Alaris Labs
Business Automation Tools

Alaris SMS Platform User's Manual

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This document is intended to provide a detailed description of installation, operation and maintenance of the Alaris SMS Platform product (later in this document referred to as "the System"). It gives information about the structure of the product, interaction of the modules it consists of, the way it integrates into a carrier's network and the protocols used to interact with third-party products.

Table of Contents

1. Terms and Acronyms

Client	Carrier from which the System owner receives traffic
System owner	System owner – a specialized carrier record used to create parent products and user accounts with access to the System's admin interface
Vendor	Carrier to which the System owner sends traffic
API	Application Programming Interface
ASR	Answer Seizure Ratio, calculated as the percentage of messages successfully received by the carrier with respect to the total number of message sending attempts. For example, if the total number of sending attempts is 100 and 50 of them are received by the carrier, the ASR will be 50%
DLR	Delivery Receipt, a report sent by the carrier to the original sender containing the message delivery status.
DLR(t)	DLR(total), the percentage of SMS delivered to the end user with respect to the total number of message sending attempts. For example, if the total number of sending attempts is 100 and 25 messages are delivered to the end user, the DLR(t) will be 25%
DLR(s)	DLR(successful), the percentage of SMS successfully received by the end user with respect to the number of messages received by the carrier. For example, if the carrier received 50 SMS and 25 of them are successfully received by the end user, the DLR(s) will be 50%
DNIS	Dialed Number Identification Service
EDR	Event Detail Record
EMA	Exponential Moving Average
ESME	External Short Message Entity (external sources and sinks of short messages)
ERMES	Enhanced Roaming Messaging System
GUID	Globally Unique Identifier
ISDN	Integrated Services Digital Network
LOT	Level of Trust
MCC	Mobile Country Code
MNC	Mobile Network Code
MS Excel	MS Excel or any other spreadsheet editor
NANP	North American Numbering Plan
NPI	Numbering Plan Indicator
OLAP	Online Analytical Processing
POI	Point of Interconnection
SLA	Service Level Agreement
SMSC	Short Message Service Center
SMPP	Short Message Peer-to-Peer Protocol
SSU	Soft Switch Unit
TON	Type of Number

2. System overview

Alaris SMS Platform (further on referred to as "the System") is a complete solution intended for carriers working in the SMS interconnect industry. The general idea of the System is to provide a carrier with a single easy-to-use point of control of all tasks related to SMS traffic management:

- Switching of SMS traffic over HTTP or SMPP
- Real-time provision of routing instructions to the switch based on user-defined static or dynamic rules
- Authorizing events and user registration attempts. To provide for prepaid balance control, the SMS Platform authorizes every SMS in the network. As soon as the routing System detects that a user has exhausted the balance/credit, it starts to reject all new message attempts from that user
- Clients' billing and invoice distribution. The System provides for client account charging and invoice generation. Invoices can be automatically delivered to customers by email. The System owner can also track client payments and match these payments with the issued invoices
- Monitoring statistical parameters related to traffic behavior and System health. Detailed traffic statistics is calculated immediately after the EDR data gets into the System. Thus, all statistical layers (any combination of any customer, vendor, MCCMNC etc. split by any period) are preliminarily calculated in the background. This allows for instant view of any statistical layout – irrespective of the amount of requested data

Along with the SMS Platform, the company offers Alaris inVoice, a BSS solution for voice traffic management. For more detail on Alaris inVoice, refer to *www.alarislabs.com*.

3. Interface structure

The System provides a carrier with a set of tools that help its employees in everyday operations. The user interface is web-based; no other software installation is required. The interface is confirmed to work with recent versions of Mozilla Firefox; other browsers may not provide access to all System functions correctly.

The Start page provides a set of auto-refreshing charts offering an overview of the traffic, DB and hardware performance.

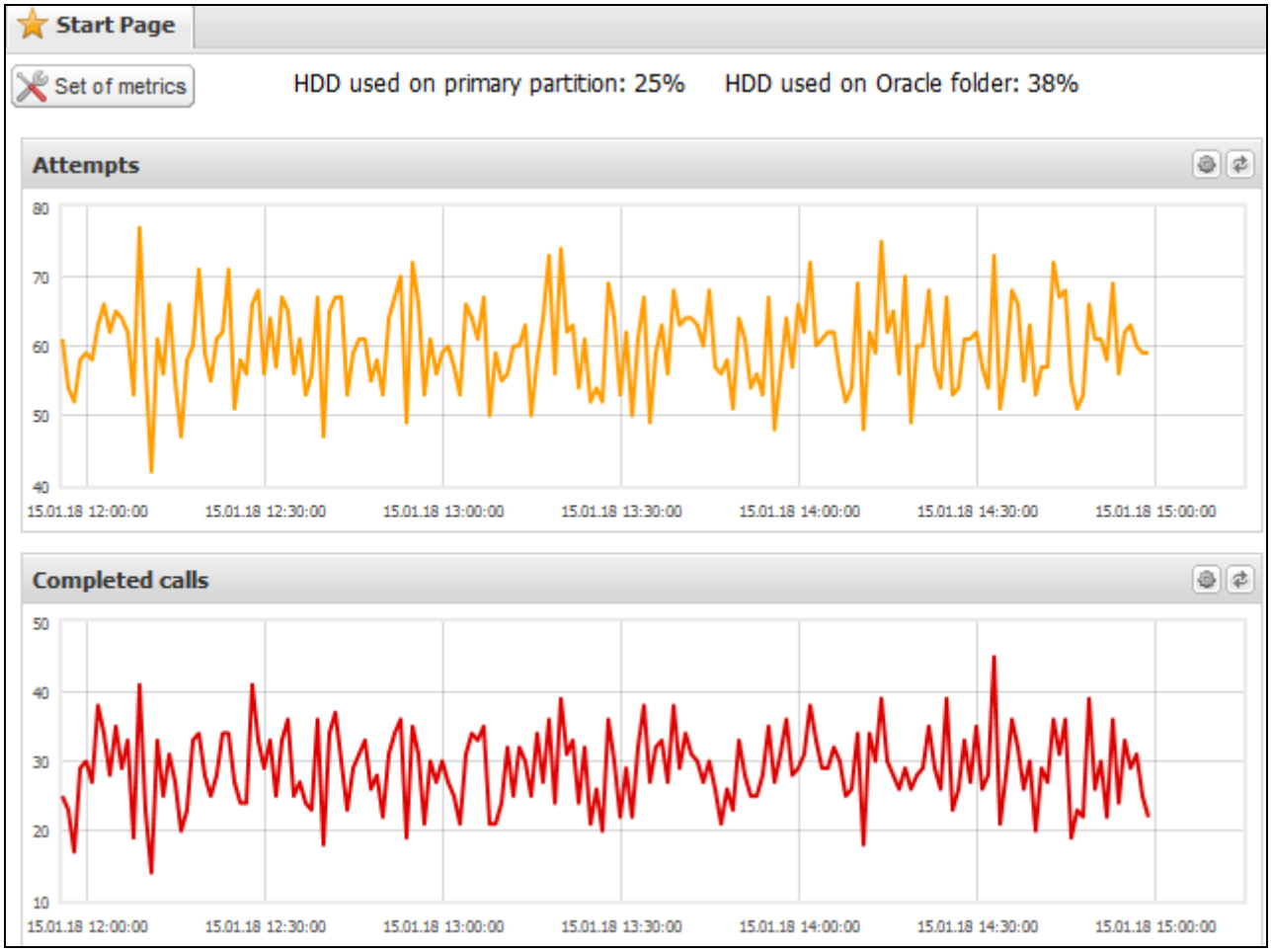


Fig. 1 Start page

Each chart can be customized in terms of grouping the data by the time interval (minutes/hours/days, no grouping by default), by the number of recent values to display (100, 200, 300, 500) and by the refresh period (1, 2, 5, 10 or 30 minutes). Use the button in the upper right corner of a chart to configure the required parameters and the button to refresh the chart.

The list of parameters to track is configured in the *Set of metrics* window opened by the Set of metrics button, located in the upper left corner of the *Start* page. Select the appropriate check boxes and click the Save button.

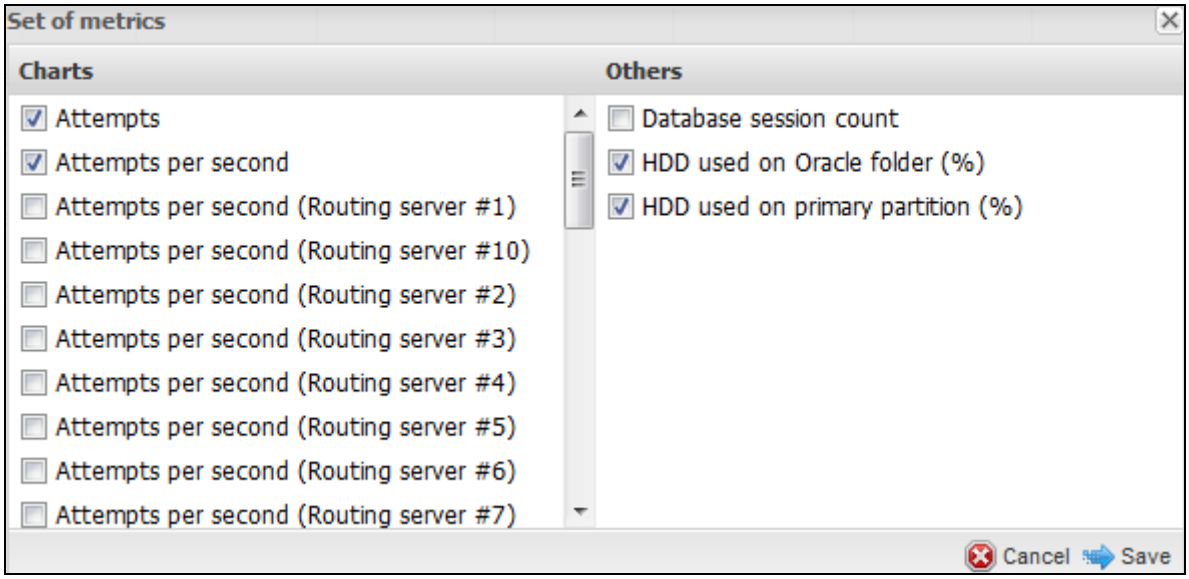


Fig. 2 Set of metrics

The Start button located in the bottom left corner of the page opens the main System menu and provides access to all System features. Some of the menu items may be unavailable to certain users depending on their access rights. The access rights are configured on the *Carriers\Users* page.
The *Start* menu includes the following items:

- *Administration*
- *Carriers*
- *Finance*
- *Reference books*
- *Reports*
- *SMS*
- *SMS Retail*

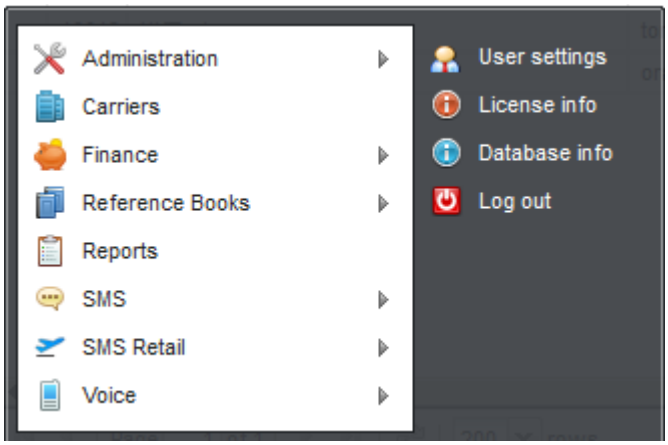


Fig. 3 Start menu

The User settings button opens the *Password configuration* menu. Enter the new password in the field or use the Generate button to generate the password automatically. Relative security of the password in percentage points is displayed in the field to the right. When the new password is ready, click the Save new password button.

Fig. 4 Password configuration

NOTE: In order to keep this Manual concise and convenient for use, self-explanatory interface items such as menu parameters and table columns are not detailed in text but are illustrated in screenshots.

4. Administration

4.1 Account manager history

The *Administration/Account manager history* page serves to view and add information about account managers. It comes handy in calculating manager bonuses when an account is transferred to another manager. The *Effective from* field shows the date on which the account was assigned to the manager.

Carrier	Account	Manager	Effective from
All	All	All	−∞ ≤ X ≤ ∞
Narnia Telecom	USD (ID 363)	abison abison (abison)	2016.10.10 00:00:00
RScom	USD (ID 11558)	admin Administrator (admin)	2016.04.27 00:00:00
British Hairways	USD (ID 464)	admin Administrator (admin)	2016.10.10 00:00:00
Pure Minutes Test	USD (ID 11542)	admin Administrator (admin)	2015.09.02 00:00:00

Fig. 5 Account manager history

To assign a new manager to an account, click Assign manager.

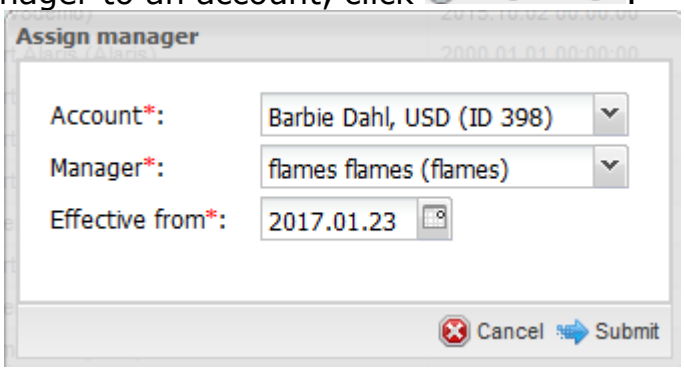


Fig. 6 Assign manager

In the dialog that appears, select the appropriate account, manager and the date on which the changes take effect. Click Submit to save the changes or Cancel to discard the settings.

4.2 Email processing rules

The *Administration\Email processing rules* page serves to configure rules for recognition of incoming emails that contain rate sheets. The System analyzes the email parameters (address, subject, text, attachment name etc.), identifies it as containing rate sheets and automatically imports the rate sheet file.

The page has two panels. The left panel has two tab sheets: the *Email rules* table and the *Files* table. The right panel has the *Add*, *Edit* and *Simulation* menus.

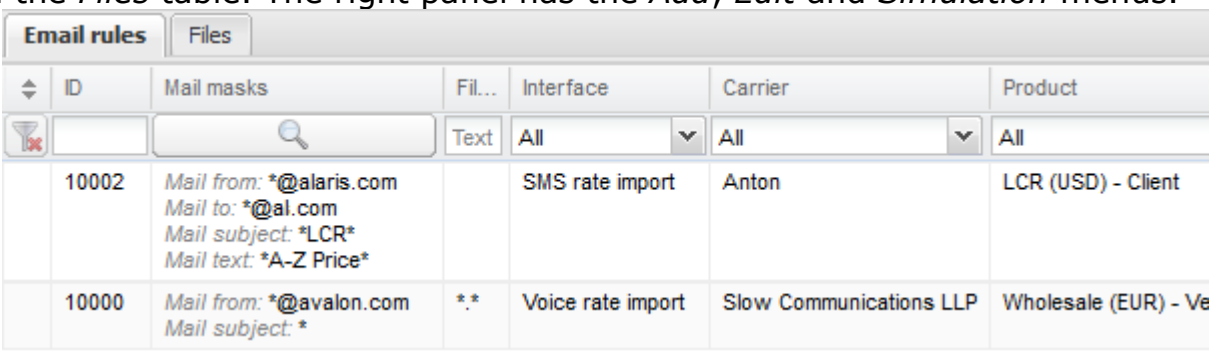


Fig. 7 Email rules

The *Add* menu is illustrated below.

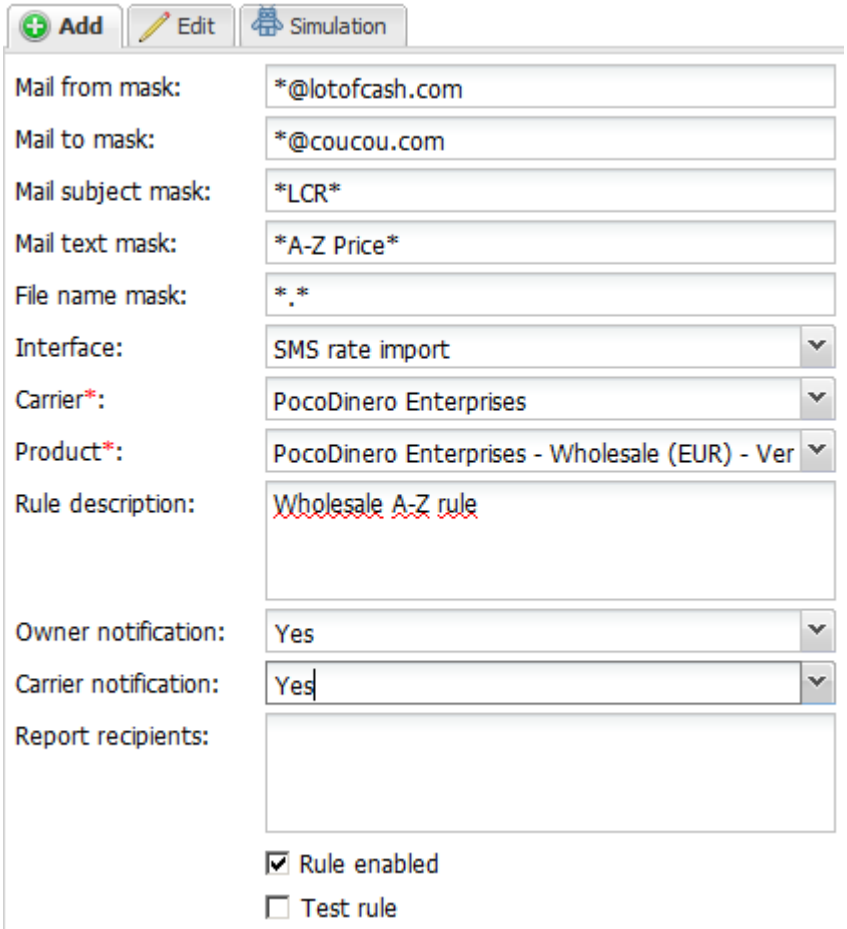


Fig. 8 Add menu

To create a rule, enter the appropriate parameters in the fields detailed below. Fields marked with an asterisk (*) are required.

- *Mail from mask, Mail to mask, Mail subject mask, Mail text mask, File name mask*: define a mask (use an asterisk * as a wildcard)
- *Interface:* select *SMS rate import*
- *Carrier*
- *Product*
- *Rule description*: arbitrary comments

- *Owner notification, Carrier notification*: select *Yes* if a copy of the message must be sent to the System owner (account manager)/carrier respectively
- *Report recipients*: supply comma- or semicolon-separated email addresses to which rate sheet import reports will be sent
- *Rule enabled*: select when the tests are complete to activate the rule
- *Test rule*: select when testing the rule to prevent submitting it prematurely. The rule will only operate in the simulation mode. NOTE: Both *Rule enabled* and *Test rule* must be selected to enable simulation.

Click Submit to save the changes. The entry will appear in the *Email rules* table. To test the rule, select it in the table and open the *Simulation* menu.

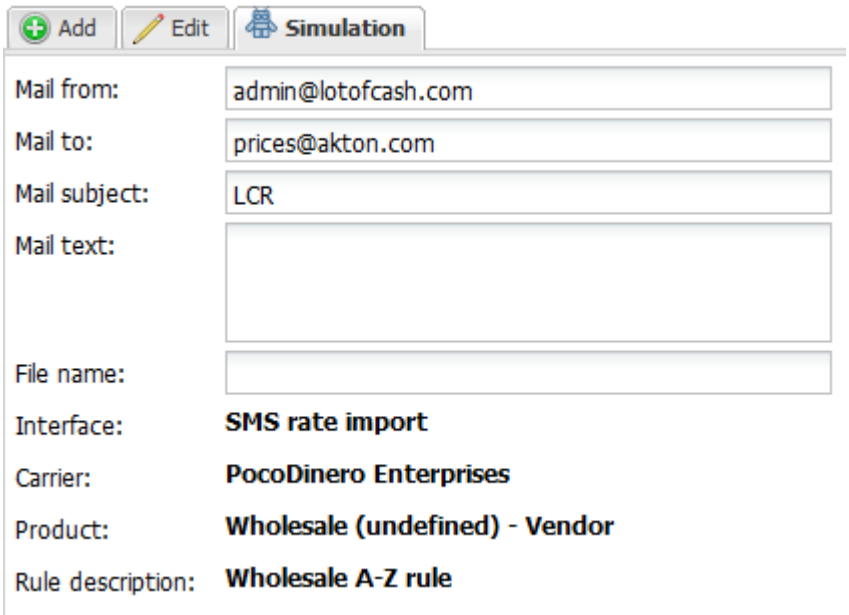


Fig. 9 Simulation

Enter the appropriate parameters and click Run. The rule details will appear on the *Simulation* panel (highlighted in bold in the figure above) and the rule will appear in the *Email rules* table. Once the tests are completed, go to the *Edit* menu and deselect the *Test rule* checkbox to activate the rule.
The *Files* page shows all imported rate sheet files (for both automatic and manual import).

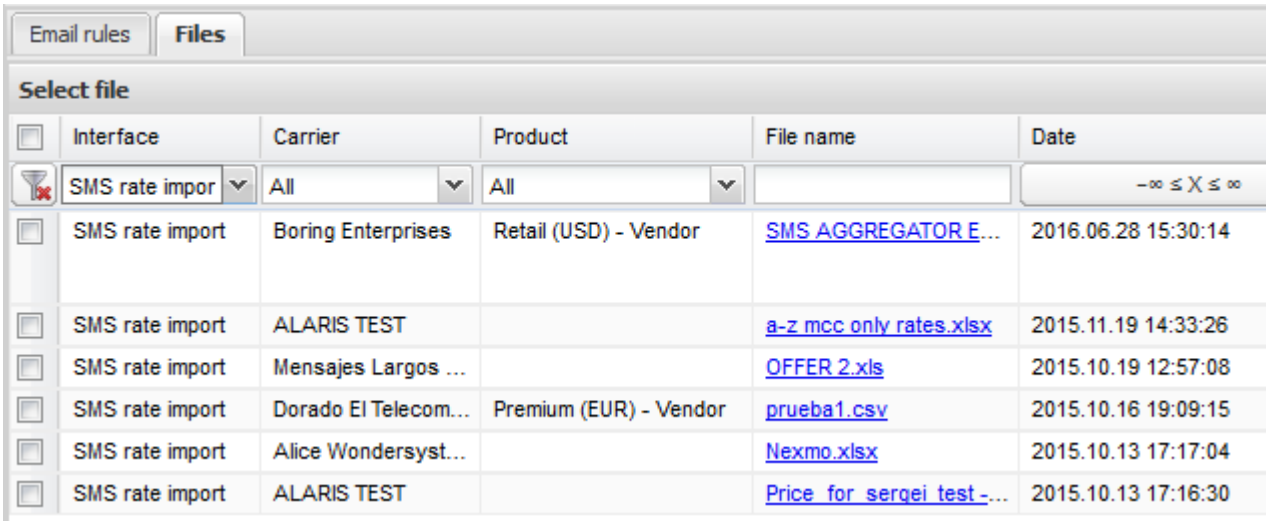


Fig. 10 Files page

Click on the link in the *File name* column to open the rate sheet file. NOTE: The *User name* column shows the name of the System owner's user who performed manual file import.

4.3 Outgoing Email accounts

The *Administration\Outgoing Email accounts* page serves to configure accounts on behalf of which the System owner sends emails to its partners. For example, it is possible to configure sending technical and commercial emails from separate accounts.

The page has two panels. The left panel is a table of configured accounts; the right panel contains the *Add* and *Edit* menus.

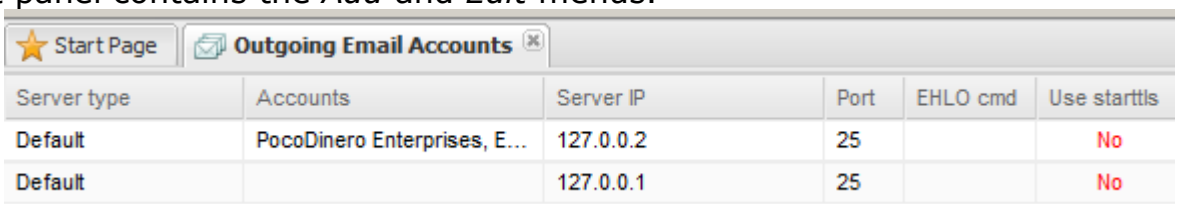


Fig. 11 Outgoing email accounts table

The *Add* menu is illustrated below.

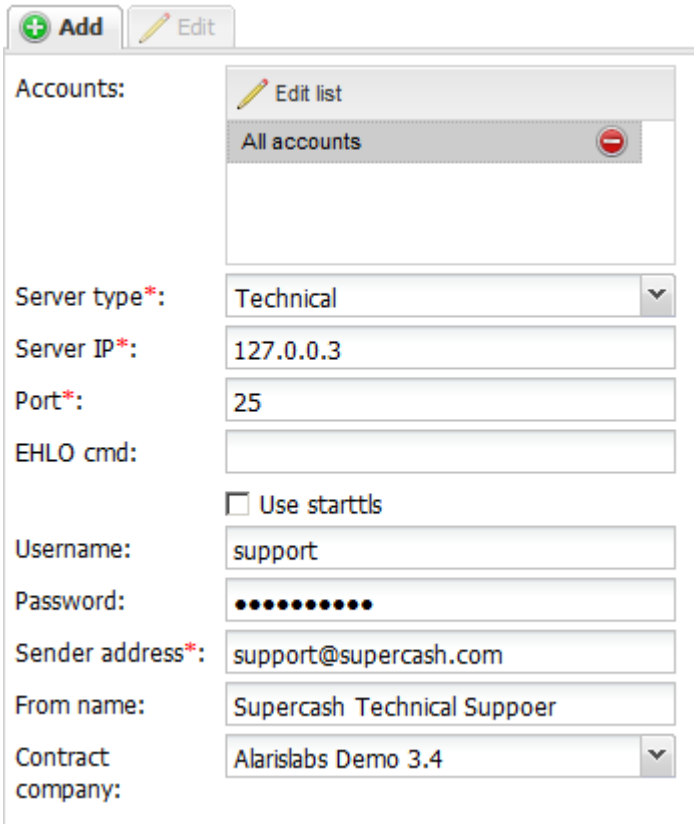


Fig. 12 Add menu

To create an email account, enter the appropriate parameters in the fields detailed below. Fields marked with an asterisk (*) are required.

- *Accounts*: click Edit list to add partners that will receive emails from this account
- *Server type*: select the type of messages that will be sent from this address:
  - *Default*: all kinds of the e-mails
  - *Billing*: invoices, balance and credit alarms
  - *Rates*: rates updates
  - *Technical*: technical alerts (generated at *Administration\Service notifications*)
  - *Reports*: reports generated by the *Report builder*
  - *Client portal*: messages related to the Partner portal and Wholesale portal
- *Server IP*, *Port*: mail server parameters
- *EHLO cmd*: EHLO value (see SMTP standard description rfc 5321*)*
- *Use starttls*: check the flag to enable encryption
- *Username, Password, Sender address, From name*: specify the mail account details
- *Contact company*

Click Submit to save the changes. The entry will appear in the *Outgoing email accounts* table. To check if the account configurations are correct, click Test mail server at the bottom of the page. The System will try to connect to the mail server. The result will appear in a dialog box.

4.4 Service notifications

The *Administration\Service notifications* page serves to generate and schedule emails to partners about maintenance operations. The emails are sent to the addresses specified in *Carriers\Agreements* (the *Default technical emails* parameter).
The page has two panels. The left panel is a table of scheduled notifications; the right panel contains the *Add* and *Edit* menus.

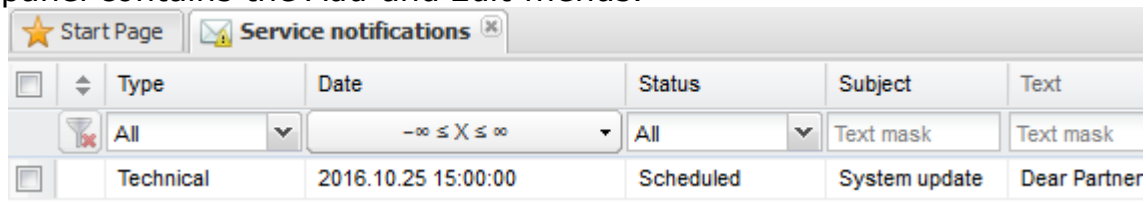


Fig. 13 Service notifications table

The *Add* menu is illustrated below.

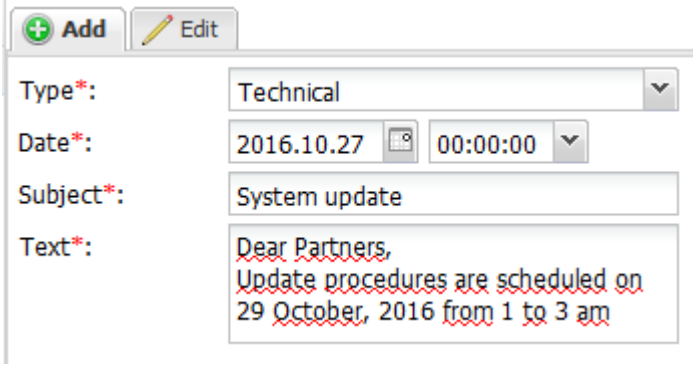


Fig. 14 Add menu

The *Add* menu contains the following parameters:

- *Type*: type of communication
- *Date*: the date and time of the email dispatch to partners
- *Subject*, *Text*: the subject and text of the message

4.5 System Jobs

The *Administration\Jobs* page contains general information about standard processes running in the database. The page is intended for the Alaris support team.

4.6 System Settings

The *System Settings* menu allows administration of all the main System parameters. Most of them can only be configured by the Alaris support team and must not be edited by the user to prevent the System breakdown. The sections below describe the parameters that can be configured by the System owner.

