

CALL SHOP CONTROL SYSTEM

ROUTEL PUBLIC

TELLINK

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1. -INTRODUCTION.

The **Routel Public call shops control system** has been designed by **Tellink Sistemas de Comunicación S.L.** with the purpose of managing and controlling all the operations of a telephone call shop from a PC. The system carries out the following functions:

- It centralises in a single post the management of multiple telephone boxes. From the PC application software, it is possible to obtain the amount of the calls, generate the billing receipts, block/unblock the telephone boxes of the call shop, assign a **credit** to a specific telephone box, etc.
- Control the status of all the telephone boxes from the **PC**. Data is viewed, such as the telephone boxes in use, with connected call, with calls pending billing, the amount of the calls, the call destination, the duration of the call, etc.
- Reduction of the call cost. It allows to define up to 16 carriers and select the low-priced operator (carrier) to dispatch the call. The routing and the charging are carried out according to the call destination, the day of the week, and the time zone.
- It registers the data of all the calls made from the telephone boxes in an **Access database** for subsequent treatment. This data may come in hand to generate consultations, obtain reports, estimate total calculations, print calls that fulfil certain criterion, etc.
- It has the possibility of incorporating a **modem** in the **subrack** for remote access, and obtaining the CDR's (Calls Detail Record) made by the call shop and the assignment of a maximum allowed credit or expense.
- From a single PC, it allows to control several **subracks**, and therefore a number higher than 16 telephone boxes.
- It adds the management of up to 6 ports with **auxiliary outputs**. A **GSM module** may be connected to these ports to dispatch the call through an alternative path regarding the **PSTN**. For example, forward the calls to mobiles via **GSM or other alternative network**.
- Possibility to show in the **display** the call destination during dialling.
- Option to configure **pincodes** per telephone box for operator (carrier) 16.
- Option of "update firmware" to update the equipment version. It should only be used in subracks with version 3.0 or N 9.
- Possibility to configure the Carrier Selection Prefix to use per telephone box.
- Line analysis to detect the call set-up, CALL PROGRESS.

1.1. –Basic requirements.

- PC-Pentium with Windows 95, 98, 2000, Me or XP operating system.
- Availability of at least one **serial port** for connection with a **subrack**.
- At least 32 Mbytes of RAM.

2. –DESCRIPTION.

2.1. – General operation description.

Through the Routel Public system, it is possible to control a maximum of 64 telephone boxes from a post with a computer. The operation mode is the following: the client requests a telephone box to make a call. The **user** unblocks and assigns a telephone box, denominated by a number. In the unblock, the **user** may request pre-payment on the part of the client (credit operation mode) or the client can pay at the end of the call.

Another method of operating is to configure the system so the call is not blocked once it concludes. In this case, once the telephone box is unblocked, it remains always enabled for use.

The client can then begin dialling, and at the end of this, the system can detect the communication set-up and begin charging in 2 forms:

- With the client pressing a button. To begin to speak, the client must press the button if the telephone box is configured in this form.
- Through the detection of remote off hook by means of the polarity change in the line or the detection of the **DTMF** tone indicated for this **telephone operator (carrier)**.
- Through either one of the two previous conditions.

During the call, the client can view in the **display** different data related to it, such as the number dialled, the duration of the call, the cost of the call, the credit left, the current date or time. The data to show may be configured by the system administrator in the PC software.

In addition, during the call shop operation, the person in charge views from the PC the status of all the telephone boxes. The data shown includes the number dialled, the call destination, start time, call duration, cost, credit remaining if operating in this mode, Carrier Selection Prefix dialled and status of the telephone box.

When the client ends the successful call, the call data is registered in the computer. A bill receipt is generated with general data such as the telephone box number, date and time when the invoice was originated, bill number and data of the call itself, including the number dialled, the name of the call destination country, the call type, the start time and duration of the call, the total amount in Euro, and the breakdown in taxable base and VAT. If it works on credit, the bill indicates the amount delivered before the call and the amount to return. These fields that are shown on the bill are also configurable, except those that are strictly necessary and that always appear.

All the calls made in the call shop are registered in an **Access database** format, which includes data such as the bill number, number dialled, call destination, Carrier Selection Prefix used to dispatch the call, start time and duration, total call amount, person in charge of collecting the call, etc. Using this database, the administrator or the supervisor would be able to generate all types of listings to manage and control the call shop.

This system also allows working with 16 different carriers with the aim of obtaining the highest savings possible by using the low-cost operator (carrier).

2.2. – Telephone box status description.

During operation, each telephone box of the system may go through the following status:

2.2.1. Blocked telephone box status.

In this status, no calls may be made from the telephone box. The off hook or on hook of the telephone is not viewed in the PC since the telephone box is completely disabled for operation. This status is indicated in two forms: without text or icon, or with the “**BLOCKED**” text and the icon that represents a padlock.

2.2.2. Telephone box status with telephone on hook.

This is the next status after unblocking the telephone if the telephone in the telephone box is not off hook. In this status, you can unblock again or block the telephone box. It is represented with the “**TELEPHONE ON HOOK**” text and the following icon.



2.2.3. Telephone box status with telephone off hook.

This is the next status after unblocking the telephone box if the telephone in the telephone box is off hook. In this status, you can **Block** the telephone box but not **Unblock**. It is represented with the “**TELEPHONE OFF HOOK**” text and the following icon.



2.2.4. Telephone box status while dialling.

This status is similar to the previous one, except the client has started dialling the telephone number. If the system detects during dialling one of the headers configured to route through the Carrier defined, the system proceeds to place the Carrier Selection Prefix before the number. The added prefix is indicated in the “Prefix” field of the telephone box status screen. The status is represented with the “**DIALLING**” text and the same previous icon.

