will have access to some of the lowest rates in the market. Because we don't send you any bills, we pass the savings on to you. With GOtalk, you get the same low rates 24 hours a day.

No more long distance bills - Because GOtalk is a prepaid service, you won't have to worry about surprise long distance bills at the end of the month. You can recharge your account with as little as $10 - now you can take control of your phone budget once and for all.

20 Recharge when it suits you - easy and simple recharge options

* Recharge using your credit card by calling GOtalk
* Visit the recharge section in our website www.gotalk.com.au and use your credit card
* Go to Australia Post and pay with cash

* BPAY using a biller code and the account number (from the
back of your card)

You never need to run out. When your account goes below $5 we let you know so that you have the option to add more value to your account.

5 Auto Top Up - You can register for our auto top up service. Your account will be topped up automatically with a predetermined amount each month or if your balance reaches $5 or less. Top up your account with as little as $10 or as much as $100 at a time.

10 View your account online - Go to 'Account Details' on the navigational bar above and you will be able to view your account balance, your recharges and your call details.

Use GOtalk from any phone in Australia - You can also make calls using GOtalk services whilst travelling or staying with friends. You can use your GOtalk service from any phone in Australia using your same prepaid account. Just dial 1800gotalk, enter your registered phone number and four digit PIN and make a call.

Tired of paying for someone else's calls? - Whether you are in a share house or you want to allocate a budget for your teenagers to use, using GOtalk will make sure everyone pays their own way – With GOtalk each person can have their own separate account by using a 4 digit security pin code - you will never need to fight over a long distance bill again!

25 Just register for a 'Multiple Account'.

Going overseas and want to call friends in Australia? -
Whilst you are overseas you can still enjoy all the benefits of GOtalk's low rates and prepay as you go. Simply call our Customer Service to find out which of the 49 countries you can call from.

5 Low Balance Alert — When your account goes below $5, the next time you use the service you are alerted and given the option to automatically add value to your account.

Low Talk Time — you will hear a 'beep' when you have 60 seconds left for your call and again when you have 30 seconds left.

User Guide for Example 1

Instruction for the user 12 for use of the system via the screens illustrated in Figs 2 through to 6 can be as follows:

15 Calling From Home

1. Dial number you wish to call.
2. Listen to your account balance and available talk time
   Note: for national calls, dial area code + phone number
   Note: also for international calls, dial country code + area code + phone number —

Calling When Away From Home

You can use GOtalk from any phone in Australia using your same prepaid account. You just follow these simple steps:

25 1. Dial 1800 468 255 (that is, 1800gotalk)
2. Select option 4
3. Enter your 10 digit phone number (e.g. 02 9770 1234) + your 4 digit security pin code followed by 
4. Listen to your current balance*
5. Dial the number you wish to call followed by 
6. Listen to the talk time available

Access From Overseas

Whilst you are overseas you can still enjoy the benefits of GOtalk's low rates and prepay as you go. Simply call customer service to find out which of the 49 country's you can call from

Recharge when it suits you

Add value to your account 24 hours, 7 days a week by using any of our simple and convenient recharge methods listed below:

1. On the Gotalk website - (www.gotalk.com.au) in the 'Account Details' section using your credit card
2. Over the Phone - Call 1800 GOtalk (1800 468 255) and follow the voice prompts to recharge your account with your credit card. This facility is available 24 hours day, every day of the year. Alternatively our customer service team will talk you through it all.
3. Australia Post - Take your personalised GOtalk card to any Australia Post and pay over the counter. Call credits are normally available by 10am the next working day.
4. **BPAY** - Your BPAY biller code will be provided and the Customer Reference Number is your account number (from the back of the GOtalk card). Call credits are available within 24 hours.

5. **Auto Top Up**

You can register for our Auto Top Up service. Your account will be topped up automatically with a pre-determined amount each month or if your account balance reaches $5 or less. Top up your account with as little as $10 or as much as $100 at a time.

6. **Low Balance Alert**

When your account goes below $5, the next time you use the service you are alerted and given the option to automatically add value to your account.

7. **Low Talk Time**

You will hear a 'beep' when you have 60 seconds left for your call and again when you have 30 seconds left.

