KAREL WEBCM

# User Manual



Last Update: 18.12.2012

# Table of Contents

# Part I

## Welcome to WebCM

# 1 Welcome to WebCM

Welcome to WebCM. Thank you for choosing our product.

See the section About WebCM for the basic features of WebCM.

You can learn about the product updates in the page Updates.

We suggest that you read the section How to Use the Help Window for more information about using the help window.

Before use, you should definitely read the section Normal Users, if you are a normal user; and the section Administrators, if you are a system administrator.

You can browse the section About the User Interface and its subsections to know about the user interface.

You can find information on regular usage of the interface in the section General Use.

You can find information on usage of the interface, pertaining to administrative use, in the section Administrative Use.

Frequently asked questions and their answers are located in the section Frequently Asked Questions.

You can get information about the concepts that are mentioned in the application, in the section References.

In conclusion, you can make use of the Index pages, which have been arranged in alphabetical order.

# Part II

# Introduction

# 2 Introduction

## 2.1 About WebCM

WebCM is the call detail record software that has been designed for Karel PBXs.

The basic features of the software can be summarized as follows:

- WebCM is Web-based.

  As can be deduced from its name, the WebCM software is web-based. WebCM users need just modern web browser software (like Mozilla Firefox, Microsoft Internet Explorer) to use the application, and a PDF reader (like Acrobat PDF Reader) to view the PDF reports.

- WebCM can work with multiple PBXs simultaneously.

  The WebCM software can collect call detail record information from multiple PBXs simultaneously and present those pieces of information to the users as a whole or separately with respect to each PBX.

- WebCM is multi-user software.

  More than one user can use the software at the same time.

- WebCM supports different user account types.

  WebCM users can use the system through different roles according to their authorization levels. While a user in a normal role can view the records pertaining to the calls made through his phones only; s/he can view the records pertaining to the persons s/he is in charge of, or the records pertaining to the calls made over the PBXs s/he is in charge of, respectively in the Group Administrator and PBX Administrator roles. Even further, in the WebCM Administrator role, s/he can view the entire call detail records that exist within the system. (See User Roles for further information and for the difference among several roles.)

- SMS messages are logged through WebCM, too.

  WebCM can process and present the records pertaining to SMS messages sent and received via the Karel GSM Terminals, along with the other call detail records.

- WebCM has detailed tariff and pricing features.

  WebCM allows creating tariffs based on extension groups, trunk groups and the operator. Periods of validity can be defined for the tariffs. Existing records can be modified and costs can be recalculated, as well as new tariff definitions can be entered into the system, which are to be effective from then on. Calls can be priced with respect to pulse rate or the prefix of called number. WebCM can optionally price extension (internal) calls as well. (See Pricing, How to Determine the Appropriate Tariff for detailed information on pricing.)

- WebCM supports different currencies for pricing.

  Call cost definitions pertaining to different tariffs can be created, which are based on different currencies and calls are priced in those currencies. On the other hand, while sums or averages of costs are being calculated in reports, costs are automatically converted to the reference currency. (See Working with Different Currencies for the use of different currencies in the system.)

- WebCM can support different languages for different users simultaneously.

  Different users can use WebCM in different languages at the same time, provided that translations into different languages have been done. The entire expressions that are used in the interface are stored in the database. Equivalences of those expressions in different languages can be defined through the system. That makes it possible for users to translate without the need for any extra software, regarding the languages which have not been included in the standard software.

- The WebCM reports are delivered to you automatically, without waiting.

  WebCM report requests are taken from users, put into queue and when the reports are ready, they are served to the users, without making them wait. Hence, the users can send many report requests to the system one after another, without waiting. Besides, if one wishes to receive reports in certain periods, then daily, weekly and monthly report schedules can be defined. (See Export, Reports, Histograms and the E-Mail Service for detailed information about the reports.)

- General and personal phone book records can be created with WebCM.

  A corporate phone book is available in WebCM, to which the entire users have access. In addition to that, users can enter private and public names or remarks corresponding to a telephone number. Individuals can view private or public remarks that are in their own phone books, public remarks of other users, or remarks that have been defined in the corporate phone book, wherever the external phone numbers are referred. (See Phone Books for detailed information about the phone books.)

- The WebCM database is maintained and backed up regularly on a daily basis.

  The WebCM Maintenance Service backs up the database daily and performs technical maintenance. Daily maintenance schedule and the time period before the old files in the back up archive in the system are deleted can be arranged.

- WebCM supports multiple operating systems.

  Operating system of the server on which the WebCM software runs can be either Windows or Linux. Since the software is web-based, there is virtually no limit to the operating systems that can be used on user computers.

## 2.2 Updates

A summary of the WebCM updates is as follows:

- Version AAA

  That is the first version released.

- Version AAB

  - A new report named "Call Summary By Extension and Call Type (Basic)" was added.
  - Several bugs were fixed.

- Version AAC

  - In "Export", "Histograms" and "Reports" pages, users can define more than one e-mail address, so that generated report files are sent to all e-mail addresses simultaneously.
  - "User groups" feature was added.
  - "Account codes" feature was added.
  - Click-to-dial feature was made configurable per user.
  - Search features were improved.
  - Export feature was added to all tables.
  - Backup-on-demand feature was added.
  - New reports were added:
    1. Call Summary by User Groups
    2. Call Summary by User Groups and Call Types

3. Call Summary By User Groups and Extensions
4. Call Summary by User Groups and Users
5. Call Summary By User Groups, Users and Call Types

- For the call detail records archive feature was added.
- Several bugs were fixed.

- Version AAD
  - Users were enabled to define a name for the reports.
  - Users with WebCM Administrator role were enabled to view and delete report jobs in the queue.
  - Some reports were optimized.
  - A new user role named Human Resources was added, which is authorized to edit user records.
  - A page to display connection status between the Data Collector Service and each active data sources was added.
  - Advanced Search pages are improved.
  - Long Distance GSM and International GSM call types are defined.
- Version AAE
  - New report named "Call Detail By Users" and "Call Detail By User Groups and Users" were added.
  - Some performance issues were fixed.
  - Several bugs were fixed.
  - Installation manual was updated.
- Version AAF
  - New report named "Call Summary by Account Code" was added.
  - Users were enabled to use reporting features without a need for e-mail server. According to user needs, repors can either be delivered to them by e-mail or they can be stored in database and can be accessed on Web interface.
  - Import feature was added to Users page.
  - Several bugs were fixed.
- Version AAG
  - Russian language support was added.
  - New report named "Call Detail By Subscriber No" was added.
  - Network calls support was added.
  - WebCM DB Tools maintenance program was added.
  - Delivery of alarm mail messages to the users who are defined as "Alarm Recepient" in the system was added.
- Version AAH
  - Storage of queries for later use was provided.

- Version AAI
    - LDAP synchronization feature was added.
- Version AAJ
    - IPv6 and HTTPS supports were added.
    - Call recording features were added.

## 2.3 How to Use the Help Window

Shortcuts to relevant help pages have been defined on various interfaces in the application. The left edge of the help window has been reserved for the Contents or Index sections, whereas the help content pertaining to the selected topic is displayed on the right.

The help pages are displayed in a different window, so if your browser's *pop-up blocker* feature is active, then it should be so configured that it would not block The WebCM windows, in order to let the help pages be displayed correctly.

# Part III

## Before Use

# 3 Before Use

## 3.1 Normal Users

You should pay attention to the following guidelines before use, in order to utilize the WebCM application without any problems:

The JavaScript code has been intensively employed within the WebCM application. Therefore, some features may not work as they are supposed to, if your browser has been configured so as to block JavaScript. Moreover, if your browser's *pop-up blocker* feature is active, then it should be so configured that it would not hinder the WebCM application in any way. You can consult your system administrator on that.

You will need a username and a password to be able to use the application. If you do not already have a username and a password, then consult your system administrator.

While you use the report feature in the application, your e-mail address is bring to the related window. In order to use this feature, your e-mail address should have also been defined by your system administrator while your user account is being created. (This is required only if WebCM is configured to deliver reports by e-mail.)

You should consult your system administrator on different authorization levels you may need when using the application. (See User Roles) For instance, if you are a group administrator, and yet you are able to view records of your own calls only, then merely a Normal User role might have been defined for you. If that is the case, then the Group Administrator is supposed to be included in your set of roles, and the people who you are in charge of should be defined.

In conclusion, we suggest that you study help pages on usage.

## 3.2 Administrators

You should pay attention to the following guidelines before use, in order for your users to use the WebCM application without problems:

Each user will need a username and a password to log in to the system. Hence, first of all, you are supposed to create an account for each user through the interface Users. PBX users who will not be WebCM users are also supposed to be registered in the system through that interface, considering that their names, along with their extension numbers, should be displayed in records and reports. (It is not necessary to define passwords for those users.) Furthermore, e-mail addresses of the entire users are also supposed to be defined, considering that they should be able to make use of the report feature. (This is required only if WebCM is configured to deliver reports by e-mail.)

You should identify to the system different user roles that the users will need, you should predetermine the persons who group administrators will be in charge of, as well as the PBXs which PBX administrators will manage, and then define the necessary parameters; yet you can do that eventually.

In order for the call detail record information to be priced correctly, the tariffs are also supposed to be defined correctly and updated regularly. How the appropriate tariff is determined for a call and detailed information on pricing are explained through examples in the sections How to Determine the Appropriate Tariff and Pricing, respectively.

Special days can be identified to the system through the section Special Days, in order to be used in regard with the tariffs.

You are supposed to identify the PBX_or the PBXs_ to the system prior to use, in which the call detail record information is to be accumulated. (See PBX Definitions for detailed information) Defining the country and area codes of the PBXs with respect to the countries and cities they are located in is essential, considering sound determination of call type and pricing information, regarding calls made especially among the PBXs that are within the same PBX group.

First of all, you are supposed to create a PBX group for the PBXs that are in the same PBX group, and then you are supposed to include pertaining PBXs to that group. (See PBX groups for PBX groups.)

If only a single PBX has been defined in the system, or if the defined PBXs are not in the same PBX group, then extension and trunk numbers will automatically be defined in the system eventually, as their call detail records are resolved. In that case, what should be done is just to define which users the extensions belong.

However, concerning the defined PBXs that are in the same PBX group, it may not be determined whether a called number is an extension or a trunk number. First of all, in order for the system to figure out that that is a call among the PBXs that are in the same PBX group, a trunk group is supposed to be created for trunk numbers that are used for such calls, and then they are supposed to be marked as the Network group. (See Trunk Groups for detailed information) Indeed, since it would make more sense to employ different tariffs for pricing that kind of calls, too, the trunk group that is to be created will be used to define that tariff as well. (For example, the VOIP tariffs, etc.)

Moreover, concerning the calls made among the PBXs which are in the same PBX group, the system may not know beforehand to which PBX the called extension belongs. Concerning that kind of usage, extension numbers pertaining to the PBXs are also supposed to be entered into the system in advance. Only after those definitions are created, the system can detect that that kind of calls are made within the same PBX group and identify the PBX which the called extension belongs.

Extension, trunk and prefix groups are utilized for tariffs. They should be created when needed. (See Extension Groups, Trunk Groups, Prefix Groups, How to Determine the Appropriate Tariff for detailed information)

If different currencies are used when defining rates, then values of those currencies in the reference currency should also be entered correctly into the system. Total and average cost calculations are done in the reference currency in reports. (See also Currencies, Working with Different Currencies)

In order for the system to work properly, the WebCM services must be working all the time. You can activate any service, which is not already active, through the interface reserved for it. The log information would be helpful regarding the problems pertaining to the operation of the services. (See also The WebCM Services)

In conclusion, we suggest that you study help pages on usage.

# Part IV

## The User Interface

# 4 The User Interface

## 4.1 About the User Interface

This chapter includes information per page about the user interface.

All users who can log in to the system, although through different authorizations, may access the interfaces that are mentioned under the topic General Use.

Only the users in the role WebCM Administrator may access the interfaces that are mentioned under the topic Administrative Use.

## 4.2 General Use

Information about the interfaces, which are open to access of all users, is presented in this chapter.

### 4.2.1 Calls

The interface on which calls are displayed differs according to the active role of the user. While the normal user, for example, may view only the information pertaining to calls he is related to; the group administrator may view only the information pertaining to calls which the users s/he is in charge of are related to; the PBX administrator may view only the call detail record information of the PBXs s/he is in charge of. The WebCM administrator, on the other hand, can view the entire call detail record information in the system.

Call detail record information entries are listed in pages that have been sorted with respect to time, beginning with the most recent to the oldest. In order to proceed among pages, number of another page can be selected through the Page menu. Previous and Next links can be used to move one page backward or next, respectively. The following pieces of information are displayed at the top of the record list: sequence of the displayed page, the range of records it lists and total number of records.

Number of records that are to be listed per page can be set through the Items per page section. Columns that are desired to be present on the list can be selected through the Columns page.

You can perform speed search among the call detail records without exiting the page. Enter the criteria pertaining to the search you wish to do into the search dialog box and click the Search button. For instance, let us suppose that you view your own calls in the normal user role. When you type "Jack" in the search dialog box and then click the Search button, the entire call detail records that contain the word "Jack" are displayed. Suppose you wish to view the incoming calls only. This time, when you type "Incoming" in the search dialog box and then click the Search button, the entire incoming calls and SMS messages that contain the word "Jack" are listed. "Calls" can be selected again from the menu to cancel the query criteria.

You can use the Advanced search link for more Advanced searches.