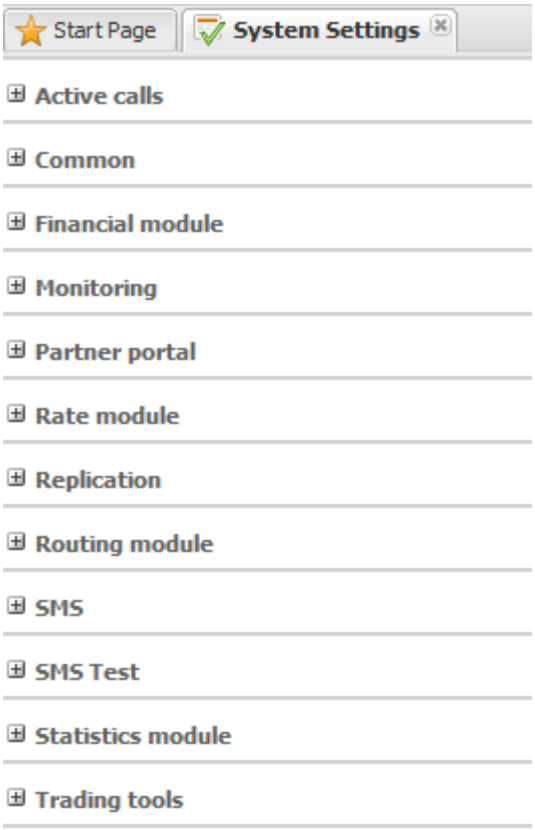


Fig. 15 System settings

4.6.1 Common

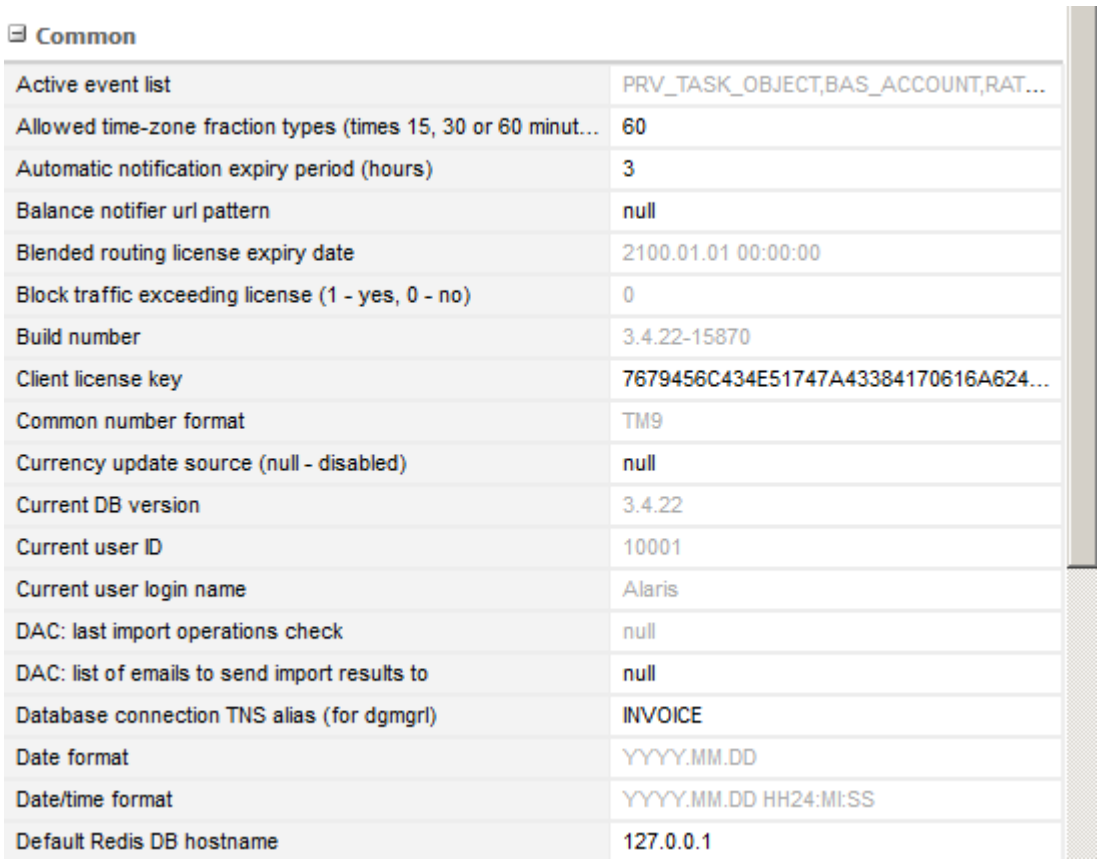


Fig. 16 Common settings

- *Allowed time-zone fraction types (times 15, 30 or 60 minutes)*: used in cases when partners have time zones with irregular time offsets. For example, to include the Iran timezone (UTC + 3.5) set this parameter to 30, so that the statistics and invoicing are calculated correctly. NOTE: The parameter only impacts statistics used for invoice generation and the invoice timezone)
- *Enable overall email delivery in the System (1 - enable, 0 - disable)*: defines whether the System will send emails (such as invoices, notifications, alarms etc.)
- *First day of the week (0 - Sunday, 1 - Monday)*: defines the day on which the week starts (in calendars)
- *Font applied to excel files (0 - internal default, 1 - default file formatting)*: defines what font to use in MS Excel files generated by the System. Select 0 to use the default System font or 1 to use the font of the MS Excel document (the System takes the font of the top first cell of the document)
- *Log store period, days*: the period to store the change logs of Database objects (Carriers, Products and routing rules). NOTE: The logs contain details of every change in System tables as well as the author of the changes. This allows investigating any incident (System breakdown, errors, malicious attacks etc.). However, logs take disk space and impact the DB size. Therefore, prior to modifying this parameter consult the Alaris support team
- *Password expiry reminder (days)*: defines the time to warn a user to change password before expiration
- *Password valid period (days)*: defines the period after which the password expires
- *Rate change log, days*: the period to store the rate change logs in the System
- *Support email*: email address of the Alaris support team that System notification and alarms are sent to
- *Temporary password logins allowed*: the number of allowed login attempts with a temporary password. NOTE: A temporary password is assigned to the user if the regular password was not changed in due time and expired. The user can log in the System with the temporary password and change it to a regular one. If the user fails to create a new regular password and uses up the number of logins specified in this parameter, the access to the System is blocked. The password can be changed at *Start\User settings*
- *Temporary password valid period (days)*: defines the period of the temporary password expiration
- *Zip report file when emailed (1 - zip, 0 - don't zip)*: defines whether the report files attached to the e-mails sent by the System must be archived

4.6.2 Financial module

Financial module

Balance alarm threshold #1, USD	100
Balance alarm threshold #2, USD	50
Balance alarm threshold #3, USD	20
Balance alarm threshold #4, USD	0
Balance alarm threshold #5, USD	null
Credit alarm default email (null - do not use it)	not@alarislabs.com
Credit alarm threshold #1, %	70
Credit alarm threshold #2, %	80
Credit alarm threshold #3, %	90
Credit alarm threshold #4, %	100
Credit alarm threshold #5, %	null
Credit status reset threshold, %	5

Fig. 17 Financial module

- *Balance alarm threshold*: defines the minimal amount of the partner account balance (in the System currency) to trigger an alarm (five thresholds are available)
- *Credit alarm default email (null - do not use it)*: the System owner's email address that receives balance alerts for all accounts that have the *Send balance alerts* flag checked
- *Credit alarm threshold, %*: defines the minimal amount of the credit provided to a partner (configured in the *In credit* field on the Carriers*Agreements*) to trigger an alarm (five thresholds are available)
- *Credit status reset threshold, %*: defines the minimal amount of balance for credit alarms to be triggered again (it is done to prevent numerous alarms when the client balance is fluctuating around the limit because of bilateral traffic, increasing a bit above the disconnection point and then dropping below the limit again). Example: suppose the *Credit alarm threshold* is set to 70%, the *Credit status reset threshold* is 5%, and the credit usage fluctuates between 69 and 71%. For the alert to be sent again, the credit usage must first drop to at least 65 percent and then raise to 70 percent.
- *Credit status reset threshold, USD*: same as above, but measured in the System currency instead of percentage
- *Cross-monthly invoice splitting (1 - split, 0 - do not split)*: defines whether invoices with the billing period covering the joint between two months are to be split in two separate invoices
- *Current invoice number*: defines the index number of the next automatically generated invoice (increases automatically with every invoice generated by the System, i.e. does not count manually created documents). This parameter is used in generation of the invoice reference number. The parameter's value can be edited (e.g. to start invoice enumeration from the beginning, set the parameter to 1)

- *Default charge grouping mode*: defines how invoices are grouped if the *Autovalue* flag is checked in the *Carriers\Products Add* or *Edit menu*. Possible values include:
  - *1 - separate invoices for client and vendor side*: traffic details for all products are grouped in one invoice for each traffic direction (client or vendor)
  - *2 – separate invoices for each product*: a separate charge and a separate invoice are issued for each product
  - 3 – *separate charges within one invoice*: a single invoice contains several traffic detail files, one for each charge
- *Email address to CC invoices distribution (null - do not send CC)*: defines the additional email addresses for invoice delivery; several comma separated addresses can be specified
- *Finance first (second, third) currency*: text string that defines additional currencies in which invoices and charges can be calculated (normally they are displayed in the account currency). Examples: USD, EUR etc. The default value is *null.* NOTE: After you configure the currencies in *Finance first (second, third) currency,* perform EDR rerating (see *SMS\EDR management\EDR Rerating*) and invoice recalculation (see *Finance\Invoices\Editing invoices*) for the appropriate period, otherwise all amounts in the *Charges* table will be zero
- *Invoice auto-dispatch delay, hours (null - auto confirmation and dispatch is off)*: when the value is a positive integer, all invoices are confirmed and sent to partners automatically with the delay specified in the parameter. When the value is *null*, all created invoices have the draft status and must be confirmed and dispatched manually
- *Invoice correction type (1 - replace invoice, 2 - correct last invoice)*: defines the method of sending invoice corrections. When the value is *1*, the invoice is replaced and the partner receives a new version of the invoice; when the value is *2*, the partner receives an additional credit note or new invoice
- *Invoice delivery options (1 - attachment, 2 - link, 3 - separate emails, null - do not send)*: defines the way invoices and the traffic details summary are sent
- *Invoice details filename pattern*: defines the file name format of the file with the traffic details summary (for example, [CompanyName]_[InvoiceDate]_[Details].pdf)
- *Invoice filename pattern*: defines the format of the invoice file name (for example, [CompanyName]_[InvoiceDate].pdf)
- *Invoice generation delay, hours*: time interval to delay invoice generation after the invoicing period ends – this is done to make sure that all the late EDRs for that period successfully hit the System before the invoice is generated
- *Invoice issue date option (1 - last day of current billing period, 2 – first day of next billing period)*: defines the date of invoice issue
- *Invoice presented amount includes tax (1 - yes, 0 - no)*: defines whether the amount due according to partner estimation includes tax

- *Invoice reference number format*: defines the format of the invoice reference number. The parameter supports all alphabetical and numeric values. The following markers can also be used here:
  - [XXXXX] (the number of X's can vary) – placeholder for the value from the *Current invoice number* parameter. The number of X's stands for the amount of digits to display. For example, if the *Current invoice number* is set to 123 and the *Invoice reference number format* parameter is set to [XXXXX] (5 X's) - the reference number of the next generated invoice will be '00123'
  - [CAR_ID] – ID of the partner Carrier record
  - [AGR_CODE] – code of the partner's Agreement (taken from the mandatory field *Agreement code* of the *Carriers\Agreements*)
  - [YYYYMMDD] or [YYMMDD] – the invoice generation date (can be found in the *Created* column of the *Invoices* page)
- *Min absolute mismatch to invoke a dispute*: the minimal absolute difference between the System owner's and partner's invoice amounts to start a dispute (*Presented amount* and *Due amount*)
- *Min percent mismatch to invoke a dispute*: same as above, but checking the relative difference (in per cent). Both of these parameters should be surpassed simultaneously to trigger the invoice status change to *Disputed*
- *Notification period of deferred payments coming due, days*: the number of days for notifying a partner about the expiry of a draft payment (see *Payments table* for more detail on draft payments). The email addresses are set in *Carriers\Agreements* (*Default invoice emails* field)
- *Payment registration alert:* sending notification on received payment to the partner
- *Scoring (Credibility), Scoring (Payment stability), Scoring (Subjective estimation), Scoring (Traffic volume stability)*: defines the weight of partner's estimation index – a bigger value in the field means more weight of this parameter among others
- *Send balance alerts for accounts with non zero credit limit (0 - no, 1 - yes)*: defines whether balance alerts must be sent to accounts having a credit limit (the limit amount is set in *Carriers\Accounts*)
- *Send credit alarm to account manager (0 - no, 1 - yes)*: defines whether credit/balance alarms are to be sent to the client account manager on the System owner's side (to the address indicated in the *Email* field in the account manager's user record in the *Carriers\Users*)
- *Send credit alarm to customer (0 - no, 1 - yes)*: defines whether credit/balance alarms are to be sent to the partners (to the addresses indicated in the *Account alert emails* fields in the partners' *Agreements* in the *Carriers\Agreements*
- *Send notifications of deferred payments coming due to client (1 – yes, 0 - no)*: defines whether to notify partners about the expiry of draft payments (see *Payments table* for more detail on draft payments). The email addresses are set in *Carriers\Agreements* (*Default invoice emails* field)

- *Suggest making document mapping by default (1 – yes, 0 - no)*: when the parameter is set to *1*, the *Make auto mapping* flag in the *Edit invoice* form is checked by default
- *Unconditional invoice dispute threshold*: the minimal absolute difference between the System owner's and partner's invoice amounts to start a dispute, regardless of the parameter *Min absolute mismatch to invoke a dispute*
- *Zip traffic details when sent to e-mail (0 - no, 1 - yes)*: defines whether the traffic details files attached to the e-mails sent by the System are to be archived

4.6.3 Partner portal

Partner portal

Allow new user registration (1 - yes, 0 - no)	1
Allow portal users edit POI (1 - yes, 0 - no)	1
Authorize.net API Login ID	null
Authorize.net Salt	null
Authorize.net Transaction Key	null
Available currencies (null - All)	null
Available product IDs (null - All)	null
Customer portal URL	https://192.168.18.218/portal
Customer portal URL (retail)	http://sms34.alarislabs.ru
Default SMS channel NPI	null
Default SMS channel TON	null
Default SMS channel address range	null
Default SMS channel port	null
Default SMS channel system type	null
Default account manager user ID	null

Fig. 18 Partner portal settings

- *Allow new user registration (1 - yes, 0 - no)*: defines whether Partner portal users can create their accounts themselves or new user registration is only performed by the System Owner
- *Allow portal users to edit POI (1 - yes, 0 - no)*: defines whether Partner portal users can create and edit their POIs
- *Authorize.net API Login ID*: authorization parameter for accounts belonging to the Authorize.net payment service
- *Authorize.net Salt*: authorization parameter for accounts belonging to the Authorize.net payment service
- *Authorize.net Transaction Key*: authorization parameter for accounts belonging to the Authorize.net payment service
- *Available currencies (null – All)*: comma-separated list of currency codes defined in the System, which will be available in the Partner portal for new partner account creation
- *Available product IDs (null – All)*: comma-separated list of client products belonging to the System owner that will be available as parent products in the Partner portal for new partner product creation

- *Customer portal URL*: web address of the Partner portal
- *Customer portal URL (retail)*: URL of the retail portal (for SMS campaigns)
- *Default SMS channel NPI, Default SMS channel TON, Default SMS channel address range, Default SMS channel port, Default SMS channel system type*: parameters for SMS channel creation using the Partner portal. Values entered in these fields will be default settings for the newly created channels
- *Default account manager user ID*: ID of the user belonging to the System owner that will be appointed as the account manager for all new self-subscribed clients at the customer portal
- *Infrastructure POI IPs (comma separated)*: IP addresses of the System owner's internal network
- *Mandatory users (comma separated)*: required user roles that must be configured at the Partner portal
- *Max client products per carrier (null - unlimited)*: maximum allowed number of products configured in the Partner portal
- *Maximum number of simultaneous connections to database*: defines how many simultaneous requests can be sent to the database from the web interface of the Partner portal
- *PAYPAL Business*: authorization parameter for the accounts belonging to the PAYPAL payment service (e-mail address)
- *PAYPAL payment confirmation URL*: URL used for confirmation of Paypal payments
- *Poi IP mask to hide in Portal (null - show all)*: subnet of IP addresses that should not be displayed at the Partner portal
- *Portal access mode (1 - read/write, 2 - read only)*: defines access rights to the Partner portal
- *Send portal notifications to (null – don't send)*: email address to send email notifications when a new user or partner POI is created, or a payment is made through the Partner portal
- *Show fully paid invoices (0* – no; 1 – yes): defines whether the invoices settled by a partner should be displayed in the Partner portal. Unsettled invoices are always displayed
- *Spare database connection waiting timeout*: defines the keep alive time for the requests from the Partner portal GUI to the database if the *Maximum number of simultaneous connections to database* is exceeded

4.6.4 SMS

SMS

Active EDR day count	62
Analytics calculation process count	0
Analytics first currency	USD
Analytics second currency	null
Analytics third currency	null
Apply postponed DLRs in, days	null
Archive EDR day count	365
Auto threshold calculation (0 - no, 1 - yes)	1
Automatic EDR archiving limit	30000000
Blocked networks markers	No,False,Blocked,0
Calculate analytics total depending on VPD	0
Day cube partition count	62
Default vendor GUID (if not supplied in csv files)	null
Defragment SMS rates	1
Delivery timestamp delta (sec)	15
Delivery waiting period, sec	172800

Fig. 19 SMS

- *Active EDR day count*: period during which EDRs can be accessed for various operations (such as rerating, invoice generation etc.) After this EDRs are moved to an archive
- *Analytics first (second, third) currency*: currencies used in *SMS\Analytics* (can be different from the System currency)
- *Apply postponed DLRs in, days*: delay period for applying DLRs generated before the date specified in the parameter *Postpone applying DLRs for SMS received before*
- *Archive EDR day count*: EDR storage period in an archive. After this EDRs are deleted
- *Auto threshold calculation (0 - no, 1 - yes)*: when the value is 1, the cube update thresholds are calculated automatically
- *Automatic EDR archiving limit*: the number or EDRs archived within a single session
- *Blocked networks markers*: a list of keywords (comma-separated) used as markers of blocked networks in import of rate sheet files. If the rate sheet file has the *Network status* column and one of the keywords is found in the file for any rate, the *Rate note* field for this rate will have the *Blocked* value.
- *Day cube partition count*: number of daily cubes stored in the System; in other words, a period of time (in days) during which the System retains aggregated statistics arranged by daily cubes
- *Delivery waiting period, sec*: the period during which DLRs are expected; after that, the DLR will not be recognized
- *EMA frame*: number of data counts with the same weight within EMA (exponential moving average)

- *EMA stats delay, min*: the statistics calculation delay in minutes. NOTE: In terms of routing statistics, the EMA tool serves to secure prevalence of recent EDRs over earlier ones; the System's routing module receives all SMS statistical data from the database, where EMA is calculated retrospectively with the specified delay, i.e. data on messages arriving within or after this delay period is not taken into account since it can seriously damage the overall analytical picture, for example, because of the absence of delivery reports that are most likely to arrive shortly afterwards
- *EMA stats last date*: date and time of the latest update of statistics
- *EMA valid period, days*: stats validity period in days for stats validity for items used in the routing rules (for example, client MCC MNC code). If on expiration of the specified period no traffic is processed for the item, the routing module will assume statistics for this item as null; if even one SMS arrives within this period the stats will be considered valid
- *HLR dip enabled*: when the value is *1*, the *Dip HLR* checkbox is selected by default in the *Add menu* of the *Carriers\Products* page for SMS products
- *Hour cube partition count*: number of hourly cubes stored in the System; in other words, a period of time (in hours) during which the System retains aggregated statistics arranged by hourly cubes
- *List of MCCs with 3-digit MNCs*: list of MCCs for countries that always use 3-digit MNCs. The list is used to generate the MCCMC5 column during rate export. MCCs that are not in the list are translated into 5-digit codes if the MNC starts with 0.
- *List of SMS products which margin is set to 0 in analytics*: SMS products that must be excluded from margin analysis (their margin is displayed as 0 in *SMS\Analytics*). This parameter is used when the rates must be ignored in analytics – for example, when the System owner uses internal equipment for processing SMS messages, which makes rates and margin data irrelevant
- *Minute cube partition count*: number of minute cubes stored in the System; in other words, a period of time (in minutes) during which the System retains aggregated statistics arranged by minute cubes
- *Month cube partition count*: number of monthly cubes stored in the System; in other words, a period of time (in months) during which the System retains aggregated statistics arranged by monthly cubes
- *Multi-threaded analytics (0 - no, 1 - yes)*: enables multi-threaded analytics (MA). NOTE: It is reasonable to use this mode only on high performance Systems with monthly traffic of at least 5 mln SMS
- *Non-match DLR storage period, min*: storage period of DLRs with no matching *EDR submit_sm* packets
- *Postpone applying DLRs for SMS received before*: postpone applying DLRs for messages received before the specified date. The parameter serves to prevent backdate update of statistics during invoice generation. The postponed DLRs will be applied after the delay configured in the parameter *Apply postponed DLRs in, days*
- *Rate activation time adjustment, minutes*: round-off value (in minutes) for applying new rates. For example, if the parameter is set to 60 (minutes),

and the rate activation time in the rate sheet file is 1 January at 01:20, the rate will be applied on 1 January at 2:00. However, if the rate activation time is 1:00 sharp (or any other round hour), the rate will be active at 1:00 (and not 2:00), even if the round-off value is 60.

- *Rate rounding precision (displaying)*: number of decimal places for displayed rates
- *Rate rounding precision (storing)*: number of decimal places for rates stored in the System
- *Recalculate current day stats at, hours (0-23, 1-fold)*: forced recalculation of day statistics at the specified hour (valid values are integers from 0 to 23)
- *Recalculate current hour stats at, mins (0-50, 10-fold)*: forced recalculation of hour statistics at the specified minute of the hour (valid values are 0, 10, 20, 30, 40 or 50)
- *Routes to send*: maximum number of routes that the System can provide for terminating an SMS
- *Stats calculation delay, minutes (day/hour/min/month)*: the delays configured for each time increment (minute, hour, day, week, and month) to allow statistics calculation even if the thresholds configured in *Stats calculation threshold (SMS/Hour, SA)* and *Stats calculation threshold (EDR/day, EDR/hour, EDR/min, EDR/month, EDR/week, MA)* have not been reached. For example, the value *45* in the parameter *Stats calculation delay, minutes (day)* means that the statistics for a daily cube will be calculated on 00:45 on the following day in case amount of new records does not exceed the threshold defined in *Stats calculation threshold (EDR/day)*
- *Stats calculation threshold (SMS/Hour, SA)*: number of SMS attempts necessary to launch next cube recalculation (in single-threaded analytics); the initial value is set for hourly cubes, but can be calculated for minute, weekly, daily, or monthly cubes by respective multiplication, i.e. with 100 SMS/hour value, daily cube recalculation will take place at 2400 SMSs level etc.
- *Stats calculation threshold (EDR/day, EDR/hour, EDR/min, EDR/month, EDR/week, MA)*: number of EDRs per day/hour/minute/month necessary to launch next cube recalculation (in multi-threaded analytics). See *Reports\Analytical cube status (Administration)* for more detail on single- and multi-threaded analytics
- *Switch URL template for SMS test send*: URL of the switch used for test SMS generation; test messages may be generated directly from the switch or from the billing interface by creating a channel, linking it to POI and a certain product, and may be terminated if the System manages to find possible termination. The parameter is set by Alaris engineers and must not be changed by a user
- *Traffic details days count*: number of days in financial cubes; indicates a period by the end of which the System will start to form a financial cube

- *Update rate notes for existing rates (0 - no, 1 - yes)*: defines whether the imported rates must be updated if the rate record has the same price but a new rate note
- *Week cube partition count*: number of weekly cubes stored in the System; in other words a period (in weeks) during which the System retains aggregated statistics arranged by weekly cubes.

4.7 Template manager

The *Administration\Template manager* page allows creating templates for various document types generated by the System – invoices, rate export files, invoice letters etc.

The page is divided in two panels. The left panel is a table of templates. The table contains the following information:

Template	Contract comp...	Account	Product type	Last updated	
Balance alert letter (html)	All	Default	-	2015.06.15 16:22:37	
Credit alert letter (html)	All	Default	-	2015.06.15 16:22:37	
Credit note (xls, pdf)	All	Default	-	2013.06.21 12:21:49	
Credit note letter (html)	All	Default	-	2013.06.21 12:22:07	
Invoice (xls, pdf)	All	Default	-	2013.06.21 12:22:18	
Invoice details (xls, pdf)	All	Default	All	2015.06.15 16:22:36	
Invoice details (xls, pdf)	All	Default	International	2016.07.08 15:06:17	
Invoice details (xls, pdf)	All	Default	US domestic	2016.07.08 15:06:17	
Invoice details (xls, pdf)	All	Default	SMS	2016.07.08 15:06:17	
Invoice letter (html)	All	Default	-	2013.06.21 12:22:40	

Fig. 20 Template manager

- *Template*: description of the template and link for downloading the document in XLS, PDF or HTML format
- *Contract company*: the legal entity of the System owner on behalf of which it works with a partner
- *Account*: carrier account(s) the selected template is used for (if *Default* – the template is used for all carriers except for those who have separate templates; *Default* templates cannot be deleted)
- *Last updated*: the date of the template latest update
- Button in the rightmost column activates the *Change template* menu on the right.

The *Change template* menu allows configuration of the following parameters:

- *Template type*: type of the template (select from the drop-down list)
- *Contract company*
- *Account filter*: carrier account the template is used for (it is possible to select multiple accounts by moving the required accounts from the *Other items* list to the *Selected items* list. The *Account filter* shows only accounts belonging to the carrier selected from the drop-down list)
- *Product type*: select *SMS*
- *Template file*: select a file to upload

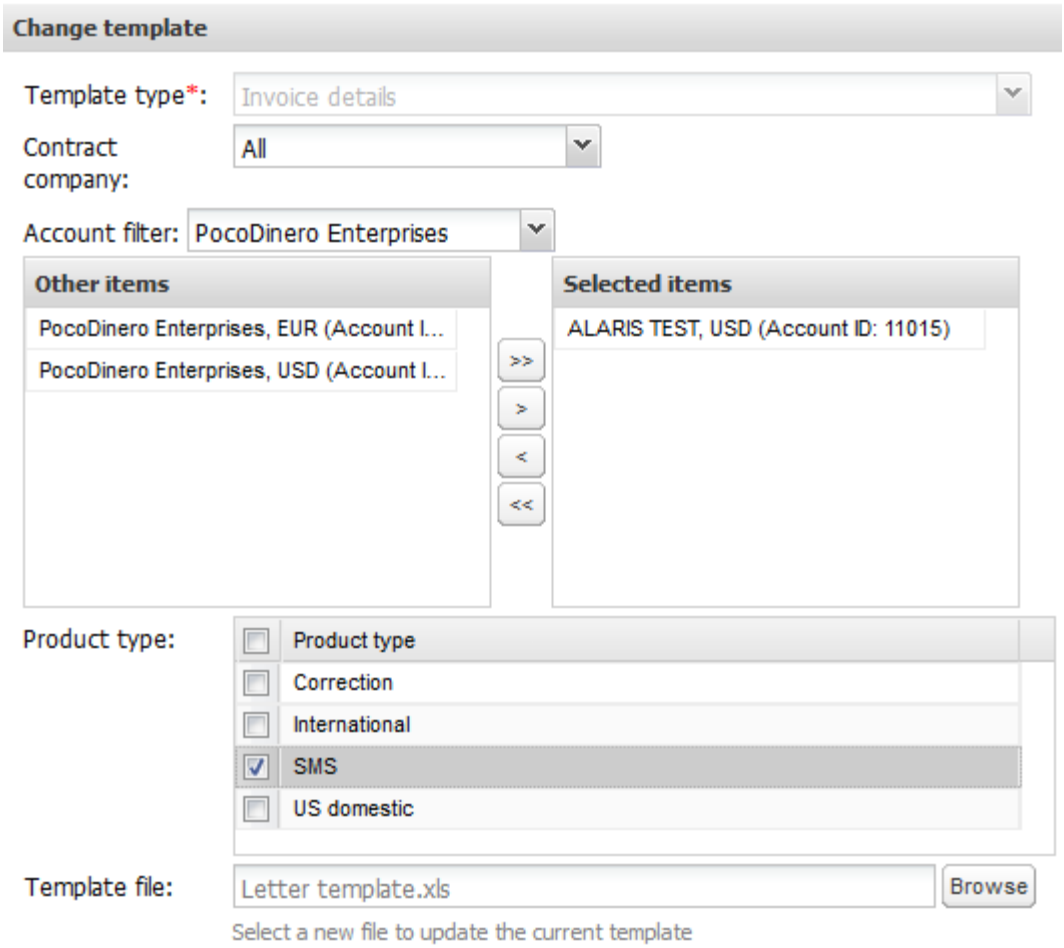


Fig. 21 Change template

When through with defining the parameters, click Save to confirm or Cancel to discard the settings.

To add a new template to the System click Add template and open the *Add new template* menu. The configurable parameters are the same as in the *Change template* menu.

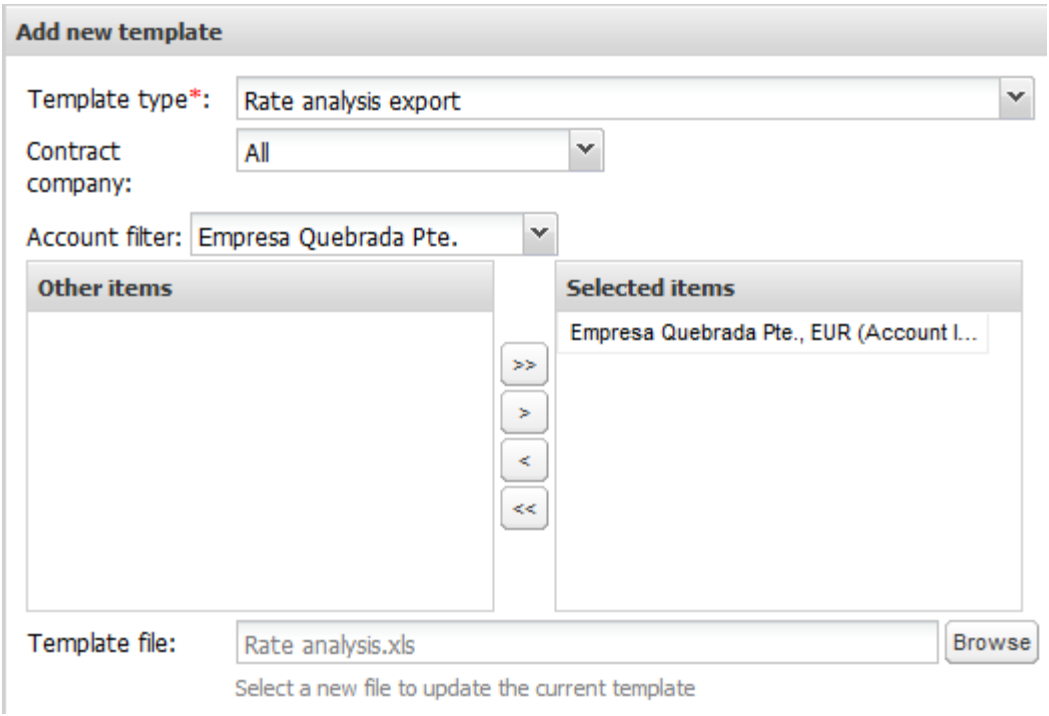


Fig. 22 Add template menu

Below is a list of available markers for the templates:

4.7.1 Markers

Markers are alphanumeric strings in square brackets that are used in document templates as placeholders of information. Below is a list of markers supported by the System.

General parameters

[InvoiceId] – invoice identifier
[InvoicePeriod] – invoice period
[InvoicePeriodLong] – invoice period with time indication
[InvoiceSysPeriod] - – invoice period in the System owner's time zone
[CompanyId] – partner carrier's identifier
[CompanyName] - partner company name
[CompanyRegisteredName] – name of the partner's company as specified in the parameter *Company registered name* in *Carriers\Agreements*
[CompanyAddress] – partner's address
[CompanyVAT] – partner's personal tax reference number
[CurrencyCode] – currency
[InvoiceDate] – invoice issue date
[InvoiceRefNumber] – invoice reference number
[InvoiceDueDate] - invoice due date
[InvoiceTimezone] – name of the time zone according to which the invoice is generated
[FileName] – PDF file name
[DetailsFileName] – name of the PDF file with traffic details
[AgrCode] – agreement code

Invoice totals

[EstimatedAmountNum] – invoice total including taxes, without currency indication

[EstimatedAmount] – invoice total including taxes, with currency indication

[EstimatedAmountWithoutTaxNum] – invoice amount excluding tax, without currency indication

[EstimatedAmountWithoutTax] – invoice amount excluding tax with currency indication

[TaxAmountNum] – tax amount without currency indication

[TaxAmount] - tax amount with currency indication

[TaxRate] – tax rate with the percent symbol (for example, 21%)

[PreviousBalanceNum] – partner's account balance at the end of the invoice period, without currency indication;

[PreviousBalance] partner's account balance at the end of the invoice period, without currency indication

[TotalAmountNum] - total payable including balance (difference between PreviousBalance and EstimatedAmount, without currency indication)

[TotalAmount] - total payable including balance (difference between PreviousBalance and EstimatedAmount, with currency indication)

[PrepaymentAmountNum] – prepaying total (least ([EstimatedAmount], greatest ([PreviousBalanceNum], 0)), without currency indication

[PrepaymentAmount] – [PrepaymentAmountNum] with currency indication

[AmountInWord] – invoice amount written in words

[EstAmountInWord] - EstimatedAmount written in words

[EstimatedAmountPlusTaxNum] – invoice amount including tax (the tax is added automatically), with no currency indication

[EstimatedAmountPlusTax] - invoice amount including tax (the tax is added automatically), with currency indication

Invoice totals in multiple currencies

[<Currency code>InInvoiceCurrency] – value of one unit of <Currency code> in the invoice currency. Currencies from the *Currency exchange rates* reference book are used instead of <Currency code> (for example, for a USD invoice, [EURInInvoiceCurrency] is approximately 1.2)

[InvoiceCurrencyIn<Currency code>] - value of one unit of the invoice currency in <Currency code>. A currency from the *Currency exchange rates* reference book can be inserted into <Currency code>] (for example, for a USD invoice, [InvoiceCurrencyInEUR] is approximately 0.8)

[EstimatedAmountIn<Currency code>] – invoice amount in the currency <Currency code>

[EstimatedAmountWithoutTaxIn<Currency code>] - invoice total without taxes in the currency <Currency code>

[TaxAmountIn<Currency code>] – amount of tax in the currency <Currency code>

Details of invoice charges

[ChargeDetColumn1] – MCC
[ChargeDetColumn2] - MNC
[ChargeDetAmount] – amount
[ChargeDetEvent] – number of SMS
[ChargeDetVolume] – volume
[ChargeDetRate] – rate

Parameters edited by urlencode function

[CompanyNameUE] – company name encoded for use in URL
[CurrencyCodeUE] – currency code (e.g. USD, EUR, etc.) encoded for use in URL
[InvoiceDateUE] – invoice issue date encoded for use in URL
[InvoiceRefNumberUE] – invoice reference number encoded for use in URL

NOTE: Urlencode function transforms invoice parameters, replacing the corresponding markers listed in this section into a special format to be used within a URL-link.

Markers for letter subject and body only

[DocumentLink] – download link to the invoice cover letter
[DetailsLink] – download link to the traffic summary details document

Markers for attachments only

[ChargeDescription] - charge description
[ChargeAmount] – charge total
[ChargeCurrencyCode] – charge currency
[ChargeVolume] – charge volume

Markers for amounts in multiple currencies

[CurrencyCode1] – name of the currency set by the Finance first currency parameter (*Administration\System settings\Financial module*)
[CurrencyCode2] – name of the currency set by the Finance second currency parameter (*Administration\System settings\Financial module*)
[CurrencyCode3] - name of the currency set by the Finance third currency parameter (*Administration\System settings\Financial module*) currency

[EstimatedAmountNumX], where X = 1,2,3 – invoice amount including tax, with currency indication for [CurrencyCodeX]
[EstimatedAmountX], where X = 1,2,3 - invoice amount including tax with currency indication for [CurrencyCodeX]

[EstimatedAmountWithoutTaxNumX], where X = 1,2,3 – invoice amount excluding tax, without currency indication for [CurrencyCodeX]
[EstimatedAmountWithoutTaxX], where X = 1,2,3 – invoice amount excluding tax with currency indication for [CurrencyCodeX]

[EstimatedAmountPlusTaxNumX], where X = 1,2,3 – invoice amount including tax (the tax is added automatically) without currency indication for [CurrencyCodeX]
[EstimatedAmountPlusTaxX], where X = 1,2,3 – invoice amount including tax (the tax is added automatically) with currency indication for [CurrencyCodeX]
[TaxAmountNumX], where X = 1,2,3 – tax amount without currency indication for [CurrencyCodeX]
[TaxAmountX], where X = 1,2,3 - tax amount with currency indication for [CurrencyCodeX]

[ChargeAmountX], where X = 1,2,3 – charge amount with currency indication for [CurrencyCodeX]

Markers for SMS rate export (letter and rate file)
[CompanyName] – partner name
[CompanyRegisteredName] – name of the partner's company as specified in the parameter *Company registered name* in *Carriers\Agreements*
[CompanyAddress] – partner address
[ProductName] – product name
[OwnerName] – System owner's company name as set in the parameter *Contract company name* in *Carriers*
[IssueDate] – date of the rate file creation
[TimeZone] – System owner's time zone

Markers for email notifications on System owner account activation, registration and password reset
[SystemOwnerName] – name of the System owner
[Link] – activation link

Markers for password reset notifications generated by the System owner (for users created in the *Carriers\Users* page)
[SystemOwnerName] - name of the System owner
[UserFirstLastName] – user's first and last names
[UserLoginName] – user's login
[UserNewPassword] – new password
[PasswordExpireDate] – password expiry date
[Link] – System access link

Markers for password expiry notifications
[SystemOwnerName] - name of the System owner
[ExpireDate] - password expiry date
[UserFirstLastName] – user's first and last names
[Link] – System access link

Markers for the invoice reference number
[CAR_ID] – carrier identifier
[AGR_CODE] – agreement code

[YYYYMMDD] – invoice issue date
[YYMMDD] – invoice issue date (another format)
[X*] - invoice number (if, for example, the value is set to XXXX, then numbers are 0001, 0002, ... 9999)

4.8 Trace analyzer

The *Administration\Trace analyzer* page provides a convenient web interface for capturing network traces in the PCAP format. This comes instrumental in low-level troubleshooting of partner channels.
The System captures network traces on a non-stop basis. The *Trace analyzer* page allows filtering the required file. The user can download a PCAP file for a specific partner channel (IP address) for a predefined time period, as illustrated below.