8. **Customer Service**

Our GOtalk team is available 24 hours a day, 7 days a week.

Simply call 1800 GOtalk (1800 468 255) if you would like to change your 4 digit security pin code, add more value to your account or to ask about our latest offers.

9. **View Account Details Online**

Go to Account Details to view your account balances, your recharges and your call details.
Multiple User (Shared Household)

1. Dial the number you wish to call.
2. Enter the 4 digit security pin code followed by #
3. Listen to your account balance and talk time available.

Printable Version

To download a printable version please click here

*This feature is optional and can be turned off by calling Customer Services.

10 GOralk Online Services

Welcome to GOralk Online Services. Please click on the links below to go to the relevant section.

Your Account Details

Your registered telephone number (07) 5593 0631
Your personal account number 360006333
Your current account balance $41.68

GOralk Recharge Options

Welcome to the Recharge section. We offer you the convenience of recharging your GOralk Account 24 hours a day, 7 days a week. You can recharge as little as $10 or as much as $100 at a time.

There are several simple and convenient options available to you:

Using a Credit Card (24 hours a day, 7 days a week)

You can recharge our account by entering your credit card details via our secure site please click here. This should
take no longer than a couple of minutes. Recharge as little as $10 or as much as $100.

OR

You can call our Customer Service 1800 GOtalk (1800 468 255) with your credit card details and ask for additional value to be added to your account.

Pay with Cash at Australia Post

If you prefer to pay with cash, you simply take your GOtalk card* (that has a barcode ~ the back) to Australia Post and they will add the value to your account. Call credits will normally be available by 8pm the same evening.

PAY

With the biller code and your 10 digit account number, you can call your phone banking provider or visit your internet banking provider at their website to add value to your account. Call credits will be available overnight.

Auto Top Up

You can register for our Auto Top Up service by calling Customer Service. Your account will be topped up automatically with a pre-determined amount each month with as little as $10 or as much as $100 at a time or if your balance reaches $5 or less.

SECOND EMBODIMENT

With reference to Figs. 7 and 8 there is illustrated a real-time pre-paid call access system 50 in accordance with a second preferred embodiment of the present invention.
In this instance a first provider 51 acts as a local access provider and provides the infrastructure for the public switched telephone network across a boundary referred to as the point of interconnection 52.

In this instance it is second provider 53 which incorporates a pre-paid database 54 into its network in the manner described in respect of previous embodiments thus providing the ability to calls which are transferred to the second provider network 53 the ability to provide pre-paid call access from a designated line.

In this instance the "designated line" is that of calling party A designated "CLIA" in Fig. 7. In its simplest form the designated line 55 is characterised by a telephone number associated with calling party A.

In the event that calling party A has pre-selected the network of second provider 53, then when calling party A makes a telephone call on designated line 55 the point of interconnection 52 checks a pre-selection look-up table 56 to determine the provider pre-selected for designated line 55 which, in this instance, is second provider 53 and then on-transfers the call to the network of second provider 53.

The call being transferred can be a local call, a timed call, a long distance call, an international call. At the same time, as a minimum, data is provided with the redirected call 57 in the form of the originating telephone number CLIA of calling party A (equivalent to the
designated line 55 identity) together with the destination number CLIB to whom the call ultimately is to be passed by way of the second provider's network.

A similar scenario can occur where the originating party originates a call from a mobile phone 60 and, in this instance, has a "virtual" designated line 59 characterised by the telephone number (CLIC) of the mobile phone 60. In this case the mobile telephone network 61 of the mobile telephone network provider must pass to the point of interconnection 52 information comprising CLIC and CLIB. This information is then on-forwarded with reference to the pre-selection look-up table 56 as described with reference to CLIA above.

**Information Transfer Between the Local Access Provider and the Pre-Paid System**

With reference to Figure 7 the Pre-Paid System 50, interfaces to the Public Switched Telephone Network across a boundary commonly referred to as a Point Of Interconnection 52. Within most Regulatory Jurisdictions a series of technical standards exist that define this interface. These standards are in turn well known to those conversant with telephone network engineering. The agreed standard within the Australian environment for this is referred to as I-ISUP and is defined within ACA (Australian Communications Authority) and/or ACIF documentation.
The Pre-Paid System 50 described here is configured in accordance with the relevant Standards and is capable of interconnecting either directly to the Local Access Provider or via an intermediary inter-exchange carrier, Long Distance Carrier or other Service Provider using the interface and signalling scheme referred to above.