You can convert the call detail record listing that has been obtained as a result of the search, or the entire call detail records, if no search has been performed, in CSV, Excel, PDF or XML format. Only the data in the selected columns on the screen is considered while converting the call detail record information into those formats. (See Export for detailed information)

You can have histograms drawn or reports created that are based on the call detail records that have been obtained, again, as a result of the search. As for the histograms and reports that you demand without carrying out any query, the entire records are considered.

In fact, you might not be liable for all of the calls listed in the calls section. For instance, in a record of incoming calls, if you are the one who has called, then the actual owner of that call detail record is the one who has been called, because s/he is the one who has actually received the call. On the other hand, considering internal calls, if you are the one who has been called, then the actual owner of that call detail record is not you, but instead, the one who has called you; because s/he has actually made the call.

Since calls are supposed to be priced and costs are supposed to be charged to persons who are actually liable, you will see in reports and histograms only the information that pertains to calls that you are the actual owner. Nevertheless, regarding some of the calls, even though you are not the one who is the actual owner, the entire records that pertains to you are listed in that page, because you are somehow involved. In a similar way, a group administrator can view the entire list of calls that *concerns* the persons who s/he is in charge of, however, only the calls that those persons are the actual owners are considered in reports.

Users that are in the role of WebCM Administrator can view all information regarding call detail records. Moreover, they may allow any call detail record information they want, to be deleted, processed or priced again, or archived. To do that, they are supposed to click the check box that is located to the left of call detail record information in the page and click Delete, Reprocess, Recalculate Price or Move to Archive. Reprocessing a call detail record entry again means deleting it and generating it again from raw data by the Data Parser Service. As for recalculating price for a call detail record entry, it is not deleted; instead, just pricing operation is performed again. For instance, when tariff or cost definition change, call detail record information can be filtered and priced again. In order to move selected call detail records to an archive, you should select an archive from the list that is composed of archive names that were created before, using Archives page. Since each of these operations may take a long time to complete, depending on the number of records to be processed, each of these operations may be processed by the Maintenance Service. Status of these operations may be seen in the log view of the Maintenance Service.

### 4.2.2 Advanced Search

The Advanced Search function allows users to perform advanced search queries on call detail records with respect to certain fields. For example, taking the date and time of the call into consideration, calls made Today, Yesterday, This Month or Last Month can be queried. Alternatively, the user can search for calls made before or after a certain time, or within a certain time period. In order to carry out a search based on call type, the user can select from a list that displays all possible call types. Multiple items can be selected by holding down the keyboard's Ctrl key while selecting with the mouse.

The upper section of the advanced search screen has a gray-bordered control box that includes within it control items related to saved queries and running the current query. Below this control box are three boxes with dark blue borders that show, from left to right, advanced search categories, the currently selected category and the current query tree. The user is expected to form a query tree in the lower right hand box and run that query by clicking the "Search" control (yellow lightning symbol in the upper right hand corner, within the gray control box).

The easiest way to form a query is to activate a previously saved query from the selection list on the left hand side of the gray control box. The selected item in this list of saved queries can be deleted by pressing the "Delete query" control.

New conditions can be added to the query tree using the "Add Condition" and "Add Condition's Complement" controls in the box for the selected category, located in the lower center section. The selected category can be changed by selecting a different category from the list of advanced search categories (dark blue box in the lower left hand part of the screen). The query tree box contains a "Delete" control (a red X) to remove a branch from the query and a "Delete All" control (a bomb) to clear the entire query. The "AND" and "OR" controls found in the same section allow logical grouping of query lines to define complex query logic. The location of individual query lines within the query tree can be changed through drag-and-drop moves.

The "Save as" control (blue diskette in the gray control box) can be used to give a name to the current query and save it for later use.

Some categories include calendar controls that allow the user to enter query criteria for searching with respect to time and date. The calendar screen initially displays the current date and time. There is a dialog box on the lower section of the calendar window, into which the time can be entered in the format hh:mm:ss. If that field is left blank, then the beginning of the day, namely 00:00:00, is taken as the default. If the calendar is being used to pick a date only (if the time of the day is irrelevant) then the time field can be safely ignored. Buttons for proceeding to the previous and the next year and month are available at the top of the calendar interface. As soon as the desired day is clicked, the date and time information is transferred to the interface that generated the calendar. Therefore, if the user wishes to enter the time of the day, then this should be done prior to selecting the day.

It is possible to specify units for some fields. For instance, the user can specify the duration of a call in seconds or minutes.

Not all of the calls that are listed in the "Calls" screen are the ones you have initiated, or the ones you have received. The calls that *concern* you yet *belong* to someone else are also listed. Hence, the ability to query with respect to the actual owner of the call is also provided.

The regular "Calls" screen provides a quick search box, which allows Internet search engine style searches. You can perform simpler searches through that interface.

To cancel the active query while the results of a search are on the screen (to see an unfiltered list of all calls), the Calls icon on the main WebCM menu at the top of the window can be clicked.

## 4.2.3 Export

By using this user interface, the data presented in web interface can be exported to CSV, Excel, PDF or XML formats.

In order to export data, a format should be specified in Format section. In addition, number of records to be converted should be selected in Number of records section.

For the configurations where reports are delivered by e-mail, type the e-mail addresses of the recepients to the related text area and press the E-mail button, so that the data converted is sent to related users by e-mail. If you wish, you can give a name to a report. Report name and report type will be placed in the subject part of the e-mail message.

For the configurations where reports are accessed by Web interface, press the Create button.

**Scheduled Reports**

If you would like the data exported to be prepared automatically on a regular basis, then you are supposed to specify through the interface that this is a scheduled report. After determining the starting time for the reports, you can pick one of the four program types:

The programs scheduled to run for one time only, run only one time on the specified date, at the specified time. They are deleted right after they have run.

The daily programs run once a day: everyday, weekdays, on the weekend, or on any specified day. (For example, everyday, weekdays, on the weekend or once every five days, etc.)

The weekly programs run once in the specified week on the selected days. (For example, once every other week, on Monday and Friday, etc.)

The monthly programs run on a specified day of selected months. (For example, on the fifth days of January and July, etc.)

In order to see, and cancel when desired, the list of the scheduled reports that have been defined previously, the link scheduled reports should be clicked. The users who are actively in the WebCM Administrator role may view the list of the entire scheduled reports in the system and intervene when necessary. As for the users in other roles, only the list of the scheduled reports that have been defined for those users are displayed. (See Scheduled Reports for detailed information on the scheduled reports)

## 4.2.4 Histograms

Histograms graphically present to the users distributions of calls with respect to certain criteria. Some of the histogram options available in the system are as follows:

- Call distributions by call types:
  Call detail records are graphed with respect to the type of the call. Each bar represents a call type.
- Call distributions by hours:

Call detail records are graphed with respect to hours calls are performed. There are 24 bars, each representing an hour of the day.

- Call distributions by day of the week:
  Call detail records are graphed with respect to the days of the week on which calls are performed. There are seven bars in total, each representing a day of the week.

- Call distributions by day of month:
  Call detail records are graphed with respect to the days of the month on which calls are performed. There are as many bars as the number of the days in the selected month, each bar representing a day of the month. For instance, if January is selected as the month, then there will be 31 bars in the corresponding histogram, whereas there will be 30 bars, if June is the selected month.

- Call distributions by months:
  Call detail records are graphed with respect to the months in which calls are performed. There are 12 bars in total, each representing a month of the year.

The data to be present in the histograms can be filtered by using the query modules. Otherwise, the histogram is plotted with respect to the entire records that are within the authorization of the particular person in the pertaining data set. Hence, before plotting the histograms, the data that the histograms are to be based on should be filtered by using the query module.

In addition to the current query the user has created, menus to specify Year and/or Month are also available on the histogram creation interface.

Number of calls that match the criteria you have determined is displayed at the bottom of the histogram.

For example, if a user wishes to see the distribution of the calls s/he has made within the previous month, with respect to the call type, then, first of all, s/he has to log in to the system in the Normal User role and if her/his role is different, then s/he is supposed to shift to that role. Then, s/he should filter the records pertaining to the previous month by employing the query module and then s/he should select the "Histogram" menu, and finally, s/he should select the "Call Distributions by Call Types" menu. Alternatively, after accessing the "Histogram" menu without employing the query module, s/he can enter the Year and Month criteria through that window and then select the "Call Distributions by Call Types" menu.

If another user wishes to see the distribution of the entire calls s/he has made in the current month, with respect to hour, then, first of all, s/he has to log in to the system in the role WebCM Administrator and if her/his role is different, then s/he is supposed to shift to that role. Then, s/he should filter the records pertaining to the current month out of the entire records by employing the query module and then s/he should select the "Histogram" menu, and finally, s/he should select the  Call Distributions by Hours menu.

After determining the data through the interface, which pertains to the histogram to be plotted, click the OK button to view the histogram through your web browser, or for the configurations where reports are delivered by e-mail, type each recepient's e-mail address one under the other and click the E-mail button, if you want the histogram to be sent as a report to the e-mail addresses you choose. For the configurations where reports are accessed by Web interface, click the Report button.

**Scheduled Reports**

If you would like the reports to be prepared automatically on a regular basis, then you are supposed to specify through the interface that the report is a scheduled one. After determining the starting time for the reports, you can pick one of the four program types:

The programs scheduled to run for one time only,  run only one time on the specified date, at the specified time. They are deleted right after they have run.

The daily programs run once a day: everyday, weekdays, on the weekend, or on any specified day. (For example, everyday, weekdays, on the weekend or once every five days, etc.)

The weekly programs run once in the specified week on the selected days. (For example, once every other week, on Monday and Friday, etc.)

The monthly programs run on a specified day of selected months. (For example, on the fifth days of January and July, etc.)

In order to see, and cancel when desired, the list of the scheduled reports that have been defined previously, the link scheduled reports should be clicked. The users who are actively in the WebCM Administrator role may view the list of the entire scheduled reports in the system and intervene when necessary. As for the users in other roles, only the list of the scheduled reports that have been defined for those users are displayed. (See Scheduled Reports for detailed information on the scheduled reports)

## 4.2.5 Reports

Report requests that have been entered by the users through the WebCM interface are stored in a pool, to be processed by the WebCM E-mail Service. If the WebCM E-mail Service is working, it puts the report requests in a queue, creates the report files in PDF format.

Since the report requests increase system load, in order for the report requests, which may be transmitted simultaneously, not to deteriorate the system performance, when the requests are being fulfilled, the reports are not submitted to the web browser of the users as soon as they are requested. Instead, the report requests are accumulated in a pool in the database, processed in turn and report files are created in PDF format, and then those files are either sent to the e-mail addresses of the recepients or stored in database to be served thru web interface.

For the configurations where reports are delivered by e-mail, e-mail address of each recepient must be typed one under the other in the related text area. If you wish, you can give a name to a report. Report name and report type will be placed in the subject part of the e-mail message.

The users access different reports according to their active roles. (See User Roles for detailed information on the roles.) The system presents the list of the report template files, out of the available ones, which are appropriate for the active role of the user. The user selects in the list the report template s/he needs and requests the report. The user may be prompted for additional parameters regarding some reports.

The data to be present in the report can be filtered by using the query modules. Otherwise, the report is created with respect to the entire records that are within the authorization of the particular person in the pertaining data set. Therefore, the data that is to be the basis of the report should be filtered by using the query functions before requesting report.

For example, if a user demands a summary report with respect to the call type, regarding the calls s/he has made within the previous month, first of all, s/he has to log in to the system in the Normal User role and if her/his role is different, then s/he is supposed to shift to that role. Then, s/he should filter the records pertaining to the previous month by employing the query module and then s/he should obtain the report list by selecting the Reports menu. Finally, s/he should place the report request by selecting the template Call Summary by Call Type on the report list to be opened.

If another user wishes to see the user-based report of the entire calls that has been made in the current month, based on, then, first of all, s/he has to log in to the system in the role WebCM Administrator and if her/his role is different, then s/he is supposed to shift to that role. Then, s/he should filter the records pertaining to the current month out of the entire records by employing the query module and then s/he should proceed to the Reports section and request the report by selecting the template Call Summary by User.

While usually the reports that may concern only a single person is presented for the Normal User role, reports with more involved content is presented to the users in other roles. The roles and data content of the corresponding reports are Group Administrator: data pertaining to the persons who the Group Administrator is in charge of, PBX Administrator: the entire data pertaining to the pbx, and WebCM Administrator: data pertaining to the entire system.

**Scheduled Reports**

If you would like the reports to be prepared automatically on a regular basis, then you are supposed to specify through the interface that the report is a scheduled one. After determining the starting time for the reports, you can pick one of the four program types:

The programs scheduled to run for one time only,  run only one time on the specified date, at the specified time. They are deleted right after they have run.

The daily programs run once a day: everyday, weekdays, on the weekend, or on any specified day. (For example, everyday, weekdays, on the weekend or once every five days, etc.)

The weekly programs run once in the specified week on the selected days. (For example, once every other week, on Monday and Friday, etc.)

The monthly programs run on a specified day of selected months. (For example, on the fifth days of January and July, etc.)

In order to see, and cancel when desired, the list of the scheduled reports that have been defined previously, the link scheduled reports should be clicked. The users who are actively in the WebCM Administrator role may view the list of the entire scheduled reports in the system and intervene when necessary. As for the users in other roles, only the list of the scheduled reports that have been defined for those users are displayed. (See Scheduled Reports for detailed information on the scheduled reports)

**Note for Advanced Users and System Administrators:**

The report template files are located in the \Reports folder that is under the application directory on the server. The user report interface lists for the user only the relevant ones out of those templates, according to the active role of the user. Since the report template files are in XML format, they can be viewed with any text editor and re-arranged according to needs, or a new template can be created, which is based on an existing template, and can be put into use according to needs. Both visual and content data pertaining to the reports can be determined according to needs. The roles that are authorized to use a particular report can be set. In case an extra report template is needed, beside the ones provided by the system, then it would be a better idea to copy one of the available templates and create a new template file with a new name, rather than to make changes in the report template files. By this way, should the system be re-installed, the risk of losing the modified report template files would be avoided. Since web users have no access to the folder that contains the reports, only the users with the authorization for server operations (e.g. your system administrator) can make changes in those files.