In this status, if the client places the telephone on hook, he can begin dialling again without having to unblock the telephone box again.

2.2.5. Telephone box status with connected call.

After dialling the number, if the connection with the other end is detected - either by pressing the button or through the detection of a polarity change in the line or the detection of **DTMF** tone - the system begins charging the call. The cost, remaining credit, and the duration of the call is regularly updated each second. In this status, you can block the telephone box, which would cause the call to go on hook. It is represented with the “**CONNECTED**” text and the same icon as the telephone box status with telephone off hook.

2.2.6. Telephone box status pending billing.

After concluding the call, the system may act in different ways according to the value of the “**Billing mode**” parameter in the **configure system** menu. The values of this parameter may be:

- “**Show bill detail**” or “**Without viewing bill detail**” when concluding the call, the telephone box passes to pending billing status and the telephone box is blocked, so new calls cannot be made.
- “**Generate receipt when telephone goes on hook**”, the telephone box directly changes to Blocked status.

- “**Generate bill and not block**” the telephone box is not blocked.
- “**Accumulate bill**” or “**Accumulate bill with detail**” when concluding the call, the telephone box is not blocked and a bill is not generated until the order to bill is issued.

In this status, the only operation allowed is Bill or Cancel call. It is represented with the “**PENDING BILLING**” text and the following icon.



2.3. – Basic configuration and start-up.

Install the **Routel Public** application following the steps indicated in Appendix A.

Before proceeding to work with the **Routel Public** system, make sure the physical connections are correct according to appendix A that shows the physical installation.

At the beginning of the application, a Password is requested that is empty by default.

The system has two work phases: a first phase of configuration and another of operation.

During the system operation phase, you cannot modify the configuration, but you can view it. To modify the configuration, it is necessary for all the telephone boxes of the system to be blocked.

A quick configuration to check that the system is installed correctly would consist of executing the “**Routel Public**” file, through a direct access icon in the **Windows** desktop or from the explorer.

Once inside the application, the main screen indicates if there is communication with the subrack through a pilot or indicator that is red if communication does not exist, or green if it exists.

If the indicator is red, there is probably a connection error between the PC and subrack, or an error in the serial port selected for this communication. This is configured in the “**Configure system**” menu, “**Configure ports**” command button.

In the main screen, another red or green colour indicator exists in the section designated as alarms. The special events that occur in the system are registered in this section. Every time one of these events takes place, the indicator is lit with the red colour. To delete this indicator and pass to the normal status, which is the green colour, this section should be selected.

To check that correct communication exists with one of the telephone boxes, you can choose to unblock a telephone box and select its number. If the on hook or off hook telephone status appears in the screen of the subrack in that telephone box, then this operation was correct.

After verifying that communication exists with all the system elements, you can proceed with the system configuration. To do this, all the telephone boxes should be blocked. A sequence of steps to follow could be:

- 1.- Configure the operation mode of the entire system, “**Configure system**” menu.
- 2.- Configure the users with permission to use the system, “**Configure users**” menu.
- 3.- Configure the operators (carriers) to be managed by the application, “**Configure operators/prefixes**” menu.
- 4.- Configure general records of the **subrack**, “**Configure generic**” menu.
- 5.- If charging and routing to apply on holidays is considered, configure these days in the menu “**Configure list of holidays**.”
- 6.- Finally, configure the rates in the “**Configure rates**” menu. This section configures the routing, the prices, and the time zones for the telephone prefixes to consider in the system. Before going into this option, it is necessary to know all the operators (carriers) and the currency to use, for which it is necessary to previously carry out steps 1,3,4.

A detailed description of all of these options and others that comprise the system is offered in the following chapter.

3. – COMMANDS MENU.

These options allow you to carry out operations that trigger sending a command to the subrack.

The command options are grouped in the commands menu and their function is detailed next:

1) Unblock telephone box.

This option may be selected by menu, with the “**Unblock**” button in the toolbar, or by clicking on the icon that it is shown next:



This button enables a telephone box for use on the part of a client. In the selection of the telephone box number to unblock, you can also enter - besides the telephone box number - the credit assigned to the telephone box. You can force a call to a specific telephone number to be established by a specific operator (carrier).

If the operator (carrier) to use is indicated, it is necessary to enter the first numbers of the number to call to also obtain the price to apply to this call. To obtain the price, use the prices configured for this operator (carrier) and call type.

It is only possible to **unblock** telephone boxes that are blocked, or unblocked telephone boxes but with telephone on hook.

Once the telephone box is unblocked, the telephone box status line will show the telephone on hook or telephone off hook icon and its associated text “**Telephone on hook**” or “**Telephone off hook**”, depending on the case. The padlock icon that indicates a blocked telephone box will disappear.

2) Block telephone box.

This option may be selected from the menu, with the “**Block**” button in the toolbar, or by clicking on the icon that it is shown next:



This option disables the telephone box. It only needs as entry parameter the telephone box number to block.

This option is not allowed on telephone boxes that are pending billing. If an attempt is made to **block** a telephone box with a connected call or with the telephone off hook, the system warns of this situation, since the person in charge is the only one who can cancel the operation or proceed with the block operation.

Once the telephone box is blocked, the padlock icon appears in the telephone box status line without any text.

3) bill call.

This option may be selected from the menu, with the “**Bill**” button in the toolbar, or by clicking on the printer icon.

This option carries out the billing process for the calls made in a telephone box. This process consists of printing the bill receipt and storing this data in the “**locutorio.mdb**” database in the table of collections made. It only needs as entry parameter the telephone box number to bill.

The billing process may be carried out in different ways depending on the “**Charge mode**” parameter of the “**Configure system**” menu.

If the “**Charge mode**” parameter of the **configure system** menu serves to “**Generate bill when telephone goes on hook**” or “**Generate bill and not block**”, it is not necessary to carry out this operation since in these cases this process is carried out automatically.