For the Pre-Paid System 50 to achieve the functionality it is important only to be able to determine the originating telephone number 57, the A Party CLI, or CLIA, and the dialled Destination Number 58 (the B Party CLI or CLIB) at the point of interconnection 52. The Pre-Paid System 50 is therefore capable of providing all of the facilities referred to above across lower functionality interfaces such as ISDN and may therefore be connected to correspondent networks at the so-called terminal level.

Pre-Paid System General Description

The telecommunications regulatory regimes around the world generally encourage competition particularly but not exclusively for Long Distance (LD) calls either nationally or internationally or for Fixed-To-Mobile (FTM) calls, by enforcing so-called 'pre-selection' capabilities on the Local Access Providers.

In effect this preselection allows the telephone subscriber to be physically connected to a certain telecommunications provider for the supply of their local
call facilities but to have their Long Distance (LD) and Fixed-To-Mobile (FTM) calls passed across from their local provider to a different carrier or service provider to provide an equivalent service. This process is typically transparent to the subscriber and no change to dialling habits is required. The subscriber must register with the Alternative Provider and declare to their Local Access Provider their requirement for Preselection to that Alternative Provider.

As an alternative, the regulatory regime also mandates the use of a manual over-ride code that the subscriber can dial by prepending it to the desired number on a call-by-call basis. This 4-digit code provides a method of passing the call to the carrier or service provider of choice on any individual call and over-rides any preselection condition for that call only. In this manner a telephone subscriber can choose from a number of suppliers on a call-by-call basis for both local as well as other kinds of calls.

The Pre-Paid System 50 presented herein conforms to the generalities of the above but provides additional functionality by way of allowing calls to be made and debited in Real Time against a Pre-Paid Account Balance.
Conventional Long Distance Call Flow

The following simplified description of the conventional service arrangement assumes that the subscriber has previously entered into a supply agreement with both a local access provider as well as an alternative supplier of LD & FTM services and that preselection to that alternative supplier has been effected.

The subscriber places an LD or FTM call using the local access facilities provided by their Local Access Provider.

The Local Access Provider, by analysing the dialled digits, recognises that the call is one that is preselectable.

The Local Access Provider establishes the identity of the Carrier/Service Provider that currently provides LD/FTM services for that subscriber, typically by either examining in real time a remote database or by local switch programming.

The Local Access provider passes the call to the Preselected Carrier/Service Provider for them to process and terminate. The methodology by which the call is passed between the two network operators is subject to appropriate technical and operational standards in force within the jurisdiction of the Regulatory Authority.

The Local Access Provider charges the Preselected Carrier/Service Provider an Interconnect fee, usually as a
per-minute rate and as such the Local Access Provider for this call levies no charges on the caller.

The Preselected Carrier/Service Provider receives the call from the Local Access Provider, together with information distinguishing the Originating Subscriber’s Calling Line Identity (CLI) and the required destination.

The Preselected Carrier/Service Provider then typically validates the CLI against a database of permitted numbers to ensure that a valid commercial agreement exists between themselves and the Originating Subscriber.

If the CLI is unknown to the Carrier/Service Provider the call will usually be terminated to a recorded announcement advising the Originating Subscriber to contact the Customer Service Department.

If the CLI is known and authorised, the call will be routed by the Preselected Carrier/Service Provider to the desired terminating number, be it nationally or international.

The Preselected Carrier/Service Provider will generate a billing record at the completion of the call that in turn will appear on the Originating Subscriber’s invoice at some later period.

In this manner, the Subscriber is billed in arrears for all calls made over some arbitrary billing period.

Typically the Subscriber has no easily accessible method by
which they can ascertain their call costs to date merely by using telephone instrument.