The query sentences in the report template files, which pertain to the data to be present in reports, are in SQL format. One should pay attention to the SQL sentences, so that they are suitable for all roles and reflect the filter information that has been activated on the pre-report session. SQL sentences of similar template files may be examined to ensure that.

### 4.2.6 Documents

If an e-mail server is defined using the E-mail Servers page and enabled in the System Configuration page then WebCM will try to use this mail server to e-mail a document that it generates to the addresses given by the user who requested the document.  Otherwise, the document will be stored on WebCM until the Maintenance Service deletes it during regular clean up of old documents or an authorized user manually deletes it.  The time period that the Maintenance service will allow a document to remain on WebCM is given by the "report_expire_time" parameter in the "maintenance" section of the WebCM configuration file.  Its default value is 604800, which corresponds to a week in seconds.

To users whose current role is WebCM Administrator, the Documents page will show information about all the documents that are currently stored on WebCM.  Other users only see the documents that they have created themselves.

For each document, the displayed information will include the following: a description, the Active Query (if there was one) that was used to select the items used to generate the document, the date and time when the document was created, the size of the document in kilobytes and the file type of the document.  A user in the WebCM Administrator role will also see a numerical identifier for the document and the name of the user who created the document.

Documents can be deleted by selecting their checkboxes and clicking the Delete button.

The Scheduled Reports and Report Job Queue pages are accessible from this page through their own links. Those two pages, in turn, provide access to this page through a Documents link.

Quick Search on the Documents page enable searches based on User, Description, Size and Type fields. Advanced Search categories include Date and Time of Document Creation, Document Size and Document Type.

## 4.2.7 Scheduled Reports

The list of the entire scheduled reports that have been defined in the system is displayed on the scheduled reports page, for users whose active roles is WebCM Administrator, whereas, for the persons in other roles, only the list of the scheduled reports that pertains to that particular person is displayed. Regarding the scheduled reports, pieces of information such as the following are listed: name and type of the report, to which user it belongs (if the entire scheduled reports are being listed), in which role the report is to run, type of the schedule program, (once, daily, weekly or monthly), frequency of the scheduled task (everyday, once every 5 days, every week on Monday and Friday, on the 3rd day of every month), start time of the task, the last time the task has been executed_ if it has run before_ and the next time it is to be executed.

Users whose active role is WebCM Administator can view and delete report jobs waiting in the queue to be processed. In order to do this, the link Report Jobs Queue should be clicked.

To cancel a scheduled report, it is selected in the list and the Delete button is clicked.

The E-mail Service is supposed to be active, in order for the scheduled report tasks to run on time.

Simple and advanced search can be carried out in scheduled reports. For instance, a user in the WebCM Administrator role can query the scheduled reports pertaining to a particular user by entering the name of that user to the simple search box. The advanced search feature can be used for all roles. The Advanced search feature allows queries to be performed with respect to the user role to be applied when creating reports, type of the scheduled task, the last time the task has run and the next time it has been set to run.

## 4.2.8 Users

The list of users who are defined in the system is displayed on that page. The Username is the name users employ when logging in to the system. The expression OK is displayed in the Password column, if a password has been assigned to that user, or else the user cannot log in. Actual names of users, which are to be used in reports and call detail records, are located in the Real Name column. The E-mail data is the e-mail addresses of users. The roles a particular user can take on are listed in the Roles column. (See User Roles for detailed information on user roles) Extension numbers that a user owns are listed in the Extension Numbers column. Names of PBXs, for which the users in the PBX administrator role are responsible, are listed in the next column. The User Group column displays the group that the user belongs to. The Telephony Client column displays the telephony application for the user (like Karel Net-Console). If a telephony application has been defined for a user, the extension and PSTN numbers are displayed as links on related web pages. If the telephony application is setup on the user's computer, when the user clicks on those links, the application is opened and relevant number is dialed. Alarm Recepient column displays whether a user will receive the alarm messages related to WebCM services or not.

Speed search can be performed on the user records, just as it can be done on the interface on which the calls are displayed. The list can be converted to CSV, Excel, PDF or XML format.

Defining a new user in the system, deleting an existing user or making changes in the user information are possible only for the users in the WebCM Administrator role or Human Resources role. A different interface becomes available, which allows making changes in the records while the user list is being displayed for those roles. However, assigning a role or taking a role away from a user are possible only for the users in the WebCM Administrator role.

To create a new user, the name to be used by the new user when logging in the system is supposed to be entered into the section New User: and the Create button is supposed to be clicked. Then, to make changes in user attributes, the link Edit is clicked, which is at the end of the line pertaining to the user, so that the interface for editing records opens. The username, the password, the real name, the e-mail address, the user group and user's telephony application are entered through that interface and the OK button is clicked. The Cancel link is used, if one wishes to cancel the changes that have been made.

In order to assign a role to one or more users, the boxes that are to the left of the user records should be checked and Assign Role button should be clicked after selecting the desired role in the Select Role: menu, which is at the top of the list. On the other hand, to take back a role from one or more users, the Take away

Role button should be clicked. Administrative roles of users are listed in the Roles column. Hence, if there is no expression in that column for a particular user, then that means the user have only the Normal User role. Users for whom no password has been defined cannot make use of the system, i.e., all their authorization becomes invalid. Therefore, there is no need for a role definition such as "Unauthorized User" in the system.

If the Group Administrator role has been assigned to a user, then the user groups they are responsible are also supposed to be defined through the User Groups page. Likewise, regarding the users to which the PBX Administrator role has been assigned, the PBXs they are responsible for are also supposed to be defined through the PBX Definitions page.

To delete information pertaining to one or more users, the boxes to the left of the pertaining user records should be checked and then the Delete button should be clicked.

A user in the Normal User role can change her/his password or can define her/his telephony application after clicking the Myself link on that page. Users in the Group Administrator role can view the list of users who they manage. Similarly, users in the PBX Administrator role can view the list of users of pbxs that they manage.

**Import Users**

Especially while working with a lot of high-capacity pbxs, by using this feature, administrators can import lots of pbx, extension and user information from a CSV file into WebCM database instead of defining them one by one using the WebCM web interface.

Before executing the command, input file that will be imported must be prepared. (During the installation, an empty import_usr.csv file is placed under utils\import_usr folder as an example.) File must be in CSV format and must consist of following columns in it: Pbx;Extension;Username;Password;Email;UserGroup. First row of the file to be imported must be the same as the first row of the sample CSV file. The other rows should consist of relative field values seperated with ';'. CSV files can easily be edited with Microsoft Excel or OpenOffice applications. Pbx and Username fields are mandatory, and if any of them left as blank, related record will not be imported. Password field is optional, however if password is left as blank, related user will not be able to login to WebCM. Thus, usernames can be copied to password fields, and users can change their password after they login to the system. Similarly, Email and UserGroup fields are optional, too. However, if email field is left as blank, related user will not be able to receive report e-mails.

After input file is ready, by using Import Users link, data stored in CSV file can be imported to WebCM database. After process is finished, total number of records processed and total number of records imported are displayed on page

Run perl import_usr.pl command. The result of import operation for each record will be printed to the console screen. If there are lots of records in CSV file, and it is hard to follow messages, you can redirect the console output to a text file by running perl import_usr.pl > output.txt command. After command is executed, a text file named output.txt will be created. Results of the import operation can be examined by opening this file using a text editor. If failures exists, this records can be corrected manually, and import operation may be repeated, or these records can be defined by using WebCM web interface.

### 4.2.9 Synchronize with LDAP

WebCM allows an administrator to easily update its user information based on entries in a network directory service that implements the Lightweight Directory Access Protocol (LDAP), such as Microsoft Active Directory and OpenLDAP. Synchronization of user data with LDAP can be done either manually, using the web interface, or automatically by the Maintenance Service. On the web interface, the feature can be accessed through the Synchronize with LDAP link on the Users page, available only to the WebCM Administrator role.

Manual synchronization through the web interface is divided into two steps: preview and actual synchronization. The page initially comes up in preview mode. The administrator is expected to inspect the preview results to make sure that the configuration is correct. It is possible to make changes to the configuration and select the Preview operation again. Once satisfied with the preview results, the administrator can execute the actual synchronization by selecting the Synchronize operation, after which a report page appears that provides information on the synchronization steps that were taken.

The LDAP synchronization page is divided into two sections: the configuration section at the top and the synchronization details section at the bottom. The configuration section comprises two tables: the Settings table and the Attribute Mappings table. Only the Settings table is visible at first. It is possible to switch between the two configuration tables using the link in the upper right hand corner that initially reads Attribute

Mappings.  In report mode, the entire configuration section is invisible at first, but still accessible through the Configuration link.

The Settings table of the configuration section is a form for entering the information that is needed to access and search the directory server.  The form, which provides a description and an example for most fields, is initialized using data in the [ldap] section of the WebCM configuration file. WebCM tries to provide reasonable default values for information that it cannot find in the configuration file. If WebCM cannot access the directory server using the server address and port number given in the form, it will display a message indicating that the network directory service cannot be accessed.  If there is a problem with the user name or password fields, the error message will warn that WebCM was unable to bind to the directory service.  If the access and bind steps are successful, the values in the fields for search root and filter will determine which entries, if any, are retrieved from the directory.  Finally, the PBX field shows the name of the PBX with which any extension numbers found in directory entries are to be associated as a last resort.

The second configuration table, the one for Attribute Mappings, includes a form that allows the WebCM Administrator to specify which LDAP attribute corresponds to each WebCM user property.  A description and an example are again provided for each field.

The synchronization details section displays the directory entries that match the configuration. In preview mode, it shows how the directory attributes are interpreted based on the configuration. It also displays the matching WebCM user object, if there is one. By clicking the Detail link, some information can be obtained on what steps WebCM would have taken if this were an actual synchronization instead of a dry preview run.  In report mode, the state of the matching WebCM user before and after the synchronization operation is shown, as well as the actual steps taken.

## 4.2.10 User Groups

On that page, you can create user groups and then assign administrators to that groups.

Only the user in the WebCM Administrator role is authorized to define new user groups in the system, to delete existing ones or to modify user group information. A different interface becomes available, which allows making changes in the records while the user groups are being displayed for that role.

To create a new user group, the name of the group is supposed to be entered into the section New User Group: and the Create button is supposed to be clicked. Then, to make changes in group attributes, the link Edit is clicked, which is at the end of the line pertaining to the group, so that the interface for editing records opens. Required information is entered through that interface and the OK button is clicked. The Cancel link is used, if the changes that have been made are desired to be cancelled.

To assign administrators to one more user groups, the boxes that are to the left of the records of a particular user group are checked, a user is selected on the Select Admin: menu that is at the top of the list, and the Assign as Admin button is clicked. If a user is to be removed from administrative authority for one or more user groups, then the Take away Admin role button is clicked. In order for a user to appear on the Administrators menu, the user must have previously been assigned as Group Administrator. (See Users.)

To delete information pertaining to one or more groups, desired user groups are supposed to be selected and then the Delete button is supposed to be clicked.

When the name of any user group is clicked, detailed information about administrators and users of the group is listed.

## 4.2.11 Phone Book

The phone book offers the users an interface, through which they can enter remarks regarding external phone numbers.

The records pertaining to a user's own calls are sorted by the frequencies of calls, i.e., starting with the phone number that is called most frequently to the one that is called most rarely. Users can append private or public remarks to those numbers. Private remarks and the numbers they pertain to can be viewed only by the user who have appended them, only when the user is in the Normal User role. Other users, no matter what their roles are, cannot view those remarks. Users can also view upon wish all external numbers defined in the system and append remarks to them. Listing of those numbers are also sorted by the frequencies of calls, starting with the phone number that is called most frequently.

A corporate remark pertaining to an external number can be entered only by users in the WebCM Administrator role. On the other hand, such remarks can be viewed by all users in the system.

Remark regarding an external number, which is to be displayed in reports, is queried in the phone book in the following order:

For Normal Users (For a user viewing her/his own private call detail records):

- If you have appended a private remark to the number, then it is displayed.
- Alternatively, if a corporate remark has been entered by the WebCM Administrator, then it is displayed.
- Else, if public remarks have been entered by several other users regarding the number, then one of them is selected and displayed together with the name of the user.

For administrative roles (For a user examining or inspecting other users' call detail records):

- If a corporate remark regarding the number has been entered by the WebCM Administrator, then it is displayed.
- Alternatively, if public remarks have been entered by several other users regarding the number, then one of them is selected and displayed together with the name of the user.
- Else, if private remarks regarding the number have been entered by other users, then of them is selected and displayed in the form "Private (Name of the user)", where the name in the parenthesis corresponds to the person who has entered the private remark. Private remarks that have been entered by users are never displayed in any way.

You can load to the phone book the Net-CM phone book or any other phone book that is in the CSV format. See How to Load Records to the Phone Book for detailed information on this topic.

### 4.2.11.1 How to Load Records to the Phone Book

You can load records to the phone book from the Net-CM phone book or from any other phone book that is in the CSV format. The records are loaded as corporate phone book records if your active role is WebCM Administrator; else, they are loaded as personal phone book records.