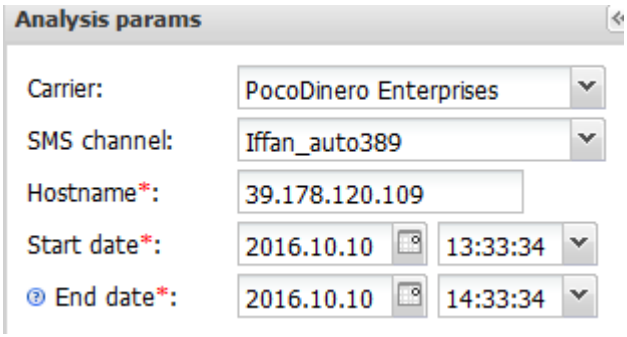


Fig. 23 Analysis parameters (filter)

To download the file, click on the link in the *Details* column of the table of tasks.

Carrier	SMS channel	Hostname	Start date	End date	Details
All	All				
Empresa Quebr...	Astro_auto116	92.15.61.106	2016.10.10 13:33:34	2016.10.10 13:48:34	
OleLukoile Oy	-	39.178.120.109	2016.10.10 13:33:34	2016.10.10 14:33:34	
PocoDinero Ente...	Iffan_auto389	39.178.120.109	2016.10.10 13:33:34	2016.10.10 14:33:34	
PocoDinero Ente...	Iffan_auto389	39.178.120.109	2016.10.10 13:33:34	2016.10.10 14:33:34	

Fig. 24 Table of tasks

NOTE: By default traces are stored in the System for three days.

5. Carriers

The *Carriers* section is one of the most essential components of the System. It allows managing information related to partners as it contains all the basic data about carriers the System owner works with.
The *Carriers* section includes the following pages: *Carriers, Users, Accounts, Agreements, Products, SMS channels, SMS POI*. The pages are interconnected and do not allow inadvertent deletion of any parent item if it has at least one child component. In case you are sure to delete a carrier or some of its parent components, use the *Delete this <item name> and all child components* button which permits deletion after confirmation.
Each page stores a full list of items indicated in the page name, so they can all be viewed in one place. This is useful when you need to find out, for example, to

which carrier belongs a particular IP address. Each page allows filtering items according to objects they belong to or by their key parameters using text masks or drop-down lists under the column headers. To clear the configured filter click the *Clear filter* button located in the left upper corner of each page.
Once you select a carrier by highlighting it in the first page, all other pages display only objects belonging to that carrier. The information on each page of the *Carriers* section can also be filtered irrespective of the carrier selected in the first page.
Each page of the *Carriers* section is divided in two panels. The left panel contains the table with the items registered in the System. The right panel contains the *Add* and *Edit* menus that allow adding new records or editing existing ones. To activate the *Edit* menu, click on the record in the table.

5.1 Carriers

The *Carriers* page contains general information about carriers. The page is divided in two sections. The left section displays a table of carrier records registered in the System.

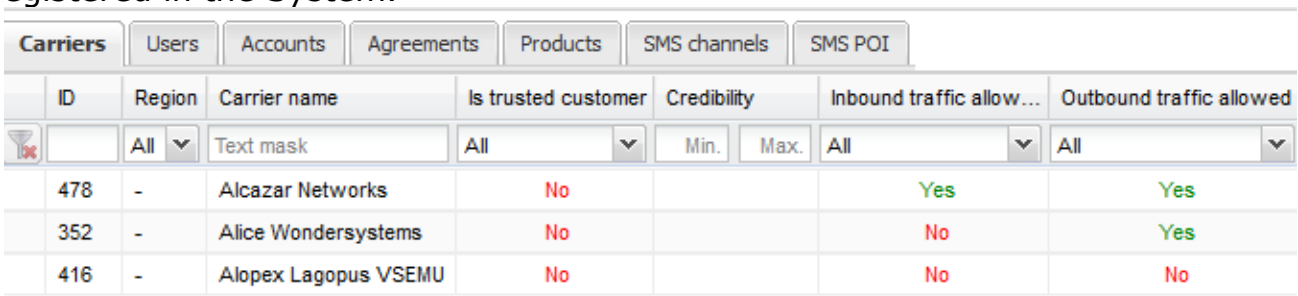


Fig. 25 Carriers

The table contains the following information:

- *ID*: internal identification number
- *Region*: region of the carrier (the regions are listed in the *Reference books\Regions section)*
- *Carrier name*: full name of the carrier's company
- *Is trusted customer*: type of the credit control approach (if the *Is trusted customer* parameter is *Yes*, the carrier will not be disconnected irrespective of the account balance). The value depends on the *In credit* parameter in the *Carriers\Agreements* page
- *Credibility*: index of the partner's due diligence, automatically calculated based on the partner's payment stability, subjective estimation, credit limit and traffic volume stability
- *Inbound/Outbound traffic allowed*

The right section contains the *Add* and *Edit* menus. To add a new carrier, enter the appropriate parameters in the *Add* menu. Fields marked with an asterisk (*) are required.

- *Carrier name*: full name of the carrier's company
- *Subjective estimation*: personal estimation of a carrier for *Credibility* calculation
- *Inbound traffic allowed / Outbound traffic allowed*
- *Address*: the carrier's postal address

- *Region*: geographical region
- *VAT identification number*: VAT ID
- *Comments*: any relevant notes
- *Contract company*: the legal entity of the System owner on behalf of which it works with the carrier. The parameter comes handy when the System owner interacts with different partners on behalf of different legal entities. NOTE: Various contract companies can have different sets of access rights, which may impact the accessibility and visibility of certain functions in the System (configured at *Reference books\Contract companies*).

NOTE: to make a carrier record operative, at least one account must be created (see *Carriers\Accounts* for more detail).

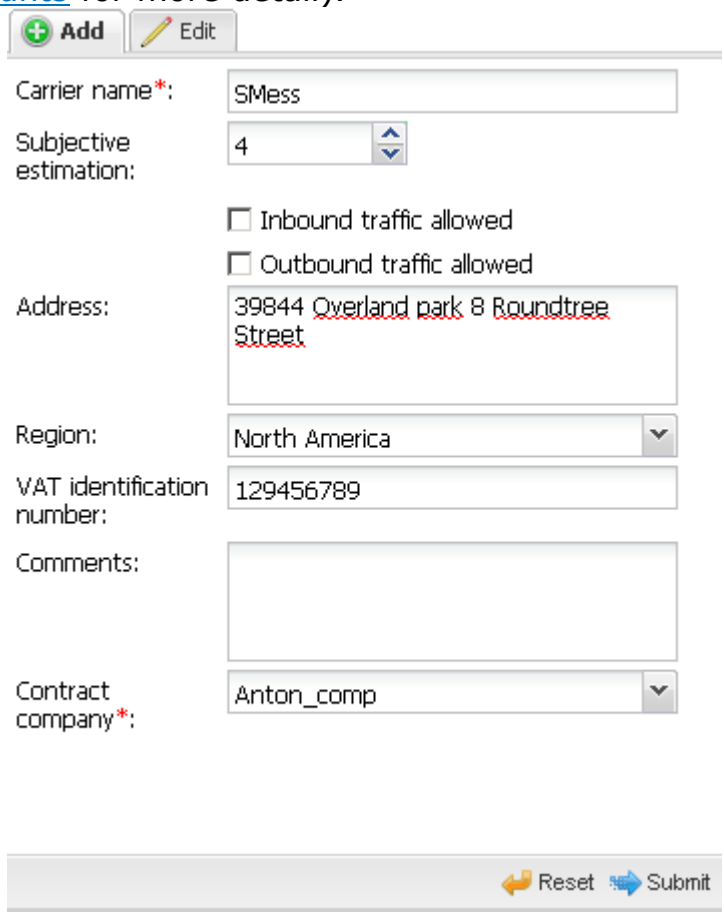


Fig. 26 Add carrier menu

When through with defining the parameters, click Submit to confirm or Reset to discard the settings. To delete a record, select it in the table and click Delete this carrier and all child components in the *Edit* panel.

5.2 Users

The *Carriers\Users* page contains information on user accounts that allow logging in to the System. The access to the main System interface is granted only to the System owner users, while other carriers' users can log in only over the *Partner portal* interface.

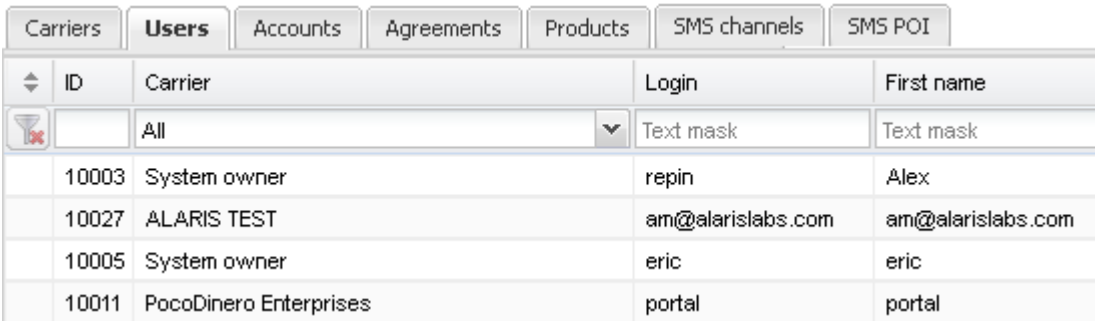


Fig. 27 Users

Use text masks or drop-down lists under the column headers to filter the records in the table.
The right-hand panel contains the *Add* and *Edit* menus.

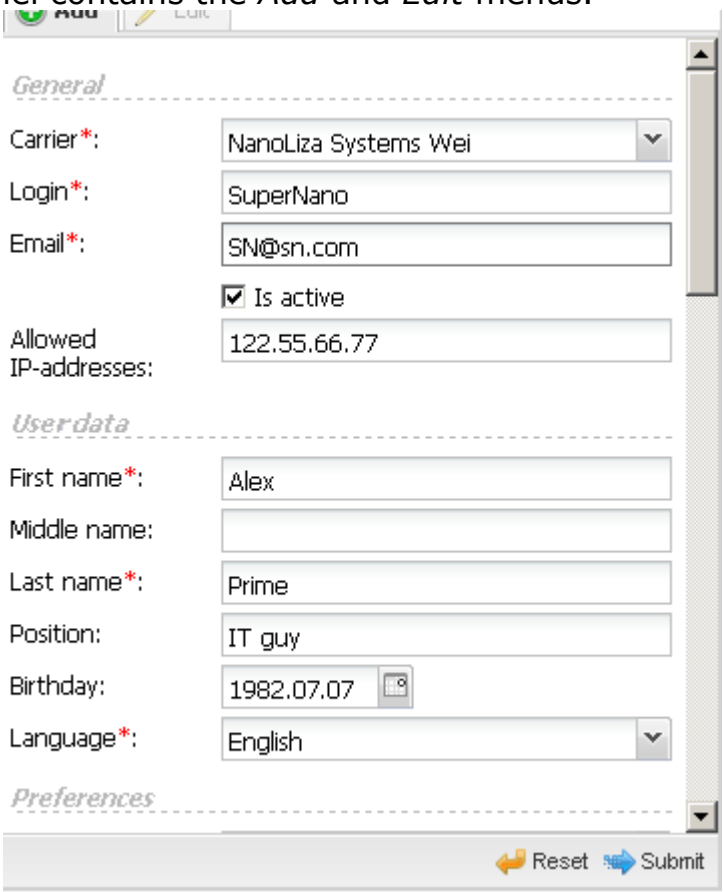


Fig. 28 Add menu, General and User data

The *Add* menu contains the following parameters:
General:

- *Carrier*: select the carrier from the drop-down list
- *Login*: the user's login
- *Email*: the user's email
- *Is active*: defines whether the user will have access to the System interface (for users belonging to the System owner) or to the *Partner portal* (for users belonging to any other carrier)
- *Allowed IP addresses*: IP addresses allowed for logging in to the System. Several comma separated IP addresses or a network mask can be entered

User Data:

- *First name*, *Middle name* and *Last name* of the user
- *Position:* the user's position in the company
- *Birthday*: the user's birth date
- *Language*: web-interface language. English is the default language

Preferences:

- *Send rate changes, Send invoices, Send alarms*: define whether the System will send this information to the user's email address defined in the *Email* field

Contacts:

- *Main contact phone number*, *Office phone*, *Mobile phone number*, *Skype*, *MSN*, *Other IMs*: the user's contact information

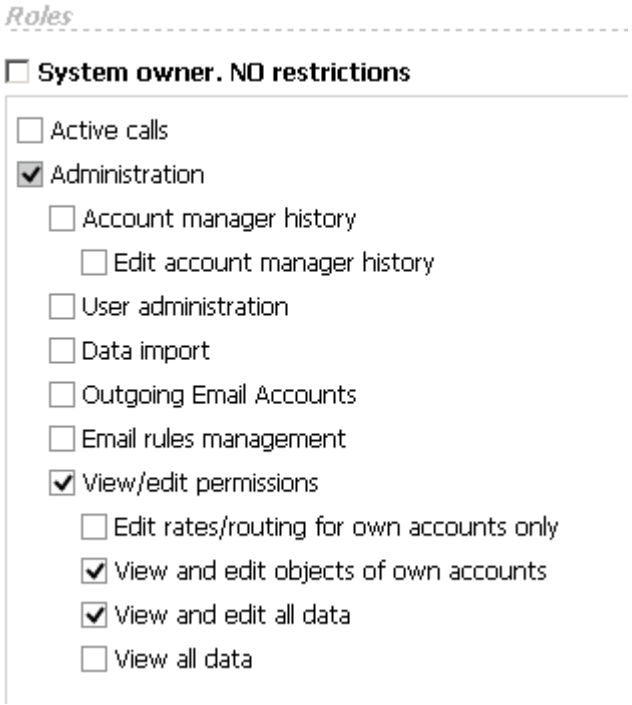


Fig. 29 Add menu, Roles

Roles: permissions to access the interface components. User roles restrict the information within the System interface from being seen or edited by specific users - so, for example, a user from the technical department cannot see any financial details. Select the flag *System owner. NO restrictions* to grant all possible permissions to the user.

The following permissions may prove handy:

- *View/edit permissions* defines what kind of information can be viewed by the user:
  - *Edit rates/routing for own accounts only*: allows the user to edit the rates and routing data referring only to the accounts managed by the user
  - *View and edit objects of own accounts*: allows the user to view and edit data pertaining only to the accounts managed by the user
  - *View and edit all data, View all data*: allows the user to view and/or edit any data in the System

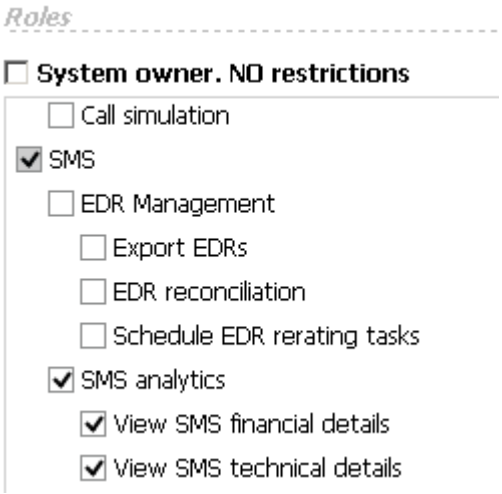


Fig. 30 Add menu, SMS analytics

- *SMS –> SMS Analytics*
  - *View SMS financial details, View SMS technical details*: allows limiting access to the technical or financial sections of the *Analytics* page.

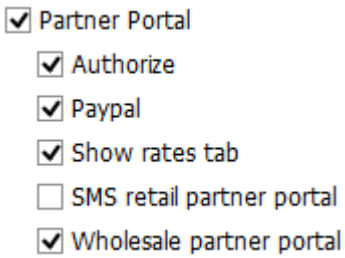


Fig. 31 Partner Portal

- *Partner portal*: defines permissions for users having access only to the *Partner portal* interface. NOTE: Users having access to the Partner portal or Wholesale partner portal must be created on behalf of a user other than the System owner.
  - *Authorize, Paypal*: allows payments via the authorize.net and Paypal accordingly. NOTE: Prior to using this function, an account must be registered at authorize.net and Paypal respectively and configured in *Administration\System settings\Partner portal*
  - *Show rates tab*: displays information about SMS rates
  - *SMS retail partner portal*: grants access to the SMS marketing portal
  - *Wholesale partner portal*: grants access to the wholesale SMS exchange portal

When through with defining the parameters, click Submit to confirm or Reset to discard the settings. Click Delete to delete the selected record.

The User password change button opens the password change menu.

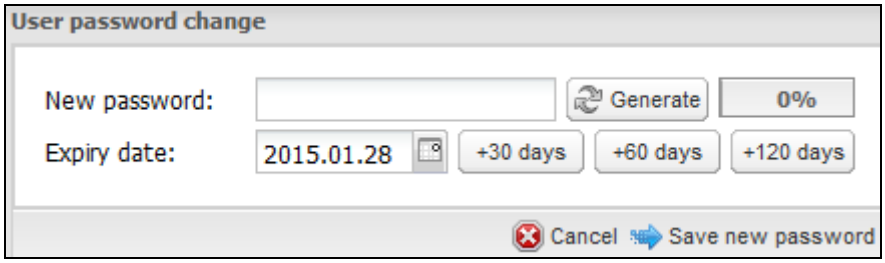


Fig. 32 User password change

Enter the new password in the appropriate field or use the Generate button to generate the password automatically. Relative security of the password in percentage points is displayed in the field to the right. Configure the password expiry date or use the <+ * *days*> buttons to prolong it. When the new password is ready, click the Save new password button.

5.3 Accounts

The *Carriers\Accounts* page contains data on financial accounts associated with the carriers.

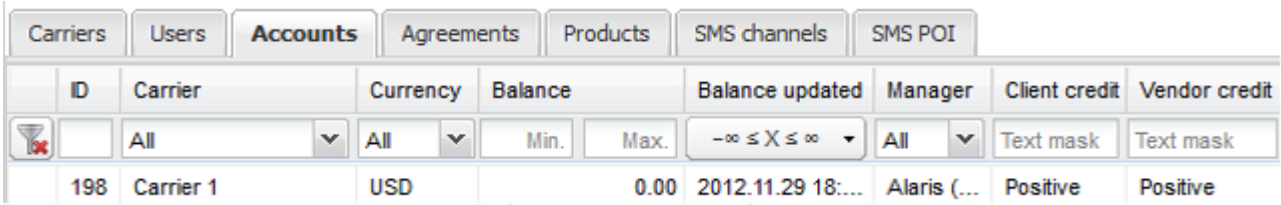


Fig. 33 Accounts

Use text masks or drop-down lists under the column headers to filter the records in the table. The table contains the following information:

- *ID*: internal identification number
- *Carrier*: select the carrier from the drop-down list
- *Currency*: currency of the account. The currencies and their exchange rates are configured in *Reference books\Currency exchange rates*. In order to integrate real-time update of exchange rates, contact the Alaris technical support team
- *Balance*: current balance of this account
- *Balance updated*: date and time of the latest balance update (is performed every minute). NOTE: As the balance is not updated in real time, the credit limit may be exceeded. However, due to frequent (every minute) update, the overlimit is normally insignificant
- *Manager*: manager responsible for this account on the side of the System owner. The manager is assigned in the *Administration\Account manager history* once the account is created
- *Client credit*: credit status on the client's side. The figure in brackets is the credit limit configured in the *Carriers\Agreements* page. The value 0 means no credit available (prepaid services); no figure in brackets means the credit is unlimited (postpaid services)
- *Vendor credit*: credit status on the vendor's side. Similarly to *Client credit*, the figure in brackets is the credit limit
- *Description*: arbitrary description of the account

The right panel contains the *Add* and *Edit* menus.

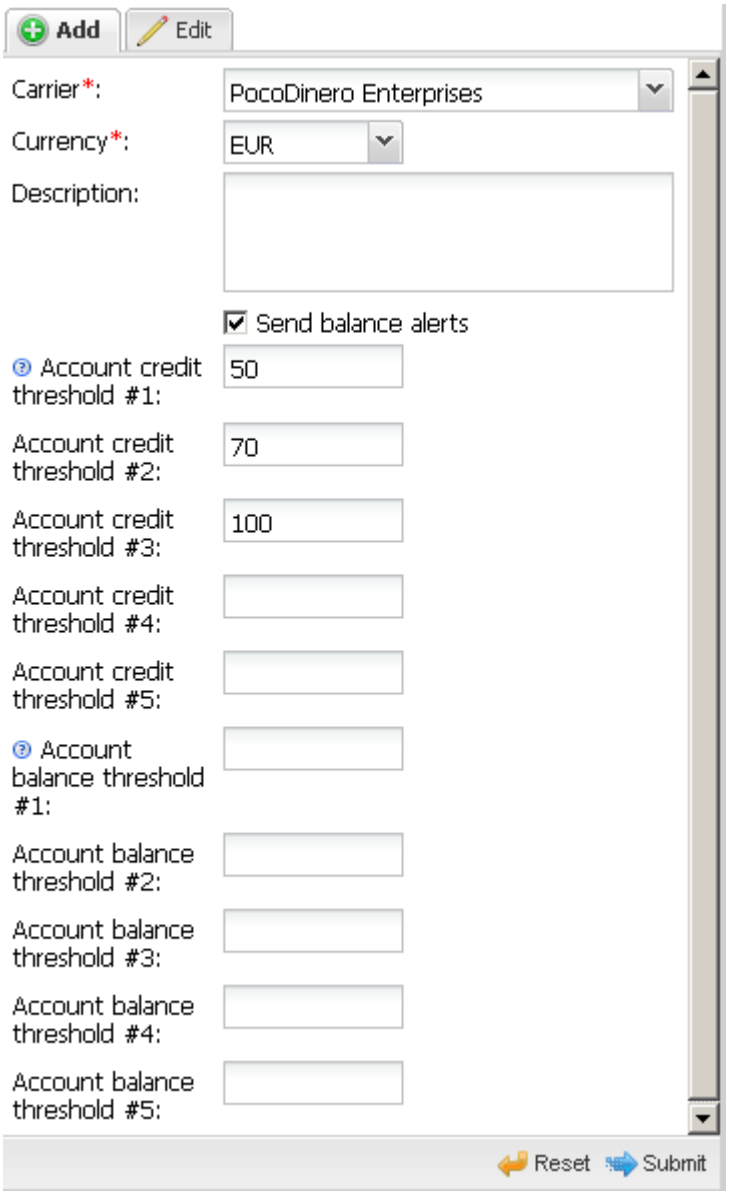


Fig. 34 Add menu

The *Add* menu contains the following parameters:

- *Carrier*
- *Currency*
- *Description*
- *Send balance alerts*: select the flag to send the client automatic notifications on reaching the balance limit (with a CC to the account manager). A copy of the notification can also be sent to the System owner's email specified in the field *Credit alarm default email* (*Administration\System settings\Financial module*). The selected *Send balance alerts* checkbox activates the fields below
- *Account credit threshold (#1-#5)*: notify the client when a certain percentage of the credit limit is reached (the credit limit must be non-zero and not void); supply the value as a percentage of the credit limit. Up to 5

notifications can be configured, for example, at 50 percent, 70 percent and 100 percent limit reached

Account balance threshold (#1-#5): notify the client when a certain account balance amount is reached (if the agreement is fully prepaid); supply the amount in respective currency. Up to 5 notifications can be configured When through with defining the parameters, click Submit to confirm or Reset to discard the settings. Click Delete this account and all child components to delete the selected record.

5.4 Agreements

The *Carriers\Agreements* page stores the most essential terms of the interconnect agreements with the carriers. Most parameters defined on this page are used by the System in its automatic operation, for example, in routing. At least one agreement must be entered in the System. Each agreement is linked to a specific account. NOTE: If both incoming and outgoing traffic directions are allowed in the agreement, some parameters will be included twice - separately for each traffic direction, those intended for client traffic starting with *In*, while those belonging to the vendor agreement section starting with *Out*.

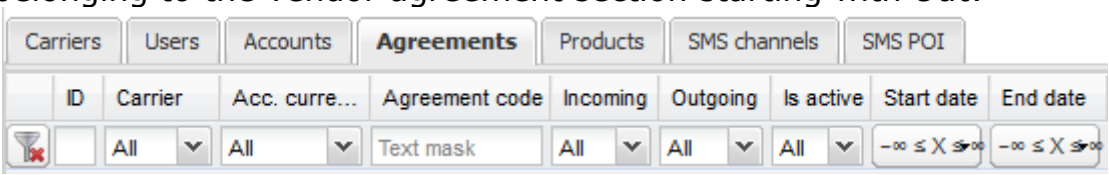


Fig. 35 Agreements

Use text masks or drop-down lists under the column headers to filter the records in the table.

The right panel contains the *Add* and *Edit* menus.

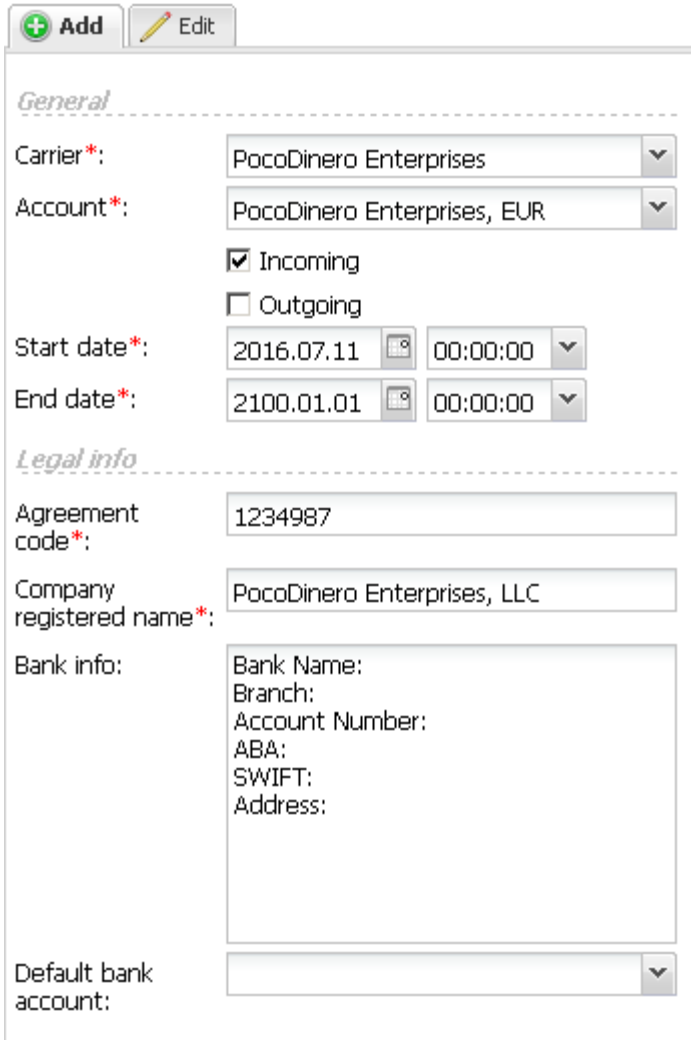


Fig. 36 Add menu, General and Legal info

The *Add* menu allows defining the following parameters (in the corresponding account currency):

General:

- *Carrier*: select a carrier from the drop-down list
- *Account*: select an account from the drop-down list
- *Incoming/Outgoing*: traffic direction (unilateral or bilateral). NOTE: only one agreement can be created for each direction. Two agreements with the same traffic direction can only be created if their validity periods do not overlap. Once the agreement is created, its original traffic direction cannot be removed; however, the other direction can be added
- *Start date*: effective date of the agreement
- *End date*: expiry date of the agreement

Legal info: company details used for reference

- *Agreement code*: arbitrary reference code of the agreement*Company registered name*: legal name of the partner carrier's company
- *Bank info*: bank details of the partner
- *Default bank account*: a default bank account of the System owner used for partner settlements (configured in *Reference books\Bank accounts*)

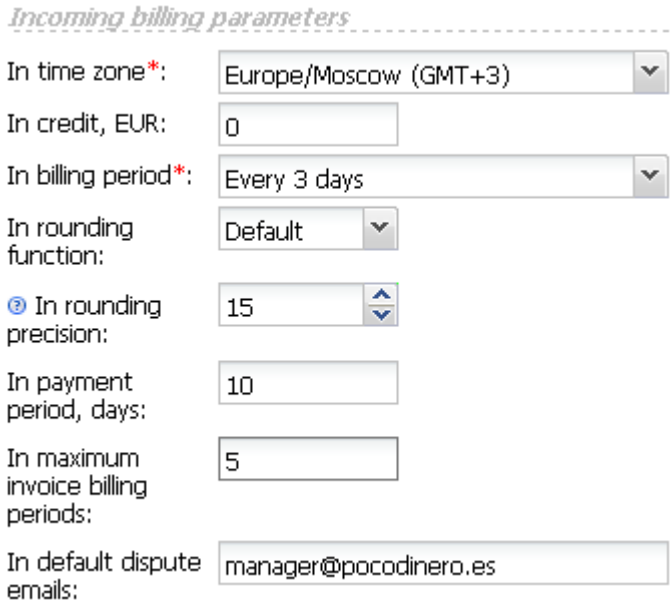


Fig. 37 Add menu, Incoming billing parameters

- *Incoming billing parameters, Outgoing billing parameters*: identical sets of parameters for client traffic (start with *In)* and vendor traffic (start with *Out*):
- *In/Out time zones*: time zones for the incoming and outgoing traffic. The *In time zone* value is used when creating an invoice for the client (invoicing is always done in the client time zone), while the *Out time zone* value is important when vendor rates are imported into the System, so that the System can adjust the effective date/time according to the difference between the System and the partner time zones. NOTE: It is good practice to use the GMT time zone for invoicing in order to eliminate possible time zone discrepancies
- *In/Out* credit: credit limits for the client and vendor sides (e.g. if the field is set to 1000, the balance of the respective account will be allowed to go down to -1000 of the account currency units before the traffic is blocked). This field value is displayed in the *Client credit* column of the *Carriers\Accounts* table. NOTE: The default value of the *In Credit parameter* is zero, which means no credit offered to the client. If the field is empty, the *Is trusted customer* parameter is automatically set as *Yes* for that client and the automated credit control for it is disabled. The default value for the *Out credit* parameter is blank, which also turns off auto-disconnection of the vendor by the System credit control
- *In/Out billing period*: period of the client/vendor invoice generation. Select a period ranging from 1 day to 4 months from the drop-down list
- *In/Out rounding precision*: relevant for voice traffic only
- *In/Out payment period, days*: number of days for issued invoices to get paid. This parameter is used for monitoring invoices which are not paid in due time. Such invoices are marked as *Overdue*
- *In/Out maximum invoice billing periods*: the number of billing periods after which the System issues an invoice irrespective of the *Minimum invoice amount* (detailed below)

- *In/Out default dispute emails*: the client IP address for sending invoice disputes. Conditions invoking a dispute are configured in *Administration\System Settings\Common*

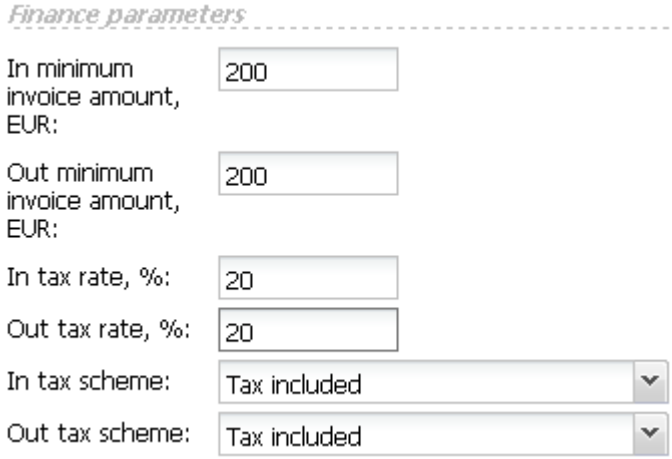


Fig. 38 Add menu, Finance parameters

Finance parameters:

- *In/Out minimum invoice amount*: threshold of the total invoice amount below which the invoices are not created. Instead, the System will add the pending amount to the next invoice of the same customer (in this case the timeframe indicated in the new invoice will include the intervals of both invoices, and the traffic details will also be combined)
- *In/Out tax rate, %*: if the invoice amount includes taxation, this parameter defines the percent of the tax
- *In/Out tax scheme*:
  - *Tax included:* if the tax is included into the rate, the invoice is calculated as derivative of (Rate)*(Volume)
  - *Add tax % to estimated amount*: if the tax is not included in the rate, the invoice is calculated as a sum of (Rate)*(Volume) + (Rate)*(Volume)*(tax)
  - *Document only tax inclusion*: the tax is included in the invoice but is not actually charged

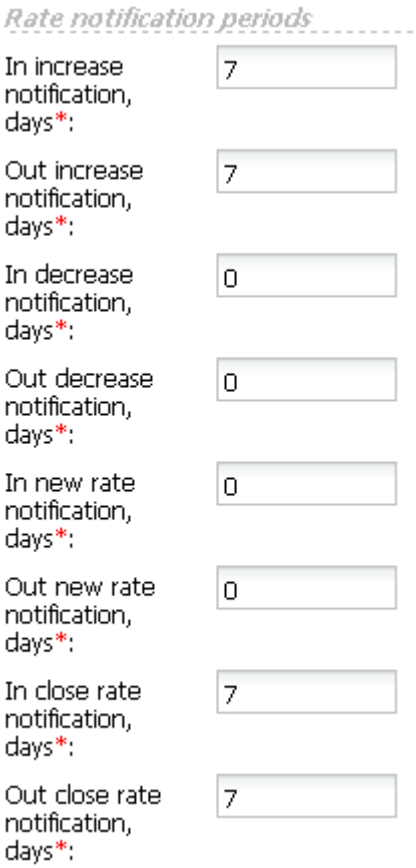


Fig. 39 Add menu, Rate notification periods

Rate notification periods: the minimum number of days for notifying a vendor or customer about any upcoming rate changes. Notifications sent at shorter notice may be rejected by the recipient

- *In/Out increase notification, days:* number of days for an advance rate increase notice to be sent from vendor/to customer
- *In/Out decrease notification, days*: number of days for an advance rate decrease notice to be sent from vendor/to customer
- *In/Out new rate notification, days*: number of days for a notice about new rates
- *In/Out close rate notification, days*: number of days for a notice about closing rates

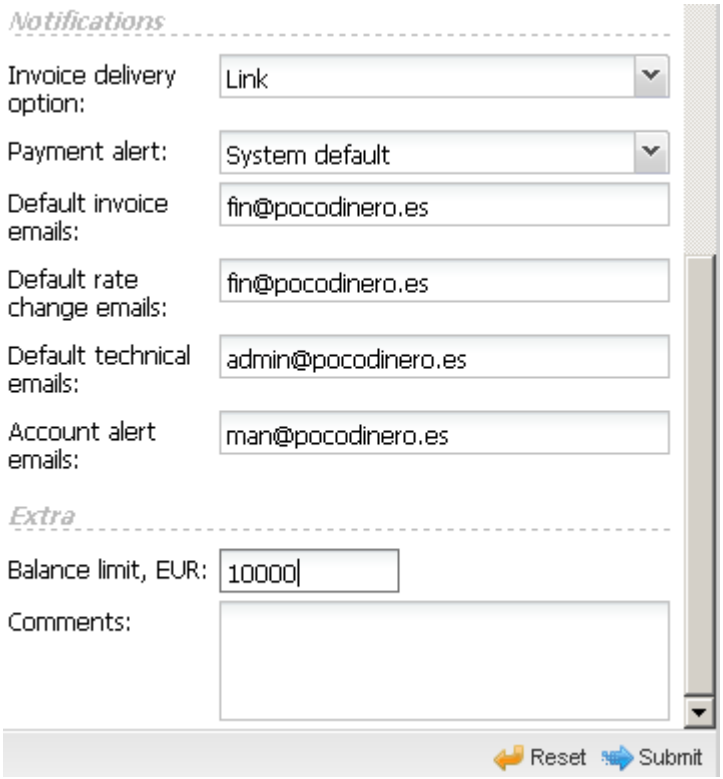


Fig. 40 Add menu, Notifications and Extra

Notifications:

- *Invoice delivery option*: specify how the invoices must be delivered:
  - *System default:* deliver as configured in the *Invoice delivery options* parameter in *Administration\System settings\Financial module*
  - *Do not send*: no invoice is delivered
  - *Attachment*: the invoice is sent in an email with two attachments, one containing a cover letter in PDF format and the other a MS Excel file with traffic summary details
  - *Link*: the email contains links to the two invoice files (PDF cover letter and MS Excel traffic summary details). The files are stored on the System server; once the client clicks on the links the message status is changed to *delivered*. NOTE: This is a reliable way to know that the invoice has been received by the partner
  - *Separate emails*: the PDF cover letter and MS Excel traffic summary details are sent in two separate messages
- *Payment alert*: sending notification on received payment to the partner (*System default*, *Enabled* or *Disabled*). *System default* is defined by the Payment registration alert parameter in the *Administration\System settings\Financial module*
- *Default invoice emails*: emails for sending invoices to. Several comma- or semicolon-separated addresses may be indicated. If the field is empty, invoices are sent to the carrier's user email addresses, defined:
  - on the *Carriers\Users* page (only users with the checked *Send invoices* flag are considered) and
  - in the *Email address to CC invoices distribution* parameter defined in the *Administration\System settings\Financial module*

- *Default rate change/technical/account alert emails*: email addresses of the partners' financial, rate and technical departments, where rate increase/change, monitoring alerts, balance limit reached alerts and other notifications are sent:
  - If the *Default rate change emails* field is empty, rate change notifications are sent to the carrier's user email defined on the *Carriers\Users* page (only users with the checked *Send rate updates* flag are considered)
  - The *Default technical emails* field contains email addresses to send notifications configured in the *Administration\Service notifications* page. If the field is empty, partners will receive no notifications
  - If the *Account alert emails* field is empty, the alerts are sent to the email address of the primary System administrator and to the email indicated in the *Credit alarm default email* parameter in the *Administration\System settings\Financial module*

Extra:

- *Comments:* arbitrary comments

When through with defining the parameters, click Submit to confirm or Reset to discard the settings. Click Delete to delete the selected record.