If the “**Charge mode**” parameter of the **configure system** menu serves to “**Accumulate bill**” or “**Accumulate bill with detail**”, it generates a bill with all the calls made in a telephone box until this time.

It is only possible to bill telephone boxes whose status is “**Pending billing**”. The telephone box is blocked once it is billed; the telephone box status line shows the padlock icon without text.

4) **Cancel calls.**

This option is selected from the menu.

This option cancels the call pending billing or the last one billed. In this option, it is necessary to select the number of the telephone box in which the call was made.

5) **Unblock all the telephone boxes.**

It unblocks all of the telephone boxes controlled by the application.

6) **Block all the telephone boxes.**

It blocks all of the telephone boxes controlled by the application.

7) **Send configuration.**

The button to carry out a profile dump is shown next:



This option sends the configuration to the **subrack**, corresponding to the day of the week of the current date. The data sent will be that configured in the menu **configure generic, prefixes and rates** of the “**Call shop**”.

8) **Receive configuration.**

The button to receive the configuration profile of an equipment is shown next:



This option receives the current configuration of the subrack. When this process concludes, it shows a window to indicate in which file the configuration obtained is saved and if you want to edit it. The configuration of the subrack is saved in files with “**.par**” extension.

9) **View call shop credit.**

The button to receive the credit assigned to the call shop is the following one:

The reception of the credit shows a screen with the following data:

- Credit assigned to the call shop.
- Accumulated cost: it is the expense made by the call shop from the assignment of this credit.
- Credit remaining to the call shop: it is the difference between the assigned credit and the accumulated cost.

If the credit assigned to the call shop is -1 , it means that it has unlimited credit, that is to say, there is no maximum regarding the expense to carry out.

The credit assigned from remote to the call shop may be by telephone boxes or to the complete **subrack**; in this last case, the credit and accumulated cost is designated in this screen in the “**Locutorio**” field.

10) **Update firmware.**

This option allows the version change in the **subrack**. Only applicable to the equipment with subrack version 3.0, N 9 or higher. The software to send to the equipment has a “.bin” extension and should be supplied by the manufacturer (Tellink).

11) **Generate equipment configuration file.**

This option generates a file with the configuration to send to the **subrack**. This option requests the name of the file in which to store the file to create. The extension “.par” must be added to this name.

12) **See equipment configuration file.**

This option allows to edit a file with “.par” extension for viewing.

13) **Configure printer fonts.**

This option allows to select the letter type with which to print the billing receipt. In order for this option to be valid, it is necessary to select the option “**Selected printer fonts**” of the menu “**Configure system**”. If this option is not selected, the predetermined printer fonts are used.

14) **End session.**

The system only allows access to users who are enabled for it. All call collections register the name of the user who carried out the billing. When a user gives control to another, he can select this option that shows the billing obtained during the entire session on the part of the active user at the time.

15) **Exit.**

This option concludes the application and blocks all the telephone boxes. If a telephone box is in use or unblocked, the system warns this with a message and the person operating the system can cancel this process.

4. – CONFIGURATION MENU.

These options allow to configure the operation mode of the **Rutel Public** system in both the PC software and in its interrelation with the subrack and the other system elements. It is divided into the following options:

4.1. – Configure system.

It presents the following configuration options:

1.- Number of subracks.

This field indicates the **subrack** number that the application supports. Its value may be between 1 and 4. This field determines the start in the numbering of the telephone boxes.

If subrack No. = 1 then the telephone boxes are numbered from 1 to 16.

If subrack No. = 2 then the telephone boxes are numbered from 17 to 32.

If subrack No. = 3 then the telephone boxes are numbered from 33 to 48.

If subrack No. = 4 then the telephone boxes are numbered from 49 to 64.

2.- Number of telephone boxes.

It indicates the number of telephone boxes managed by the application in the **subrack**. For example, if the subrack

number is 2 and the number of telephone boxes is 4, then the application controls the telephone boxes numbered from 17 to 20, both inclusive.

3.- Operation mode.

This option can have 2 values:

- **Eligible:** the person in charge of the call shop selects, when he unblocks the telephone box, if it operates with credit or if payment is made at the end of the call.
- **Credit:** This operation mode requires not unblocking a telephone box until after entering the credit assigned to the telephone box. The credit is the prepayment carried out by the client for the use of the service.

4.- VAT to apply.

Percentage of VAT to apply. It is only used when you obtain the VAT part of the total price.

5.- Characters per line in receipt.

It indicates the number of characters that may be written in each line of the billing receipt.

6.- International indicator.

Prefix that is placed before each international prefix of each country. By default, this field has the value "00."

7.- Profit margin.

When a telephone box is unblocked and an operator (carrier) through which to carry out the call in this telephone box is indicated, the cost to apply to this call is obtained from the rate of this operator (carrier) plus the profit margin percentage.

8.- Number of receipt copies.

Number of bill copies to print.

9.- Billing mode.

It indicates the form in which the billing process is carried out. It can have the following values:

- **Not see bill detail:** when the order to **Bill** or cancel is given, the telephone box number on which to carry out this operation is selected and it is carried out.
- **Show bill detail:** when the order to **Bill** is selected, telephone box number is selected and an intermediate screen is shown with the bill data. The person in charge can choose in this screen to **Cancel** or **Bill** the call.
- **Generate bill when the telephone goes on hook:** This billing mode generates a receipt when the call concludes and it blocks the telephone box. In this mode, it is not necessary to select the telephone box number to **bill**.
- **Generate bill and not block:** This billing mode generates a receipt when the call concludes and it does not block the telephone box.
- **"Accumulate bill" or "Accumulate bill with detail":** these 2 modes when the call concludes do not block the telephone box or generate a bill, but they do add the cost to the total amount of the telephone box, allowing the accumulation of several calls in a single bill that is printed with the **"Bill"** command.
- **"Accumulate and block when billing":** This mode accumulates the bill as in the two previous modes, but with the difference that when the telephone box billing order is given, the telephone box is blocked.