To do that, first you should specify the location of the phone book record in your system that is to be loaded and then you should click the OK button. The selected phone book file is transferred to the server, afterwards.

If the file, which has been selected and transferred to the server is a valid one, then an interface opens, which displays data fields pertaining to the records present in that file, as well as the ones present in the WebCM phone book. You are supposed to match field information on that interface. After selecting data in a field in the source file, selecting one of the appropriate fields in the WebCM phone book file, and then clicking the right arrow button, the pieces of data in the two fields are matched and the corresponding information is displayed on the list of field matches. If the performed matching is incorrect, on the other hand, then it can be undone with the left arrow key after selecting it in the list of field matches. (At this stage, if the phone book file that is transferred to the server is a Net-CM phone book file, then, first it is converted to CSV format and then processed in the same as the other CSV files.)

After all the WebCM phone book file fields have been matched like that, appropriate country and area information, long distance call code and local phone number length are supposed to be specified with respect to the records present in the phone book. Country and area code information, as well as long distance call code, is retrieved from the PBX. Therefore, the necessary information should be defined in the system prior to loading, if it has not already been defined. That information is required in order to transfer the numbers, which are located in the source phone book file to the WebCM phone book properly. One proceeds to the next step after selecting the appropriate information and clicking the OK button.

At the next step, some pieces of the data from the top of the records to be loaded are displayed, so that you can check for the last time before loading. The loading operation may be initiated by the OK button, provided that there is no problem with the data. Once the loading is over, number of new records that have been created in the phone book, number of updated records out of existing ones and number of records that have not been changed are displayed. If a phone number does not already exist in the WebCM phone book, then it is created together with its remark. On the other hand, if the number already exists in the WebCM phone book, but no remark has been appended to it, then just the remark field is updated. Furthermore, if the phone number happens to be incorrect or already exists together with its remark, then no action is taken for such records.

### 4.2.12 Tariffs

Tariffs determine the rules to be applied when pricing calls. Pricing calls on the basis of call detail record information is explained in detail in the section Pricing.

On the "Tariffs" page, starting and expiry times for the validity of the tariff, precedence of the tariff, special extension group for the tariff (if available), trunk group, operator and summary information about tariff rates and time slices are listed. Tariffs for which no starting time for validity has been specified are not utilized; hence, that time must definitely be defined in order for the tariff to be active. Tariffs for which no expiry time for validity has been specified are valid for all calls made after the specified starting time for validity. Tariffs for which both starting and expiry times have been specified are applied only for pricing calls that have been made within the specified period.

Only the user in the WebCM Administrator role is authorized to define new tariffs, to delete or modify existing ones. A different interface becomes available, which allows making changes in the records while the list of tariffs is being displayed for that role.

To create a new tariff, the name of the new tariff is supposed to be entered into the section New Tariff: and the Create button is supposed to be clicked. Then, to make changes in tariff attributes, the link Edit is clicked, which is at the end of the line pertaining to the tariff, so that the interface for editing records opens. Required information is entered through that interface and the OK button is clicked. The Cancel link is used, if the changes that have been made are desired to be cancelled.

To delete data pertaining to one or more tariffs, boxes located to the left of desired tariff records are checked and the Delete button is clicked.

If an Extension Group has been specified for a tariff, then the tariff is utilized to price calls made by the members of that group only.

If a Trunk Group has been specified for a tariff, then the tariff is utilized to price calls made over the trunks contained in that group only.

Likewise, if an Operator has been specified for a tariff, then the tariff is utilized to price calls made over that telecom operator only.

Precedence, determines the tariff to be applied in case several tariffs are appropriate equally for a call, and it is assigned by the user.

Details of a tariff can be viewed by clicking a link specified as the name of the tariff. Detailed information regarding a tariff has been organized in those sections: basic rates, special rates, pulse rates, SMS rates, week and special days.

An interface, through which rates can be determined according to types of calls, is available for the Basic Rates. Since incoming calls and SMS messages are not priced, they are not included in that section. Indeed, prices regarding SMS messages that are sent have been separately defined on the page SMS Rates. In cases where no rates have been defined for a particular call type, the Default Rate is employed.

Special rates according to the prefix of the called number have been organized in the section Special Rates. In order to define special rates, prefix groups must have been created before. Special rates can be defined for calls where the called numbers start with a prefix that is included in a selected prefix group that has already been created.

Pulse Rates ensure that pricing is performed more accurately, if pulse signal is available on the trunk you are using and if that information is being transmitted to the WebCM application by your PBX. Trunks with pulse signals can be organized as a trunk group, a special tariff may be created for that group and precedence can be given to pulse price data in pricing. To do that, the field Use pulse when available? is supposed to be checked as Yes. Apart from price per pulse, a fixed price per call can also be defined optionally.

SMS Rates apply to SMS messages that are sent only. Just as the special rates defined for calls, rates for particular prefix groups can be defined, as well as a default SMS rate can be defined. In cases where no prefix group matches the number to which the SMS message is sent, the default SMS rate applies.

If there are Special Days you want a particular tariff to be applied, then you can define those days in the Special Days section. List of special days is created in the calendar page beforehand and becomes available for all tariffs.

If you want a tariff to be applied in particular days of the week, then you can define such days in the Week section.

How pricing is carried out by the system is explained in the section Pricing, and how the appropriate tariff for a call is determined is explained in the section How to Determine the Appropriate Tariff.

## 4.2.13 PBX Definitions

PBXs that have been defined in the system and details regarding them are displayed in this section. Information such as country code, area code, STD code, PBX group to which a particular PBX belongs to and PBX administrators are displayed.

Country code, area code and STD code are used to complete prefixes of called or calling external numbers. For instance, let the country code, area code and STD code of your PBX be 90, 312 and 0, respectively. A seven-digit external number in the call detail record, pertaining to a call whose type is local, is saved as 90312XXXXXXX. Another external number pertaining to a long distance call, which has been made to 0212XXXXXXX, is saved as 90212XXXXXXX.

In addition to that, those codes also allow the call type to be detected correctly for calls among PBXs that are in the same PBX group. For example, let some PBXs be in the same PBX group, whose country codes are the same, but area codes are different. The call type is to be updated again as long distance, for calls made among those PBXs. The call type may actually appear to be long distance for VoIP calls among some PBXs that have the same area code (i.e., they are in the same city). In that case, WebCM updates the call type automatically as local call.

However, for WebCM to accomplish that, the PBXs must have been defined as in the same PBX group. PBX groups are defined by the WebCM Administrator, as explained in the section PBX Groups and the list is displayed in the same window as PBXs have been defined.

An extension may call another extension that is in another PBX of the same PBX group, or s/he may call an external number over that PBX. In that case, in order to price the call correctly, the system must know whether the called number is an extension of another PBX or an external number. That is possible only if the user defines extension numbers in the system for the PBXs that are in the same PBX group. Hence, if you are the WebCM Administrator, you are supposed to identify extension numbers to the system before use.

Only the user in the WebCM Administrator role is authorized to define a new PBX in the system, to delete existing ones or to modify PBX information. A different interface becomes available, which allows making changes in the records while the list of PBXs is being displayed for that role. Extension, trunk and data source information pertaining to a PBX can also be edited by administrators of that PBX; however, PBX administrators are authorized to edit information pertaining only to the PBX they are in charge of. They are not allowed to make any changes on information pertaining to other PBXs.

To create a new PBX definition, the name of the new PBX is supposed to be entered into the section New PBX: and the Create button is supposed to be clicked. Then, to make changes in PBX attributes, the link Edit is clicked, which is at the end of the line pertaining to the PBX, so that the interface for editing records opens. Required information is entered through that interface and the OK button is clicked. The Cancel link is used, if the changes that have been made are desired to be cancelled.

To assign administrators to one more PBXs, the boxes that are to the left of the records of a particular PBX are checked, a user is selected on the Select Admin: menu that is at the top of the list, and the Assign as Admin button is clicked. If a user is to be removed from administrative authority for one or more PBXs, then the Take away Admin role button is clicked. In order for a user to appear on the Administrators menu, the user must have previously been assigned as PBX Administrator. (See Users.)

To delete information pertaining to one or more PBXs, the boxes to the left of the records pertaining to the particular PBXs are checked and then the Delete button is clicked.

You can reach detailed information regarding a PBX by clicking the name of the PBX. That information consists of Extensions, Trunks, Account Codes and Data Sources.

Extension numbers that have been defined in the PBX and information regarding them can be edited through the extension list. Those pieces of information are the number of the extension (internal number), its owner and the extension group that the extension is included in, if there is any. (See Extension Groups) To define a new extension number in the selected PBX, the extension number is typed in the New extension number: section and the Create button is clicked. Consecutive extension numbers in a range can be defined collectively by inserting a hyphen (-) between the numbers that specify the range (for example, 1110-1199). To include extensions in a particular extension group or to remove them from a group, after selecting the desired group in the Select Extension Group: section and the desired extension numbers in the pertaining list, Add to Group or Remove from Group buttons should be clicked.

Trunk numbers of the PBX and information regarding trunks can be edited through the trunks list. Those pieces of information are the trunk number, description regarding the trunk and the group. (See Trunk Groups) To define a new trunk number in the selected PBX, the trunk number is typed in the New trunk number: section and the Create button is clicked. Consecutive trunk numbers in a range can be defined collectively by inserting a hyphen (-) between the numbers that specify the range (for example, 701-712). To include trunks in a particular trunk group or to remove them from a group, after selecting the desired group in the Select Trunk Group: section and the desired trunk numbers in the pertaining list, Add to Group or Remove from Group buttons should be clicked.

Account codes of the PBX and the description regarding account codes can be edited through the account codes list. To define a new account code in the selected PBX, the account code is typed in the New account code: section and the Create button is clicked. Consecutive account codes in a range can be defined collectively by inserting a hyphen (-) between the numbers that specify the range (for example, 001-010).

Call detail record data sources pertaining to the PBX and detailed information regarding them can be edited through the data sources list. Normally, a single data source would be enough for a PBX, however, if there are one or more Karel GSM Terminals that have been connected to the PBX, then each server that sends SMS information over those terminals by using Karel GT Server software may be identified to the system as a data source, considering that the sent SMS information is also to be logged. The information regarding a data source, namely the network address, description and the TCP port to be used for connection should be edited. Under normal conditions, the TCP port for the call detail record data sources (Karel Net-Console Server, Karel LAN Adaptor) is 24995 and it is 25995 for the Karel GT Server, however, if data sources are configured for different ports, then appropriate port numbers are supposed to be entered in that section. A particular data source may be desired to be idle until the information is edited, which regards to the data source and the PBX it has been connected to, or it may optionally be disabled temporarily in order to halt it collecting data. In such a case, the data in the Active column is supposed to be set to No. When a new data source is added to the system, its active status is changed or an existing data source is deleted, the Data Collector Service should be restarted. You can define only one call detail record source address and port pair in the system. For the call detail record sources serving on the same address but from different TCP ports, you can give address and port pair together. To achieve this, enter <address>:<port> into the section New data source and press Create button. For instance, if you want to define Net-Console Server and GT Server running on localhost, you can enter 127.0.0.1:24995 and 127.0.0.1:25995.

## 4.2.14 Special Days

Special days of the year can be identified to the system on that page, in order to be used for several purposes in the system (e.g. for tariffs).

Only the user in the WebCM Administrator role is authorized to define a new day on the system calendar, to delete existing ones or to modify the calendar. A different interface becomes available, which allows making changes in the records while the calendar is being displayed for that role.

To add a new special day to the system calendar, a name expressing the day is supposed to be entered into the section New Special Day: and the Create button is supposed to be clicked. Then, to make changes in record attributes, the link Edit is clicked, which is at the end of the pertaining line, so that the interface for editing records opens. Required information is entered through that interface and the OK button is clicked. The Cancel link is used, if the changes that have been made are desired to be cancelled. When defining special days, Starting and Ending days are supposed to be entered.

To delete information pertaining to one or more special days, desired days should be selected and then the Delete button is supposed to be clicked.

### 4.2.15 Extension Groups

On that page, you can create extension groups and then you can create tariffs to be applied for pricing calls of the extensions that are included in those groups (See Tariffs).

Only the user in the WebCM Administrator role is authorized to define new extension groups in the system, to delete existing ones or to modify extension group information. A different interface becomes available, which allows making changes in the records while the extension groups are being displayed for that role.

To create a new extension group, the name of the group is supposed to be entered into the section New Extension Group: and the Create button is supposed to be clicked. Then, to make changes in group attributes, the link Edit is clicked, which is at the end of the line pertaining to the group, so that the interface for editing records opens. Required information is entered through that interface and the OK button is clicked. The Cancel link is used, if the changes that have been made are desired to be cancelled.

To delete information pertaining to one or more groups, desired extension groups are supposed to be selected and then the Delete button is supposed to be clicked. Extension groups are used for tariffs only, so an extension may be a member of several extension groups, or extensions of different PBXs may be included in the same group. Tariffs are common to all calls in the system and they do not pertain to any particular PBX. Nevertheless, if there any available tariffs, which have been defined for extension groups that consist of extensions of a single PBX only, then that tariff is certainly applied for the extensions of that particular PBX only and it becomes special for that PBX.

When the name of any extension group is clicked, detailed information about extensions in that group, as well as the tariffs applied for that extension group is listed.

### 4.2.16 Trunk Groups

On that page, you can create trunk groups and then you can create tariffs to be applied for pricing calls made over the trunks that are included in those groups (See Tariffs).

Only the user in the WebCM Administrator role is authorized to define new trunk groups in the system, to delete existing ones or to modify trunk group information. A different interface becomes available, which allows making changes in the records while the trunk groups are being displayed for that role.