5.5 Products

The *Carriers\Products* page contains information about products associated with carriers' accounts. A product is a rate plan, or, in other words, a type of service level agreement (SLA) offered to partners. Products allow grouping vendors and clients based on their SLA, and are then used for creation of routing rules for such groups.
Each product is linked to an account, so its currency is always the same as that of the account.

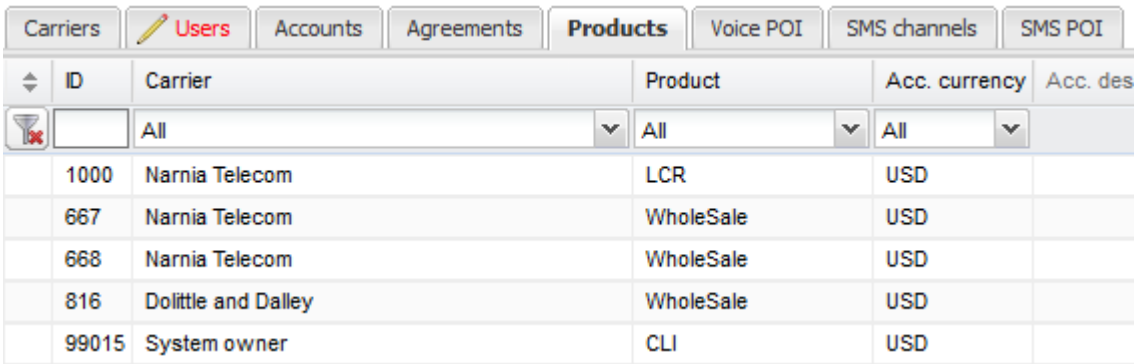


Fig. 41 Products

Use text masks or drop-down lists under the column headers to filter the records in the table.
The right panel contains the *Add* and *Edit* menus.

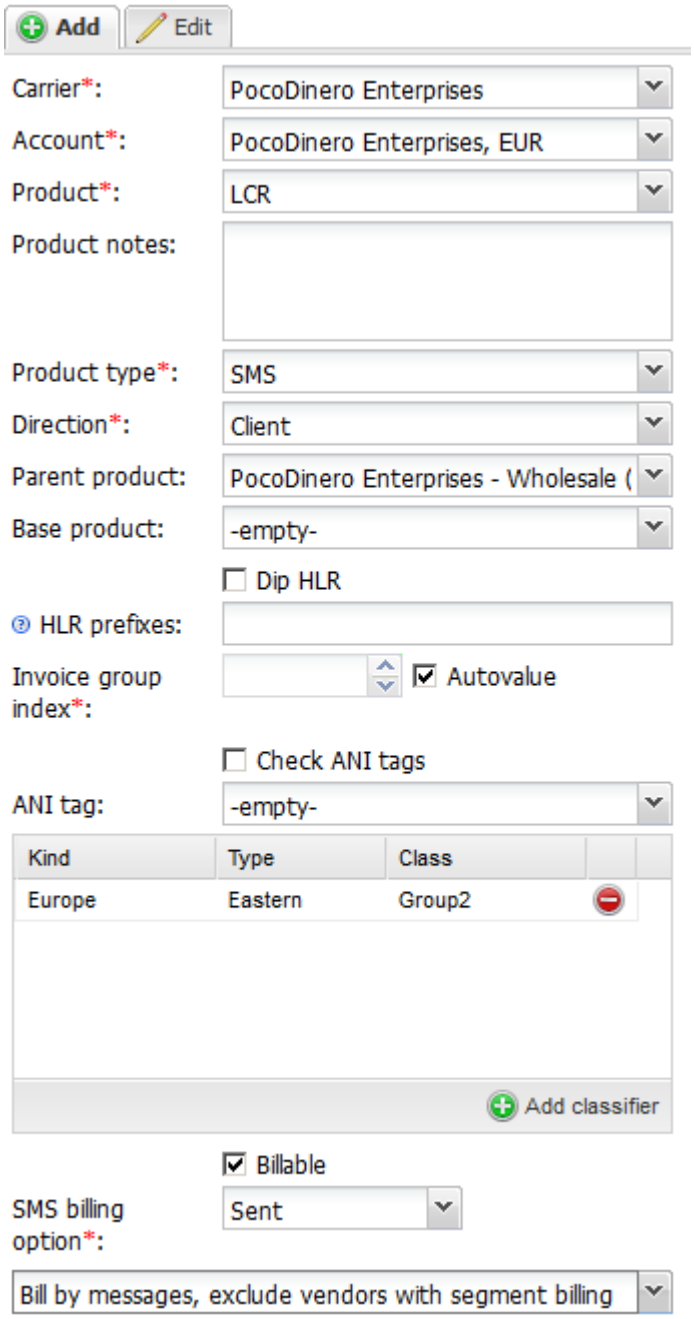
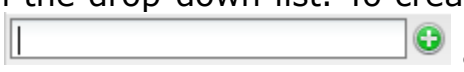


Fig. 42 Add menu

The *Add* menu allows defining of the following parameters:

- *Carrier*: select the carrier from the drop-down list
- *Account*: select the account from the drop-down list
- *Product*: select the product name from the drop-down list. To create a new product name, type it in the edit box  and click the  button
- *Product type*: select the traffic type (*SMS*) from the drop-down list
- *Direction*: select the traffic direction (*Client* or *Vendor*) from the drop-down list
- *Parent product*: select the parent product from the drop-down list. A parent product is a product created by the System owner that allows applying one

and the same rate plan to several partners. In order to do this, create a product for each partner, and select the parent product for them.

- *Base product*: select the base product from the drop-down list. A base product is a product of the same direction and associated with the same account that stores the basic rates (those not linked to A-number)
- *Dip HLR*: check the flag for real-time HLR query on the network the subscriber is currently connected to. Contact the Alaris support team to activate this function. NOTE: An agreement with an HLR provider is required for the function to work
- *HLR prefixes*: specify country codes (space separated) for which HLR dipping must be performed (this parameter helps minimize HLR dipping expenses by selecting only those countries where it is commercially reasonable). NOTE: By default if this field is empty, the routing engine uses the internal list defined in the routing module configuration file which can be updated by the Alaris technical support team
- *Invoice group index*: define how you want your products to be invoiced. Products having the same index will be invoiced in a single file. To have each product invoiced separately, assign a unique index to each product. To include several products in a single invoice as separate charges, assign a common integer part for appropriate products and different fractional parts for each of them, for example, 0.1, 0.2, 0.3 etc.
- *Autovalue*: when the flag is checked, the grouping is performed as set in the parameter *Default charge grouping mode* (for possible values refer to *Administration\System settings\Financial module*)
- *Check ANI tags* (available only if *Base product* is not selected): the checkbox serves to look for A-numbers set as ANI tags in other products that have this product selected in the *Base product* list. It is relevant for EU/Non-EU billing. For example, SMS within EU are cheaper than those from EU to non-EU countries. The System can identify intra-EU SMS and route them accordingly. Suppose you have two vendor rate sheet files – one having no association with A-numbers and the other containing rates within EU. Both sets of rates are associated with the same POI. Create Product 1 for rates having no association with A-numbers. Select *Check ANI tags* and create a SMS POI for Product 1. Then create Product 2 for rates within the EU. In the *Base product* field select Product 1; in the *ANI tag* field select the tags containing EU dial codes (the ANI tags must be previously created in *Reference books\Caller ID tags*). No SMS POI must be created for Product 2.
- *ANI tag* (available only if Check ANI tags is deselected): select ANI tags if the product stores rates linked to A-numbers (in this case, *Base product* must also be selected)
- *Add classifier*: the table allows creating and assigning personalized tags to products, which may prove helpful for analytics. Click 

to create a new product tag, and fill in the fields as appropriate using the edit box  . To assign a tag, select it in the table
- *Billable*: check the flag if the product must be charged for

- *SMS billing option*: defines billable SMS based on their delivery status. Possible options include:
  - *Sent*: messages with the *Sent* status are billed
  - *Delivered*: messages with the *Delivered* status are billed
  - *Attempts*: all message sending attempts are billed
  - *Any DLR received*: messages with any DLR are billed, irrespective of the delivery status

NOTE: Different *SMS billing option* values for the vendor/client may result in additional profit/loss. For example, suppose the System owner receives 100 SMS messages from a client with *Sent* as the *SMS billing option*, and forwards them a vendor with *Delivered* as the *SMS billing option* and gets only 50 DLR reports. In this case the System owner will receive payment for 100 SMS from the client and will only pay for 50 SMS sent to the vendor.

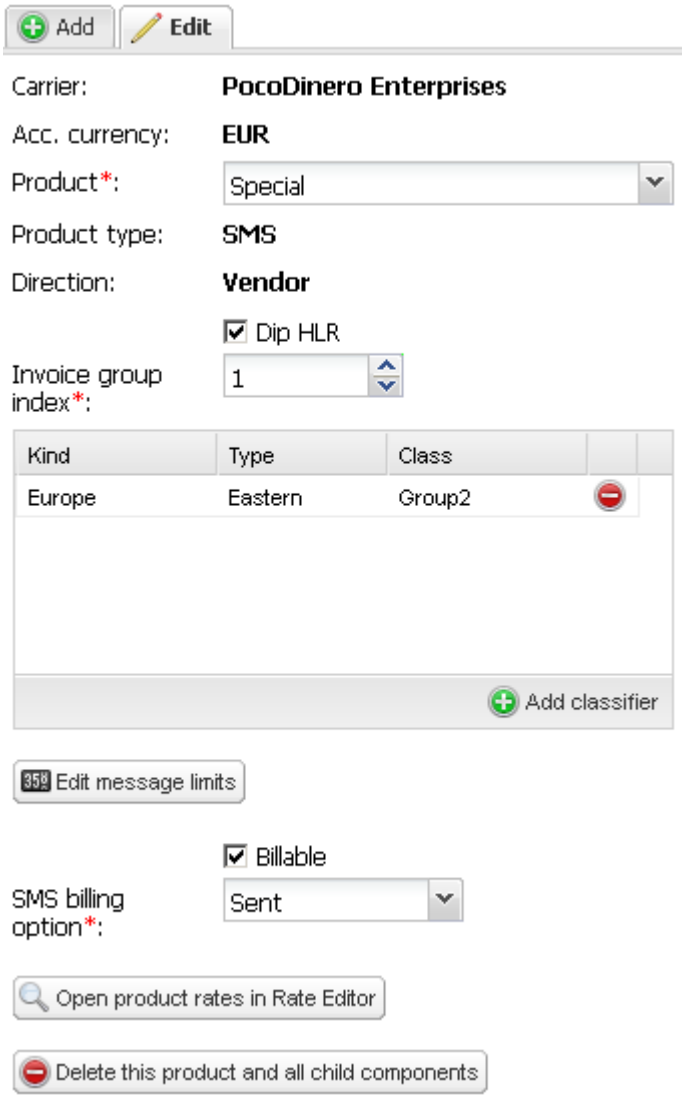


Fig. 43 Edit menu

The *Edit* menu additionally allows defining of the following parameters:

- *Edit message limits*: opens the *Message limits* table for defining the maximum number of SMS that can be sent through the product. Select the appropriate record. To create a new limit, in the *Add new limit* field

illustrated below enter the maximum number of SMS, select the SMS status (*Successful* – the DLR status is *Sent*, *Attempts* – any message sending attempts, *Delivered* – the DLR status is *Delivered*), select the time period and start date, and click Add.

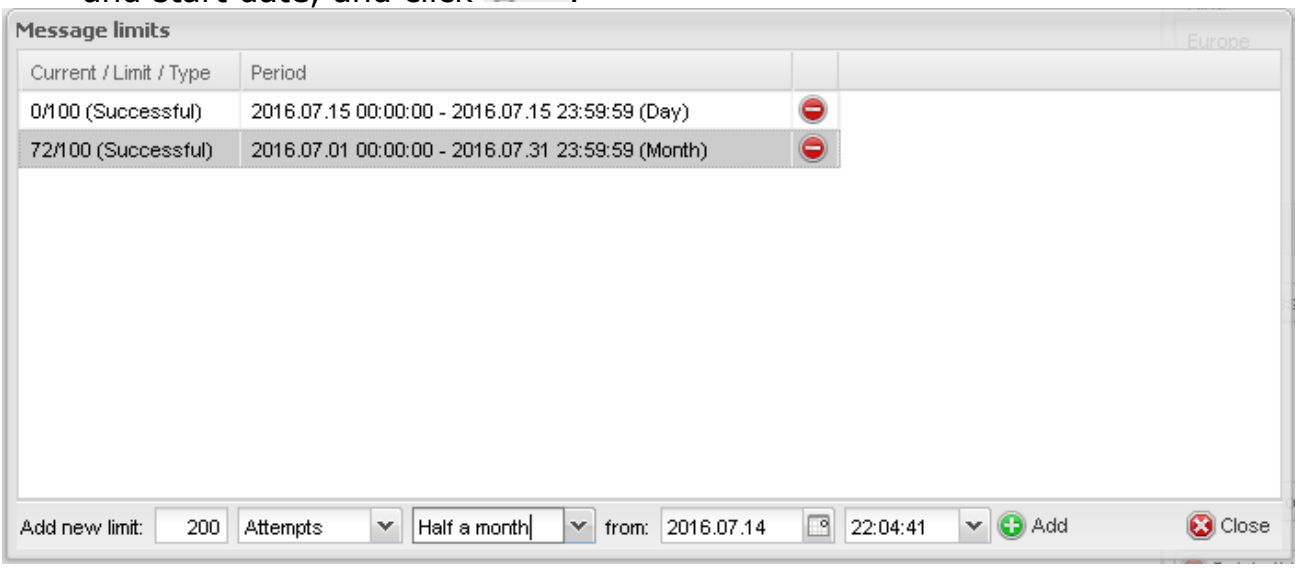


Fig. 44 Message limits

- *Open product rates in Rate editor*: opens the *SMS\Rates\Rate editor* page.

When through with defining the parameters, click Submit to confirm or Reset to discard the settings. Click Delete this product and all child components to delete the selected record.

5.6 SMS channels

SMS channels represent physical connections between carriers used for SMS transmission and receipt (analogue to "Bind" in SMPP). All created channels are automatically mirrored to the switch if all the necessary parameters are specified in the *System Settings\SMS module*.

The *SMS channels* page contains information on the channels registered in the System.

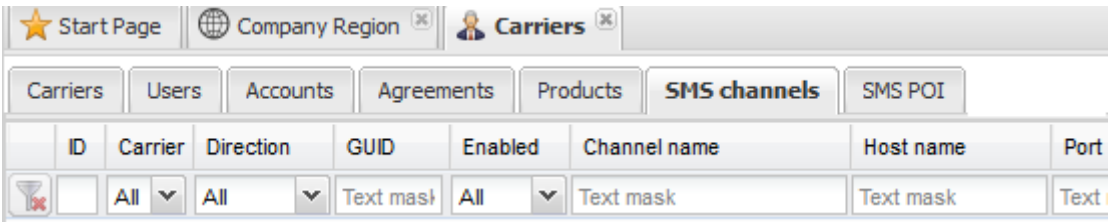


Fig. 45 SMS channels

Use text masks or drop-down lists under the column headers to filter the records in the table.

The right panel contains the *Add* and *Edit* menus. The Add menu contains the following fields.

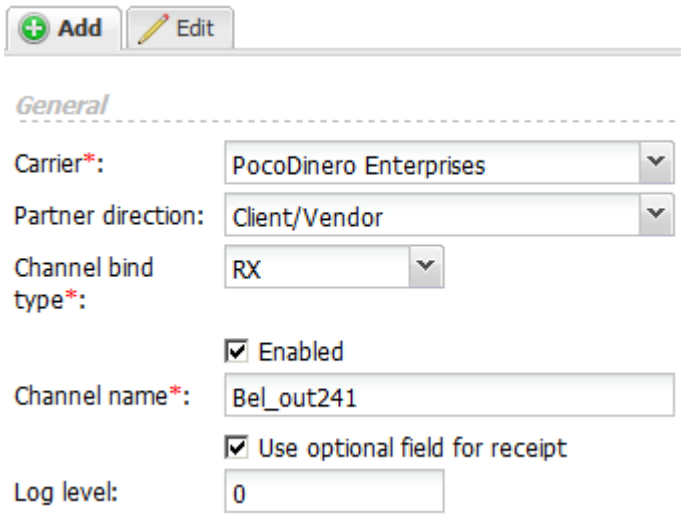


Fig. 46 Add menu, General

General:

- *Carrier*: select a carrier to which a channel is associated from the drop-down list
- *Direction*: select a direction from the drop-down list (*Client/Vendor*, *Client* or *Vendor*)
- *Channel bind type*: possible values: *TX* (transmit), *RX* (receive), *TR* (transmit/receive – recommended for interconnection with vendors), *Auto* (as specified by the party establishing connection, recommended for interconnection with clients)
- *Enabled*: identifies channel activity. A channel can be temporarily disabled for a number of reasons, for example, for error correction purposes
- *Channel name*: arbitrary name defined by the user (this name is displayed in *Reports* and *Analytics*)
- *Use optional field for receipt*: check to use the optional fields *Message ID* and *Message State* in the delivery report (delivery to clients)
- *Log level*: the log level for the channel. Valid values include: *0* – log disabled; *1* – log enabled. NOTE: The parameter is currently inactive

Fig. 47 Add menu, Connection

Connection:

- *Channel type*: *SMPP* or *HTTP*
- If *SMPP* is selected, the following fields are active:
  - *Host name*: DNS name (for vendor channels only) or IP address for sending bind requests. The use of multiple IP addresses in a single channel is not supported; however, a subnet mask can be used, e.g. 1.2.3.4/24 (for client channels only)
  - *Port*: port for sending bind requests to (relevant for vendor SMPP channels only). For client channels, the port used on the client side is irrelevant. The default port the client must specify on their switch for interconnection with the System is *2875* for SMPP channels and *8001* for HTTP channels
  - *System type*: optional parameter used for authentication during binding. It categorizes the type of ESME that is binding to the SMSC; e.g. "VMS" (voice mail System) or "OTA" (over-the-air activation System)
- If *HTTP* is selected, the following field is active:
  - *URL template*: specify the IP address and port instead of the *<localhost:8000>* in the template string (for vendor channels only). For client HTTP channels, no URL template is needed. The client must comply with the following URL format *http://localhost:8000/api?ani=ani&dnis=$dnis$&username=$username$&password=$password$&message=$text$&command=submit&serviceType=$serviceType$* (replace *<localhost>* with the System's switch IP address and *<8000>* with *8001*)

- *Login* and *Password*: user name and password to be indicated in each bind request for authentication purposes
- *SSL type*: select the version of the SSL protocol (relevant for client channels only)
- *Timeout*: *submit_sm* response timeout (for vendor channels). When the timout expires, the SMS is switched to the next route.
- *Local address*: enter the local IP address of the System's switch that will be used to connect to the vendor (in case several network interfaces on the switch server are employed)
- *No. of connections*: (relevant for the new beta version of the switch only) the number of binds established with vendors using the same credentials (login, password, IP address and port). This parameter comes instrumental when connecting to vendors that have limited throughput capacity per bind. The load is distributed between the binds in a round-robin pattern. For single-server versions of the System, the issue can be resolved only by creating several channels. NOTE: for client channels, the number of interconnections with the same credentials is unlimited both in the cluster and single-server versions

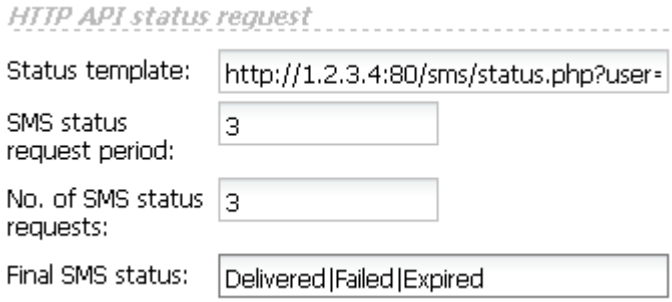


Fig. 48 Add menu, HTTP API status request

HTTP API status request: the section defines the status request parameters of HTTP SMS to the vendor. NOTE: translation of SMS statuses from the vendor's format to that of SMPP clients is done based on an intrinsic correlation table (configured by the Alaris support team).

- *Status template*: URL used for getting the SMS status (for outgoing channels only; must be provided by the vendor). NOTE: for incoming connections leave the field blank and provide the client with the following status template string: *http://1.2.3.4:8001/api?&username=$username$&password=$password$&command=query&serviceType=$serviceType$&messageId=$messageId$* (the client must replace *1.2.3.4* with the System's IP address; the port is normally 8001 but if necessary check it with the Alaris support team)
- *SMS status request period*: period (in seconds) for the initial request of the SMS status. The next status request will be sent in X to the power of N (seconds), where X is the *SMS status request period*, and N the attempt number. For example, if X is 3 seconds, the second attempt will be initiated in 3^2, (that is, 9) seconds, the third attempt in 3^3 (27) seconds etc.
- *No. of SMS status requests*: maximum number of SMS status requests. NOTE: As the SMS status request period becomes longer with every subsequent request, it is recommended that the values of the parameters

No. of SMS status requests and *No. of SMS status requests* are in correlation with each other. The maximum SMS status request period is 24 hours; messages with a period longer than that will not be sent

- *Final SMS status*: SMS status the receipt of which will stop further status requests. Several |-separated statuses can be indicated. NOTE: Standard SMPP 3.4 statuses (DELIVRD, REJECTD) must be used here. If the vendor sends custom statuses, the switch must be configured to translate them to the standard format

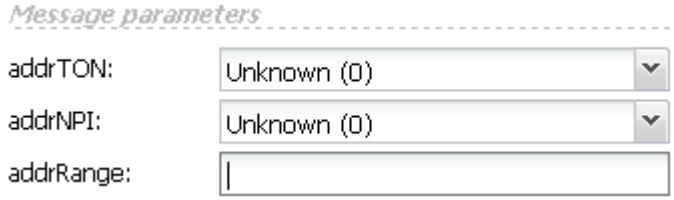


Fig. 49 Add menu, Message parameters

Message parameters (set the parameters of the bind):

- *addrTON*: the type of sender ID. Select *Alphanumeric (5)* if planning to transfer messages from alpha senders; select *Unknown (0)* if only messages from numeric senders will be transmitted
- *addrNPI*: defines the Numeric Plan Indicator (NPI) to be used in the SMS address parameters. Possible values: *Unknown*, *ISDN (E163/E164)*, *Data (X.121)*, *Telex (F.69)*, *Land Mobile (E.212)*, *National*, *Private*, *ERMES*, *Internet (IP)*, *WAP Client ID*. The default value is *Unknown* and normally there is no need to change it
- *addrRange*: optional parameter used to specify a set of SME addresses serviced by the ESME client. A single SME address may also be specified. UNIX Regular Expression notation should be used to specify a range of addresses. Messages addressed to any destination in this range shall be routed to the ESME

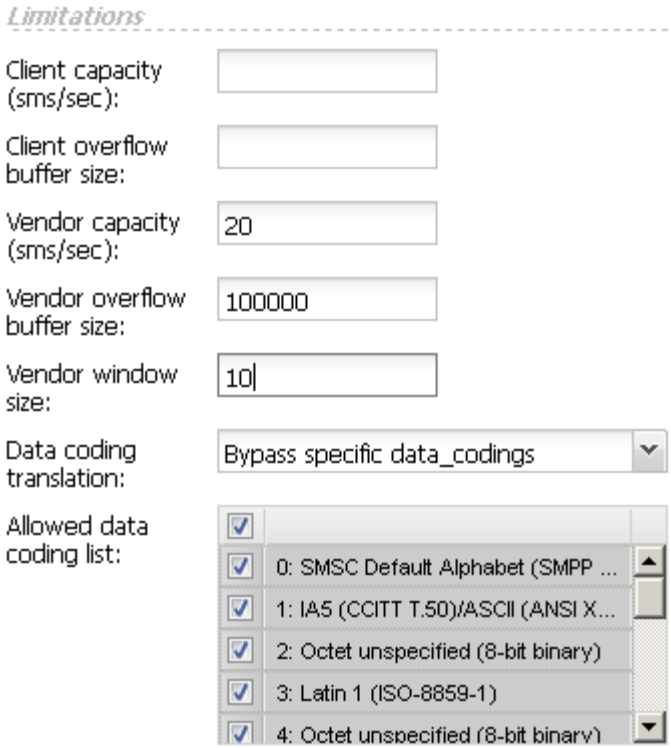


Fig. 50 Add menu, Limitations

Limitations:

- *Client capacity (sms/sec)*: allowed number of SMS per second for client. When exceeded, and if the value of the parameter *Client overflow buffer size* is not set, SMS messages are rejected
- *Client overflow buffer size*: allowed number of SMS in the storage buffer. In case when the *Client capacity* is exceeded, all new incoming SMS are stored in a buffer. If the buffer is overflowed, all the following SMS are rejected
- *Vendor capacity (sms/sec)*: allowed number of SMS per second for vendor. When exceeded, and if the value of the parameter *Vendor overflow buffer size* is not set, SMS messages are rejected
- *Vendor overflow buffer size*: allowed number of SMS in the storage buffer. In case the *Vendor capacity* is exceeded, all new outgoing SMS are stored in a buffer, to be sent when the load on the vendor channel is back to normal. If the buffer is overflowed, all the following SMS are routed to the next-in-line vendor
- *Vendor window size*: allowed number of pending messages awaiting the vendor's response (*submit_sm* packets without *submit_sm_resp* received). If, for example, the value of *Vendor window size* is 10, the System will not send the eleventh message, pending receipt of at least one *submit_sm_response* message from vendor side. NOTE: if the vendor has a large number of pending messages awaiting response, sending traffic to the vendor is unreasonable. Once the *Vendor window size* is reached, the System stops sending traffic to the vendor until the number of pending messages decreases
- *Data coding translation*: encoding of SMS texts. Possible values include:

- *Bypass specific data codings* – the System will only send messages in encodings selected in the parameter *Allowed data coding list* as described below. Messages with deselected encodings are either directed to other vendors or rejected if no further vendor routes are available
- *Only for lossless translation to GSM 7-bit*: messages are sent through the channel only if all symbols can be translated to ASCII. If the message has any Unicode symbols, it will be forwarded to the next-in-line channel
- *Force translation to GSM 7-bit*: any Unicode symbols are replaced with *?*

- *Allowed data coding list*: SMS encodings used in the *Bypass specific data codings* parameter. Deselect the encodings that must not be sent through the channel

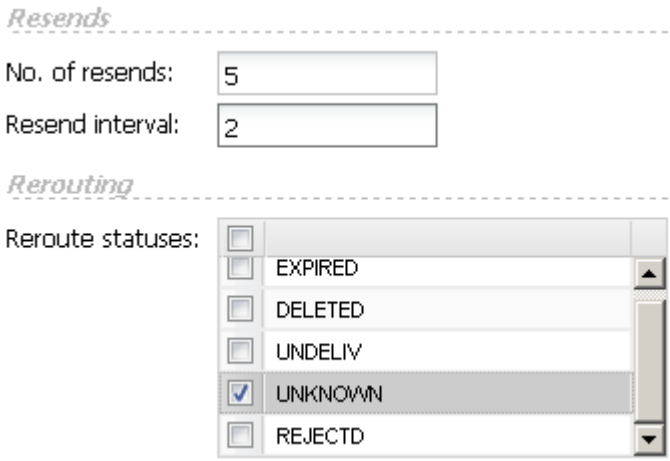


Fig. 51 Add menu, Resends and Rerouting

Resends: this group of parameters defines how to resend SMS if the vendor bind is down, or if the bind responds with a code suitable for rerouting. The codes are set in the internal configuration of the router and can be changed by the Alaris support team if necessary:

- *No. of resends*: the number of resend attempts. Once the number of attempts is reached, the System will go to the next-in-line vendor
- *Resend interval*: the interval between resend attempts in seconds

Rerouting:

- *Reroute statuses*: select delivery statuses for rerouting of SMS. If the vendor returns one of the selected statuses, the System will send the SMS through the next-in-line vendor

Click the Clone button to create a duplicate of the configured channel. This is helpful in configuring another channel with similar parameters. When through with defining the parameters, click Submit to confirm or Reset to discard the settings. Click Delete to delete the selected record.

5.7 SMS POI

An SMS POI (point of interconnection) is a logical entity that links a channel to a product. It allows differentiation between service quality levels for billing purposes - for example, when a single channel is used to send traffic for two products with different SLA. One channel may be linked to a number of different POIs with varying *Service type* parameter, which is an alphanumeric value set by

the user similar to the technical prefix used for the same purposes in voice billing.

The *SMS POI* page holds all the information on the POIs registered in the System.