**Pre-Paid Long Distance Call Flow**

The Pre-Paid system 50 described here provides additional functionality and capabilities to that described above so as to allow the provision of for example Long Distance and Fixed-To-Mobile services by way of a Pre-Paid Account Balance held in the Pre-Paid Database 54.

With reference to Figure 8 the following simplified description again assumes that the subscriber has previously entered into a supply agreement with both a local access provider as well as an alternative supplier of Pre-Paid Long Distance & Fixed-To-Mobile services and that preselection to that alternative supplier has been effected.

The subscriber places an LD or FTM call using the local access facilities provided by their Local Access Provider.

The Local Access Provider, by analysing the dialled digits, recognises that the call is one that is preselectable.

The Local Access Provider establishes the identity of the Carrier/Service Provider that currently provides LD/FTM services for that subscriber, typically by either examining in real time a remote database or by local switch programming. It should be noted that there is no additional
requirement upon the Local Access Provider to determine that this call is destined for the Pre-Paid system and that the operation of their Local Access Network is unchanged from the conventional method described previously. The Pre-Paid System described here does not require any additional functionality within the existing telephone network that already supports Preselection.

With reference to Figure 8 the Local Access provider passes the call to the Preselected Carrier/Service Provider for them to process and terminate.

The Local Access Provider charges the Preselected Carrier/Service Provider an Interconnect fee, usually as a per-minute rate.

The Preselected Carrier/Service Provider receives the call from the Local Access Provider, together with information distinguishing the Calling Subscriber’s Calling Line Identity (CLI) and the required destination.

The Preselected Carrier/Service Provider operates the Pre-Paid System and all calls received from the Local Access Provider are passed into this Pre-Paid System.

The Pre-Paid System interrogates the Pre-Paid Database to determine the status of the account associated with the Calling Subscriber’s Telephone number.

If that telephone number is unknown within the Pre-Paid Database 54, the Pre-Paid System will play a Recorded Voice Announcement or the like that will inform the caller
that they are not registered. The Pre-Paid System by
signalling a 'hang-up' back to the Local Access Provider
will release the call.

If that telephone number is indeed known to the Pre-
Paid System, a number of parameters, related to that
account are retrieved from the Pre-Paid Database. These
parameters would include, but are not limited to, Account
Status, Remaining Balance, Security Classification, Call
Barring Details and the like.

If the telephone number is one for which a number of
accounts exist, the Pre-Paid System will request from the
caller the Security Code or PIN and then validate it based
upon information stored within the Pre-Paid Database. From
this validation the Pre-Paid System will correctly identify
the appropriate account and retrieve account related
parameters as described above. If the supplied Security
Code or PIN is incorrect, the Pre-Paid System will re-
prompt the caller for the correct information a number of
additional times set by the System Operator. If the caller
fails to provide correct security information or PIN within
the specified number of attempts, the Pre-Paid System will
immediately hang-up and fail the call.

According to the Account parameters, the Pre-Paid
System will request and validate any Security Code or PIN
that the user has previously configured prior to
progressing the call. If the supplied Security Code or PIN
is incorrect, the Pre-Paid System will re-prompt the caller for the correct information a number of additional times set by the System Operator. If the caller fails to provide correct Security Code or PIN within the specified number of attempts, the Pre-Paid System will immediately hang-up and fail the call.

According to the Account parameters, the Pre-paid System will validate the dialled (B Party number) against any Destination Barring data specific to that account and allow or disallow the call accordingly. If the call is refused because of this barring condition, an appropriate recorded announcement is played to the caller and the Pre-Paid System will then hang-up and fail the call.

According to the Account parameters, the Pre-paid System will validate the current time & date against any Time-Of-Day Barring data specific to that account and allow or disallow the call accordingly. If the call is refused because of this barring condition, an appropriate recorded announcement is played to the caller and the Pre-Paid System will then hang-up and fail the call.

The Pre-Paid System determines the appropriate charging rate for this call based upon the destination originally dialled by the Caller. The System Operator has previously configured this rate, contained within a database table located on the Pre-Paid Database. The specific rate selected is a function of various call
parameters including but not limited to Origination Number, Destination Number, Time of Day, and Day of Week.