To create a new trunk group, the name of the group is supposed to be entered into the section New Trunk Group: and the Create button is supposed to be clicked. Then, to make changes in group attributes, the link Edit is clicked, which is at the end of the line pertaining to the group, so that the interface for editing records opens. Required information is entered through that interface and the OK button is clicked. The Cancel link is used, if the changes that have been made are desired to be cancelled.

To delete information pertaining to one or more groups, desired trunk groups are supposed to be selected and then the Delete button is supposed to be clicked. Trunk groups are used for tariffs only, so a trunk may be a member of several groups, or trunks of different PBXs may be included in the same group. Tariffs are common to all calls in the system and they do not pertain to any particular PBX. Nevertheless, if there are any available tariffs, which have been defined for groups that consist of trunks of a single PBX only, then that tariff is certainly applied for the trunks of that particular PBX only and it becomes special for that PBX.

When the name of any trunk group is clicked, detailed information about trunks in that group, as well as the tariffs applied for that trunk group is listed.

### 4.2.17 Telecom Operators

On that page, you can create a table for telecom operators and then you can create tariffs to be applied for pricing calls made over these telecom operators (See Tariffs).

Only the user in the WebCM Administrator role is authorized to define new telecom operators in the system, to delete existing ones or to modify telecom operator information. A different interface becomes available, which allows making changes in the records while the telecom operators are being displayed for that role.

To create a new telecom operator, the name of the telecom operator is supposed to be entered into the section New Telecom Operator: and the Create button is supposed to be clicked. Then, to make changes in operator's attributes, the link Edit is clicked, which is at the end of the line pertaining to the operator, so that the interface for editing records opens. Required information is entered through that interface and the OK button is clicked. The Cancel link is used, if the changes that have been made are desired to be cancelled. The telecom operator attribute for a call detail record is assigned by Data Parser Service looking at Prefix field of the telecom operator. So this field must be entered correctly.

To delete information pertaining to one or more telecom operators, desired telecom operators are supposed to be selected and then the Delete button is supposed to be clicked.

### 4.2.18 Prefix Groups

On that page, you can create prefix groups and then you can create special tariffs to be applied for pricing calls made to the numbers that are included in those groups (See Tariffs).

Only the user in the WebCM Administrator role is authorized to define new prefix groups in the system, to delete existing ones or to modify prefix group information. A different interface becomes available, which allows making changes in the records while the prefix groups are being displayed for that role.

To create a new prefix group, the name of the group is supposed to be entered into the section New Prefix Group: and the Create button is supposed to be clicked.

To delete information pertaining to one or more groups, desired prefix groups are supposed to be selected and then the Delete button is supposed to be clicked. Prefix groups are also common to all system, just like extension and trunk groups, that is, they are not PBX-specific.

Once a prefix group has been created, it can be edited after clicking its name.

Prefixes that can be added to a prefix group have been pre-defined in the system as major, minor and micro, depending on their lengths. Prefixes in several details (such as country, city, and the operator) can be selected in the pertaining list and then added to a group. For example, if one desires to add a major prefix to a group, then, first the link Major Prefixes should be selected. Major prefixes that have been selected before for the particular group_if there are any_ are available in the list that opens. To add prefixes, by clicking the link View major prefixes not included in this prefix group, the prefixes to be added to the group can be determined in the list that opens. In a higher level, if one desires to determine prefixes to be added according to the type of phone numbers (such as mobile, pstn), then that can be done through the Destination Types section.

Prefix groups are used when pricing according to prefix of a called number. As explained in the section Tariffs, they can be used when defining special rates for calls or defining rates for SMS messages.

Remarks about prefixes are included in the Calls page, where information pertaining to calls is listed. The remark is displayed next to an external call or an SMS message, or it is used in some reports.

### 4.2.19 Currencies

On that page, currencies to be used for rates in tariffs and their values in reference currency can be edited. Users in WebCM Administrator role are authorized to edit records.

List of currencies comes with the system; however, it may need to be re-organized depending on usage. Only the currencies with a precedence that is greater than zero are displayed in the list of rates, which can be accessed through tariffs interface. Therefore, priorities of currencies to be displayed are supposed to be set accordingly on that interface. Since the currencies, to which priorities greater than 0 have been assigned, are sorted on the relevant interfaces by magnitude of their priorities, from the greatest to the smallest, the greatest value should be assigned to the currency to be used most frequently. Value 0 may be assigned to currencies that are not to be considered.

The Default Exchange Rate to convert a currency to the reference currency can be set (The initial value is 1) and it can be changed in time. To enter the value of a currency in reference currency, the desired currency in the Name column is clicked and the new currency value is entered through the interface that opens. The entered value is displayed in the Last Exchange Rate column on the main page, where currencies are listed.

While calls are being priced, the cost in the currency that is specified in the rate is converted to the reference currency by using the current value of the currency at the time of the call and it is saved along with the other call detail record information. Since costs are supposed to be in the same currency to be summed or averaged while total and average costs are being listed in reports, exchange rates are supposed to be defined in order to convert the calculated cost to the reference currency. If currencies other than the reference one are not to be used for rates in tariffs, then there is no need to update information on the currencies page. The value in the Decimal Places column specifies the number of digits to the right of the decimal point to be used when entering the equivalent in the reference currency of a desired currency. On the other hand, Decimal Places to Display specifies the number of digits to the right of the decimal point to be used for the desired currency on screens and in reports when displaying costs.

## 4.3 Administrative Use

Only the information about administrative interfaces has been presented in this section. The users whose active role is WebCM Administrator only can access those interfaces.

### 4.3.1 Call Record Log

On that page, the users in the WebCM Administrator role are authorized to view and delete the last 5000 listening and deletion operations on call records. The users in the WebCM Administrator role can also search call record logs according to PBX, user, user role, network address, process type (listening or deletion) and process time fields. They can also convert the call record logs that has been obtained as a result of the search, or the entire call record logs, if no search has been performed, in CSV, Excel, PDF or XML format. (See Export for detailed information)

### 4.3.2 Report Job Queue

E-mail Service has a report job queue that contains an ordered list of jobs waiting to be processed. On that page, the users in the WebCM Administrator role are authorized to view and delete the report jobs waiting in the queue. If an error occurs while a report is being prepared, in order to enable the system to continue with the next report job, admin user should delete the report job entry at the top of the list. The report jobs are listed in the order they are processed by the E-mail Service. Thus, in case of an error, by deleting the first record on this page and restarting the E-mail Service system continues to work with the next report job. If the deleted report is a scheduled report, it will never be prepared again.

### 4.3.3 Expressions

The Expressions is the interface on which expressions pertaining to any kind of text used in the application are listed and which allows translation of those expressions to other languages.

Only the users in the WebCM Administrator role are authorized to define a new expression in the system or delete an existing expression.

End users do not need to create a new expression or delete an existing one, but they might need to translate those expressions into other languages.

To do that, first, by clicking the name of an expression, they access the interface that displays the equivalents of the expression in several languages, and then they can change the available translation of the expression through that interface or add a new equivalent for an expression whose translation is not available. They can use the links Edit and Create for those operations, which are located next to the desired language.

Translation of an expression in a particular language can be erased by clicking the Delete link, yet end users do not usually need to do that.

If the desired language, into which an expression is to be translated, does not appear in the drop-down list, then that means a precedence has not been assigned to that language in the system. Therefore, precedence assignment has to be performed for the desired language in the Languages section.

All expressions and translations into all languages are stored in the database.

### 4.3.4 Languages

Languages that have been defined in the system are listed on that interface. In order to make it possible for the WebCM application to be utilized in other languages as well, the languages included in the list can be edited by using that interface. The Expressions interface can be used to enter into the system the translations of expressions in any language, one by one.

On interfaces where language option is displayed (e.g. Expressions, System Configuration), only the languages, to which priorities values that are greater than 0 have been assigned on this page are displayed and used as sorted according to their priorities, from the highest to the lowest. Hence, precedence values that are greater than zero must be assigned to languages that are to be used in the system. On the other hand, "0" is supposed to be assigned as the precedence value to languages that are desired to remain idle, so that they do not appear on any interface. Since the languages with precedence values that are greater than zero are sorted on several interfaces according to magnitudes of their priorities, the highest precedence is supposed to be assigned to the language that is to be used most frequently.

Different users are able use the application in different languages at the same time. A language can be assigned through the System Configuration page as the default for a user who logs in the system for the first time.

Only the users whose active role is WebCM Administrator are authorized to access the Languages interface and edit data.

### 4.3.5 PBX Groups

"PBX groups" is a concept employed when identifying the PBXs to the system, which are on the same network. For example, such identifications are needed to distinguish calls made among PBXs that belong to multi-locational companies, so that those calls are priced correctly. However, if the PBXs in the system from which data is to be collected are completely independent from each other, then there is no need to define PBX groups. Although not necessary, PBX groups can be created in the system and PBXs may be included in those groups upon wish. (Need for PBX groups has also been explained in the page PBX Definitions.)

Only the user in the WebCM Administrator role is authorized to define new PBX groups in the system, to delete existing ones or to modify PBX group information. A different interface becomes available, which allows making changes in the records while the PBX groups are being displayed for that role.

To create a new PBX group, the name of the new PBX group is supposed to be entered into the section New PBX Group: and the Create button is supposed to be clicked. Then, to make changes in group attributes, the link Edit is clicked, which is at the end of the line pertaining to the group, so that the interface for editing records opens. Required information is entered through that interface and the OK button is clicked. The Cancel link is used, if the changes that have been made are desired to be cancelled.

To delete information pertaining to one or more PBX groups, the boxes to the left of the records pertaining to the particular PBX groups are checked and then the Delete button is clicked.

## 4.3.6 Raw Data

On this page, the following pieces of information are listed: condition of call detail record information before it has been processed, which has been collected from data sources; sources of data collected; which PBX it pertains to; and finally, whether it has been processed or not. Raw data is collected by the Data Collector Service and processed by the Data Parser Service.

## 4.3.7 E-Mail Servers

The E-Mail Servers page presents an interface through which SMTP (Simple Mail Transfer Protocol) e-mail servers can be defined, which may be used by the E-Mail Service.

Only the user in the WebCM Administrator role is authorized to define new e-mail servers in the system, to delete existing ones or to modify e-mail server information. A different interface becomes available, which allows making changes in the records while the e-mail servers are being displayed for that role.

To create a new e-mail server, the name of the new e-mail server is supposed to be entered into the section New E-Mail Server: and the Create button is supposed to be clicked. Then, to make changes in server attributes, the link Edit is clicked, which is at the end of the line pertaining to the server, so that the interface for editing records opens. Required information is entered through that interface and the OK button is clicked. The Cancel link is used, if the changes that have been made are desired to be cancelled.

To delete information pertaining to one or more e-mail servers, the boxes to the left of the records pertaining to the particular e-mail servers are checked and then the Delete button is clicked.

More than one e-mail servers can be defined on that page. The server to be used by the E-Mail Service is determined through the System Configuration page. If more than one server is defined, then, in case the e-mail server that is used by the system is down, operation of the E-Mail Service is maintained by changing the default e-mail server.

The Port value is the TCP port number the e-mail server listens. Its default value is 25.

IP address of the e-mail server is supposed to be entered as the Address value.

Any e-mail address that has or has not been defined on the server may be entered into the From Address section (Like webcm@karel.com.tr). Recipients see that address at the From section of the e-mail. The address does not have to be a valid one. Messages that are sent to users include a notification reminding them not to reply to the message sent.

The supported authorization mechanisms for SMTP servers have been listed in the Authorization Method section. If no authorization mechanism is active, then No authorization option should be selected.

On the other hand, if authorization applies, then a Login Name and a Login Password are supposed to be entered. In that case, a login account is supposed to be created on the SMTP server or an existing one is supposed to be used. Entering a login name and a password is not needed, if authorization does not apply.

## 4.3.8 System Configuration

The System Configuration section presents an interface that allows several settings to be done, which concern the entire users and operation of the system.

Only the users whose active role is WebCM Administrator are authorized to change the system configuration.

The e-mail server to be employed by the E-Mail Service should be defined in the E-Mail Server section on the System Configuration page. If no defined server is available in the parameter list, then first, at least one e-mail server, which is to be used by the service, is supposed to be defined on the E-Mail Servers page. More than one server can be defined on the E-Mail Servers page and the default server can be changed through the system configuration page when necessary, by selecting one of the definitions in the list of e-mail servers. By this way, in case an e-mail server is temporarily down, another one can be put into use.

If e-mail server is not defined, prepared reports are served to the users on web interface, otherwise reports are delivered to users thru selected the e-mail server.

The reference currency, which is to be used by the system, is defined in the Reference Currency section. The system allows different currencies to be used when defining rates in tariffs. (See "Working with Different Currencies" for information on usage of different currencies in the system.) Nevertheless, when a call is being priced, after pricing according to the currency that has been specified in the pertaining rate in a particular tariff has been completed, the cost is calculated once again, this time in the reference currency, by taking the most appropriate rate of exchange into consideration. Total and average cost calculations in call detail record reports are carried out in the reference currency (See Currencies for more information.) Therefore, the reference currency must be defined. Only a few currencies, which have been given higher precedence on the Currencies page, are listed according to their priorities on that page; hence, priorities of the currencies, which the interface is to display, are supposed to be set on the Currencies page.

The default language for users who has just been registered in the system or who has just started to use it can be selected in the Default Language section. Only the languages that have been given high precedence on the Languages page are displayed on that interface; so, if a desired language does not appear in the list, then a precedence is supposed to be assigned to it through the Languages page.

## 4.3.9 Archives

Archives page lists call detail record archives and number of call detail records in these archives.