10.- Selected printer fonts.

If this option is selected, it indicates that the billing receipt should be printed using the letter type selected in the option **"Configure printer fonts"** of the **commands** menu. If this option is not active, the printer fonts are the predetermined ones

11.- Cancel calls lower than.

This option allows to automatically cancel the calls whose duration is lower than the number of seconds that is specified. If it is 0 **sec.**, then it does not cancel any call automatically.

12.- Allow the supervisor to configures rates and users.

If this option is selected, it indicates that the supervisor user can access the option “**Configure rates**” “**zones**” and configure the fields related to the sale price. These fields are the initial cost, minute price, and time span. It also allows the supervisor to access the option “**Configure users**” and register and cancel users with **system operator** or **supervisor** access level.

13.- Duration of the calls stored.

It indicates the maximum time of permanence of the calls made in the databases **locutorio.mdb** and **supervisor.mdb**, after this period they are deleted from these databases.

14.- Increase 1 second in bill.

If this option is selected, the calls with a duration of 1 minute 0 sec., 2 minutes 0 sec., etc. are presented in the bill with a duration of 1 min. 1 sec., 2 min 1 sec. respectively. In other words, it increases the duration in the bill by 1 second if the duration of the call does not have seconds.

15. - Save communication traces.

The selection of this option registers the communications between the **subrack** and the PC in a file with extension “**.trc**” The user should never activate this option since the information generated it is only interpretable by the system manufacturer.

You can also select the following options in this section:

4.1.1. Configure ports.

This option associates one of the COM communication serial ports of the PC to the **subrack** that controls the application. This serial port will be used in the dialogue between **subrack** and **PC**.

4.1.2. Installation place.

This section indicates the rate district in which the call shop is located. This fact is used when obtaining the prefixes of the **local** and **regional** calls in the “**Calculate**” option of the menu “**Configure rates**”, “**Prefixes**” option.

The rate district may be determined by selecting it directly or by entering one of the numbers of the call shop and selecting the “**Search**” button.

4.1.3. Charge mode.

It indicates to each one of the telephone boxes of the **subrack** the event that should take place to consider the call successful and begin charging. Such events may be by “**Button Pressed**”, “**Change of polarity or DTMF tone**” or “**either one**”.

Starting from version 4.0, there is a possibility to detect events in line through the parameter “**Charge by voice**”. This line analysis is made after the dialling process, and it is independent of the “**charge mode**” selected. For example, if a change of polarity is detected and this option is selected, the system begins charging. The possible in line events that may be detected and their treatment are the following:

- **Event: busy. Action:** it carries out a retry if it is configured to do so.
- **Event: Ring Back without allocution. Action:** Does not carry out retires and waits for off hook.

- **Event: Ring Back** followed by **allocation**. **Action:** the charging process begins.
- **Event: allocation** without detection of Ring Back: **Action:** This entails two different forms depending on the “**Charge allocation**” parameter. If this parameter is selected, it begins charging, otherwise retries would be generated if this configuration exists.

This “**Charge by voice**” operation mode is used especially in cases in which change of polarity in line does not exist, or off hook DTMF tone is not received from the switch and you do not want to charge by “**pressed button**”.

4.1.4. Presentation.

It allows to select the fields to show in the display and in the call bill receipt. If several fields need to appear in a line of the display, these are shown alternately.

If you select to show in the **display** “**Call Cost/Credit**”, it shows the credit or the cost depending on whether the call was by credit or by final payment.

If you select “**Show destination in dialling**”, the name of the destination appears in the top line of the **display** during the dialling process.

4.1.5. Permits.

It defines a series of options available for the different types of users. In this screen, the following options are shown:

1.- Show in prefix the name of the operator.

The selection of this option shows in the main screen the name of the **operator** through which the call is dispatched instead of the prefix number.

2.- Not show costs or profits to operators.

The activation of this option does not show to users with “**Operator system**” access level the cost and profit fields in the “**See reports**” menu.

3.- Not allow route selection in unblock.

This option disables the possibility of route and price selection in the telephone box unblock screen.

4.2. – Configure users.

This option allows to add, edit, and delete the users in charge of controlling and managing the PC software of the **Routel Public** system. The registration information of a user is comprised of a name, a **password** or access code that must be entered twice, and an access level.

There are three access levels: **Administrator**, **supervisor** and **system operator**:

- The **administrator** gives access to all the functionalities of the software. The **database** with the **charging** information for the **administrator** is denominated **locutorio.mdb**.
- The **supervisor** does not have permission to modify the configuration, but he does have a **database** denominated **supervisor.mdb** to consult the billing information of the call shop. If the option “**allow supervisor to configure rates and users**” is selected, the supervisor has the possibility to:
 - Access the menu “**Configure users**” and register and cancel users with **system operator** and **supervisor** access level.
 - Access the menu “**Configure rates**” “**zones**” and configure the fields related with the rates to apply.

- The **system operator** does not allow access to the system configuration for modification, or to the call shop billing information.

The start system has 2 users denominated **administrator** and **supervisor**. These users cannot be deleted, but it is possible to modify their name and password. The password that is **entered** in these 2 users is the one that should be used to access the two **databases** mentioned before.

4.3. Configure operators (carriers).

This option allows to enter the 16 possible carriers to use in the system and their associated **DTMF** tones to detect the remote off hook. The definition of each operator (carrier) is comprised of a descriptive name, a prefix, and the **DTMF** tone received at the remote off hook. The prefix is placed before the header, and it can be an operator (carrier) selection prefix or a swicht access telephone number, with or without **pincode**.