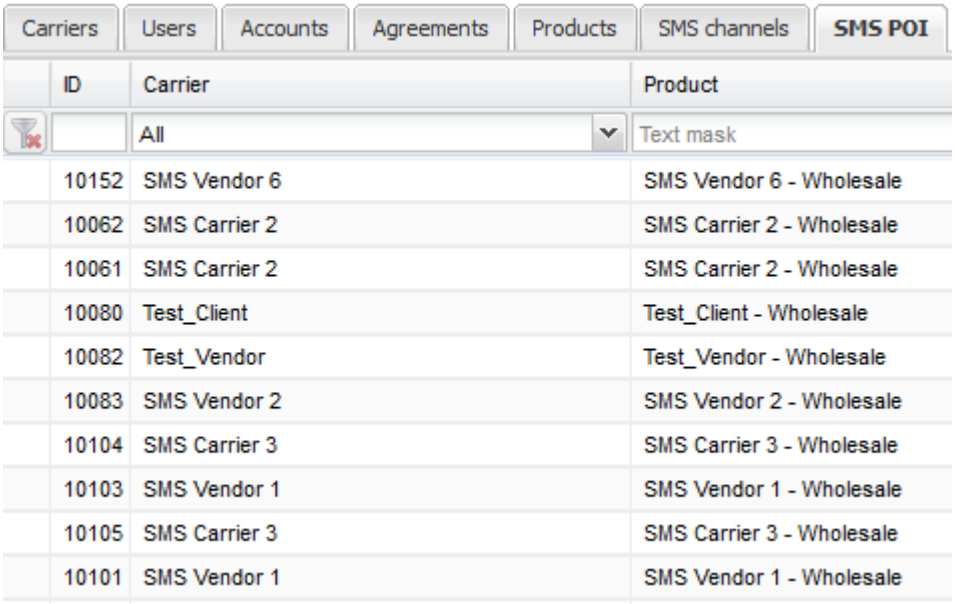


Fig. 52 SMS POI

Use text masks or drop-down lists under the column headers to filter the records in the table.

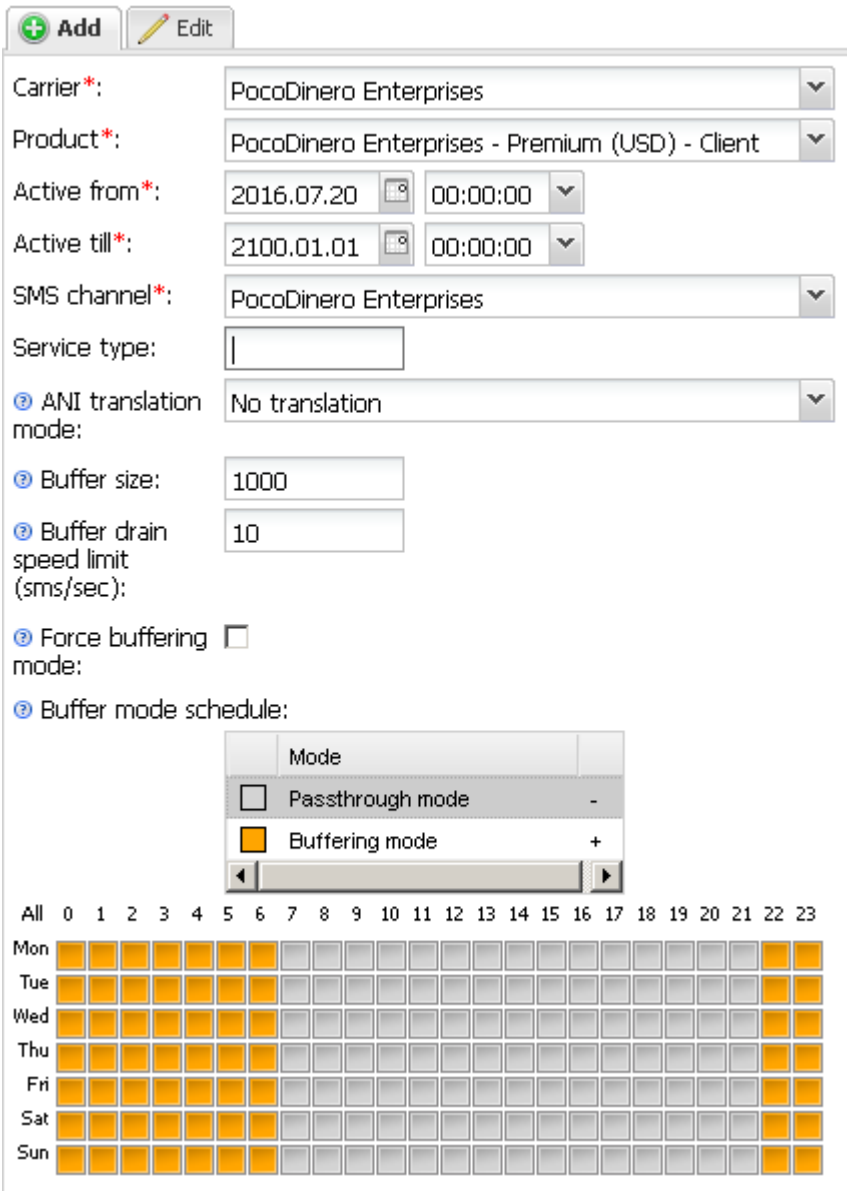


Fig. 53 Add menu

The right panel contains the *Add* and *Edit* menus that allow adding new records or editing existing ones. To activate the *Edit* menu, click on the record in the table. Enter the required parameters in the corresponding fields. Fields marked with an asterisk (*) are required. The *Add* menu contains the following parameters:

- Carrier: carrier to which a POI is associated
- *Product*: product to which a POI is associated
- *Active from / Active till*: date and time of POI activation/deactivation
- *SMS channel*: channel the POI is linked to
- *Service type*: reference to the service quality level, which is an arbitrary parameter defined by the user (must contain less than 6 symbols to match the SMPP 3.4 requirements). Normally, this field is left blank
- *ANI translation mode*: sender ID transformation mode. Possible values are:
  - *No translation*: no translation takes place

- *Load from list*: A-numbers are taken from a file previously uploaded to the server. NOTE: The SMS router looks for such a file in the location specified in the *randomAniFilename* attribute of its configuration file. The file must be located on the same server where the SMS router is installed. The file must contain a list of numbers, which will be taken consequently as A-numbers in outgoing messages. To check which numbers are currently being used, go to the SMS router main log file and look for the following records: *RRH;;run() MLs 1,2411 secs (181/4 rq, RP5; 0,1/3,2/0,0, FAIL: 0/0(0,0%/0,0%)), rndAniCnt 0/5000000*. The *rndAniCnt 0/5000000* indicates how many A-numbers are used out of the total number of records in the file. When all records are used the file usage is started from the beginning of the file
- *Auto generate*: outgoing A-numbers are generated according to a specified pattern. The expression in the pattern must meet the Python programming language syntax requirements. If the expression contains syntax errors, no A-number translation takes place. To check if the expression is correct and view the result of the expression translation, go to the SMS router shell and use *shpoi id* in the SMS router CLI interface. If the expression is syntactically correct, then the CLI output will indicate *cmpld*, if not, the output will diplay *INVLD*.

- *Buffer size*: allowed number of messages in the storage buffer (for client products only). The buffer size is defined separately for each POI. When the buffer is full all new incoming messages are rejected. When defining buffer size values, keep in mind that each POI has its own separate buffer taking additional RAM memory; 1Gb of RAM can hold approximately 300,000 messages in a buffer
- *Buffer drain speed limit (sms/sec)*: speed at which messages are passed over from the buffer to the routing module for delivery. NOTE: the actual speed of SMS passthrough is also limited by other factors and parameters:
  - the passthrough speed is not greater than half of the available capacity of the switch (available switch capacity = total estimated capacity, which is calculated by the switch every second MINUS current load of the switch). The estimated capacity limit is higher in priority than the limits defined at the POI level
  - limitation of the outgoing SMS speed defined for outgoing vendor channels that were chosen by the routing module for SMS delivery
- *Force buffering mode*: all incoming messages are buffered for later delivery. When this flag is unchecked, the system operates according to the *Buffer mode schedule*. NOTE: If the buffer is full, all incoming messages are rejected
- *Buffer mode schedule*: defines the logic of dealing with incoming SMS messages based on day of week and hour of day. Two variants are possible:
  - *Buffering mode*: incoming messages are not sent further, but stored in the internal buffer for later delivery

- *Passthrough mode*: incoming messages are passed over to routing logics for delivery. Select the appropriate mode and click on the schedule to fill it

When through with defining the parameters, click Submit to confirm or Reset to discard the settings. Click Delete to delete the selected record.

6. Finance

All financial aspects associated with the carrier business are covered within the *Finance* section accessible from the *Start* menu. The System offers differentiated access to all financial data providing the System owner with a balanced coverage of financial status for each separate partner, account or product. The *Finance* section contains the following pages: *Charges*, *Invoices, Payments and Recurring fees*.

6.1 Charges

A charge is the amount charged by the System for a specific partner product for a single billing period. Charges serve as the basis for generating invoices. The Finance\Charges page contains information on charges generated by the System. It has three panels: the *Charge filter*, the *Charges* table and the *Charge details*.

Charges

Amount currency: Account currency

ID	Charge type	Contract company	Carrier	Account
	-	-	-	-
22521	Manual	Alarislabs Demo 3.4	PocoDinero Enterprises	PocoDinero Enterprises (USD)
22522	Auto	Alarislabs Demo 3.4	MummyDoll Telecom	MummyDoll Telecom (USD)
22603	Auto	Alarislabs Demo 3.4	MummyDoll Telecom	MummyDoll Telecom (USD)
22523	Auto	Alarislabs Demo 3.4	MoreThanWords SMS	MoreThanWords SMS (USD)
22524	Auto	Alarislabs Demo 3.4	Ketchum & Killum	Ketchum & Killum (USD)
22525	Auto	Alarislabs Demo 3.4	Narnia Telecom	Narnia Telecom (USD)

Fig. 54 Charges table

The *Charges* table displays the following information:

- *ID*: internal identification number
- *Charge type*: generated automatically or manually
- *Contract company*: the legal entity of the System owner on behalf of which it works with the carrier
- *Carrier*
- *Account*: account for which the charge is generated
- *Product type*: here: SMS (as configured on the *Reference books\Product types* page)
- *Charge direction*: *Payable* or *Receivable*
- *Confirmed*: shows whether the charge is confirmed on the *Finance\Invoices* page (*Yes* or *No*)
- *Group index*: the value of the *Group index* parameter in the *Carriers\Products page* (products having the same index will be invoiced in a single file)

- *Volume*: volume of the provided services (here: in SMSs)
- *Units*: measurement units (here: SMSs)
- *Service count*: number of messages
- *Amount*: the charge amount. Click on the link to open the *Charge details* table at the bottom of the page
- *System period*: charged period, displayed in the System owner's time zone
- *Partner period*: charged period, displayed in the partner's time zone
- *Correction ID*: identifier of the charge, for which this one is correctional (if this charge corrects a previous one)
- *Version*: version of the correction
- *Last update*: date and time of the latest calculation

The *Amount currency* drop-down list at the top of the table opens the list of currencies in which the charge can be displayed. By default the data is shown in the account currency. Other currencies are configured in the parameters *Finance first (second, third) currency* in *Administration\System settings\Financial module*. When all these parameters are empty, the *Amount currency* drop-down list is not displayed. NOTE: The invoice and charge data is stored in financial cubes (for more detail on cubes, see *Reports\Analytical cube status (Administration)*). After you configure the currencies in *Finance first (second, third) currency,* perform EDR rerating (see *SMS\EDR management\EDR Rerating*) and invoice recalculation (see *Finance\Invoices\Editing invoices*) for the appropriate period, otherwise all amounts in the *Charges* table will be zero.

The amounts are calculated at the exchange rate as of the date of each charge. For example, the charge dated October, 12 will be calculated at the exchange rate as of October, 12. The exchange rates are taken from the *Reference books\Currency exchange rates*.

The button in the upper left corner of the page toggles the *Charge filter* menu.

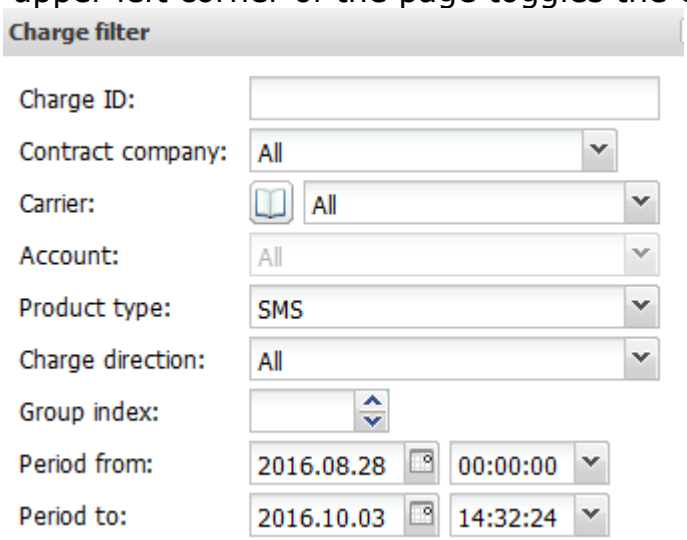


Fig. 55 Charge filter

Enter the appropriate parameters and click Apply filter to filter the records in the *Charges* table. The button opens the list of carriers that can be filtered by carrier name and region.

Click the button on the lower tool bar of the *Charges* table to refresh the table.

Select a record in the *Charges* table and click the Recalculate charge button for recalculation of the selected charge. Click Delete charge if you wish to delete the selected charge.

The Add charge detail record button opens the *Create charge detail* window for adding a new charge manually. This form comes instrumental in manual creation of a new credit note or additional invoice – for example, when settling a dispute. For more detail on credit notes, see *Finance\Invoices\How it works*.

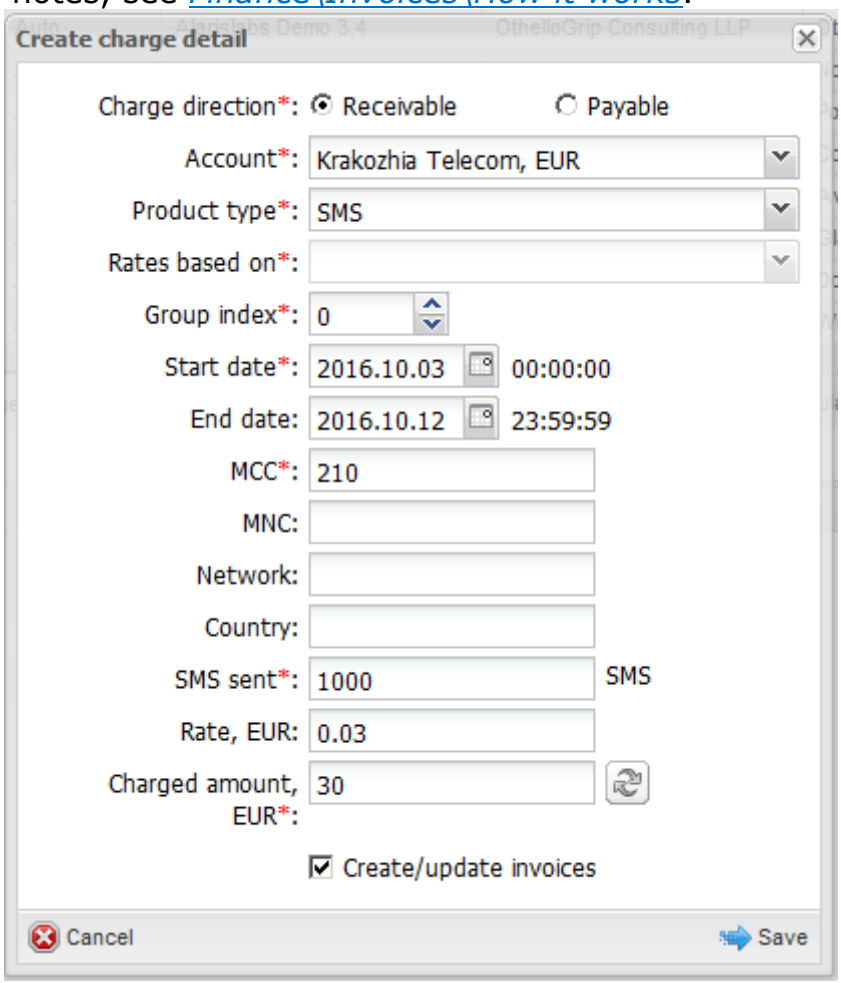


Fig. 56 Create charge detail

If the charge for this account with the same direction, product type and group index already exists, a newly created charge is added to the existing one. The *Create charge detail* form contains the following parameters:

- *Charge direction*: *Payable* or *Receivable*
- *Account:* account for which the charge is generated
- *Product type*
- *Group index*: index of the charge grouping
- *Start date, End date*: charged period. NOTE: The charged period is set in full days
- *MCC*: Mobile Country Code
- *MNC*: Mobile Network Code
- *Network*: name of the network
- *Country*: name of the country

- *SMS sent*: number of sent SMS
- *Rate*: price per SMS
- *Charged amount*: total amount of the charge is calculated automatically as a derivative of (SMS sent) * (Rate). Click to recalculate the amount if the values of the *SMS sent* or *Rate* parameters have been changed. The amount can also be entered manually
- *Create/update invoices*: if this checkbox is selected, the System creates an invoice for the charge or updates the invoice if it already exists. If the checkbox is deselected, the invoice amount will remain the same even if the charge for it is updated

Click Save to confirm or Cancel to discard the settings.

NOTE: For easier handling of correctional charges – that is, charges created to correct the partner balance - it is recommended to use a dedicated value in the *Product type* field. Go to *Reference books\Product types*, create a product type *Correction*, and in the *Unit* field select *Service.* When adding a correctional charge in the *Create charge detail* form, select *Service* in the *Product type* field. In this case, the *MCCMNC*, *Network* and *Country* fields will be hidden.

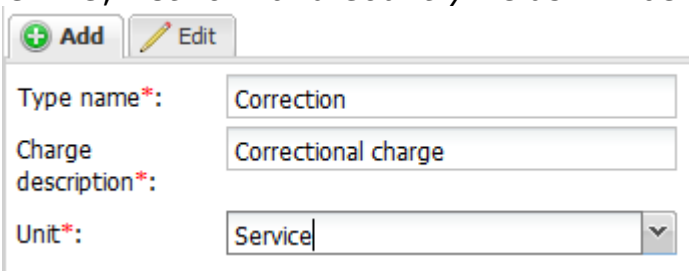


Fig. 57 Add menu in Reference books/Product type

Clink on the link in the *Amount* column to open the *Charge details* table at the bottom of the page.

Charge 19695 details

MCC	MNC	Network	Country	SMS sent	Rate, EUR	Charged amount, EUR
Total:				**24023**		**185.47**
202	05	Vodafone Gre...	Greece	2	0.00840	0.02
206	01	EastLink	Belgium	17	0.02490	0.42
206	05	Telenet	Belgium	1	0.00670	0.01
206	05	Telenet	Belgium	6	0.00770	0.05
206	05	Telenet	Belgium	6	0.01100	0.07
206	10	Mobistar S.A.	Belgium	5	0.01270	0.06
206	10	Mobistar S.A.	Belgium	22	0.01280	0.28
206	10	Mobistar S.A.	Belgium	1	0.03310	0.03
206	20	BASE	Belgium	5	0.01070	0.05

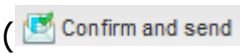
Fig. 58 Charge details

The table displays details of the selected charge: MCC and MNC codes, network name, country, number of sent messages, rate and charged amount.

6.2 Invoices

The *Finance/Invoices* page is a toolkit for reviewing and sending invoices to clients as well as generating vendor associated invoices for verification purposes.
Invoice generation is fully automated. The System collects the billing data from incoming EDRs into a dedicated data pool continuously updated at the rate of EDR arrival, which is set at the time of System installation. This data pool constitutes the backbone of all further analytical processes carried out by the System and forms the basis for billing procedures. When the current billing period (defined by the partner agreement) is over, the System has access to all the processed statistics necessary for generating a new invoice. At this point it only needs a few seconds to create the invoice file, which then can be reviewed by the user before sending.

6.2.1 How it works

By default all invoices, created automatically or manually (in the *Finance\Charges* page), have the *Draft* status and are never auto-sent to clients. Each invoice can be reviewed and edited if needed and is dispatched only after confirmation (

button on the tool bar at the bottom of the *Invoices* table). It is possible to configure automatic dispatch of invoices – use the parameter *Invoice auto-dispatch delay, hours* in *Administration\System settings\Financial module*.
All invoices automatically generated by the System are created a few hours after the end of each billing period (the billing period is defined in *Carriers\Agreements*). NOTE: The delay for invoice creation is configured by the parameter *Invoice generation delay, hours* in *Administration\System settings\Financial module*. The billing period and delays are configured in the partner time zone (defined in *Carriers\Agreements*). To avoid confusion, it is recommended to use GMT both as the System owner and partner time zones.
Apart from invoices, a user can issue another type of financial document - a credit note. A credit note is a type of invoice that is used to correct the partner balance and can be instrumental in case of disputes. When amount correction in the client's favor is needed after the invoice has been received, a credit note can cover the required amount by increasing the client's balance. In a vendor-associated case, a credit note stands for the amount to be compensated to the System owner by reducing the vendor's balance. To issue a credit note, create a charge with a negative amount, and the credit note will be generated automatically (if the *Create/update invoice* checkbox is selected in the *Create charge detail* dialog of the *Finance\Charges* page).
Confirmed invoices are delivered to preset email addresses. The default address is set in *Carriers\Agreements* (optional parameter *Default invoice emails*). Invoice copies can also be sent to other recipients defined in *Administration\System settings\Financial module* (parameter *Email address to CC invoices distribution*) or to specified System users if the *Send invoices* flag is set in *Carriers\Users* (*Edit* menu).
An invoice comprises two separate files: a PDF file containing general invoice information (cover letter) and a MS Excel file with traffic details. Both files can be sent out as attachments to a single email, or as two separate emails. The type of delivery is set in *Carriers\Agreements* (parameter *Invoice delivery options*). A

convenient option is *link*: the client receives an email with a link to the invoice. The System owner will know exactly if the invoice has actually been received (opened) by the client. This is the only case when the invoice status is changed to *Delivered*. Please note that some other general billing parameters associated with invoice generation, dispatch and payment balances are set in *Administration\System settings\Financial module* and *Carriers* sections.

6.2.2 Invoices table

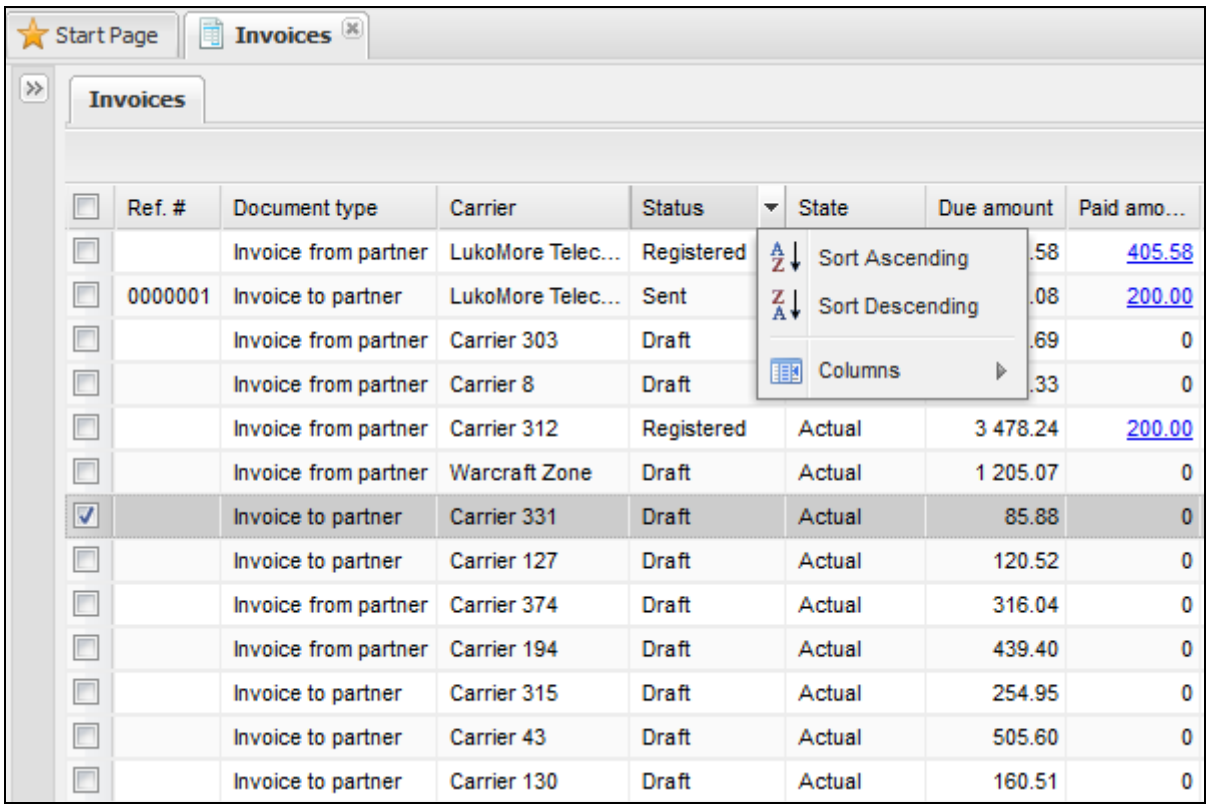
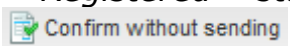


Fig. 59 Invoices table

The *Invoices* table contains information on invoices registered in the System. Drop-down lists in the column headers allow ascending/descending sorting of the records. The *Columns* list allows hiding/unhiding columns. The table contains information on the following parameters:

- *Reference number*: actual invoice number, automatically assigned to an invoice after its draft is confirmed and the invoice is sent out or configured manually; the initial number can be set in *Administration\System settings\Financial module* (parameter *Current invoice number*)
- *Document type*: Invoice to/from partner; *Credit note to/from partner*
- *Contract company*: the legal entity of the System owner on behalf of which it works with the carrier
- *Carrier*: client/vendor name, as per data in the *Carriers* section
- *Account*: account for which the invoice is generated
- *Status*:
  - *Draft* - status assigned to all generated non-confirmed invoices
  - *Sent* - status assigned to an invoice after its confirmation and dispatch (by the Confirm and send button)

- *Delivered* - status assigned to an inbound traffic invoice after it is received by the client, in case of link-assisted delivery
- *Registered* - status assigned to an invoice after it is confirmed (by the 

button)
- *Insignificant* - status assigned to an invoice with an estimated amount lower than defined in *Carriers\Agreements* (parameter *Min invoice amount*). Such invoices are not sent out for the current billing period, but are supplemented to the following period invoice, which in this case comprises two separate charges for two successive periods
- *Disputed* - status assigned to an invoice challenged by the partner, provided that both of the following preset parameters are surpassed: *Min absolute mismatch to invoke a dispute* and *Min percent mismatch to invoke a dispute* defined in *Administration\System settings\Financial module*

- State:
  - *Actual* - regular invoices generated according to currently valid billing data
  - *Outdated* - invoices are automatically marked as outdated if any relevant changes to underlying billing data are introduced into the System retrospectively, for example in case of EDR recalculation. Such outdated invoices are subject to recalculation
- *Due amount*: actual amount owed against the invoice. The displayed sum is equal either to *Estimated amount* (plus *Tax amount* if any) or *Presented amount*, depending on the *Amount source* value (see *Edit invoice* description below)
- *Paid amount*: a click on the value in this column opens the *Invoice mapping* page displaying correlation between issued invoices and made payments or counter invoices. The value in this column is displayed as a link only for registered invoices
- *Unpaid amount* – the outstanding amount in the invoice
- *Currency*: currency of the invoice
- *Payment status*: *Payment expected, Paid in full, Partially paid, Not sent, Overdue*
- *Estimated amount*: total amount due based on the System calculation; a click on the value opens charge details for each specific invoice; the same data constitutes a detailing XLS/XLSX file to be sent to a client; charge details can be exported to the XLS/XLSX format
- *Tax amount*: tax amount of the invoice. Depends on the parameter *Tax scheme* in the *Carriers\Agreements* settings:
  - *Tax included*: the tax is already added to the invoice amount. In this case *Due amount* is equal to *Estimated amount*
  - *Add tax % to estimated amount*: tax is calculated according to the invoice amount. In this case *Due amount = Estimated amount + Tax amount*
- *Presented amount*: total amount due according to partner estimation, if available; the value is introduced manually as *Presented amount* in the *Edit invoice* menu. A difference between *Estimated* and *Presented amount*, if

any and if unfavorable for the System user, changes the invoice status to *Disputed* provided it is greater than the value of either parameter: *Min absolute mismatch to invoke a dispute* or *Min percent mismatch to invoke a dispute*, whichever is higher

- *Period from / Period to*: start/end date of the invoiced period
- *Issue date*: date of the invoice issue
- *Reg date*: date on which the invoice was confirmed
- *Invoice last updated*: date and time of the latest update of the invoice
- *File*: a click on the download link opens the PDF file of the invoice (only the cover letter; the traffic details file can be downloaded by clicking  on the toolbar at the bottom of the table)
- *Invoice last updated*: date and time of the latest update of the invoice

6.2.3 Invoice mapping

Invoice mapping is allocation of payments and invoices to one another (for example, payments to counter payments, payments to invoices, invoices to counter invoices etc.) It can be done automatically or manually. Automatic mapping is configured on the *Finance/Payments* page (the *Make auto mapping* checkbox in the *Edit payment* form). NOTE: When automapping is enabled, the System allocates the received payments to cover the oldest invoices first. For manual mapping, click on the link in the *Paid amount* column to open the *Invoice mapping* page.

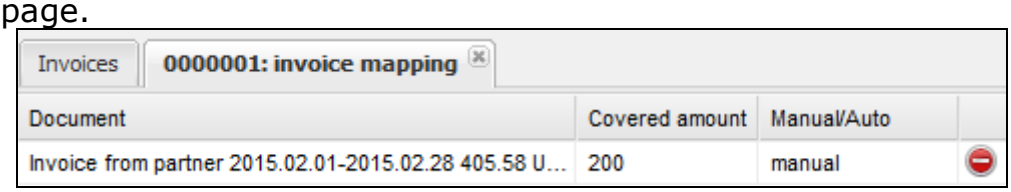


Fig. 60 Invoice mapping page

The  button on the tool bar at the bottom of the *Invoice mapping* page allows adding unmapped documents to the profile by specifying the document and choosing between listed amount options. Fields marked with an asterisk (*) are required.

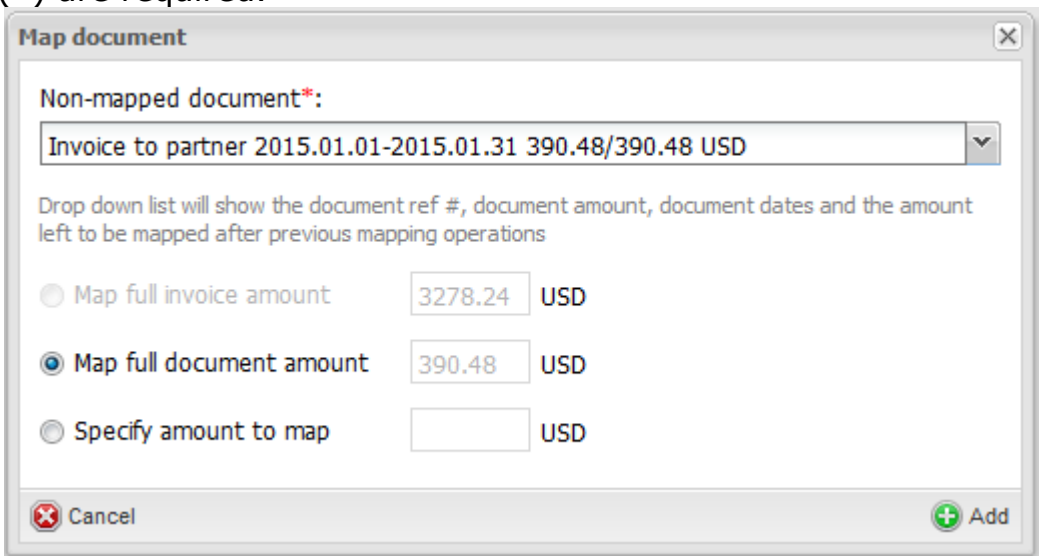


Fig. 61 Map document

- *Non-mapped document*: drop-down list of available invoices. The list is formed automatically and displays the amount available for distribution for every charge or invoice (in case unallocated financial documents from a partner are registered in the System)
- *Map full invoice amount*: is active only if the invoice is totally covered by selected payment or by counter invoice
- *Map full document amount*: if the payment amount is less than the amount of the invoice, the payment can be used to partially cover the invoice
- *Specify amount to map*: manually specify the payment amount or counter invoice to cover the selected invoice

Click 

to apply the settings.

6.2.4 Editing invoices

Double-click on any value in the *Invoices* table (except the links) to open the *Edit invoice* menu. The same menu can be opened by the 

button on the tool bar at the bottom of the table.