The Pre-Paid System then compares the remaining balance of this Account and the appropriate charging rate determined above. If the remaining balance is less than an arbitrary limit previously configured by the System Operator, the Caller will be advised that they have insufficient funds for their call and be transferred to a Recharge Facility.

If the Account Balance is greater than the arbitrary limit described above, the Caller will be advised by the Pre-Paid System of their remaining balance and the maximum possible duration of the call based upon the rate determined above.

The Pre-Paid System will then place the outgoing call to the required Destination Number. Once the Destination Number answers, the Pre-Paid System will begin to automatically decrement the Account Balance of the Caller, in Real Time, for the duration of the call.

Whilst the telephone call is active, the Pre-Paid System will continue to decrement the remaining Account Balance in Real Time. When this Account Balance decrements to a pre-set limit previously configured by the System Operator, the Pre-Paid System will notify the Caller that they have only a small amount of time remaining by way of a warning tone or recorded announcement.
If at any time during the telephone call the Account Balance is decremented to zero the call is automatically stopped by the Pre-Paid System by way of initiating a hang-up. This ensures that the Account Balance cannot be less than zero and that the Account Holder only has access to Long Distance and Fixed-To-Mobile calls equal to whatever pre-paid amount has been deposited into their Account.

When the call finishes normally by either the A or B Parties hanging-up, the Pre-Paid System receives signalling information from either or both of the A Party Local Access Provider and the B Party Local Access Provider. The Pre-Paid System then immediately ceases the Real Time decrement of the Account Balance. The new, lower Account Balance is updated on the Pre-Paid Database, again in Real Time, and is available for any subsequent calls pertaining to this Account.

Advanced Call Flow Features

There are a number of additional service features that can be implemented within the Pre-Paid System, that provide advanced facilities for the User.

Multiple Account Holders. In the conventional method of supply of Long Distance and Fixed-To-Mobile calls there is only a single billing identity or account holder associated with any particular originating telephone number. All calls made from that telephone number are billed to that single account holder irrespective of the
identity of the caller. In the Pre-Paid Platform described here, multiple account holders can all use the same telephone line and telephone number. In this case, each account holder is assigned a different Security Code or PIN that they must dial when requested by the Pre-Paid Platform. This will uniquely authenticate the Caller and allow the Pre-Paid Platform to determine the account and remaining balance by interrogating the Pre-Paid Database based upon both Originating telephone number and PIN.

Security Control. Some Account Holders would prefer that only authorised Long Distance and Fixed-To-Mobile Calls be made from their Telephone service. By using the Pre-Paid System detailed above, an Account Holder can elect to have the Pre-Paid System interrogate the Caller for the Security Code or PIN. This will ensure that only those Callers in possession of this Security Code or PIN will be able to complete such calls.

Balance Announcements. Prior to the Caller being automatically connected to their desired Destination Number, the Pre-Paid System announces to the Caller their Account Balance as a monetary amount.

Duration Announcement. Prior to the Caller being automatically connected to their desired Destination Number, the Pre-Paid System announces to the Caller the maximum available call duration to their desired
Destination Number for this call based upon their current Account Balance.

Destination Dependant Barring. Some Account Holders would prefer that their Pre-Paid service were only used for calls to certain destinations i.e. certain Countries or perhaps only for National Long Distance but not International Long Distance Calls.

Time-Of-Day Dependant Barring. Some Account Holders would prefer that their Pre-Paid Service were only used for calls made at certain times of the day or perhaps certain days of the week so as perhaps to limit unauthorised use when they were not present to approve such use. These parameters can be implemented on an Account basis at the discretion of the Account Holder.

Transparent Account Top-Up. A Caller my place a call unaware that insufficient credit balance remains in their Account. When this occurs, they are automatically prompted by the Pre-Paid System and are given the option of being automatically transferred to a Recharge Facility. If they elect to immediately perform a recharge of their account, then at the completion of the recharge process, the Pre-Paid System will place the call to their desired destination without that destination number being re-entered by the user or by them having to hang-up and call again.
In-Call Balance Query. During an active call, the Account Balance is being decremented in Real Time as described above. The user may at any time during this call receive a Real Time announcement of their remaining monetary balance and maximum remaining call duration by keying a short sequence of digits (typically however the actual code chosen is arbitrary) on their telephone keypad.