In the swicht access prefixes, it may be necessary to indicate a pause after dialling the swicht number. This may be specified with “#” followed by the number of pause seconds (between 1 and 9). Ex. 900800700#5.

The prefix operators (carriers) are numbered from 1 to 16. This prefix number or operator (carrier) name is the one that is selected in each one of the call types when configuring the routing. By default, this screen contains a **Bypass** operator (carrier) name and an empty prefix, which means that the number dialled by the telephone box user does not place any prefix in front.

The **DTMF** tone is configured if the remote off hook detection will be used by **DTMF** tone detection. This field will indicate the tone sent by the operator (carrier) when this event is produced.

4.4. Configure holidays.

This section allows to enter, modify, and delete the days of the year that the system will consider holidays. The routing and charging defined for holidays will be applied to every day in this list. The selection of one day consists of configuring the month and day to consider as holiday.

4.5. Configure rates.

This option allows to define the rates and the routing to apply in the call shop, and the rates or prices of the different operators (carriers) configured in the system. The selection of this option shows an intermediate screen like the one shown in the following figure.



In this screen, the name of an operator (carrier) or the “**Locutorio**” name is initially selected from a pull-down list. The data entered in “**Locutorio**” designates the retail sale prices and the routing to apply in the system. The rates entered in each one of the operators (carriers) are used in the calculation of the cost of the call that goes through this operator (carrier). This call cost is shown in the option “**See report**”. All the rates configured are prices including VAT.

After selecting the operator to configure, the **administrator** can choose to configure two sections:

- **Prefixes:** this option defines each one of the prefixes that belong to one same call type and group. The prefixes with same call type and group apply the same charging and routing.
- **Zones:** this option configures the routing and charging to apply to each one of the call types and groups.

4.5.1. – Configure prefixes.

This section defines and associates the prefixes to detect and the different call types and groups.

There are 6 types of calls predefined according to their scope or coverage: local, regional, long distance, mobiles, international, and other. The type of “**Other**” calls includes the prefixes that do not belong to any of the other call types.

The **administrator** includes the prefixes that belong to the different types of calls. This is carried out by selecting the type of call from the pull-down list and pressing the right mouse button. At this time, a pop-up menu appears that allows to edit, add, and delete a prefix for this call type. In the case of deleting or editing a prefix, it is necessary to previously place the cursor on the entry to modify and then press the right mouse button.

When a new entry of prefixes is added, the following type of screen appears.



In this screen, the following data is entered:

- Prefix: first digits of the number.
- Destination: name that serves to determine this prefix in a unique form.
- Group: name that groups those prefixes with the same routing and charging inside one same call type. You can select one already existing in the pull-down list or create a group, entering a new name. If prefixes that belong to one same call type have different routing or charging, different groups can be defined inside this call type.
- **Import:** Introduces the prefixes in the call type selected, taking the data from a text file. This file has to have the following format:

Country name;prefix;charging group

A prefix is entered in each line of this file. An example of a file of this type is the file **countries.txt** that accompanies the installation software.

A form of obtaining a text file of this type may be as follows:

- In the installation directory, the file “**prefixes.mdb**” exists. It is an **Access database** that contains a table denominated “**countries**”, in which you can enter the data of the prefixes.
- After entering this data, you can proceed to generate a text file with the format described before. Option “**Save as or export**” of **Access**.

- Select Save “**In an external file or database**” of text type.
- Defined with characters such as the sign “;”, “**None**” text qualifier and “**Include field names in the first row**”.

4.5.2. – **Configure zones.**

This section defines the time zones, the charging, and the routing for each one of the call types and groups defined in the section of prefixes and for each day of the week. In this section, the following screen is shown.

If the selected operator (carrier) is “**Locutorio**”, then the time zones, the retail sale prices, and the routing to apply to the system are all defined. If the selected operator (carrier) is any of the 16 operators (carriers) that may be present in the system, only the rates or prices of this operator (carrier) are defined. All prices include **VAT**.

The different days possible (the 7 days of the week and holidays) are grouped in 5 possible groups. The days with the same routing and prices are associated to the same group.

Before proceeding to configure the rates and routes, you must select the call type and group and the group of days to configure. In the top left part of this screen, a pull-down list exists with all the types and groups of calls defined in the “**Prefixes**” section. Each screen modification affects the call type and group selected at this time in the “**Call type**” list, and the group of days selected in the “**Group of days**” list.

Starting from version 3.0, within each pair of call type/group, group of days, the number of zones in which to divide the complete day is 4. You can configure 3 by moving from right to left the movement bars existing in the “**Time zone**” column or entering a value in the “**End Time**” box. The value determined by the movement bars is shown in the “**Start Time**” and “**End Time**” columns.

The first zone goes from 0 hours to the value configured in the first movement bar. The second goes from where the first zone ended until the value indicated by the second movement bar and so forth, until the fourth zone that begins where the third zone ended and always concludes at 24 hours.

The interval defined by a time zone cannot exceed 15 hours, unless the rest of the day is indicated, which is represented by taking the movement bar to the top right position. If you need to configure a zone with a value above 15 hours, 2 zones with the same prefix should be used. For example, if you want to define that prefix 1 should be applied from 1 hours to 20 hours, two zones would be used with prefix 1, such as a zone from 1 to 15 hours and another from 15 to 20 hours.

For each zone, you can select a different prefix either by the associated number in the operators (carriers) screen (“**Prefix No.**” column numbered from 1 to 16) or by the name assigned to this prefix (“**Prefixes**” column). These prefixes define the main operator (carrier) to use.