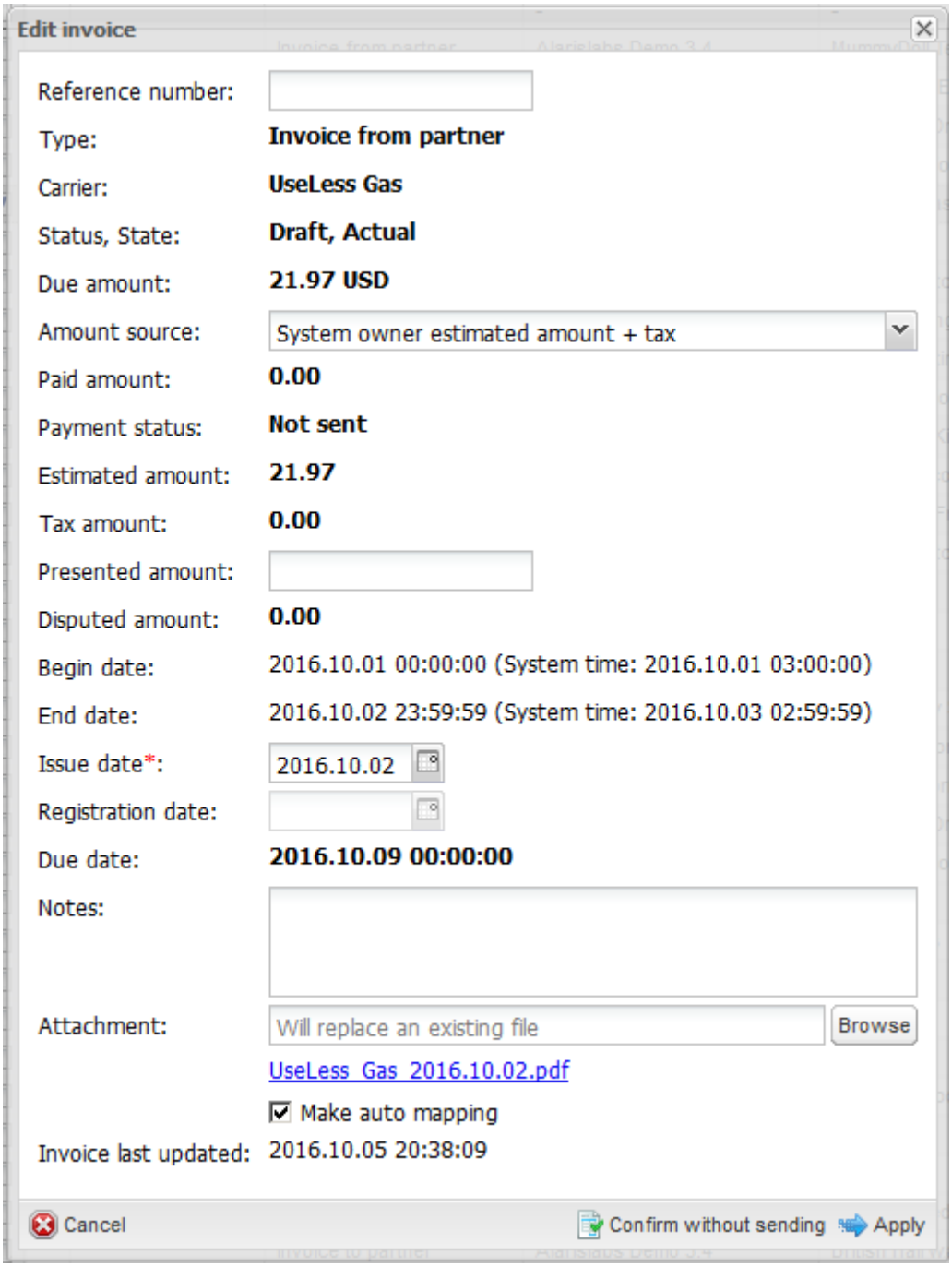


Fig. 62 Edit invoice menu

The menu contains the following parameters:

- *Reference number*
- *Amount source*: select *Amount presented by partner* or *System owner estimated amount + tax* to choose which amount is considered correct - *Estimated* (calculated by the System) or *Presented* (provided by the partner)
- *Disputed amount*: difference between *Due amount* and *Presented amount*. If *Amount source* is set as *Amount presented by partner*, then *Due amount* becomes equal to *Presented amount*, and the *Disputed amount* is null
- *Begin date* / *End date*: invoiced period
- *Due date*: payment due date

- *Notes*: arbitrary comments
- *Make auto mapping*: enables automatic synchronization of a registered payment with the relevant carrier/account invoicing and payment profile. When the checkbox is selected, the System allocates the payments to cover the oldest invoices prior to recent ones

Enter the appropriate parameters and click Apply to apply the settings. Click the Confirm without sending button to confirm the invoice draft. The invoice status will change from *Draft* to *Registered*.

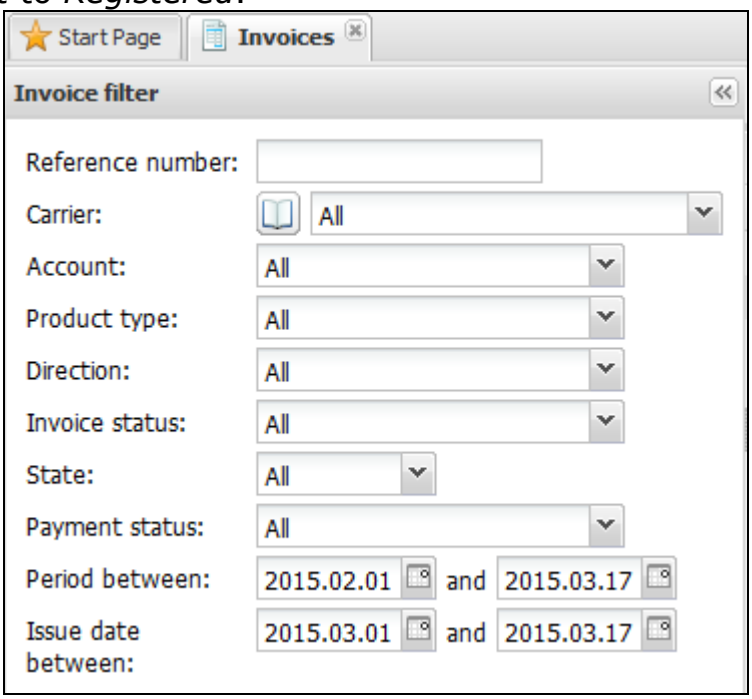


Fig. 63 Invoice filter

The button in the upper left corner of the *Invoices* page toggles the *Invoice filter menu*.

Enter the appropriate parameters and click Apply filter to filter the records in the *Invoices* table. The button in the *Carrier* field opens the list of carriers that can be filtered by ID, region or carrier name.

The Recalculate period button in the upper right corner of the *Invoices* page opens the *Recalculate period* menu, which allows recalculation of all invoices for the specified period, for example in case of billing period readjustments, outdated invoices etc. NOTE: Recalculation of invoices must be done after EDR rerating to bring the invoicing information up to date. Refer to *SMS\EDR management\EDR Rerating* for more detail.

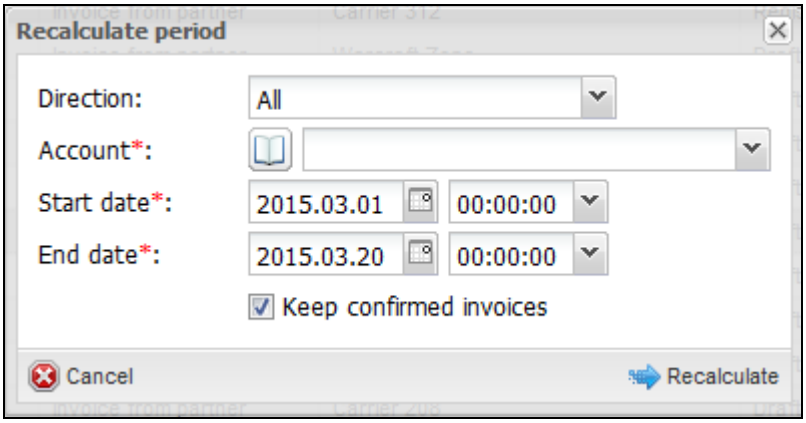


Fig. 64 Recalculate period

Enter the appropriate parameters in the menu and click Recalculate to recalculate the selected invoice:

- Direction: traffic direction (*Client*, *Vendor* or *All*)
- *Account*: select the account from the drop-down list. The button opens the list of accounts that can be filtered by account name or carrier region
- *Start date*: first date of the revised period
- *End date*: last date of the revised period
- *Keep confirmed invoices*: deselect the checkbox to re-create confirmed invoices (all invoices will be deleted and created again with the *Draft* status)

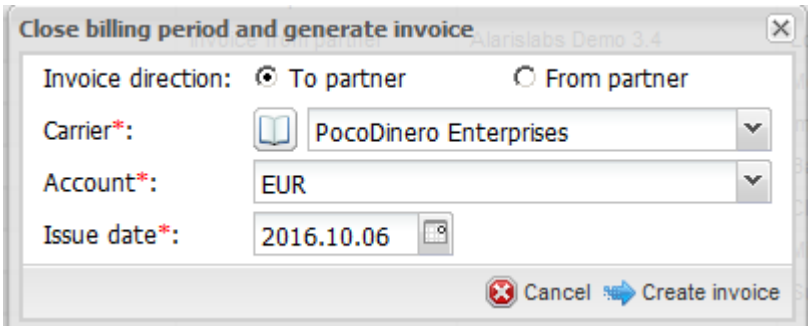


Fig. 65 Close billing period and generate invoice

The button Close billing period and generate invoice in the upper right corner of the *Invoices* page serves to generate an invoice for a billing period that is still open. The date specified in the *Issue date* parameter will become the last day of the closed billing period. The next auto-generated invoice will cover the remaining days of the preset billing period, its end date becoming the last day of the period. NOTE: Do not use this button to generate invoices for a completed billing period, when such invoices have not yet been created automatically (this normally happens when rates are imported retrospectively)

Enter the appropriate parameters in the menu:

- *Invoice direction*: to/from partner
- *Carrier*: select the carrier from the drop-down list. The button opens the list of carriers that can be filtered by ID, region or carrier name
- *Account*: select the account from the drop-down list
- *Issue date*: date of the invoice generation

Click Create invoice to generate the invoice. The invoice will appear in the table with the *Draft* status. Click Confirm and send on the bottom tool bar if you wish to confirm the selected invoice draft and send it to the partner (the invoice will be automatically sent to the e-mail defined in the *Carriers\Agreements* settings).
Click Confirm without sending to confirm the invoice without sending (for example, in case of backdate corrections).
Click Recalculate to recalculate the selected invoice draft (for example, when a partner performed backdate changes in the billing data).
Click Resend to resend the invoice to the partner.
The button opens the invoice download menu that allows downloading the cover letter, traffic details or both.

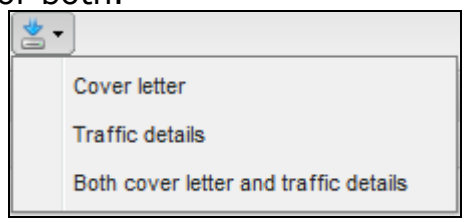


Fig. 66 Invoice download details

The download queue is displayed in the *Invoice files downloading list* that can also be opened by the button in the bottom right corner of the page.

Invoice files downloading list

Result ID	Document types	Job created	Status	Details
TASK2145	Cover letter	2015.03.15 16:34:09	ready	download
TASK2144	Cover letter, Traffic details	2015.03.15 16:29:18	ready	download
TASK2143	Cover letter	2015.03.15 16:29:14	ready	download

Fig. 67 Invoice files downloading list

Click to export the *Invoices* table to a MS Excel file.

6.3 Payments

The *Finance\Payments* page serves to track incoming and outgoing payments. The *Invoice/payment mapping* feature allows automatic matching of registered payments against issued invoices. Payments are entered (registered) to the System manually.

6.3.1 Payments table

The *Payments* table displays information about all payments registered in the System.

Synchronize balances | Make auto mapping | Import

Contract company	Bank account	Carrier	Account
-	-	-	-
Alarislabs Demo 3.4	-	Alice Wondersystems	Alice Wondersystems (EUR)

Fig. 68 Payments table

Click on the column headers for ascending/descending sorting of the records. Use the *Columns* list to hide/unhide columns. The table contains information on the following parameters:

- *Contract company*
- *Bank account*: the System owner's bank account number as configured in *Reference books\Bank accounts*
- *Carrier*: client/vendor name, as per data in the *Carriers* section
- *Account*: the partner account name and currency
- *Payment date*: the actual payment date
- *Expiry date*: for payments in the *Draft* status. Upon registration of payments (including those in the *Draft* status) the balance is immediately updated. In case when a payment is not registered before the *Expiry date,* it becomes ignored. In other words, a *Draft* is considered a regular payment only until the *Expiry date*. NOTE: This can happen when a partner informed the System owner that a payment has been made, but the actual money has not arrived yet. The partner can be notified in advance about the expiry of a draft payment. The notifications are set in the parameter *Send notifications of deferred payments coming due to client*; the period is set in *Notification period of deferred payments coming due, days* (*Administration\System settings\Financial module*). The email addresses are set in *Carriers\Agreements* (*Default invoice emails* field)
- *Registration date*: date of the payment registration in the System
- *Ref.#*: internal System reference number of the payment record
- *Direction*: *Inbound* or *Outbound*
- *Bank statement amount*: payment amount against the bank statement (the amount actually paid by the partner, before bank charges)
- *Amount debited*: the sum posted to the account (balance) after bank charges
- *Bank fee*: bank activity charges, calculated as difference in absolute value between *Bank statement* and *Amount debited*
- *Covered amount*: underlying invoice amount covered by the payment; may be partial or full. A click on the value opens payment mapping profile displaying correlation between payments made and invoices issued (see *Finance\Payments\Payment mapping*)
- *Status:* (*Draft, Registered*): a payment record may be saved in the System as a draft, for example if the actual payment from the client has not been received but the customer claims it has already been executed – such a record acquires the registered status only after additional confirmation and submission to the System. *Draft* payments have temporary impact on partner balance (until the *Expiry date*). *Registered* payments have a permanent impact on the partner balance
- *Document*: underlying document
- *Comment*: arbitrary comments

The ▣ button in the upper left corner of the *Payments* page toggles the *Payments filter* menu.

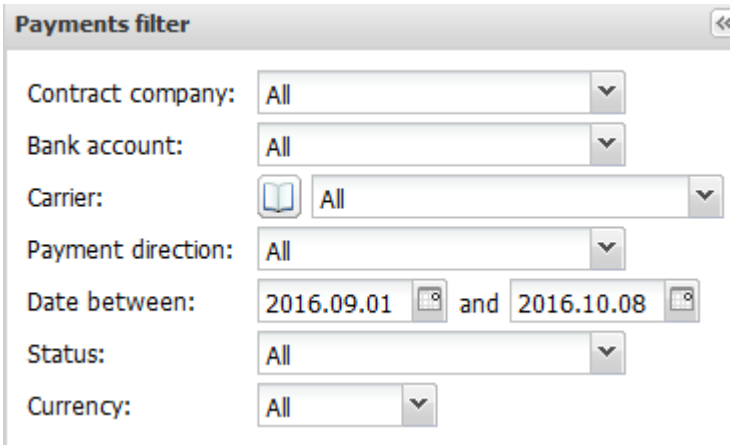


Fig. 69 Payments filter

Enter the appropriate parameters in the menu and click Apply filter to filter the records in the *Payments* table. The button in the *Carrier* field opens the list of carriers that can be filtered by ID, region or carrier name.

6.3.2 Payment mapping

A click on the *Covered amount* column values opens the payment mapping page displaying correlation between payments made and invoices issued. The page is similar to the *Finance\Invoices\Invoice mapping* page detailed above. Mapping can be done on either page.

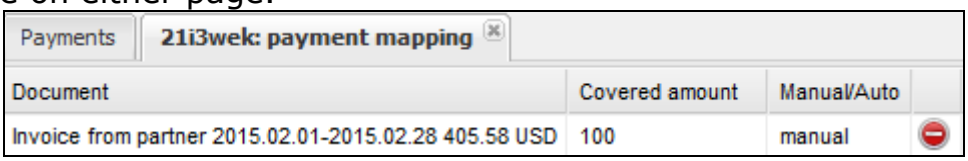


Fig. 70 Payment mapping page

The Map document button at the bottom of the *Payment mapping* page allows adding unmapped documents to the profile by specifying the document and choosing between listed amount options:

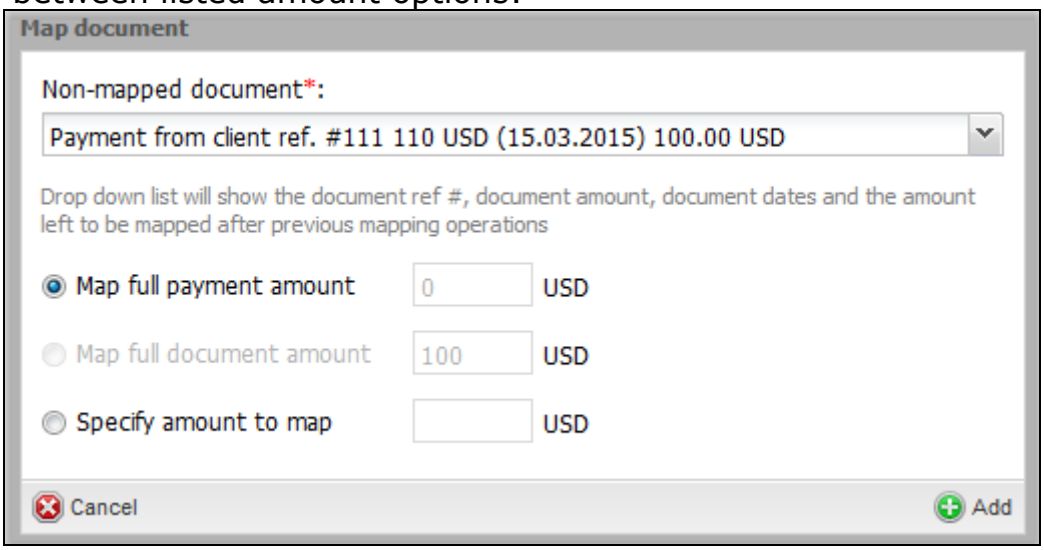


Fig. 71 Payment mapping

6.3.3 Interface controls

The *Finance\Payments* page has the following controls.

The Synchronize balances button opens the same-name menu:

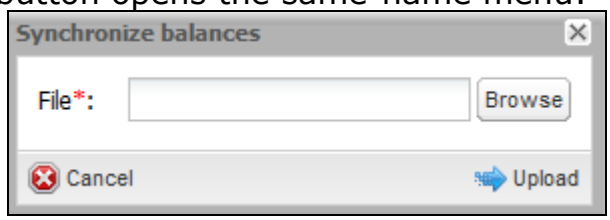


Fig. 72 Synchronize balances

The menu enables synchronization with external accounting systems through uploading data. It requires CSV files separated with semicolon (;) with the following fields:

- *Carrier name*: string of 256 characters maximum (must coincide with the carrier name in the System)
- *Currency*: string of 256 characters maximum, e.g. USD, EUR
- *Balance value*: balance amount; decimal separator dot (.) can be used
- *Balance effective date*: submitted in the format DD MM YYYY HH24 MI SS

The Make auto mapping button launches automatic allocation of payments to invoices for selected accounts:

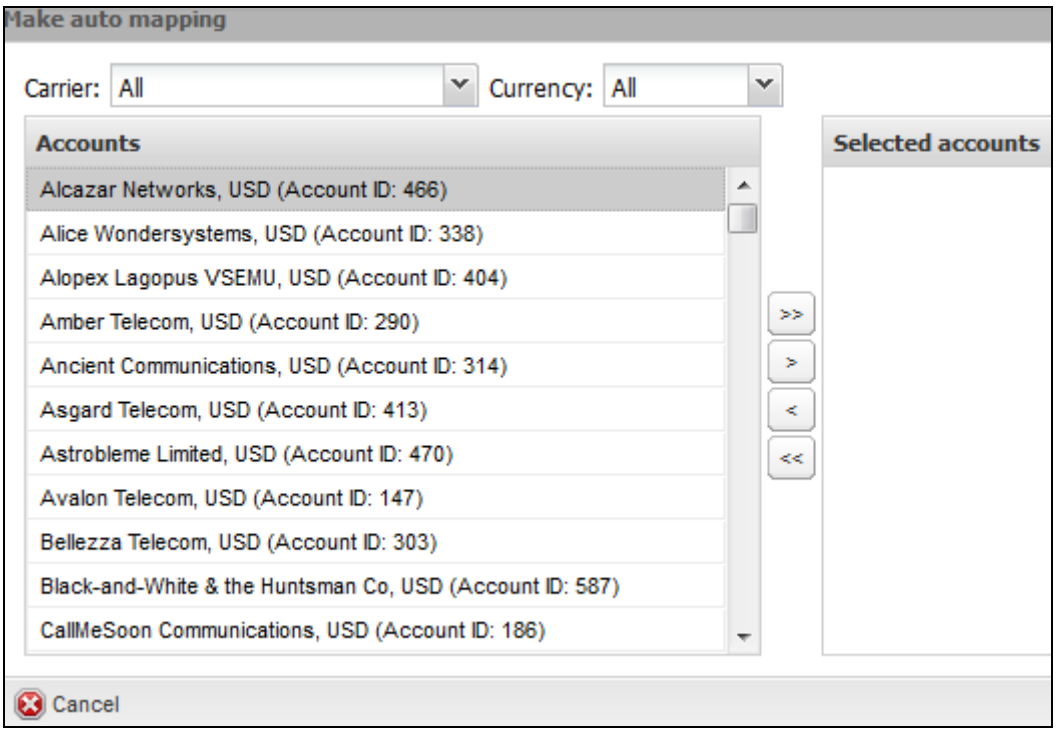


Fig. 73 Make auto mapping

The Import payments button opens the same-name menu:

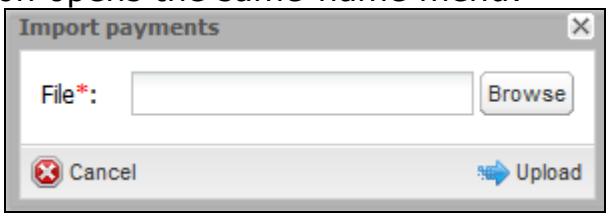


Fig. 74 Import payments

The menu allows import of external payment records; it requires CSV-format files separated with semicolon (;) with the following fields:

- *Carrier name*: string of 256 characters maximum (must fully coincide with the carrier's name in the System)
- *Payment direction*: '0' or 'inbound' for payments from client; '1' or 'outbound' for payments to vendor
- *Payment date*: submitted in format DD MM YYYY HH24 MI SS
- *Payment reference number*: string of 256 characters maximum
- *Payment amount*: payment amount, decimal separator "." (dot) can be used
- *Payment currency*: currency code, e.g. USD or EUR
- *Payment comments*: string of 4000 characters maximum
- *Account ID*: the Account ID from the *Carriers\Accounts* table (the field is required for partners having more than one account in the same currency)

A payment is associated to a carrier by the name and account currency. Therefore, carriers that have more than one account in the same currency should not use the *Import payments* feature.

The Register new payment button opens the *Payment registration* menu:

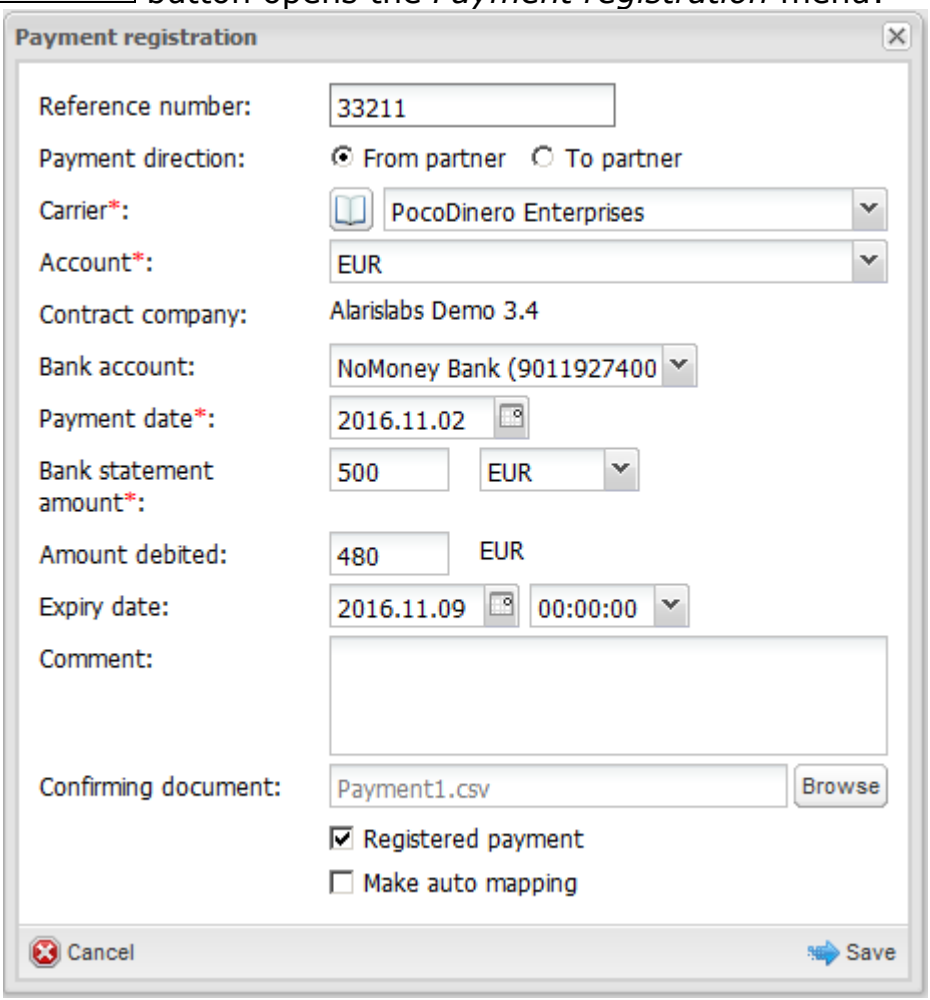


Fig. 75 Payment registration

- The menu allows manual creation of payment records by configuring the following parameters:*Reference number*: payment ID from the payment service provider
- *Payment direction*: incoming (*From partner*) or outgoing (*To partner*)

- *Carrier*: relevant client/vendor, as per data in the *Carriers* section. The button opens the list of carriers that can be filtered by ID, region or carrier name
- *Account*: relevant account, as per data in *Carriers\Accounts*
- *Contract company*
- *Bank account*: the bank account number from *Reference books\Bank accounts*
- *Payment date*: date of actual payment execution
- *Bank statement amount*: payment amount against the bank statement (the amount actually paid by the partner, before bank charges). Select currency in the drop-down list next to the field
- *Amount debited*: the sum posted to the account (balance) after bank charges
- *Expiry date*: the expiration date of payments with the *Draft* status. If the payment status is not changed to *Registered* by the date (that is, the actual payment is not received and acknowledged), the amount will be written off the partner's balance. NOTE: This field only makes sense when the *Registered* checkbox is deselected
- *Comment*: arbitrary comments to payment
- *Confirming document*: underlying document
- *Registered payment*: if the checkbox is selected, the payment gets registered immediately. The selected checkbox shows that this payment is not a *Draft* and has no *Expiry date*
- *Make auto mapping*: enables automatic synchronization of a registered payment with the relevant carrier/account invoicing and payment profile. When the checkbox is selected, the System allocates the payments to cover the oldest invoices prior to recent ones

NOTE: The currency exchange rate is taken as of the payment date.

When through with defining the parameters, click Save to confirm or Cancel to discard the settings.

The Clone payment button creates a duplicate of the configured payment. This is helpful when configuring another payment with similar parameters.

Click to refresh the page.

The button Confirm draft and submit payment(s) allows payment confirmation and registration in the System.

The button Delete payment(s) deletes the selected payment record.

Any payment record can be exported either to an CSV or XLS-file using the buttons and respectively.

6.4 Recurring fees

The *Finance\Recurring fees* page serves to configure regular charges to partners for continuous services other than SMS exchange – for example, server or data channel rental. The page contains a table of recurring fees and the *Add* and *Edit* menus.

Details	Next start date	Next end date	Confirm...	Direction
Text mask				
Recurrent fee	2016.11.01 00:00:00	2016.11.07 00:00:00	No	Client

Fig. 76 Recurring fees table

NOTE: For easier handling of recurring payments it is recommended to create a dedicated product type. Go to *Reference books\Product types*, create a new product type (for example, *Server rental*), and in the *Unit* field select *Service.*

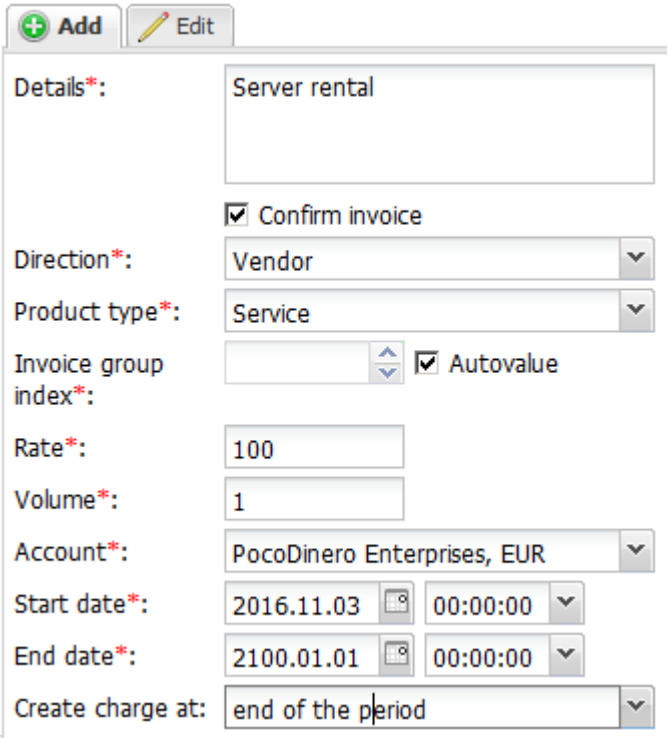


Fig. 77 Add menu

The *Add* menu of the *Recurring fees* page contains the following parameters.

- *Details*: payment description
- *Confirm invoice*: when the checkbox is selected, invoices are confirmed automatically
- *Direction*: *Vendor* or *Client*
- *Product type:* select a product type specifically created for this service
- *Invoice group index*: specify a unique value if you want this charge to be invoiced separately. To invoice this charge together with another product, select the index of that product. If *Autovalue* is checked, the grouping is performed as set in the parameter *Default charge grouping mode* (for possible values refer to *Administration\System settings\Financial module*)
- *Rate*: service price
- *Volume*: volume of the services (in units configured in *Reference books\Product types*)
- *Account*: partner account
- *Start date, End date*: billing period. For example, if the billing period is 1 month, the service will be charged for monthly. The next billing period is shown in the *Recurring fees* table in the *Next start date* and *Next end date* columns

- *Create charge at*: *end of the period* or *beginning of the period*

Click Submit to save the changes.

7. Reference books

7.1 Bank accounts

The *Reference Books\Bank accounts* page contains information about the System owner's bank accounts that are used to create agreements with partners (see *Carriers\Agreements*) and payments (see *Finance\Payments*).
To create a new bank account record, use the *Add* menu as illustrated below.

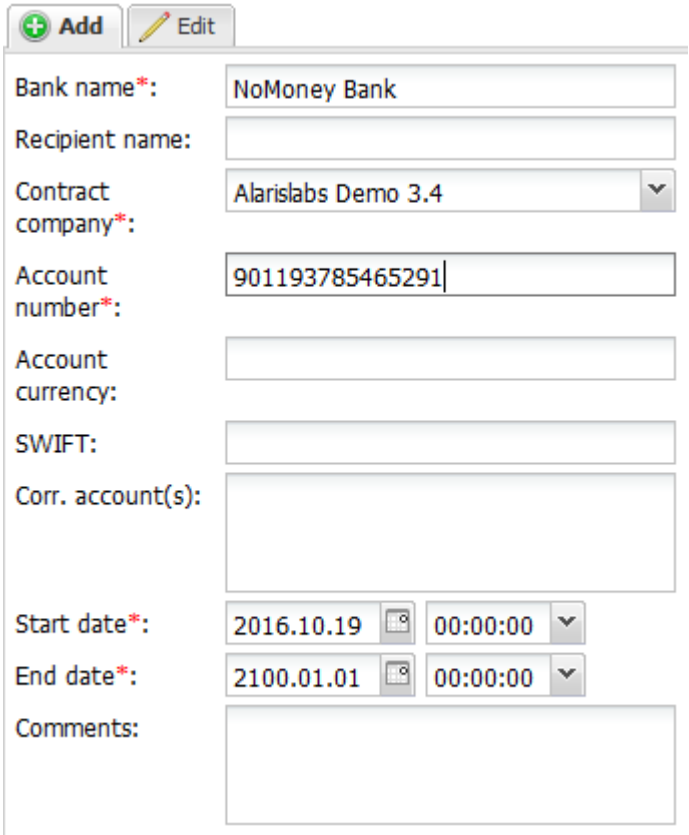


Fig. 78 Add menu

7.2 Caller ID tags

Caller ID tags are marks assigned to a caller ID or it mask. They serve to configure routing by A-number (Sender ID). This can come handy in blocking undesirable traffic from a specific number, on-net routing etc.
The *Reference Books\Caller ID* tags page contains a table of caller ID tags and the *Add* and *Edit* menus.

Type	Tag	Dial code	Description
All	All	Text mask	Text mask
SMS	USA	+1216	
SMS	Black List	79107940423	
Voice	Russia	7910141231	

Fig. 79 Caller ID tags table

To create a new tag, use the *Add* menu as illustrated below.

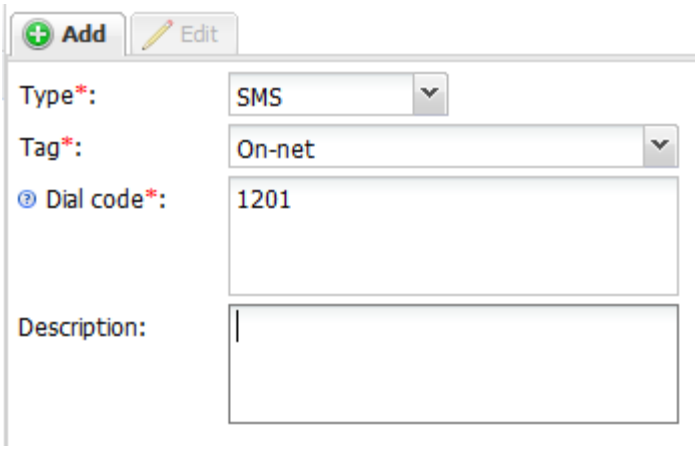


Fig. 80 Add menu

The menu contains the following parameters:

- *Type*: the tag type
- *Tag*: the tag name. To create a new tag name, expand the drop-down list, type the name in the edit field and click the button.
- *Dial code*: the dial code (use % as a wildcard if necessary)
- *Description*: arbitrary comments

Click Submit to save the changes.

7.3 Contract companies

The *Reference Books\Contract companies* page serves to configure the legal entities of the System owner, on behalf of which it works with its partners. A contract company encompasses a set of templates and properties used for doing business with a partner.

The page contains a table of contract companies and the *Add* and *Edit* menus.

ID	Contract company	Invoice filename pattern	Invoice details filenam...	Invoice refere
1	Alarislabs Demo 3.4	[CompanyName]_[Invoi...	[CompanyName]_[Invoi...	[XXXXXXX]
2	Anton_comp	Anton[xxxxx]		Anton[XXXXX

Fig. 81 Table of contract companies

To create a new record, use the *Add* menu as illustrated below.