A suitable platform to implement the system of Figure 8 can be a Linux or Unix platform with software encoded in Steadycom DRS Version 2.

Furthermore, with further reference to Figure 7, it is to be noted that least cost routing can be implemented within the network of Provider 53 so that a call ultimately to be routed to Destination Number 58 (CLIB) can be routed via a plurality of Alternative Providers 62, 63 depending on which of the alternative providers is providing the least cost connection at the time and the call between Originating Number 57 and Destination Number 58 is completed. In a particular form least cost routing requires that there be a series of contracts between each of the Alternative Providers 62, 63 and Provider 53 thereby to provide a certainty to Provider 53 of call costs as these costs must be included in the calculations associated with the Pre-Paid Database 54.

The above describes only some embodiments of the present invention and modifications, obvious to those
skilled in the art, can be made thereto without departing from the scope and spirit of the present invention.
CLAIMS

1. A call access system operating in real time; wherein a call from a subscribing caller passes from a base provider network into a pre-paid system network; said subscriber maintaining a notional credit balance in a real-time account in a pre-paid database of said pre-paid system network, and wherein funds are drawn down from said account during said call from said subscriber; said subscriber pre-selected for said pre-paid system network on a designated line.

2. The system of Claim 1 wherein said call is a timed call.

3. The system of Claim 1 or Claim 2 wherein said call is a national call, international call or call to a mobile.

4. The system of any previous claim wherein said call is initiated via a base provider network and which call is passed by said base provider network to said pre-paid system network on confirmation of a specified criterion.

5. The system of Claim 5 wherein said criterion comprises said call being a timed call.

6. A real time pre-paid call access system wherein a pre-paid call subscriber accesses a pre-paid system network
which is associated with a pre-paid system database; said pre-paid system network maintaining a pre-paid account for said subscriber as a pre-paid data record in said pre-paid system database; said subscriber enabled to make a call via said pre-paid system network while said pre-paid data record indicates funds are available to apply to the cost of said call; said subscriber pre-selected for said pre-paid system network on a designated line.

7. The system of Claim 6 wherein said call is a timed call.

8. The system of Claim 6 or Claim 7 wherein said call is a national call, international call or call to a mobile.

9. The system of Claim 6 or Claim 7 or Claim 8 wherein said call is to a mobile or cellular telephone.

10. The system of any one of claims 6 to 9 wherein said call is initiated via a base provider network and which call is passed by said base provider network to said pre-paid system network on confirmation of a specified criterion.

11. The system of Claim 10 wherein said criterion comprises said call being a timed call.
12. The system of Claim 10 wherein said criterion is said call is a national call, international call or a call to a mobile.

13. The system of Claim 10 wherein said criterion is said call is to a mobile telephone.

14. The system of Claim 10 wherein said criterion includes a code string appearing in said call.

15. The system of Claim 14 wherein said code string comprises a PIN number.

16. The system of Claim 14 wherein said PIN number identifies a specified subscriber associated with a specified pre-paid data record.

17. The system of any one of Claims 6 to 16 wherein said Subscriber is pre-selected for said Pre-Paid system network on a designated line.

18. The system of Claim 17 wherein said designated line is a landline.

19. The system of Claim 16 wherein said designated line is a mobile telephone line.

20. The system of any one of Claims 6 to 19 incorporating least cost routing.

21. A method of routing telephone calls from an A Party to a B Party by way of a first provider network and at least a second provider network; said second provider
network operating in association with a pre-paid subscriber data base; said method including the step of said second provider receiving a call from said first provider; said call including at least the designation of a designated line characterizing calling Party A together with information identifying the line of called Party B; said second provider routing said call to Party B with reference to a Pre-Paid data base for the purpose of determining cost of and charging Party A for said call.

22. The method of Claim 21 further including the step of party A pre-selecting said party B for call routing and billing.

23. The method of Claim 22 further including party B determining said cost so as to optimise said cost with reference to a plurality of service providers.

24. A real-time pre-paid call access system incorporating pre-selection as hereinbefore particularly described with reference to what is shown in Fig. 1.