From version 1.3, the possibility exists of incorporating an **alternative operator (carrier)** to each call type. This alternative operator (carrier) is used in case connection is not established through the main operator (carrier). The time after which the call is considered unsuccessful by the main operator (carrier) is configured in the “**Generic records**”, in the field “**Off hook DTMF tone wait time**”. The alternative operator (carrier) is common for all the groups of days in this call type.

From version 3.0, it is possible to define up to 4 **alternative operators** for each call type or group. Each one of them will be used in case connection is not established with the preceding alternative operator (carrier), if they are configured, beginning with alternative operator (carrier) 1 and so forth up to 4. The number 1 operator (carrier) cannot be configured as **alternative operator** starting from version 3.0.

From version 2.0, it is possible to configure up to 4 **auxiliary outputs** for each call type / group of days. If an auxiliary output is configured, the order of attempts is the following:

- The first attempt is through the auxiliary output number specified in first order. If it is busy, an attempt is made through the auxiliary output specified as second option and so forth.
- If a specified auxiliary output does not exist or all the ones indicated are busy, the equipment dispatches the call via PSTN by the main operator (carrier).
- If the call is not established by the main operator (carrier) or none of the specified auxiliary outputs are free, an attempt will be made through the alternative operator (carrier) 1 and so forth if this is how it is configured.

In the previous example, the order followed to dispatch a call of this type would be:

- The first attempt would be through the auxiliary output number 2 and if it is busy, an attempt is made through the auxiliary output number 4.
- If the auxiliary outputs are not free, an attempt is made through the main operator (carrier) selected, in this case “Retevision”.
- If all the previous attempts fail, an attempt is made through the alternative operator (carrier), in this case “BT”.

A sequence of steps to follow in the configuration of this screen may be:

1. Select the call type and group.
2. Associate the 5 groups of days with the 7 days of the week and holidays
3. Select a group of days.
4. Configure the time zones, routes and prices for this call type and this group of days of the week.
5. After configuring this group of days, select another group of days used by this type of calls and return to step 4.
6. After configuring the groups of days used for this type of calls, return to step 1 and select another type of call until you finish with the list.

Every time that a call type/group or group of days is changed, the configuration is stored without losing this configuration.

A series of options exist in the screen base to configure zones, including:

- **Accept:** Exit the screen saving all the changes made in all the types of calls and groups of days.
- **Cancel:** Exit without saving the changes. It does not save any of the changes carried out when entering the screen.
- **Copy:** Save in the clipboard the grouping of days of the week and the time zones shown when you press this button.
- **Paste:** Copies the data stored in the clipboard with the groups of days and time zones. This option is used so that if there are several types of calls that have the same time zones and groups of calls, you avoid configuring the same thing continually.

4.5.3. – Import zones.

This section allows to enter through a text file the rates and the prefixes for the international charging groups. The prices entered only use a zone from 0 to 24 hours for every day of the week. This file has to have the following format:

international charging group; operator (carrier) number; start price; minute price; time span

A charging group and its prices is entered in each line of this file. An example of a file of this type is the file **ratesE.txt** and **ratesP.Txt** (Euro) that accompanies the installation software.

One form of obtaining a text file of this type may be as follows:

- The file “**prefixes.mdb**” exists in the installation directory. This file is an **Access database** with a table denominated “**Rates**” where you can enter the prices and the operators (carriers) for each international charging group.
- After entering this data, you can proceed to generate a text file with the format described before. Option “**Save as or export**” of **Access**.
- Select Save “**In an external file or database**” “**Save as type**” of “**Text File**”.
- Defined with characters such as the sign “;”, “**None**” **text qualifier** and “**Include field names in the first row**”.

The symbol to use in the indication of decimals in the currency is the one indicated in “**Control panel**” “**Currency or number**” “**Decimal symbol**”.

Before you “**Import rates**”, it is necessary to have entered the prefixes.

The values that this option admits in each of the file fields are:

- Group charging: Name of the group defined in prefixes.
- Operator (Carrier) number: Number between 1 and 16.
- Start price: From 0 to 5 (Euro).
- Minute price: From 0 to 8,72 (Euro).
- Time span: From 0 to 500 seconds.

After importing the data, confirm the correct configuration of the respective values.

4.5.4. – Import routes.

In order to import only routes and zones without modifying the existing sale prices, the option “**Import routes**” has been introduced in the “**Configure rates**” screen. This option requests a “**.tae**” file that contains the new routing with the routes and the zones to add to the system. This requested file can be in a disk or in a directory separate from the application. The result of this option modifies the “**locutorio.tae**” file of the application directory.

Before carrying out this option, you should have copied the “**locutorio.pre**” files.

Warning: if a single zone was used before, the sale price was only configured in a single zone; if routes are imported and more zones are added, it will be necessary to configure the sale prices of the rest of the zones to use. An option has been included in the zones option denominated “**Copy prices**” that copies the prices of the first zone into following ones.

4.6. Configure pincodes.

This section defines the **DTMF** tones to send after dialling the Swicht number. This sequence of tones is denominated **pincode**, and it is used to identify the origin of the call in the routings through swicht.

A **pincode** may be defined by telephone box; these are only applicable to operator (carrier) number 16. As in the case of the prefix, in the **pincode** field it is possible to specify a pause by means of the character “#” followed by the number of pause seconds (between 1 and 9).

In the accesses through the swicht, the prefix includes the swicht number followed by an off hook wait pause and another wait pause before sending the **pincode** or the number dialled by the user. For example, prefix16 = 900800700#9#2 and pincode = 98765432#3 mean

- The equipment dials the prefix, in this case 900800700.
- It waits to detect the off hook of the swicht (change of polarity) or a maximum of 9 seconds that is the first pause configured. If off hook is detected before the 9 seconds pause indicated, it waits no longer and passes to the next point.
- It waits the 2 seconds indicated as second pause.
- Next, it would send the **pincode** if the operator (carrier) is number 16.
- After sending the **pincode**, it would wait the seconds indicated after the **pincode**. In the example, pincode = 98765432#3. In this case, 3 seconds.
- Sends the telephone number dialled by the client.