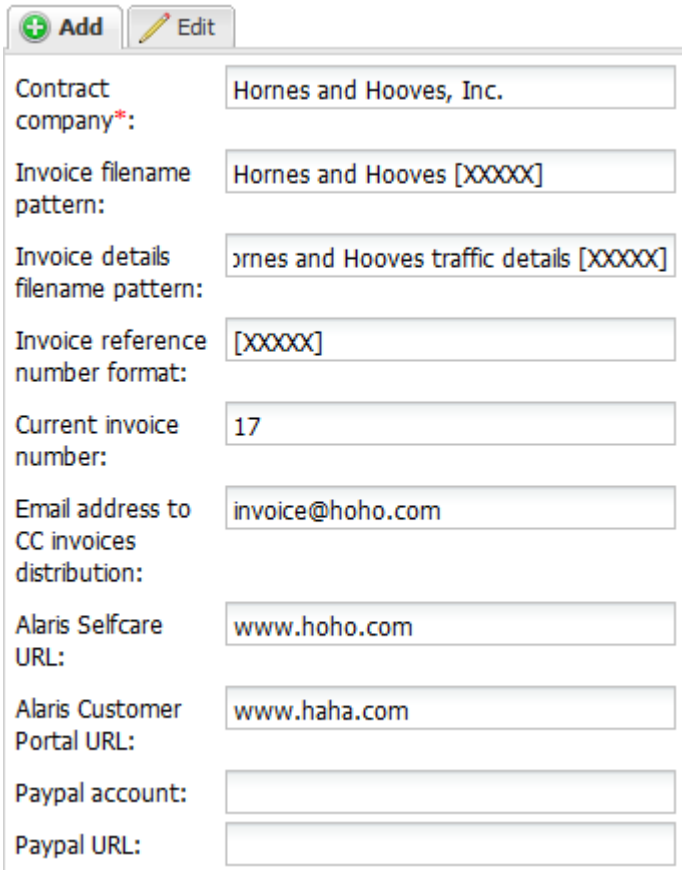


Fig. 82 Add menu

The menu contains the following parameters:

- *Contract company*: the name of the legal entity
- *Invoice filename pattern*: the filename pattern of the invoice cover sheet
- *Invoice details filename pattern*: the filename pattern of the invoice traffic details file
- *Invoice reference number format*
- *Current invoice number*
- *Email address to CC invoices distribution*
- *Alaris Selfcare URL*: link to Alaris retail portal
- *Alaris Customer Portal URL*
- *Paypal account*
- *Paypal URL*

When necessary, use markers in the above parameters. Markers are alphanumeric strings in square brackets that serve as placeholders of information used in documents. For the list of markers supported by the System, see *Administration\System settings\Template manager\Markers*. NOTE: Prior to inserting markers in the *Add* menu fields, check that they are configured in *System settings\Financial module* (*Invoice reference number format* parameter) and *Administration\System settings\Template manager*.

Click Submit to save the changes.

7.4 Currency exchange rates

The System supports multi-currency billing based on exchange rates to translate different currencies to the System currency. The *Reference Books\Currency exchange rates* page serves to manage the currencies used by the System owner's partners and keep their exchange rates up-to-date.

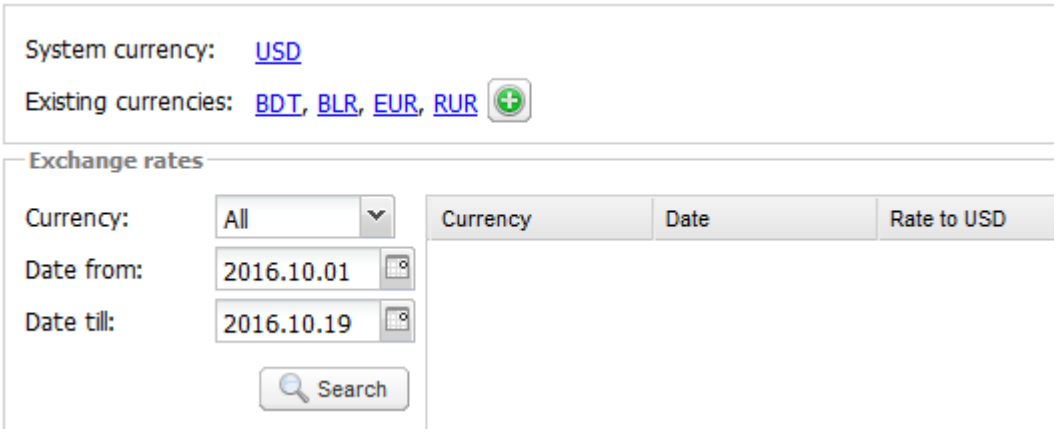


Fig. 83 Currency exchange rates

The page contains the following information:

- *System currency*: the actual System currency
- *Existing currencies*: other currencies configured in the System

Click the link with the currency code to open the *Editing currency* menu:

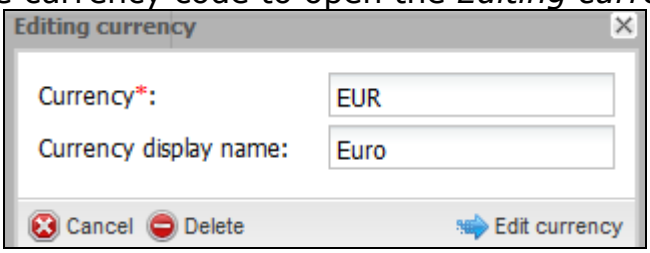


Fig. 84 Editing currency

Enter the appropriate parameters in the corresponding fields. Click Edit currency to confirm or Cancel to discard the settings. Click Delete to delete the currency.

The button opens the *Adding new currency* menu:

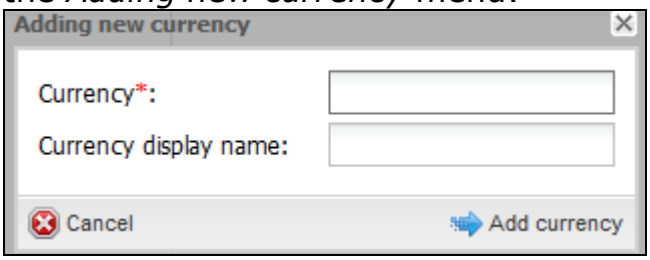


Fig. 85 Adding new currency

Enter the required parameters in the corresponding fields. Click Add currency to confirm or Cancel to discard the settings.

The bottom of the page contains exchange rates, which can be filtered by the currency name or validity period. The Search button filters the currencies according to values set in the fields *Currency*, *Date from* and *Date to*.

Add or delete the exchange rates using the Add and Delete buttons respectively. Recently updated but not saved records are marked in red reminding to click the Save button before leaving the page. Exchange rates can be added, deleted and edited for the present, past and future periods. Exchange rate changes for past periods cause statistics recalculation, which is a time and resource consuming procedure, especially for huge traffic volumes.
The exchange rate values are defined as the cost of 1 currency unit in the System currency. For example, if the System currency is USD and 1 EUR = 1.4 USD, the exchange rate for EUR will be 1.4. This tip is opened by clicking the Help button at the bottom of the page.
Currency exchange rates can be downloaded automatically. Contact the Alaris technical support team for configuration.

7.5 Product types

The *Reference Books\Product types* page contains information on the type of products registered in the System. Records highlighted in red are non-editable.
The page is divided in two sections. The left section is a table of product types. The table contains the following information:

ID	Type name	Charge description	Unit
100	Correction	Correction charges	Service
1	International	Voip traffic	Minute
3	SMS	SMS	SMS
2	US domestic	Voip traffic	Minute

Fig. 86 Product types

- *ID*: internal identification number
- *Type name:* name of the product type
- *Charge description*: description of the chargeable services
- *Unit*: measurement unit

The right panel contains the *Add* and *Edit* menus.

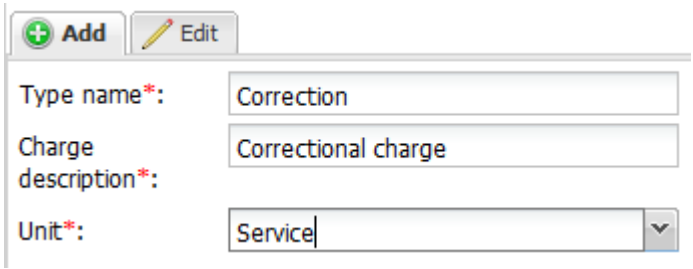


Fig. 87 Add menus

Enter the above listed parameters in the appropriate fields. When through with defining the parameters, click Submit to confirm or Reset to discard the settings. Click Delete to delete the selected record.

7.6 Regions

The *Reference Books\Regions* section serves to create lists of regional managers and region sets, which are used on the *SMS\Analytics* page as a statistical layer

component (*Client/Vendor Managers*, *Client/Vendor Region*). The section consists of three pages – *Company region, Country region* and *Country groups*.

7.6.1 Company region

The *Company region* table contains the following information:

- *ID*: internal identification number
- *Region name*: name of the region
- *Manager*: name of the manager responsible for the region

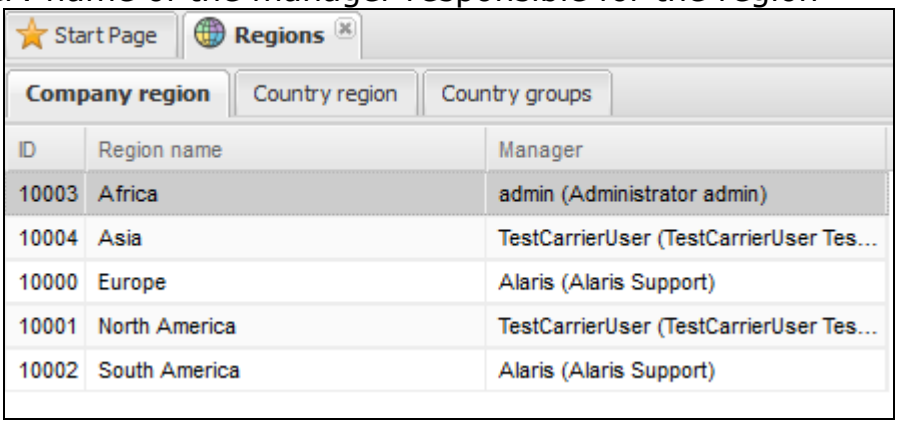


Fig. 88 Company region

The *Add* and *Edit* menus in the upper right corner of the page allow assigning managers to regions. To activate the *Edit* menu, click on the record in the table. Enter the parameters in the corresponding fields. Fields marked with an asterisk (*) are required.

Fig. 89 Add and Edit menus

When through with defining the parameters, click Submit to confirm or Reset to discard the settings. Click Delete to delete the selected record.

7.6.2 Country region

The *Country region* table contains the following information:

- *ID*: internal identification number
- *Country*: name of the country
- *Region*: name of the region

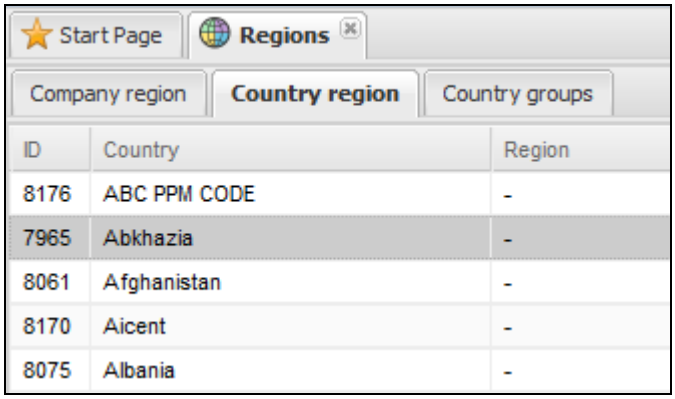


Fig. 90 Country region

The *Edit* menu in the upper right corner allows assigning countries to regions.

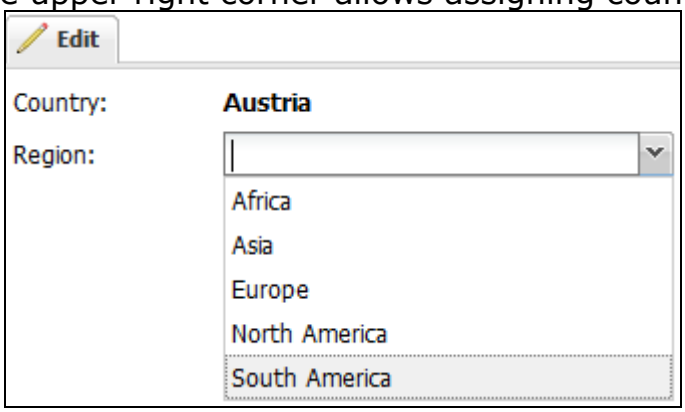


Fig. 91 Edit menu

Click Submit to confirm or Reset to discard the settings.

7.7 Units

The *Reference books\Units* page contains information on measurement units used in the System.
The page is divided in two sections: the table of units and the *Add*/*Edit* menus. The table contains the following information:

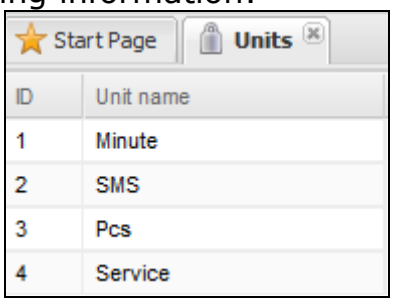


Fig. 92 Units

- *ID*: internal identification number
- *Unit name*: name of the unit

The *Add* and *Edit* menus allow adding new records or editing existing ones. To activate the *Edit* menu, click on the record in the table. Enter the unit name in the corresponding field.

Fig. 93 Add menu

When through with defining the parameters, click Submit to confirm or Cancel to discard the settings. Click Delete to delete the selected record.

8. Reports

8.1 Reports page overview

The *Reports* page enables creating custom reports based on any table in the System database.

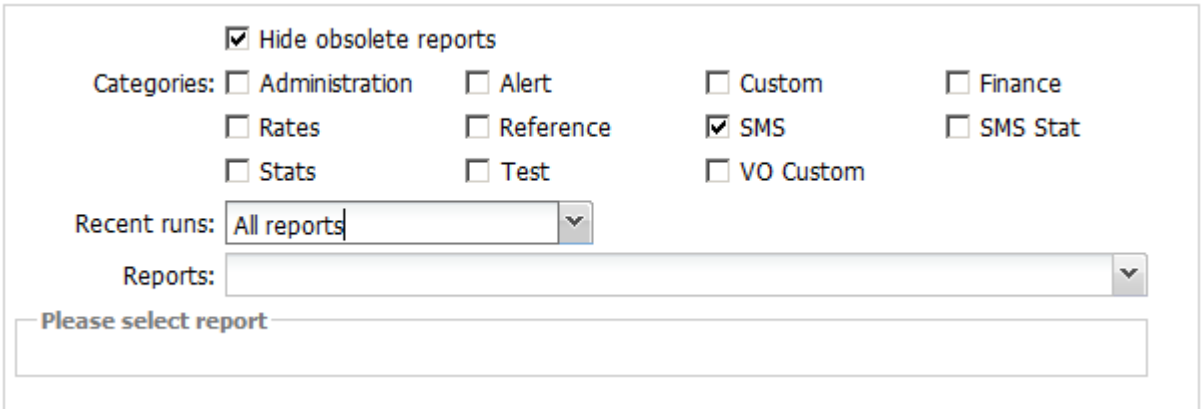


Fig. 94 Reports page

The System is delivered with a pack of report templates covering most typical needs of wholesale carriers. The reports are named according to a pattern: the last word in the report name describes the functional area the report pertains to (e.g. *Reference, Stats, Finance, Administration etc*).

The *Reports* page allows generating a report based on an existing template and contains the following parameters:

- *Categories*: the report category
- *Recent runs*: shows the reports generated for the past 24 hours, 3 days, week, 2 weeks or a month. Use this drop-down list for easy access to frequently used reports
- *Reports*: select a report from the drop-down list. A submenu with the report parameters will open below. Fill in the appropriate parameters

In the right hand panel check the flag *Is recurrent* if the report must be created regularly. Configure the time table as shown below; select the sender; in the *Email for report* field provide the email to which the reports will be sent and select the report file type in the appropriate field. NOTE: The System only sends the results of recurrent reports if they are not void.

Click Next 10 runs to view the schedule of the next 10 runs of the report. Click Save schedule to save the settings.

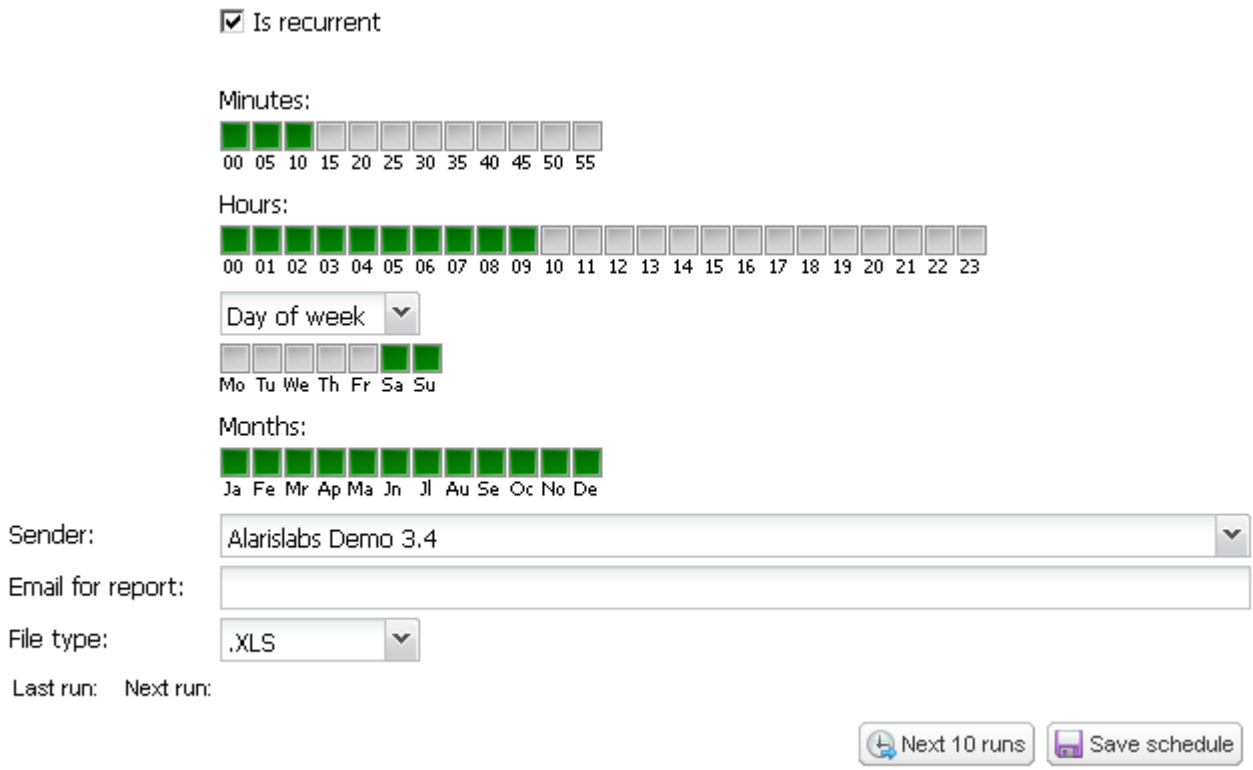


Fig. 95 Report schedule

To generate a report, click Run at the bottom of the left panel. Click Export to Excel or Export to CSV to export the file to MS Excel or a .CSV file respectively.
If access to specific data in the System DB is required for creating a report not available on the *Reports* page, contact the Alaris support team for a description of the necessary DB tables and/or views. The most frequently used reports are described below.

8.2 SMS Analytical cube status (Administration)

Analytical cubes are pre-calculated statistical tables based on the OLAP (online analytical processing) technology. The System aggregates multi-dimensional data for various objects and their combinations. This method allows fast and easy retrieval of any type of statistics – for example, for each client the System knows to which countries the traffic was sent, to which network in each country, to which MCCMNC in each network, to which vendors for each MCCMNC etc. This information is collected in minute, hour, day and month increments and is stored in analytical cubes. Cube updating is a time consuming process and is therefore performed either at the end of a time increment or when an EDR threshold is reached (whichever happens first).
The cube updating parameters are configured in *Administration\System settings\SMS module* section illustrated below.

Stats calculation delay, minutes (day)	45
Stats calculation delay, minutes (hour)	15
Stats calculation delay, minutes (min)	1
Stats calculation delay, minutes (month)	1300
Stats calculation delay, minutes (week)	300
Stats calculation threshold (EDR/day, MA)	2500
Stats calculation threshold (EDR/hour, MA)	1000
Stats calculation threshold (EDR/min, MA)	17
Stats calculation threshold (EDR/month, MA)	48000
Stats calculation threshold (EDR/week, MA)	36000
Stats calculation threshold (SMS/Hour, SA)	1000
Switch URL template for sms test send	http://127.0.0.1:8001/api?command=submit...
Traffic details days count	62
Week cube partition count	40

Fig. 96 Cube update parameters

The following parameters are available:

- *Auto threshold calculation (0 - no, 1 - yes)*: when the value is 1, the cube update thresholds are calculated automatically
- *Stats calculation delay, minutes (day/hour/min/month)*: the delays configured for each time increment (minute, hour, day, week, and month) to allow statistics calculation even if the thresholds configured in *Stats calculation threshold (SMS/Hour, SA)* and *Stats calculation threshold (EDR/day, EDR/hour, EDR/min, EDR/month, EDR/week, MA)* have not been reached. For example, the value *45* in the parameter *Stats calculation delay, minutes (day)* means that the statistics for a daily cube will be calculated on 00:45 on the following day in case the amount of new records does not exceed the threshold defined in *Stats calculation threshold (EDR/day)*
- *Stats calculation threshold*: the threshold (in EDR/min, MA, EDR/hour, MA, EDR/week, MA, EDR/month, MA and SMS/hour, SA). When reached, the statistics will be recalculated even if the increment is not yet complete

NOTE: *MA* stands for Multi-threaded Analytics and is normally used on high-performance servers; *SA* is Single-threaded Analytics and is best for low-performance servers. Single-threaded analytics involves linear analysis of data in a specific time increment. For example, in a 5-minute period initially the first minute data is calculated, then the second minute data, then the third and so on. Multi-threaded analytics provides for simultaneous calculation of several days (in this example, the data for all the five days is analyzed simultaneously). This allows much quicker analysis. Thresholds for single-threaded analytics are only set for the hour increment (*Stats calculation threshold, SMS/hour, SA* parameter), and are calculated automatically for all other increments. The analytics type (single- or multi-threaded) is set during System installation in the *Multi-threaded analytics (0 - no, 1 - yes)* parameter in *Administration\System settings\SMS*. It is recommended to check the value of this parameter prior to configuring stats calculation thresholds.

The thresholds must be configured based on the intensity of traffic, otherwise the analytics may be displayed with a noticeable delay. For example, during initial System tests when the SMS count is low it is advisable to set low thresholds for the minute/hour/day increments.

Recalculate current day stats at, hours (0-23, 1-fold)	null
Recalculate current hour stats at, mins (0-50, 10-fold)	null

Fig. 97 Recalculate stats parameters

Additionally, it is possible to configure forced recalculation of the day and hour statistics at the specified hour and minute respectively. The following parameters are used for that purpose:

- *Recalculate current day stats at, hours (0-23, 1-fold)*: any integer value from 0 to 23. For example, the value *23* means that the statistics for the current day will be recalculated at 23:00 on the same day
- *Recalculate current hour stats at, mins (0-50, 10-fold)*: specify 0, 10, 20, 30, 40 or 50. For example, the value 30 means that the statistics for the current hour will be recalculated at 30 minutes of the current hour

The *Analytical cube status* report provides information about the general status of the cubes and the cube update schedule.

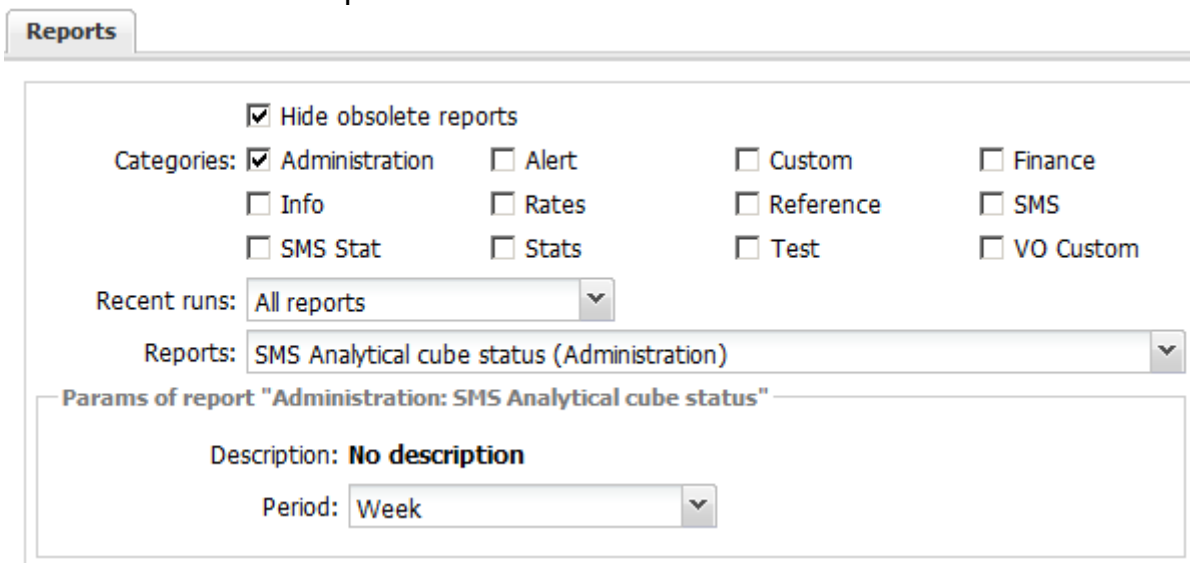


Fig. 98 SMS Analytical cube status report parameters

To generate the report, in the *Categories* section select *Administration*; in the *Reports* drop-down list select *SMS Analytical cube status (Administration)*; in the *Period* drop-down list select the appropriate period (*Minute*, *Hour*, *Day*, *Week*, *Month* or *Financial*). Click Run. NOTE: *Financial* are specialized cubes calculated by billing period. Their calculation delay is configured by the parameter *Invoice generation delay, hours* at *Administration\System settings\Financial module*.

Period: **Week**

№	Partition period t...	Partition date	State	Last change	Row count	New EDR count..
	Text mask	Text mask	Text mask	Text mask	Text mask	Text mask
1	WEEK	2016.10.24 00:0...	Must be recalcul...	2016.10.17 00:0...	0	
2	WEEK	2016.10.17 00:0...	Must be recalcul...	2016.10.17 13:5...	58876	60303
3	WEEK	2016.10.10 00:0...	Ready	2016.10.17 02:2...	79520	0

Fig. 99 SMS Analytical cube status report

The report table contains the following columns:

- *Partition period*: the cube type (*minute*, *hour*, *day*, *week*, *month* or *financial*)
- *Partition date*: the increment date and time
- *State*: *Ready* or *Must be recalculated*
- *Last change*: date and time of the last update
- *Row count*: the number of rows
- *New EDR count*: the number of new EDRs after update
- *Recalculation status*: date and time of the update

8.3 ASR alert (SMS)

ASR alert (SMS) is a report that gathers information at regular intervals and sends notifications if preset ASR threshold values are exceeded.
To generate the report, in the *Categories* section select *SMS*; in the *Reports* drop-down list select *ASR alert (SMS).*

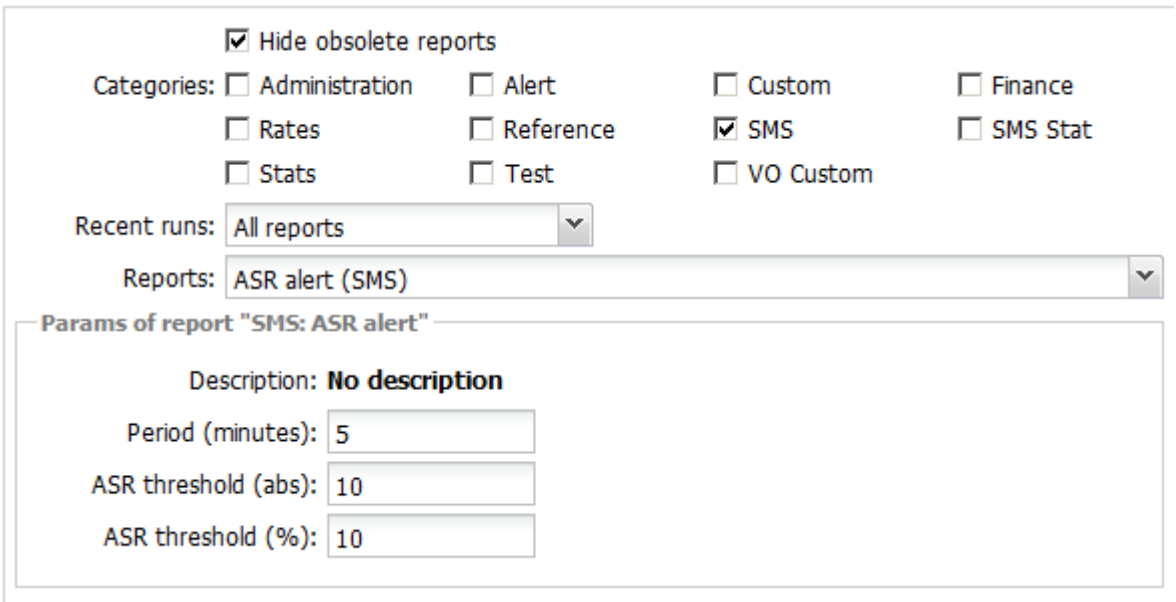


Fig. 100 ASR alert (SMS) report parameters

In the *Params of report section* defines the report parameters:

- *Period (minutes)*: the period for which the data is calculated. NOTE: the report will only be sent if the ASR exceeded the threshold values. It is recommended to set the period to 5 minutes
- *ASR threshold (abs)*: ignore routes with ASR below this value
- *ASR threshold (%)*: send alert when ASR drops by this percentage as compared to the previous period

In the right hand panel in the *Email for report* field specify the email address for sending the report. Set the schedule (for example, configure the report to run every 5 minutes) and click Save schedule . Click Run.
According to the settings illustrated above, and the 5-minute schedule, the System will check all routes every 5 minutes, compare the ASR values to those in the previous 5 minutes and notify the System owner of any events when the ASR value drops by 10 percent. An example of the report is illustrated below.

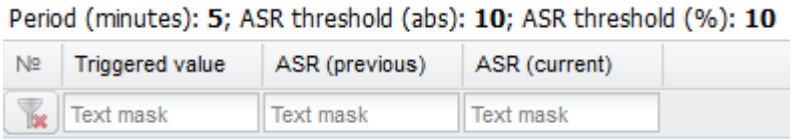


Fig. 101 ASR alert (SMS) report

NOTE. This report can be used as an example for creating other alerting reports that are sent to the user only when a preset threshold is exceeded.

8.4 Channel status (SMS)

The *Channel status (SMS)* report shows the current state of client and vendor SMPP binds, and is updated every minute. This report is highly instrumental when establishing connection with a new partner carrier.
To generate the report, in the *Categories* section select *SMS*; in the *Reports* drop-down list select *Channel status (SMS).* Select *Show disabled* checkbox to include SMS channels disabled by the System owner. Click Run.
An example of the report is shown in the figure below.

Reports | Report "Channel status (SMS)"

Show disabled

№	Carrier	Channel ID	Channel name	Direction	Login (system ID)
	Text mask	Text mask	Text mask	Text mask	Text mask
1	ALARIS TEST	12020	ALARIS TEST	CLI	user_1003
2	ALARIS TEST	10020	ALARIS TEST	CLI	tGOhlGPB
3	Alarislabs_NEW	11980	Alarislabs_NEW	CLI	user_1530
4	Alice Wondersy...	11355	Alice_auto274	CLI	zQaW
5	Alice Wondersy...	11345	Alice_auto264	CLI	zQaW012
6	Alice Wondersy...	11338	Alice_auto257	CLI	zQaW
7	Alternia Telecom...	11722	Alter_auto403	CLI	_vCZaXcS2V
8	Alternia Telecom...	11517	Alter_auto197	CLI	_vCZaXcS
9	Alternia Telecom...	11607	Alter_auto85	CLI	_vCZaXcS2V

Fig. 102 Channel status (SMS) report

8.5 EDR Export (SMS)

The *EDR Export (SMS)* report serves to export EDR records as XSL files.
To generate the report, in the *Categories* section select *SMS*; in the *Reports* drop-down list select *EDR Export (SMS).* In the *Params of report* section select appropriate parameters as shown in the figure below. Set the schedule if necessary and click Run.