25. A real-time pre-paid call access system incorporating pre-selection as hereinbefore particularly described with reference to what is shown in Fig. 7.
26. A method of routing telephone calls from an A Party to a B Party as hereinbefore described with reference to what is shown in Fig. 1.

27. A method of routing telephone calls from an A Party to a B Party as hereinbefore described with reference to what is shown in Fig. 7.
Online applications

To apply for your GOTalk account please complete the short form below and click on the submit button. Our GOTalk team will then call you back to confirm and register your account (* Denotes mandatory fields)

Title: [ ] [ ] *
First Name: 
Last Name: 
Email Address: 
Daytime Contact Number: [ ] [ ] *
Evening Contact Number: [ ] [ ] *
Mobile Number: 

Which number would you like us to contact you on: Day: ☐ Evening: ☐ Mobile: ☐ *

SUBMIT

Fig. 2
Welcome to **GOTalk** OnLine Services. Please click on the links below to go to the relevant section.

**Your Account Details**

- Your registered telephone number: (07) 5593 0831
- Your personal account number: 3500063333
- Your current account balance: $41.68

---

Fig. 3
Welcome to the Call Details section of GOtalk. This allows you to view the calls that you have made in real time. Previous days' calls are not available between midnight and 5am.

You will be able to view your last 50 calls or the calls you've made for the last 3 months, whichever is the shortest.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Origin</th>
<th>Dialed No.</th>
<th>Destination</th>
<th>Minutes</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>24/05/02 17:57:02</td>
<td>Aust (discount)</td>
<td>0755931582</td>
<td>Gold Coast</td>
<td>01:00</td>
<td>$0.74</td>
<td></td>
</tr>
<tr>
<td>20/05/02 05:56:54</td>
<td>Australia 1800</td>
<td>0755930631</td>
<td>Gold Coast</td>
<td>01:00</td>
<td>$1.19</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 4
Welcome to the recharge history section of **GOTalk**. We offer you the convenience of viewing the recharges that you have made to your account using your credit card, Australia Post, BPAY or Direct Debit. You can view the last 50 transactions or the last 3 months transactions, whichever is the shortest.

<table>
<thead>
<tr>
<th>Recharge Date</th>
<th>Recharge Time</th>
<th>Transaction Type</th>
<th>Recharge Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>25/02/02</td>
<td>13:10:02</td>
<td>CREDIT CARD</td>
<td>$10.00</td>
</tr>
<tr>
<td>24/05/02</td>
<td>17:52:15</td>
<td>CREDIT CARD</td>
<td>$10.00</td>
</tr>
<tr>
<td>23/05/02</td>
<td>17:02:08</td>
<td>CREDIT CARD</td>
<td>$10.00</td>
</tr>
<tr>
<td>23/05/02</td>
<td>10:42:52</td>
<td>CREDIT CARD</td>
<td>$10.00</td>
</tr>
</tbody>
</table>

**Fig. 5**
To add value to your account, please complete the form below with the necessary details and click the submit button.

**Telephone Number:** (07) 5593 0631  
**Account Number:** 360006333  
**Recharge Value:**  
- $10  
- $20  
- $30  
- $40  
- $50  
- $60  
- $70  
- $80  
- $90  
- $100  

**Credit Card Details:**  
**Card Types:**  
-  
-  
-  
-  
-  

**Card Number:**  

**Name on Card:**  

**Expiry Date:** January / 2002
Pre-Paid System – Basic Call Flow

Local Access Provider passes CLI of Originating Subscriber & Dialled Number (Destination)

'\(^A\) Party CLI is used in a Database Lookup to determine
x Customer Identity
x Remaining Balance
x Service Features

An Invalid CLI will be played a Recorded Announcement

End

Request & Validate PIN

Transfer to Manual or Auto Recharge

Determine Rate/min & Max Call Duration
Announce to Caller

Place Call to Desired B Party

B Party Answers

Decrement Account Balance in Real Time

Min Acc Balance

Play Low Balance Announcement

Zero Balance

Play Zero Balance Announcement & Hang-Up/Recharge

Caller Hang-Up

End

Fig. 8