Before archiving the call detail records, a new archive must be created in this page. Then, all call detail records to be archived are queried in calls page. After that, all call detail records in the query results are selected and archive name that was created is selected from the archive list, and finally, Move to Archive button is clicked. Since this operation may take a long time to complete, depending on the number of records to be archived, the operation may be processed by the Maintenance Service. Status of the operation may be seen in the log view of the  Maintenance Service.

In order to view or process the call detail records in one or more archives, relative archive or achives should be selected and queried from Advanced Search page.

Only the user in the WebCM Administrator role is authorized to define new archive in the system, to delete existing ones or to modify archive information. A different interface becomes available, which allows making changes in the records while the archives are being displayed for that role.

To create a new archive, the name of the new archive is supposed to be entered into the section New Archive: and the Create button is supposed to be clicked. Then, to make changes in archive attributes, the link Edit is clicked, which is at the end of the line pertaining to the archive, so that the interface for editing records opens. Required information is entered through that interface and the OK button is clicked. The Cancel link is used, if the changes that have been made are desired to be cancelled.

Unless the archive records are deleted, the call detail records in these archives keep existing in the system database. Whenever needed, the call detail records in these archives can be moved among the available call detail records, by pressing Extract from archive button. When an archive record is deleted, all the call detail records in the archive are deleted, too. Deleteing an archive or extracting call detail records from an archive may take a long time, these operations are processed by the Maintenance Service in the background.

As the number of call detail records in the system database increases, this may degrade the overall system performance. For this reason, it is adviced to archive old call detail records, and even delete the archives that are no longer needed. The Maintenance Service already backs up the WebCM database on a daily basis. Those backups may be periodically copied to an external media by the user. Thus, by deleting the old call detail records, system performance may be increased.

To delete information pertaining to one or more archives, or to extract call detail records from one or more archives, the boxes to the left of the records pertaining to the particular archives are checked and then the Delete or Extract from archive button is clicked.

## 4.3.10 The WebCM Services

The WebCM services are special applications that have been designed to perform some functions automatically. Those applications are activated automatically as the operating system starts without any need for user interference, and they carry out their functions until the operating system shuts down.

Special pages are available on the web interface of the WebCM application, which are used to monitor and control operation of services. Only the users whose active role is WebCM Administrator are authorized to access those pages. (See User Roles for detailed information.)

Once those pages are accessed, first the status of a desired service is displayed. Below the line indicating the status of the service, buttons are available that are used to control the service. The service can be started, stopped or restarted with those buttons. Status of the service can be queried through the Refresh button, without refreshing the page.

Operation of each service is logged. Latest information in those records can be viewed through the same interface. Refresh rate of the page while the log is being displayed can be set in seconds or it can be cancelled (No refresh option) on the Refresh Rate menu.

The WebCM Services and sub-threads of those services record data, which pertains to their operations, to log files in adjustable levels. The log file pertaining to each service is saved in the system in a separate folder, with a different filename. The log files are stored per service under the application directory, in the \data\logs folder. When the log file pertaining to a particular service reaches a certain size, it is renamed, thus creating a new log file. Similarly, when the number of log files reaches a certain limit, the log files are overwritten starting with the oldest one (Log rotation). The maximum size of the corresponding log file for each service and the number of the log files that are to be stored before they are overwritten can be set. By this way, even if the system is configured to log data in high detail, logs are prevented from getting oversized in time.

Under normal conditions, the entire WebCM services are supposed to be working all the time, but operation of those services can be intervened if necessary on exceptional situations, by those pages.

The available WebCM services in the system are:

- Data Collector Service
- Data Parser Service
- E-Mail Service
- Maintenance Service

### 4.3.10.1 Data Collector Service

The WebCM Data Collector Service is the WebCM service that is responsible for collecting call detail record data from active data sources. (See The WebCM Services for related information.)

One or more data sources can be defined in the system. The service creates a separate thread for each active data source. Those threads accumulate raw call detail record data in a common pool to be processed later, which they have collected from different sources. The accumulated data is processed by another WebCM service, namely the Data Parser Service.

The term "data source" refers to the source from which call detail record information is collected. One or more data sources may be available for each PBX. The Data Collector Service has to be restarted after a new data source is defined and activated in the system or an active data source is deleted or deactivated.

After the Data Collector Service has started, even if it is disconnected from the database server somehow, it goes on storing the data, which it is collecting, under the application directory, in the \data\cache folder. When the connection is resumed, those pieces of data are moved from the \data\cache folder to the corresponding table in the database. Data collection function is thus maintained even if the connection with the database server is interrupted.

While the Data Collector Service is going on working, each thread that is collecting data from active data sources keeps on checking in regular intervals whether call detail record information is coming from the data sources or not. In case no new call detail record data is received for a certain period, call detail record reception is restarted assuming that there should be a problem. That period is adjustable.

The Data Collector Service and sub-threads, record pieces of data that pertain to their operations to a log file in an adjustable level. (See The WebCM Services for detailed information on log files.) The log information pertaining to the Data Collector Service is stored in the \data\logs\Collector folder that is under the application directory.

In addition, you can use Active Data Sources link to display connection status between the Data Collector Service and each active data sources.

#### 4.3.10.1.1 Active Data Sources

Connection status between the Data Collector Service and each active data sources are listed on this interface.

See the Data Collector Service for detailed information on operation of the Data Collector Service.

### 4.3.10.2 Data Parser Service

The WebCM Data Parser Service is the WebCM service that is responsible for processing raw call detail record data, which is collected from active data sources. (See The WebCM Services for related information.) Call detail record data is collected by another WebCM service, namely the Data Collector Service.

The service keeps on checking in regular intervals whether there is data that has been collected by the Data Collector Service and that has not yet been processed. When there is such data, the service processes the raw data, beginning with the oldest one, and marks the ones that have been processed as so.

The Data Parser Service processes raw data and transfer them to corresponding tables in the database, so that they can be reported easily by the application. The raw data may be a call detail record, a service record or an information record.

Information records are not stored in the relational database. They are rather stored optionally in an adjustable manner just for informative purposes, under the application directory, in the \data\info folder, with respect to data source id.

As for the call and service records, they are processed and stored in separate tables to be used by the application. In a similar manner as information records, call and service records may be stored with respect to data source id, again, under the application directory, in the folders \data\record and \data\service, respectively. This feature can be activated or deactivated separately for call, service or information records.

If raw data coming from a data source is a call detail record, then the PBX, the data source and the user (provided that the appropriate data has previously been entered into the database of the application) it pertains to are also saved along with the other extracted information.

If pieces of information such as extension, trunk and customer code that pertain to the PBX, to which the data source belongs, have not previously been defined in the system, then they are defined automatically by the Data Parser Service. However, in case where data is collected from several PBXs, if any PBX group has been defined, then since it would be impossible to figure out which PBX an extension number belongs to, it would be useful to pre-define extension numbers for the system, considering that kind of usage. (See PBX Groups for detailed information.)

A called extension number and the data source, which the call detail record data comes from, may pertain to different PBXs that are yet in the same PBX group. In that case, the call type is re-assigned by checking the country and area codes of both PBXs. For instance, the call type is assigned as local, long distance or international, if the PBXs have, respectively, the same country and area codes, the same country codes but different area codes or different country and area codes. As for incoming calls, the call type remains unchanged.

External phone numbers within raw data are stored in a phone book pool, after appending country and area codes as prefix, if necessary. Users may assign names to those numbers later, in the manner their particular roles permit.

Another operation that is carried out while call detail record information is being processed is pricing calls. (See Pricing for detailed information.) The cost, which is calculated with respect to prices and currencies (The system supports different currencies simultaneously.) specified in tariffs and regulations that have been defined in the system, and its equivalent in the reference currency that has been defined in the system (See System Configuration) are logged into the table that contains call detail record information. (See Working with Different Currencies for information on usage of different currencies in the system.)

If raw data coming from a data source is a service record, then the PBX, the data source and the user (provided that the appropriate data has previously been entered into the database of the application) it pertains to are also saved along with the other extracted information.

If a price has been defined for the service, then the cost, the currency and the cost in the reference currency that has been defined in System Configuration are calculated and entered into the service record.

The Data Parser Service and sub-threads, record pieces of data that pertain to their operations to a log file in an adjustable level. (See The WebCM Services for detailed information on log files.) The log information pertaining to the Data Parser Service is stored in the \data\logs\Parser folder that is under the application directory.

### 4.3.10.3 E-mail Service

The WebCM E-Mail Service is the service that allows some information to be delivered automatically to users by e-mail through the WebCM application, on a regular basis. (See also The WebCM Services)

The E-Mail Service performs e-mail tasks that have been defined through the application. It spots the e-mail tasks in the database that have not yet been executed, arranges them according to time of request and then starts to execute the e-mail requests on scheduled times. Pieces of information pertaining to the e-mail to be sent, such as e-mail recipients; content of the e-mail message; e-mail attachments, if there are any; and the e-mail server, over which the e-mail is to be sent, are defined in advance by other modules of the application. Structure of the E-mail Service is suitable for sending e-mails with any content automatically through the application to anyone. In case a particular e-mail cannot be sent for any reason, the action is postponed for an adjustable time period and the other e-mail requests in the queue are processed. The service retries sending the postponed e-mail later. Number of those attempts can be set.

Although the main function of the E-Mail Service is the one explained in the previous paragraph, it is not the only function of the service. The service largely maintains its reporting function.

Report requests defined by users through report modules are stored in a pool, like e-mail requests. The service spots the report requests that have not yet been processed and arranges them according to time of request. Each report is created on pertaining scheduled time and stored on the server under the application directory in the folder \data\reports in suitable format, with an automatically generated filename.

The user, who has requested the report and her/his role at the moment of request are taken into consideration when creating the report. (See Export, Reports and Histograms for more information.)

If the report cannot be created for any reason whatsoever, the creation action is postponed for a certain period of time that can be set, and the service proceeds to the next report request in the queue. The service attempts to create the postponed report later again, several times. Number of those attempts can be specified.

For the configurations where reports are delivered by e-mail, if the report is created successfully, then the E-Mail Service defines a task, this time for itself, namely sending an e-mail to the address of the user that has requested the report. It creates the necessary definitions to send the created report as an e-mail attachment.

For the configurations where reports are accessed by web interface, the service stores the report in database to be served to the users.

The E-Mail Service and sub-threads, record pieces of data that pertain to their operations to a log file in an adjustable level. (See The WebCM Services for detailed information on log files.) The log information pertaining to the E-Mail Service is stored in the \data\logs\EmailSvc folder that is under the application directory.

### 4.3.10.4 Maintenance Service

The WebCM Maintenance Service backs up the WebCM database on a daily basis and performs maintenance.

(See also The WebCM Services for more information.) The time of daily maintenance and the number of days, for which the backups are to be kept on the server before they are deleted, can be set. This information is kept in WebCM configuration file named WebCM.ini with other configuration information. (In order to enable the user to edit WebCM configuration file, a shortcut under Karel\WebCM program group is created. By clicking on this shortcut, WebCM configuration file can be opened with default text editor.) The time of daily maintenance can be defined by time parameter under [maintenance] section. Format of this parameter is hh::mm (for example, 03:00).

Unless specified otherwise, the backup files are zipped and saved in the folder \data\backup that is under the application directory, with names generated automatically according to time of backup. Changes can be made in the configuration file, in order to save backup files in a different folder, or in a folder that is on another computer. Backup folder can be defined by backup_folder parameter under [maintenance] section. Another parameter, named backup_count under the same section controls the number of backups to be kept in the system. Default value of this parameter is assigned as 5 during installation.

If a change is made in the configuration file, service needs to be restarted.

Backups created by the service can be examined or downloaded to another computer through the database backups interface.

If **PostgreSQL** database is being used then location of pg_dump application, if **MySQL** database is being used then location of mysqldump application must be defined in the system path, so that it is possible to create backups. The backup files are zipped by the application gzip to save space. Hence, the location of gzip application must also be defined in the system path.

The Maintenance Service and sub-threads, record pieces of data that pertain to their operations to a log file in an adjustable level. (See The WebCM Services for detailed information on log files.) The log information pertaining to the Maintenance Service is stored in the \data\logs\ MaintenanceSvc folder that is under the application directory.

In order to open a zipped database backup file, you can use any unzip software. Then, you should follow the steps below if you want to restore an old database backup:

**If PostgreSQL database is being used;**

1. Stop services.

   In order to restore a database file, application database must not be in use. So, all Karel WebCM Services and Apache web server service should be stopped.

2. Delete WebCM database named "krl".

   You should pay attension at this step, because all WebCM related information that is stored in database will be deleted. If the backup file is not up-to-date, for instance, all the data created since the backup was taken will be lost.

   You should run the following command in command prompt:

   dropdb krl -U krl

3. Create an empty database named "krl".

   Before restoring database, you should create an empty database named "krl". You should run the following command in command prompt:

   createdb krl -E UTF8 -O krl -U root

   In this example, root is the existing administrator user/role of the PostgreSQL database. If the name of this user is different for your system, you should change this name properly. Other parameters should be kept as they are.

   If you asked to supply a password when you run the command, you should enter administrator password (root password).

4. Restore "krl" database.

A backup file can be restored by running the following command in command promt:

psql -f krl.sql -U root krl

You should enter the full path of the database backup file in place of "krl.sql" parameter. However, if you change the directory to the folder where the database file is located, then you can enter only the name of the backup file in place of "krl.sql".

Again, in this example, root is the existing administrator user/role of the PostgreSQL database. If the name of this user is different for your system, you should change this name properly.

If you asked to supply a password when you run the command, you should enter administrator password (root password).