This is only one example of the steps followed in a possible configuration. The client must adapt the configuration to the circumstances of the line and the swicht.

4.7. Configure generic.

The records denominated generic are:

- **Tone time and pause time:** they indicate the duration of the tones and the pauses in the dialling produced by the subrack.
Value by default 120 mSec in both.
- **On hook validation time:** it indicates the minimum time that the equipment should detect a status of continuous on hook to consider the on hook correct.
Value by default 100 mSec.
- **Currency:** it selects the currency in which the payments and calculations will be made and in which the rates will be entered. It can be Euro (€).
Value by default Euro.
- **Charging period:** it indicates how often the call collection will be carried out. For example, if it is done every 60 Sec., the cost of the call is increased every minute by the amount indicated for price euros/minute.
Value by default 1 Sec.
- **Interdigit period:**
Value by default 3 Sec.
- **Off hook DTMF tone wait time:** it indicates the time that the equipment waits for the reception of the DTMF tone on the part of the node to consider the call successful. It is also used as timer, after which the call is considered unsuccessful and a retry is carried out by the **alternative operators** configured.
Value by default Indefinite

The clock with the date and hour is also considered a generic record that is send from the PC to the **subrack**. This clock is obtained from the clock of the PC itself.

4.8. Configure telephone box Carrier Selection Prefix.

This option defines the prefixes to use in each telephone box in the routing of calls. It defines up to 4 prefixes per telephone box, first using the one indicated in attempt 1, and if it is not connected, it retries successively using the Carrier Selection Prefix defined in attempts 2, 3, 4.

If a Carrier is selected for a telephone box, all the calls from this telephone box will use this Carrier Selection Prefix as route. If the value “**According to zones**” is selected in the first attempt, the routing of the calls is carried out as

indicated in the “Zones” section of the menu “Configure rates.” If the value “According to zones” is selected in attempts 2,3,4, it indicates that there are no more retries selected for this telephone box.

This option only affects the prefix or route selection, maintaining as sale prices those indicated in the “Zones” section of the “Configure rates” menu.

4.9. Generate cost operators (carriers).

This option prepares the system to obtain the cost prices of the calls that are made. To obtain the costs, it is necessary to configure the rates of each one of the **carriers** of the system. This option should be executed when concluding the entry or modification of the operator (carrier) rates. The cost is stored in two databases denominated **locutorio.mdb** and **supervisor.mdb**.

5. – CONSULTATION.

5.1. Consult rates.

The option “Consult rates” allows:

- To obtain the sale rate to apply to a specific number.
- To view the prefixes of a specific destination or country.
- To obtain the sale rate to apply to a specific destination or country.

This option presents the following screen.

Destination	Call type	Prefix
Brazil Mobile	INTERNACIONAL : BRAZIL MC	005500
Brazil Rio de Janeiro	INTERNACIONAL : BRAZIL RII	005521
Brazil Sao Paulo	INTERNACIONAL : BRAZIL SA	005511
Brunei	INTERNACIONAL : BRUNEI	00673
Brunei Mobile	INTERNACIONAL : BRUNEI MI	006738
Bulgaria	INTERNACIONAL : BULGARIA	00359
Bulgaria Mobile	INTERNACIONAL : BULGARIA	0035948
Bulgaria Mobile	INTERNACIONAL : BULGARIA	0035000
Bulgaria Sofia	INTERNACIONAL : BULGARIA	003582
Burkina Faso	INTERNACIONAL : BURKINA F	00226
Burundi	INTERNACIONAL : BURUNDI	00257

Telephone number to search for rate : 00359

Name of destination to search for rate : Bulgaria

Stat price: 0 Minute price: 1.2 Time span (Sec): 0

Call type: INTERNACIONAL : BULGARIA

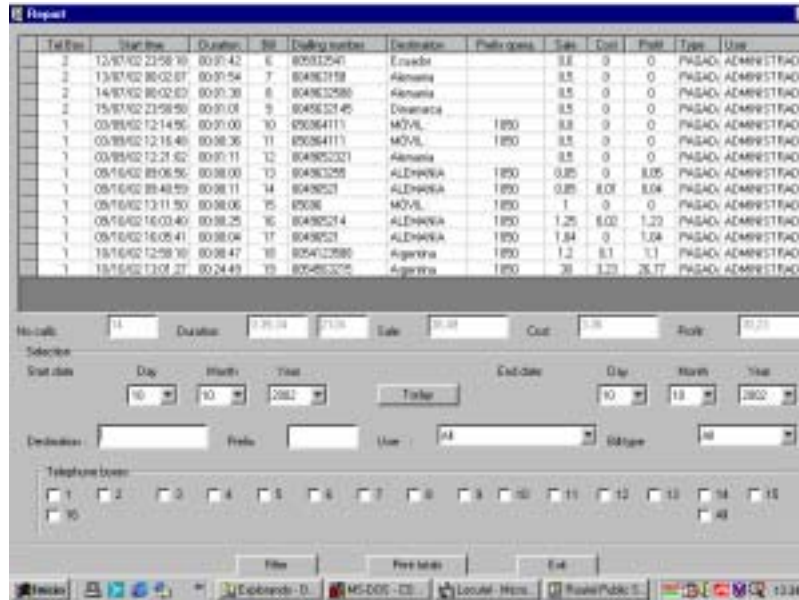
Search by number Exit

To obtain the sale price to apply to a telephone number, enter the number to determine in the field “Telephone number to search rate” and press <Intro> or press the command button “Search by number.” If this number determines the sale rate in a unique form, it shows the prices to apply; otherwise it shows the message “Cannot be determined or header with the prefix does not exist”. This message informs that more numbers are needed to determine the rate to apply or that that number does not have a defined rate.

To obtain the sale price to apply to a destination or country, select the destination in question from the list on the top and double click with the mouse. This option shows the rate to apply to this destination selected regardless of the existence of more similar prefixes. This list is ordered by destinations, and the prefixes that do not have a defined destination are located in the first position.

5.2. See report.

The following figure shows all of the components of this option.



The option “**See report**” allows to view, filter, obtain total sums, print these totals, bill, cancel, and print a receipt of calls already made.

This screen is divided into 4 parts:

- The top part contains a list of the calls made. Each line represents information about a call. The user may place the cursor on a line and use the right mouse button to see a pop-up menu that allows to cancel, bill, and print a receipt of the call selected.
- The central part informs about the totals of the selected calls. These totals inform about the number of calls, the duration in hours, minutes and seconds, or duration in seconds, the sum of the sale prices, of cost and profits.
- The selection section contains the criterion to apply in the case of establishing a filter. It is possible to filter the calls made between two dates, by telephone box number, destination, Carrier Selection Prefix, the user who issued the billing and the bill type.
- In the base, there are 3 command buttons:
- Filter: shows the calls made according to the criterion selected.
- Print totals: it prints a report with the selection criterion applied and the totals obtained with these criterion.
- Exit. The report option concludes.

6. – APPLICATION FRAMEWORK.

The main window of the **Routel Public** application is comprised of several areas:

Telefono	Telephone number	Destination call	Stat line	Status	Account	Cost	Priority	Time	Total
1	004900215	Argentina	1501.27	88.02.38	3.8	8	100		CONNECTED
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

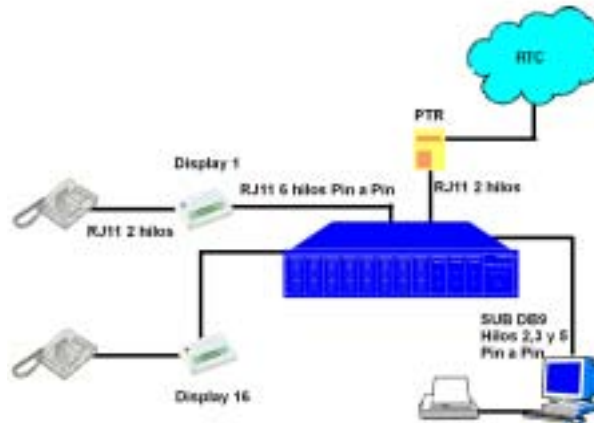
- In the top part, a list of pull-down menus is located with all the options of the system. Under the menu options, different icons and command buttons are located with the most frequent commands or options to carry out in the application.
- In the central part, you will find at least two eligible tabs. One shows the status information of the telephone boxes that comprise a **subrack**; if the system is comprised of several **subracks**, you will find as many tabs as there **subracks**. The **alarms** produced in the system are registered in the other tab.
- The bottom part shows diverse status information, such as the user that began the session in the system, the date and time of the PC, etc.

In the central part described by **Subrack 1** of this main window, a status line exists for each telephone box of the subrack. This status line informs of the current status of the telephone boxes. The indicator that accompanies the Subrack text, whose colour may be red or green, expresses the absence or presence of communication with the equipment.

In the main screen, another indicator exists with red or green colour in the tab designated as **alarms**. The special events that occur in the system are registered in this tab. Every time one of these events takes place, the red colour indicator is lit. To delete this indicator and change to its normal green colour state, this tab should be selected.

APPENDIX A. INSTALLATION PROCESS.

PHYSICAL INSTALLATION



- Find a location for the equipment where the wiring is as short as possible (ex. above one of the telephone boxes), so the longest cable would only be the data cable that connects the PC with the RACK.
- Install the displays in the telephone boxes and carry out the wiring. It is necessary to keep in mind that the cable must be of 6 wires and connected in the RJ11 pin to pin. The last point to chase is the RJ11 that the RACK connects with the telephone boxes, thereby you avoid short-circuiting with the chaser the voltage of the telephone line with the data and supply inputs of the RACK.
- Prepare the data cable. SUB DB9 male and female connectors, the physical connections are the wires (2, 3 and 5) and they must go pin to pin.
- Install the ticket printer.

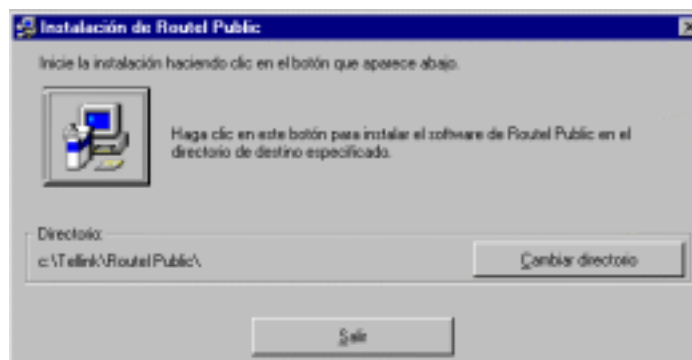
APPLICATION INSTALLATION

From the PTRs (NT's), deactivate the telephone answering service in all the lines that are installed in the RACK.

Turn on the RACK and check that the display shows information in all the telephone boxes, if one does not show anything, disconnect the RJ11 from the display and check the wiring; be careful if you have to chase RJ11 again, do it with the RJ11 of the RACK disconnected. **Do not introduce or remove cards with the RACK on.**

Install the printer drivers and select it as predetermined.

To install the **Routel Public** application, execute the **set-up** program included in the installation CD-ROM. The following window will appear to select the directory destination of the application.



To begin the installation, click on the computer icon.