5. Start services.

After the backup file is restored, all WebCM services and Apache web server service can be started.

**If MySQL database is being used;**

1. Stop services.

In order to restore a database file, application database must not be in use. So, all Karel WebCM Services and Apache web server service should be stopped.

2. Delete WebCM database named "krl" and recreate it.

You should pay attension at this step, because all WebCM related information that is stored in database will be deleted. If the backup file is not up-to-date, for instance, all the data created since the backup was taken will be lost.

You should run the following command to connect to mysql database:

mysql -u krl -pkrl

Then, run the following command in order to delete "krl" database:

DROP DATABASE krl;

Finally, run the following command in order to create an empty "krl" database:

CREATE DATABASE krl CHARACTER SET 'utf8' COLLATE 'utf8_general_ci';

Finally run the following command to leave mysql:

quit

3. Restore "krl" database.

A backup file can be restored by running the following command in command promt:

mysql -f -b -v -D krl -u krl -pkrl < krl.sql

You should enter the full path of the database backup file in place of "krl.sql" parameter. However, if you change the directory to the folder where the database file is located, then you can enter only the name of the backup file in place of "krl.sql".

4. Start services.

After the backup file is restored, all WebCM services and Apache web server service can be started.

#### 4.3.10.4.1 Database Backups

Database backups, which have been created by the Maintenance Service are listed on this interface, starting with the most recent backup to the oldest, including the time and file size of each backup. The backup files can be downloaded to another computer by clicking the names of desired files.

Backup files are essential for keeping data safe, which pertains to a period before a certain time, or restoring data, in case a problem with the database occurs.

The WebCM Maintenance Service backs up the WebCM database on a daily basis, however by pressing the Take a backup button on this page, a backup can be taken anytime.

See the Maintenance Service for detailed information on operation of the Maintenance Service.

## 4.3.11 Administrative Utilities

This chapter explains the usage of some utility programs that were designed to help the administrators to do some administrative tasks.

These programs are installed under utils folder which is under the WebCM installation folder.

**Importing pbx, extension and user information from an external file into WebCM database.**

| | |
|---|---|
| File Name | import_usr.pl |
| Location | <WEBCM>\utils\import_usr |
| Description | Especially while working with a lot of high-capacity pbxs, by using this utility program, administrators can import lots of pbx, extension and user information from a CSV file into WebCM database instead of defining them one by one using the WebCM web interface. |
| Usage | • Before executing the command, input file that will be imported must be prepared. Input file must be named as import_usr.csv and must be located under the utility folder. (During the installation, an empty import_usr.csv file is placed under utility folder as an example.) File must be in CSV format and must consist of following columns in it: Pbx;Extension;Username;Password;Email;UserGroup. First row of the file to be imported must be the same as the first row of the sample CSV file. The other rows should consist of relative field values seperated with ';'. CSV files can easily be edited with Microsoft Excel or OpenOffice applications. Pbx, Extension and Username fields are mandatory, and if any of them left as blank, related record will not be imported. Password field is optional, however if password is left as blank, related user will not be able to login to WebCM. Thus, usernames can be copied to password fields, and users can change their password after they login to the system. Similarly, Email and UserGroup fields are optional, too. However, if email field is left as blank, related user will not be able to receive report e-mails.<br><br>• After input file is ready, go to the command line (for Windows cmd.exe) and change current directory to the utility directory.<br><br>• Run perl import_usr.pl command. The result of import operation for each record will be printed to the console screen. If there are lots of records in CSV file, and it is hard to follow messages, you can redirect the console output to a text file by running perl import_usr.pl > output.txt command. After command is executed, a text file named output.txt will be created. Results of the import operation can be examined by opening this file using a text editor. If failures exists, this records can be corrected manually, and import operation may be repeated, or these records can be defined by using WebCM web interface. |

# Part V

## Frequently Asked Questions

# 5 Frequently Asked Questions

This chapter includes frequently asked questions (FAQ), together with their answers, about features of the WebCM application and its usage. FAQ consists of two topics:

- General Questions
- Administrative Questions

## 5.1 General Questions

Q: Do the entire calls in the system consist of the calls that are displayed on the "Calls" page?
A: No, not always. If you are in normal user role or in human resources role, then only the records that pertain to you are displayed on the "Calls" page; if you are in group administrator role, only the records that pertain to the people in your group are displayed; and if you are in PBX administrator role, records that pertain to the PBXs you are responsible for are displayed. Only the users in WebCM administrator role are authorized to view the entire records in the system.

Q: Why do my calls listed on the "Calls" page seem to be so few?
A: Call detail records are presented to the user in several pages, which users can browse. Users can specify the number of records to be listed on a page. You can refer to the Reports page for detailed information on calls. Many report options have been presented on that page that could meet your needs.

Q: How can I view detailed information pertaining to calls?
A: In order to view more information pertaining to the calls listed on the Calls page, first click the Columns link that is located on that page and then check any unchecked information, which you want to be additionally displayed.

Q: Are the entire calls, which are listed on the "Calls" page, my calls?
A: No, not necessarily. All calls related to you are listed, however, the actual owner of a call is the called person, if that is an incoming call; but it is the person listed in the callers column, if that is an outgoing call. In fact, that information is already displayed, if you have selected the actual owner of the call column ("Chargable" column) to be displayed.

In fact, if your role is one of the administrative roles, then the call detail record information pertaining to calls in your responsibility are displayed anyway. You can still see the actual owners of the calls in the pertaining column.

Q: Why are the total number of records in the list of calls, and the total number of records presented in the histograms or reports different?
A: Any report presented to a user, except the "Calls" list, include only the information that pertains to calls whose actual owner is that particular user. The difference arises from calls that are related to a particular user, but whose actual owner is someone else. Number of the calls present in the "Calls" list is a sum of the records that pertain to the user, to someone else or to the calls whose actual owners are unknown. (If an extension number has not been assigned to any user, then call detail records of that extension remain "ownerless".)

Q: How are the calls priced?
A: Calls are priced according to the tariffs and rates, which WebCM Administrator have entered into the system. You can refer to the page Pricing for more information.

Q: Why do different remarks about the same external number appear in reports for different users?
A: Each user may enter a public remark related to an external number, in order to share it with other users, as well as s/he may enter a private remark for herself/himself. The private remarks can be viewed only by the user who has entered them. See the section Phone Book for more information.

Q: I cannot make use of the report feature. What is the possible reason?
A: For the configurations where reports are delivered by e-mail, in order for you to use the report feature, your e-mail address is supposed to have been defined when your account has been created by WebCM Administrator. Besides, in order for that feature to be used, the E-Mail Service is supposed to be working, e-

mail server settings are supposed to be proper and the server is supposed to be up and running. Even though the entire settings are proper, there may be a temporary problem with the e-mail server. Should that be the case, you had better consult your system administrator.

Q: Why does the application occasionally prompt for re-login?
A: Just like in many web applications, a timeout period for your session has been defined in that application, too. For the sake of your information security, you will be redirected to the login page, if you do not perform any action within the timeout period after you start a session.

## 5.2 Administrative Questions

Q: Actual owner field of some calls are empty in records, what might be the reason?
A: The actual owner of a call is the called person, if the call is an incoming call; and it is the person who has the extension number listed in the callers column, if it is an outgoing call. The actual owner field remains empty, if the extension number has not been assigned to any user in the system. If the owner of such a number is known, then it should be assigned, or WebCM Administrator should be allowed to assign it.

Q: Why am I not able to view my own calls when my active role is Group Administrator?
A: When your role is Group Administrator, you can view the calls related to users in your responsibility only. Therefore, you can shift to Normal User role to view your own calls.

Q: What is the difference between the concepts "Data Source" and "PBX"?
A: The term "data source" refers to any source that provides the application with call detail record data. The source may be the Net-Console Server or GT Server software, LAN Adaptor card, or directly an IP-based PBX. The WebCM application can collect and report not only records pertaining to calls made over PBXs, but also records pertaining to SMS messages that are sent or received over Karel GSM Terminals, which are connected to your PBX. Therefore, if there are GSM terminals that are connected to a PBX, then there may be more than one data sources for a PBX. As a result, data source and PBX are different concepts.

Q: What should be entered as the TCP Port value for data sources?
A: Unless a particular data source has been configured in a different way, that value is supposed to be 24995 for the Net-Console Server and the LAN Adaptor, and 25995 for the GT Server.

Q: Why are e-mail addresses of users entered while user accounts are being created?
A: For the configurations where reports are delivered by e-mail, in order for the users to make use of the report feature, their e-mails are supposed to be identified to the system. Reports can be sent to users by e-mail, by the E-Mail Service, as suggested by the name. The feature is designed to avoid waste of time, which may occur when the users wait for the response of the system to their report requests. Users can select the reports they need on the Reports page and send their requests to the system one after another. Those report requests are accumulated in a pool; and then reports are created one by one and then sent to related users. Since not more than one report is processed on the server side, the system performance is not affected adversely.

Q: What is the meaning of the precedence value in tariffs?
A: As a result of the criteria that the system takes into consideration when determining the tariff to be applied, several tariffs may be suitable for pricing a call. If the system is unable to decide which tariff to be applied, then it selects the tariff with the highest precedence. Users are allowed to enter those precedence values, so that they decide about the tariff. You may refer to the section How to Determine the Appropriate Tariff for more information.

Q: What are the uses of extension groups, trunk groups and prefix groups?
A: Those groups are used optionally when defining tariffs. See Tariffs, Extension Groups, Trunk Groups and Prefix Groups for more information.

Q: Does the currency data on the "Currencies" interface have to be updated continuously?
A: The WebCM application supports different currencies in rates that are in tariffs, but this feature is optional. When it is utilized, calls are priced in different currencies. However, considering reports that include total or average costs, since costs in different currency cannot be summed or averaged, the calculated costs are supposed to be converted into a common currency, namely the reference currency that has been defined on the "System Configuration" page. As a result, updated currency data is required for that purpose. On the other hand, there is no need to update currency data, if the same currency is to be used in rates. Still you should pay attention to the fact that the currency used in rates in tariffs, and the reference currency that is specified on System Configuration page are supposed to be the same.

Q: How can the application be translated into different languages?
A: The application stores the interface texts in the database, just like every other information. First of all, a precedence level that is greater than zero is supposed to be assigned to the language, into which the application is to be translated in the Languages page. (See Languages for more information.) Then, equivalents of the entire expressions in that language, which are in the Expressions page are supposed to be identified to the system. Note that only the users in WebCM Administrator role are authorized to access those pages.

# Part

# VI

## Reference

# 6 Reference

This chapter contains information on several concepts that are referred to in the WebCM application.

## 6.1 The User Roles

Five user roles are available, which have been defined in the system:

- Normal User:
  A user in the normal user role can access information pertaining to calls that are related to herself/himself only and s/he can receive reports related to those calls only.

  S/he can enter private and/or public remarks, by using the Phone Book feature, for all external numbers that have been defined in the system, especially for the external numbers included in her/his own calls. Private remarks can be viewed only by the user who has entered them. Public remarks, on the other hand, can be viewed by all other users as well, so that the users are allowed to contribute to creation of a corporate phone book.

  A user in the normal user role can access information regarding users, tariffs, PBXs, and extension, trunk and prefix groups, which have been defined in the system, but s/he cannot modify them.

- Human Resources:
  The difference of human resources role from the normal user role is that user records can be edited by this role. Other than this, there is no difference between normal user role and human resources role.

- Group Administrator:
  The difference of group administrator role from the normal user role is the content of call detail records to be displayed and reported. User in this role can view call detail records pertaining to persons in her/his responsibility, and s/he can request reports regarding those records.

- PBX Administrator:
  The difference of PBX administrator role from the normal user role is the content of call detail records to be displayed and reported. User in this role can view information pertaining to calls made over the PBXs in her/his responsibility, and s/he can request reports regarding those pieces of information.

- WebCM Administrator:
  There is no limitation for this role. The user can access all call detail record information, request reports regarding that information and make any kind of change in data that controls system operation (such as tariffs). A WebCM Administrator should be, first of all, someone who has sufficient knowledge and experience to keep system running properly and as expected, so that s/he can take the responsibility. Nevertheless, a corporate manager may certainly want to access all information. In that case, such a user may also be granted with that authorization, despite the fact that s/he might not have adequate technical qualifications. The page Administrators summarizes the things a WebCM administrator is supposed to do before the system is put into use.

A user can be authorized for some or all of the roles.

The default user role while a user account is being created is Normal User. It is a WebCM Administrator's job to assign new roles to users and identify to the system the persons or PBXs they are responsible for. (See Users for related information on editing user information.)

A user should shift to a role that is suitable for her/his purpose of using the system. For example, a group administrator may not access call detail records pertaining to her/his own calls, if s/he is not a member of the groups s/he administers, when her/his active role is Group Administrator. S/he is supposed to shift to Normal User role for that.

## 6.2 Working with Different Currencies

The system allows you to work with different currencies. For instance, currencies other than the reference currency may also be selected when defining rates for tariffs. While calls are being priced, the currency that has been used in the rate and the cost in that currency are saved in the cost field of the call detail record information. In addition to that, the cost in the reference currency is also saved, in order to present correctly total or average cost information, which is to appear in reports, because reports take into consideration the cost data that is in reference currency, in the call detail record information.

While a cost is being converted from one currency into another, the most recent exchange rate (if that data is available) with respect to the date of the call, out of the exchange rates which have been entered through the Currencies interface, is used. If no value has been entered as the equivalent of a currency in the reference currency, then the default data for exchange rate is employed.

The reference currency is supposed to be defined by the WebCM Administrator during system configuration.

## 6.3 Analysis of Call Detail Record Information

### 6.3.1 Pricing

Incoming calls and incoming SMS messages are not priced by the system; hence, tariff selection is made for call types except those. When pricing calls, first, the tariff the pricing is to be based on is determined. How the system determines the tariff to be employed when pricing a call is explained in the section How to Determine the Appropriate Tariff.

A call cannot be priced, if no tariff is applicable to the call. The tariff, cost and currency fields in the call detail record remain empty. Otherwise, the tariff which pricing is to be based on is saved in the tariff field of call detail record information.

After the tariff that is suitable for the call has been determined, rate is determined according to the attributes of the call and the tariff.

If the call type is Outgoing SMS, then the system checks the SMS Rates section of the selected tariff to detect whether a special SMS rate has been defined for the prefix group in which the prefix of the number, to which the SMS message has been sent, is included. If such a rate has been defined, then it is used, else, the Default SMS Rate for the selected tariff is used. If no SMS rate has been defined, not even the default SMS rate, then the cost is assigned as zero and the currency field is left empty.

If the call type is Internal, and if an internal rate has been defined for the selected rate in the Basic Rates section, then that rate is used, else the cost is assigned as 0 and the currency field is left empty.

As for the other call types, the cost is calculated by adding the fixed price to the product of the price per pulse and the number of pulses, provided that use of pulse information is enabled, when it is available, in the Pulse Rates section of the tariff, and the currency is saved as the one that has been defined in the Pulse Rates section. On the other hand, if use of pulse has not been desired or no pulse data is available in the call detail record, then the system checks whether any special rate is available in the Special Rates section of the tariff for the prefix group of the called number. If such a rate has been defined, then that rate is used for pricing, else the system checks whether any rate is available in the Basic Rates section according to the call type, and that rate is used for pricing, if such a rate has been defined. If no such rate has been defined and pulse data is available in the call detail record, then the call is priced according to the pulse rates, as explained above, even though use of pulse information_ if it is available_ has not been enabled in the Pulse Rates section. Finally, if pulse data is not available, either, in the call detail record, then the Default Rate that is in the Basic Rates section is employed.

After the rate to be used for pricing has been determined, cost calculation is carried out in the following way:

If the call type is Outgoing SMS, then the cost is figured out by adding the fixed price to the product of number of pieces of SMS and price per piece, and it is saved in the cost field of the call detail record. The currency is the one that has been defined in the rate.

If the call type is not Outgoing SMS, on the other hand, cost is calculated according to the lengths of the 1st,

$2^{nd}$ and $3^{rd}$ billing increments, and duration of the call.

Let

M1: Price per minute,
P0: Fixed opening price,
S: Call duration rounding range,
T1: Duration of the $1^{st}$ billing increment,
M2: Price per minute in the $2^{nd}$ billing increment,
T2: Duration of the $2^{nd}$ billing increment,
M3: Price per minute in the $3^{rd}$ billing increment,

in the rate for a call, and

D: Duration of the call,
D': Duration of the call as assigned according to the time period that has been specified in the rounding range in the rate. (D' = D, if no S parameter has been specified.)

The cost of the call is calculated by the formula below:

If T1, T2 is defined and D' > T1 + T2, then
P0 + T1 x M1 + T2 x M2 + (D' - T1 - T2) x M3

If T1 + T2 >= D' > T1 or T1 is defined, D' > T1 and T2 is undefined, then
P0 + T1 x M1 + (D' - T1) x M2

If T1 >= D' or T1 and T2 is undefined
P0 + D' x M1

Example 1:

Let the rate be

M1 (Price per minute): USD 1.00 /min.
P0 (Fixed opening price): USD 0.25

and let

D (Duration of the call): 190 sec.

In that case, since no rounding is desired,

D' (Assigned duration of the call): 190 sec.,

which is the same as D. After converting the duration into minutes, D' becomes

D' (Assigned duration of the call): approximately 3.17 min.

Since T1 and T2 have not been defined, by substituting the values into the formula below:

P0 + D' x M1,

the cost of the call is found as:
USD 0.25 + 3.17 min. x USD 1.00 /min. = USD 3.42.

Example 2:

Let the rate be

M1 (Price per minute): USD 1.00 /min.
P0 (Fixed opening price): USD 0.25
S (Call duration rounding range): 30 sec.
T1 (Duration of the $1^{st}$ billing increment): 1 min.
M2 (Price per minute in the $2^{nd}$ billing increment): USD 0.75 / min.

and let

D (Duration of the call): 120 sec.

Considering that D is 120 sec. and S 30 sec., the duration is a multiple of 30, so there is no need for rounding it off. Since the durations in the rate are in minute, the value 2 min. is obtained when the duration is converted into minutes. As a result,

D' (Assigned duration of the call): 2 min.

Since T2 has not been defined, by substituting the values into the formula below:

P0 + T1 x M1 + (D' - T1) x M2,

the cost of the call is found as:
USD 0.25 + 1 min. x USD 1.00 /min. + (2 min. - 1 min.) x 0.75 = USD 2.00.

Example 3:

Let the rate be

M1 (Price per minute): USD 1.00 /min.
P0 (Fixed opening price): USD 0.25
S (Call duration rounding range): 30 sec.
T1 (Duration of the 1st billing increment): 1 min.
M2 (Price per minute in the 2nd billing increment): USD 0.75 / min.
T2 (Duration of the 2nd billing increment): 1 min.
M3 (Price per minute in the 3rd billing increment): USD 0.5 / min.

and let

D (Duration of the call): 190 sec.

Considering that D 190 sec. and S 30 sec., the duration is not a multiple of 30. Hence, it is rounded off to the upper range and considered as 210 sec. Since the durations in the rate are in minute, the value 3.5 min. is obtained when the duration is converted into minutes. As a result,

D' (Assigned duration of the call): 3.5 min.

By substituting the values into the formula below:

P0 + T1 x M1 + T2 x M2 + (D' - T1 - T2) x M3,

the cost of the call is found as:
USD 0.25 + 1 min. x USD 1.00 /min. + 1 min. x USD 0.75 /min. + (3.5 min. - 1 min. - 1 min.) x USD 0.5 /min. = USD 2.75.

Example 4:

Let the rate be

M1 (Price per minute): USD 1.00 /min.
P0 (Fixed opening price): USD 0.25
S (Call duration rounding range): 30 sec.
T1 (Duration of the 1st billing increment): 1 min.
M2 (Price per minute in the 2nd billing increment): USD 0.75 / min.
T2 (Duration of the 2nd billing increment): 1 min.
M3 (Price per minute in the 3rd billing increment): USD 0.5 / min.

and let

D (Duration of the call): 45 sec.

Considering that D 45 sec. and S 30 sec., the duration is not a multiple of 30. Therefore, it is rounded off to the upper range and considered as 60 sec. Since the durations in the rate are in minute, the value 1 min. is obtained when the duration is converted into minutes. As a result,

D' (Assigned duration of the call): 1 min.

Since the call duration does not exceed the duration of the first billing increment, (D' <= T1), the second and third billing increments are never employed. So, by substituting the values into the formula below:

P0 + D' x M1,

the cost of the call is found as:
USD 0.25 + 1 min. x USD 1.00 /min. = USD 1.25.

Example 5:

Let the rate be

M1 (Price per minute): USD 1.00 /min.
P0 (Fixed opening price): USD 0.25
T1 (Duration of the 1st billing increment): 1 min.
M2 (Price per minute in the 2nd billing increment): USD 0.75 / min.
T2 (Duration of the 2nd billing increment): 1 min.
M3 (Price per minute in the 3rd billing increment): USD 0.5 / min.

and let

D (Duration of the call): 190 sec.,

but let no S (Call duration rounding range) be defined. In that case, since no rounding is desired, D' remains the same as D:

D' (Assigned duration of the call): 190 sec.

By converting the duration into minutes, D' becomes

D' (Assigned duration of the call): approximately 3.17 min.

By substituting the values into the formula below:

P0 + T1 x M1 + T2 x M2 + (D' - T1 - T2) x M3

the cost of the call is found as:
USD 0.25 + 1 min. x USD 1.00 /min. + 1 min. x USD 0.75 /min. + (3.17 min. - 1 min. - 1 min.) x USD 0.5 /min. = USD 2.58.

The parameter S is supposed to be null in the rate, if no rounding is desired for call duration.

If no fixed price is desired when pricing, then the parameter P0 may be likewise set to null. If different billing increments are not desired to be used when pricing, then the parameters T1, T2, M2 and M3 can be set to null, and a non-zero value can be entered for the parameter M1 only. The first and second billing increments may be employed only, upon wish. In that case, there is no need for the parameters T2 and M3. In short, it is optional to enter values for all parameters in rates, except M1.

After the cost has been calculated, the currency that has been defined in the System Configuration and the currency of the calculated cost are compared. If they are the same, then that means the call cost has already been calculated in the reference currency. On the other hand, if they are different, then the cost is calculated again, in the reference currency. If a reference currency equivalent for the currency of the calculated cost has been defined in the Currencies page, then the exchange rate, whose date is the closest to that of the call, is taken into consideration, else the default exchange rate is considered and the cost is converted into the reference currency. The cost that is calculated with reference to a particular rate, its defined currency and the equivalent of the cost in the reference currency are saved in the call detail record.

## 6.3.2 How to Determine the Appropriate Tariff

Validity periods apply regarding the tariffs. A tariff can only be used to price calls made within its validity period. Ending time for the validity period of a tariff does not necessarily have to be defined. For instance, if only the starting time of a tariff has been defined, then that tariff can be used for all calls to be made after the defined starting time. That means the tariff is valid forever.

For example, let

- Tariff T1 be valid between January 1, 2006 and January 1, 2007,
- Tariff T2 be valid between March 1, 2006 and January 1, 2007,
- Tariff T3 be valid after March 1, 2006,
- Tariff T4 be valid after February 1, 2006,
- Tariff T5 be valid after January 1, 2007

All tariffs, except T5, apply to a call made on March 8, 2006.

If several tariffs, whose validity periods apply, are available for a call, then other attributes of the call and the tariffs are considered to determine the one to be selected.

Extension groups, trunk groups or telecom operators can be defined for tariffs. If any of those pieces of information is defined, then a tariff becomes specific only to the defined extension group and/or trunk group and/or telecom operator. Precedence of a tariff, among the suitable ones, in pricing a call depends on how many of those three criteria the call meets at the same time. For instance, let

- Extension Group be A, Trunk Group be D for tariff T1,
- Extension Group be A, Trunk Group be null for tariff T2,
- Extension Group be null, Trunk Group be D for tariff T3,
- Extension and Trunk Groups are null for tariff T4,

and suppose that validity periods for all those four tariffs are suitable, and no telecom operator has been specified for any of the tariffs. While trying to determine the tariff to be employed for pricing a call made by an extension that is in Extension Group A by using a trunk that is in Trunk Group D, the system gives the highest priority to the tariff T1. The tariff T4 is given the lowest priority. Yet it is not impossible for T4 to be selected as the tariff to be used for pricing.

Tariffs can be defined for particular times of certain special days in a year or particular days in a week. That kind of time information should not be confused with the concept of validity period for a tariff. Validity period for a tariff allows a tariff to be defined as valid between particular dates or after a particular date. On the other hand, special days and days of the week define the particular times at which the tariff is to be applied within its period of validity.

In order to employ a particular tariff to price a call, the call must definitely be made on the special days or within weekly time intervals, which have been defined for that tariff. Yet, it is not obligatory to define such special days or weekly time intervals for tariffs; in that case, such tariffs are the general-purpose tariffs, which can be applied to all calls.

Out of the tariffs that have been put in order according to priority in the previous step, the system, first of all, detects the ones, for which special days have been defined. If there are tariffs, whose list of special days include the date a call is performed, then those tariffs are selected, else a suitable tariff is searched in the next step by checking weekly time intervals of tariffs. If no such tariff is found, then tariffs, for which no special days or weekly time intervals have been defined, are selected. For instance, consider the tariffs below:

- For Tariff T1, April 23, 2006 and October 29, 2006 are special days for all day long,
- For Tariff T2, the list of special days are empty, the weekly time interval 18:00 - 24:00 has been defined for the weekend,
- For Tariff T3, the list of special days are empty, the weekly time interval 18:00 - 24:00 has been defined for Mondays,
- For Tariff T4, both the list of special days and the weekly time intervals are empty

Regarding a call made at 19:00, on Monday, April 23, 2006, the tariffs T1, T3 and T4 are considered, but tariff T1 is given priority over the others. Since tariff T2 applies only to weekend, it is not appropriate for that call. Since first the list of special days is checked, tariff T1 has priority over tariffs T3 and T4, even though their time intervals coincide with the time of the call. If tariff T1 had not been defined, then since no other tariff, whose list of special days were suitable was available, the weekly time intervals would be checked and this time tariff T3 would have been given priority. Furthermore, if tariffs T1 and T3 had not been defined, then the tariff to be selected would have been T4. The tariff T4 covers calls made at all times, without specifying any particular time or time period.

After all those selections, still, more than one tariff may be suitable for pricing the call. At this point, users determine the tariff to be given priority, through the parameter Precedence that is in the tariff definitions. The tariff with the highest precedence value is selected. If the precedence ranks of the entire tariffs are the same, which are in the list of suitable tariffs, then the system itself selects one of those tariffs in that case and price the call according to the rates in that tariff. (See the page Pricing for more information.)

# Index

## - A -



## - C -



## - D -



## - E -



## - F -



## - H -



## - M -



## - P -



## - Q -



## - R -



## - S -



## - T -

# - U -



# - W -