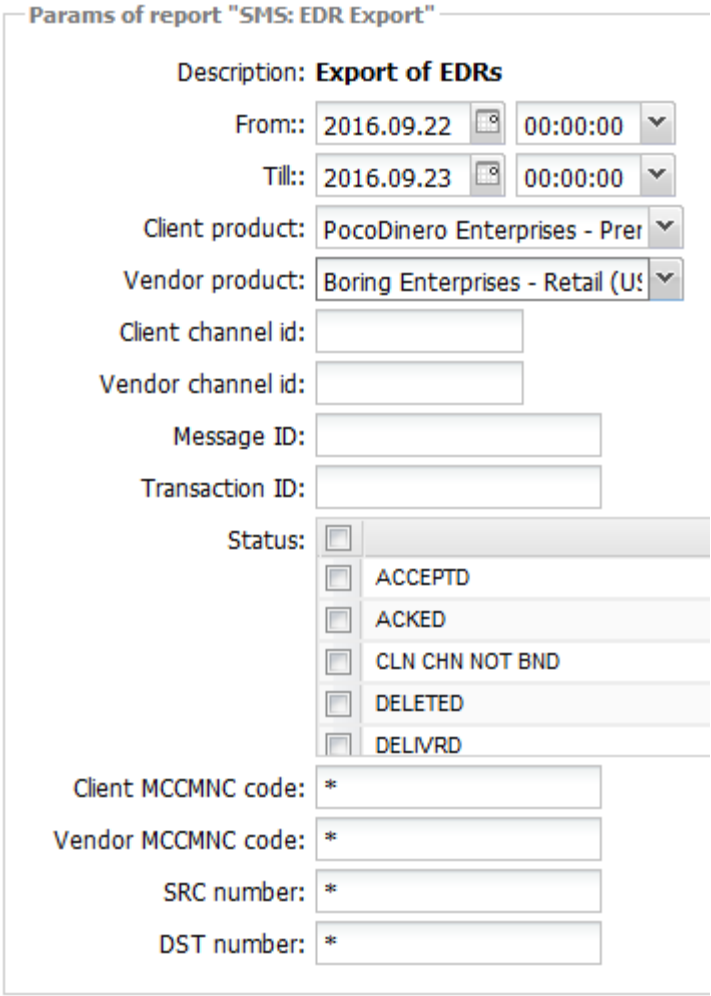


Fig. 103 EDR Export (SMS) report parameters

An example of the report is shown in the figure below.

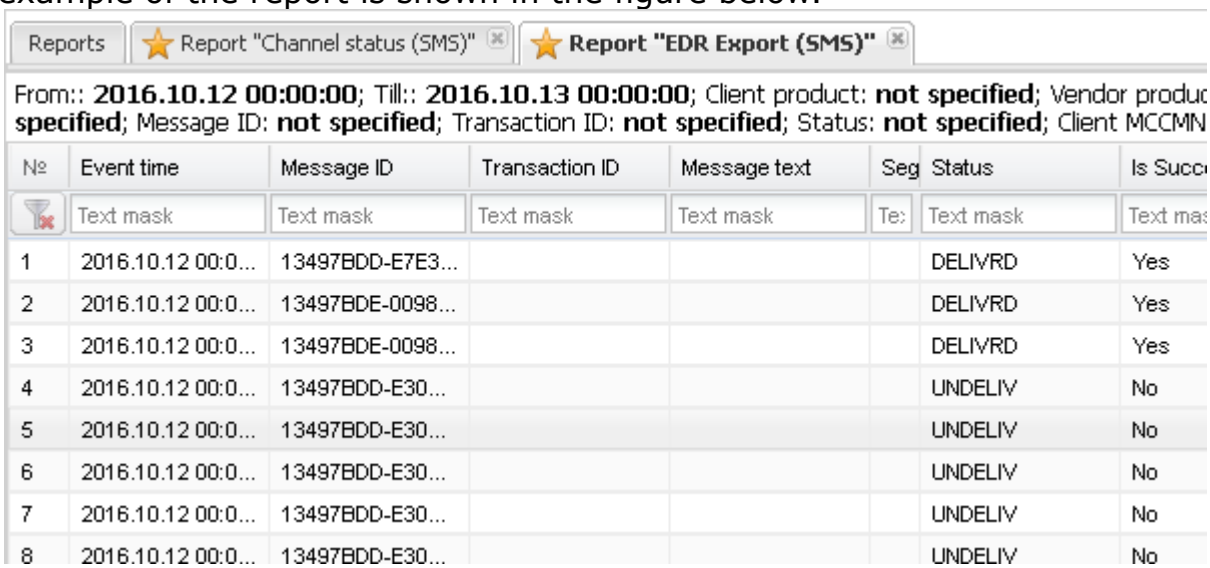


Fig. 104 EDR Export report

NOTE: Alternatively, EDR records can be exported in the *SMS\Analytics* page using the  button.

8.6 LCR Analysis (SMS)

LCR analysis (SMS) is a report that allows comparing a product with least cost rates that exist in the System. The report shows five least cost vendors per MCCMNC.

To access the report, in the *Categories* section check *SMS*; in the *Reports* drop-down list select *LCR Analysis (SMS)*.

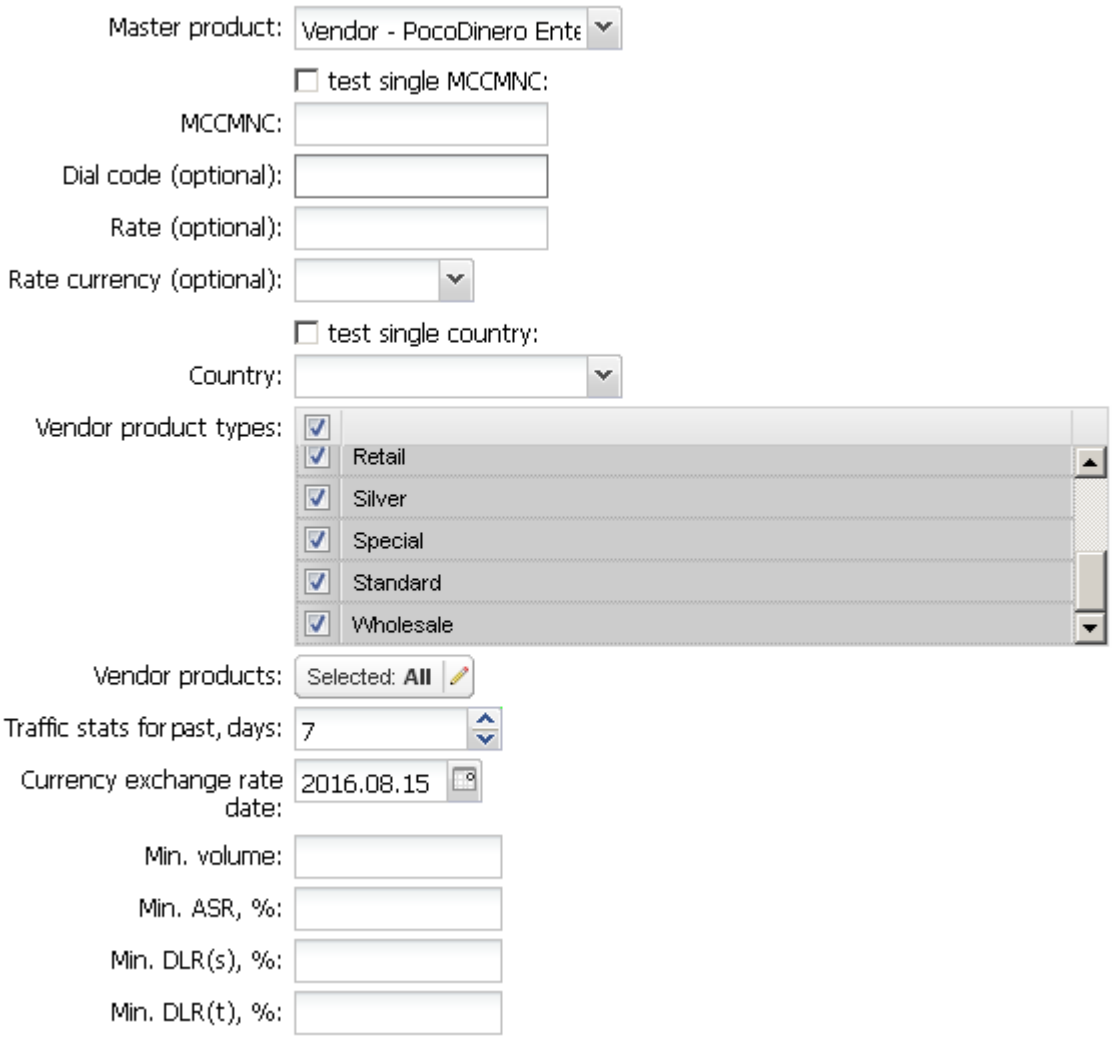


Fig. 105 LCR Analysis settings

In the *Params of report* section select the appropriate parameters as detailed below:

- *Master product*: the product to which least cost rates will be compared
- *test single MCCMNC*: check the flag and supply the MCCMNC code in the field below for least cost rates for the MCCMNC. The *Master product* field becomes inactive
- *Dial code, Rate, Rate currency (optional)*: supply the parameters if necessary
- *test single country*: check the flag to generate a report for a single country; select the country in the drop-down list below
- *Vendor product types*: select the appropriate product types

- *Vendor products*: click  to open the product multi-picker and choose the products
- *Traffic stats for past, days*: indicate the period (in days) for which the report will be generated
- *Currency exchange rate date*: select the date of the currency exchange rate
- *Min. volume*: indicate the minimum amount of SMS
- *Min. ASR, %*: specify the minimum ASR value
- *Min. DLR(s), %*: provide the minimum DLR(s) value (the percentage of SMS successfully received by the end user with respect to the number of messages received by the carrier)
- *Min. DLR(t), %*: provide the minimum DLR(t) value (the percentage of SMS delivered to the end user with respect to the total number of message sending attempts)

To generate the report, click 

at the bottom of the left panel. The report is illustrated below.

Master product: **not specified**; **test single MCCMNC:**; MCCMNC: **1213455**; Dial code (optional): **not specified**; Rate (optional
Vendor product types: **Gold,LCR,Premium,Premium SMS,Retail,Silver,Special,Standard,Wholesale**; Vendor products: **All**; **specified**; Min. ASR, %: **not specified**; Min. DLR(s), %: **not specified**; Min. DLR(t), %: **not specified**

№	Master product	Country	Network	MCCMNC	Mas	LCR1: Vendor	LCR1: ...	LCR1: Rate
	Text mask	Text ma	Text mask	Text mask	Te:	Text mask	Text mask	Text mask
1	CLIENT RATE TEST			1213455				
2	COUNTRY TEST	Finland	Alands Mobiltelefon	244014		Hen-Parking Zone - LCR	244014	0.00080 (€0.00080)
3	COUNTRY TEST	Finland	All networks	244		Hen-Parking Zone - LCR	244013 244021 244091	0.00100 (€0.00100) 0.00100 (€0.00100) 0.00100 (€0.00100)
4	COUNTRY TEST	Finland	DNA Ltd	244003		Hen-Parking Zone - LCR	244003	0.00060 (€0.00060)
5	COUNTRY TEST	Finland	DNA Ltd	244012		Hen-Parking Zone - LCR	244012	0.00060 (€0.00060)
6	COUNTRY TEST	Finland	DNA Verkot Oy	244004		Hen-Parking Zone - LCR	244	0.00080 (€0.00080)
7	COUNTRY TEST	Finland	Elisa Corporation	244021		Hen-Parking Zone - LCR	244021	0.00100 (€0.00100)
8	COUNTRY TEST	Finland	Elisa Oyj	244005		Hen-Parking Zone - LCR	244005	0.00090 (€0.00090)
9	COUNTRY TEST	Finland	Globalstar Northern ...	244000		Hen-Parking Zone - LCR	244	0.00080 (€0.00080)
10	COUNTRY TEST	Finland	Sonera	244091		Hen-Parking Zone - LCR	244091	0.00100 (€0.00100)

Fig. 106 LCR Analysis report

The report contains the following fields for each vendor:

- *LCR# Vendor*: vendor product name
- *LCR# MCCMNC*: MCCMNC of the rate
- *LCR# Rate*: rate in account currency and in System currency
- *LCR# Margin*: rate margin
- *LCR# Margin%*: margin percentage relative to cost
- *LCR# Volume*: volume in the past N days. N is configured in the report settings (*Traffic stats for last, days* parameter)
- *LCR# ASR*: number of successfully sent SMS to total attempts for the past N days
- *LCR# DLRs*: number of delivered messages to successful attempts for the past N days
- *LCR# DLRt*: number of delivered messages to total attempts for the past N days

8.7 Rate generator (SMS)

Rate generator (SMS) is a report that allows creating rates based on preconfigured base cost and markup calculation rules. This tool serves to update client rates in accordance with vendor rates and desired markup. To access the report, in the *Categories* section check *SMS*; in the *Reports* drop-down list select *Rate generator (SMS)*.

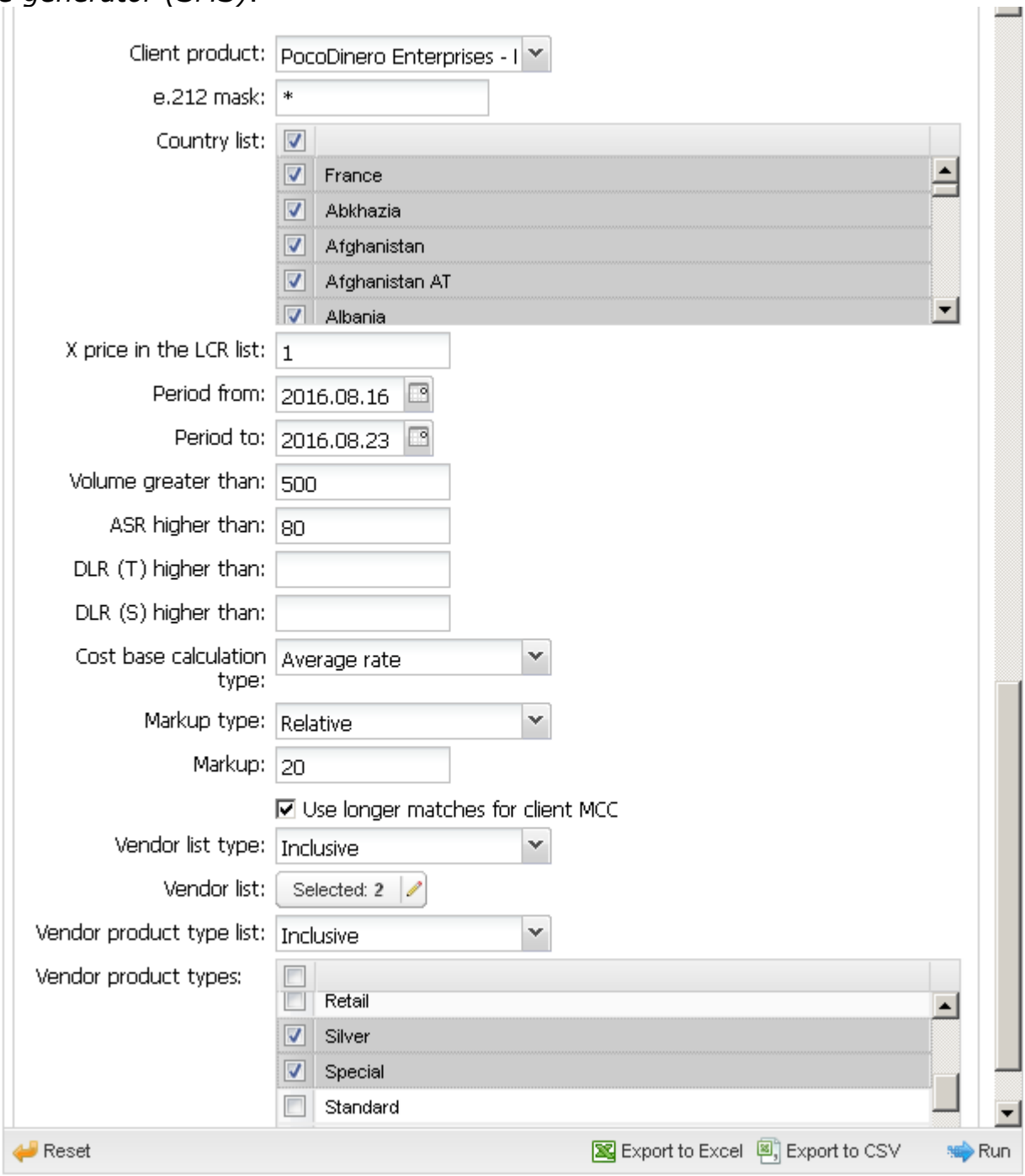


Fig. 107 Rate generator

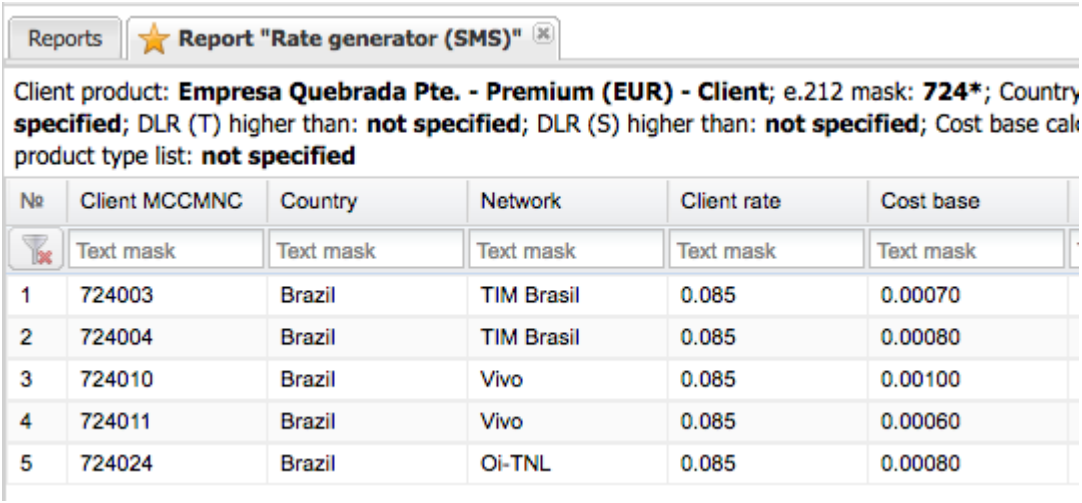
Configure the following parameters:

- *Client product list*: select a product for which MCCMNC rates will be calculated. NOTE: Check that MCCMNC rates are uploaded in the product in order for the report to be generated

- *e.212 mask*: select the mask of MCCMNC
- *Country list*: specify the countries
- *X price in the LCR list*: define which rate from the cheapest will be taken for the calculation of rates. *1* means the cheapest rate for each MCCMNC is taken into account. *5* means the fifth cheapest rate will be considered; the previous four cheapest vendor rates will not be taken into account for base rate calculation
- *Period from, Period to:* select the period for which statistics will be selected
- *Volume greater than*: define the traffic volume that should be sent to the vendor MCCMNC rate for it to be considered active. Inactive rates are not taken into account. Leave the field blank to consider all rates irrespective of the amount of traffic
- *ASR higher than*, *DLR(T) higher than, DLR(S) higher than:* the minimum values of *ASR*, *DLR(T)* and *DLR(S)* respectively of vendor MCCMNC rate to be considered for rate calculation. Similar to the parameter *Volume greater than*. NOTE: The *DLR(T)* and *DLR(S)* are explained in *Terms and Acronyms*.
- *Cost base calculation type:* defines the calculation principle of termination base cost. Values include:
  - *Average rate*: the System takes all qualifying vendor's traffic for the period chosen above and defines average weighed cost of one SMS as the base cost of termination
  - *LCR*: the System takes the cheapest vendor rate for the MCCMNC among the vendors that qualify based on the specified parameters and have rates for the period
- *Markup type*: defines how markup is added. Values include:
  - *Relative*: adds a percentage of base cost as markup
  - *Absolute*: adds a fixed amount in System currency to the base cost
- *Markup*: the amount added if *Markup type* is *Absolute* or percentage of the base cost if *Markup type* is *Relative*
- *Use longer matches for client MCC*: check the flag if the client offers a flat rate for an MCC and the vendor offers multiple rates for the MCC. For example, the client offers 202 for Greece and the vendor has rates for 202001, 202002 etc. NOTE: In case of multiple matches for client MCC (for example, 202001, 202002 etc., the System will use the match with the highest vendor rate
- *Vendor list type*: *Inclusive* or *Exclusive* list of vendors to narrow down the field of searching to define the base cost of termination
- *Vendor list:* the list of vendors among which the base cost will be defined (if the *Vendor list type* is *Inclusive*) or list of vendors excluded from base cost calculation (if the *Vendor list type* is *Exclusive*)
- *Vendor product type list*: defines whether the *Vendor product list* is *Inclusive* or *Exclusive* (similar to *Vendor list type*)
- *Vendor product types*: defines the product types for which the base cost will be calculated

To generate the report, click 

at the bottom of the left panel. An example of the report is shown below.



Reports | Report "Rate generator (SMS)"

Client product: **Empresa Quebrada Pte. - Premium (EUR) - Client**; e.212 mask: **724***; Country **specified**; DLR (T) higher than: **not specified**; DLR (S) higher than: **not specified**; Cost base cal product type list: **not specified**

№	Client MCCMNC	Country	Network	Client rate	Cost base
	Text mask	Text mask	Text mask	Text mask	Text mask
1	724003	Brazil	TIM Brasil	0.085	0.00070
2	724004	Brazil	TIM Brasil	0.085	0.00080
3	724010	Brazil	Vivo	0.085	0.00100
4	724011	Brazil	Vivo	0.085	0.00060
5	724024	Brazil	Oi-TNL	0.085	0.00080

Fig. 108 Rate generator (SMS) report

8.8 Change logs (Administration)

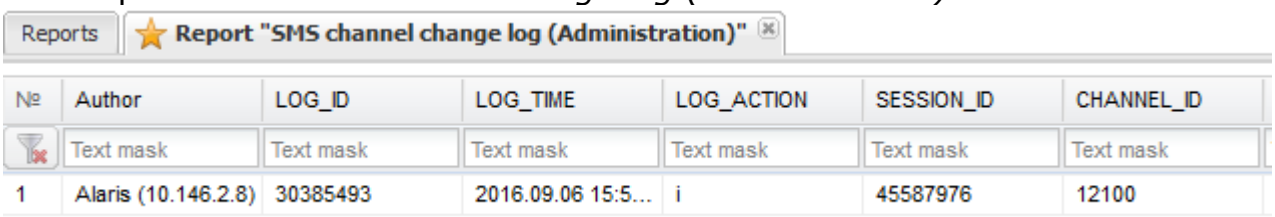
Change logs keep track of all the changes made by the System owner to System objects for the past 30 days (the period is configured by the parameter *Log store period, days* at *Administration\System settings\Common*). These logs allow identifying the user who made the changes (when fixing something that went wrong, for example).

To view the log, in the *Categories* section select *Administration*; in the *Reports* drop-down list select the appropriate log. In the *Params of report* section select appropriate parameters. Click Run.

The following change logs exist in the System (available in the *Administration* section):

- *Agreement change log*
- *Balance change log*
- *Carrier change log*
- *Past rate change log*
- *Permission change log*
- *POI change log*
- *Product change log*
- *Rate change log*
- *SMS channel change log*
- *SMS POI change log*
- *SMS routing rule change log*
- *SMSC change log*
- *System settings change log*

An example of the *SMS channel change log (Administration)* is shown below.



Reports | Report "SMS channel change log (Administration)"

№	Author	LOG_ID	LOG_TIME	LOG_ACTION	SESSION_ID	CHANNEL_ID
	Text mask	Text mask	Text mask	Text mask	Text mask	Text mask
1	Alaris (10.146.2.8)	30385493	2016.09.06 15:5...	i	45587976	12100

Fig. 109 SMS channel change log (Administration)

8.9 System log (Administration)

The System log (Administration) stores information about all operations and processes in the database. It serves to monitor the database operability, check that the statistics is calculated correctly, detect critical database errors etc.

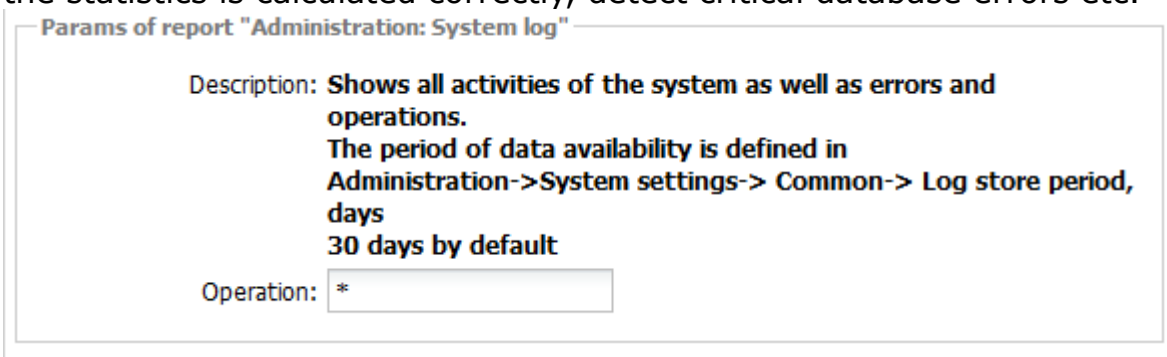


Fig. 110 Parameters of System log (Administration)

To view the log, in the Categories section select Administration; in the Reports drop-down list select System log (Administration). In the Params of report section in the Operation field specify the database operation (use the * mask symbol if necessary). Click Run.

9. SMS

9.1 Analytics

The *SMS\Analytics* page provides an easy-to-read and quick-to-draw picture of the most important statistical parameters. This tool feeds on pre-calculated statistical tables (OLAP cubes) instead of raw EDR data. This approach decreases the System response time when a user selects a new aspect to display. The side effect is that the amount of available aspects is limited (mostly by server performance and free disk space). However, the limit is adjustable and all important aspects are included into the scope by default.

The page consists of two interconnected parts. The top part displays a table of performance indicators pertaining to the specified statistical aspects (a user-defined combination of business items, e.g. Client >> Country >> Vendor) for the time interval selected in the bottom part. The *Total* line shows data for all the clients or vendors of the System owner, whichever is selected.

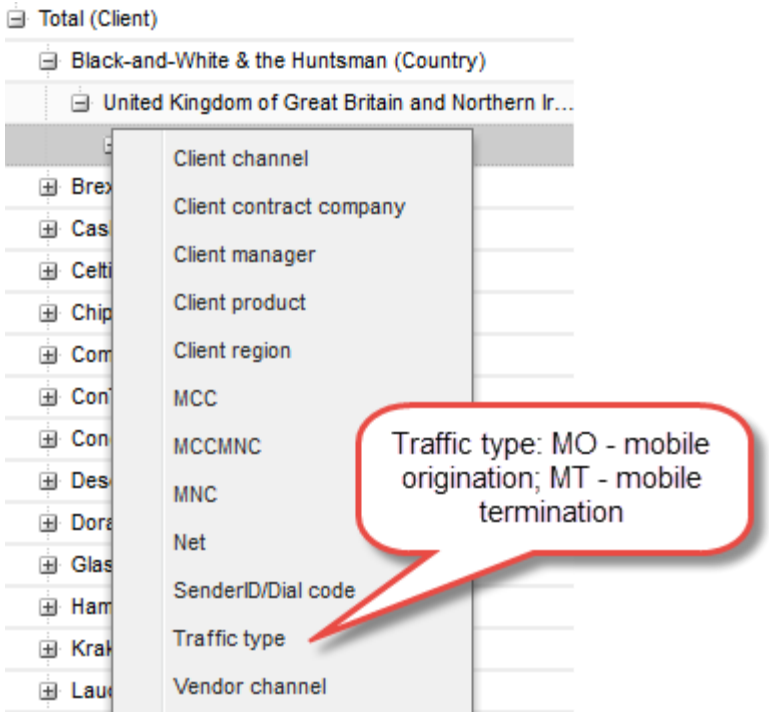


Fig. 111 Selecting the level of detail in the context menu

Each item with available underlying layers has the "+" sign on the left of its name. Click on the "+" sign to open the context menu and add more items to the displayed combination. To close a layer click on the "-" sign on the left of its parent object.

For example, to drill down on the client level, select a specific client, then choose to view its stats by country, then select a specific country and further detail it by vendor and so on as shown in the figure above.

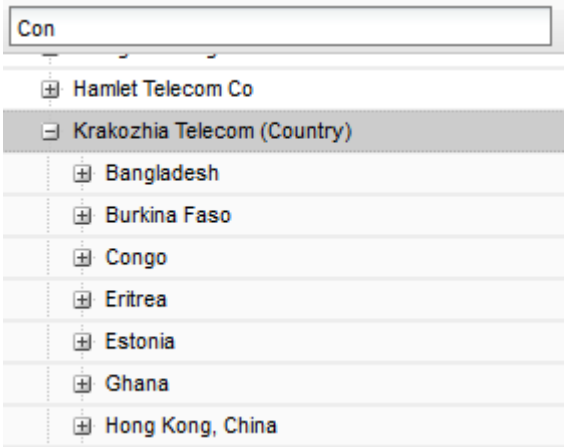


Fig. 112 Items filter

Items can be filtered by filling in the edit box at the top of the first column. The filter always applies to the child items (if any) of the currently selected item. For example, to display the *Congo* stats for *Krakozhia Telecom*, select *Krakozhia Telecom* in the list, in the context menu select *Country*, and enter the first few characters of the search word, for example, *Con*. To locate the item by the characters in the middle/end of the word, use the wildcards * or %, in this example *Congo* can be filtered by entering **go or %go*.

When a user adds a new detail level to the selected aspect, the System includes the items that have stats for the combination of previously selected objects. Example: select *Client* and *Country* in the context menu. The System will display countries to which the selected client was forwarding traffic over the time interval selected in the bottom table.

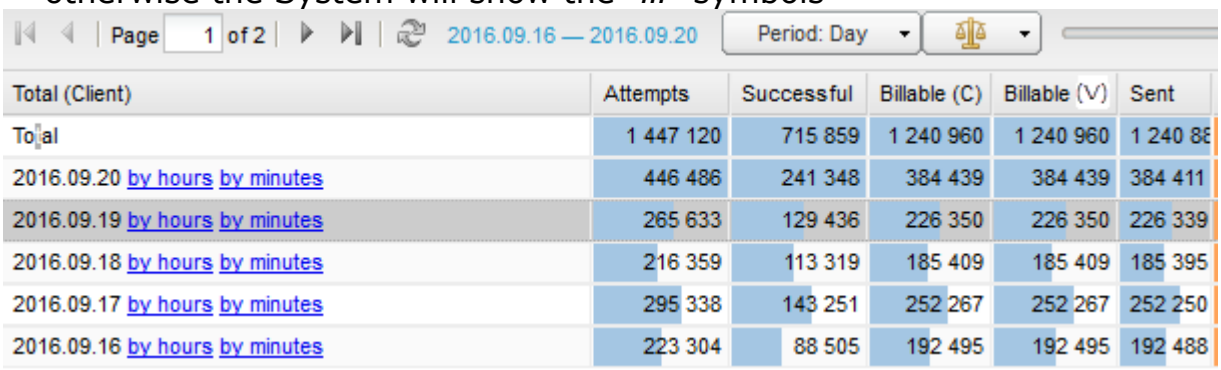
	Attempts	Successful	Sent	ASR, %	DLR (V)
Total (Client)	251 822	94 380	211 834	37.48	209.74
Black-and-White & the Huntsman	2	0	0	0.00	
Brexit Telecom	40 468	13 864	39 986	34.26	270.54
Cash-a-Lot	0	4	0		0.00
Celtic Is The Best.net	7 436	2 892	6 422	38.89	196.61
Chip&Dale Solutions	396	180	250	45.45	78.89
Combi-Hypocalypse Alert	14	8	14	57.14	175.00
ConTIGO Mobile	8 262	2 282	8 136	27.62	343.03
ConchisCall	140	40	76	28.57	165.00
DesdeMona Lastcall	230	98	194	42.61	134.69

Fig. 113 Analytics (top table)

The top table contains information on the following parameters:

- *Attempts*: total number of attempted SMS transfers from the client side
- *Successful*: number of SMS transfers confirmed by vendors as received
- *Billable (C), Billable (V)*: number of billable SMS for clients (C) and vendors (V) as configured by the parameter SMS billing options on the *Carriers\Products* page.
- *Sent*: number of SMS messages with the *Sent* status
- *ASR,%*: successful to total attempts ratio. An attempt is considered successful if a vendor accepted it for delivery (i.e. *submit_sm_resp* with the field "*cause=0*" is received in response to the client's request *submit_sm*)
- *DLR (S)*: delivered messages to successful attempts ratio
- *DLR (T)*: delivered messages to total attempts ratio
- *Delivered*: messages delivered to the end user (successful delivery report is received)
- *Aver. delivery delay*: average delivery delay in minutes
- *Segments*: the number of SMS segments that long messages are broken into
- *Margin, USD*: total margin
- *Cost (C), USD*: total charge for SMS traffic associated with the selected item chain that the *System owner* can bill to theclients
- *Cost (V), USD*: total cost of SMS traffic associated with the selected item chain that the *System owner* must pay to the vendors
- *Margin per attempt*: ratio of margin divided by the number of attempts
- *Margin %*: ratio of margin divided by Cost (C)
- *Aver. rate (C), Aver. Rate (V)*: average client (C) and vendor (V) rates for the selected destination(s) during the selected time interval
- *Rate (C), RATE (V)*: client (C) and vendor (V) rates that were in effect for selected destination(s) during the selected time interval. If the number of

different rates involved does not exceed 3, all of them are displayed; otherwise the System will show the "…" symbols



Total (Client)	Attempts	Successful	Billable (C)	Billable (V)	Sent
Total	1 447 120	715 859	1 240 960	1 240 960	1 240 88
2016.09.20 by hours by minutes	446 486	241 348	384 439	384 439	384 411
2016.09.19 by hours by minutes	265 633	129 436	226 350	226 350	226 339
2016.09.18 by hours by minutes	216 359	113 319	185 409	185 409	185 395
2016.09.17 by hours by minutes	295 338	143 251	252 267	252 267	252 250
2016.09.16 by hours by minutes	223 304	88 505	192 495	192 495	192 488

Fig. 114 Analytics (bottom table)

The bottom area presents the same performance indicators arranged by periods for the aspect selected in the top table. The top line always shows total values for each parameter of the selected statistical layer within the defined timeframe – e.g. if the user specifies 5 days in the *Timeframe selector* (see below), the *Total* line in the bottom table will show the summary for the selected 5 days. It is convenient when you need to see the totals for a custom period (not equal to the System defaults – hours, days etc.).

Total value can also be useful when the System is recalculating the stats for the current period (e.g. the current hour) and cannot show the stats for it. The user can select a range of lower-level time steps by clicking on the link in the table rows (in Fig. 114 – *by hours* or *by minutes*). These smaller time steps cover the entire period between now and the beginning of the bigger timeframe (which is being recalculated) – the System will show the actual stats for that bigger timeframe in the *Total* line based on the summary of all underlying smaller intervals. NOTE: To view the stats recalculation progress, see the *Analytical cube status (Administration)* report.

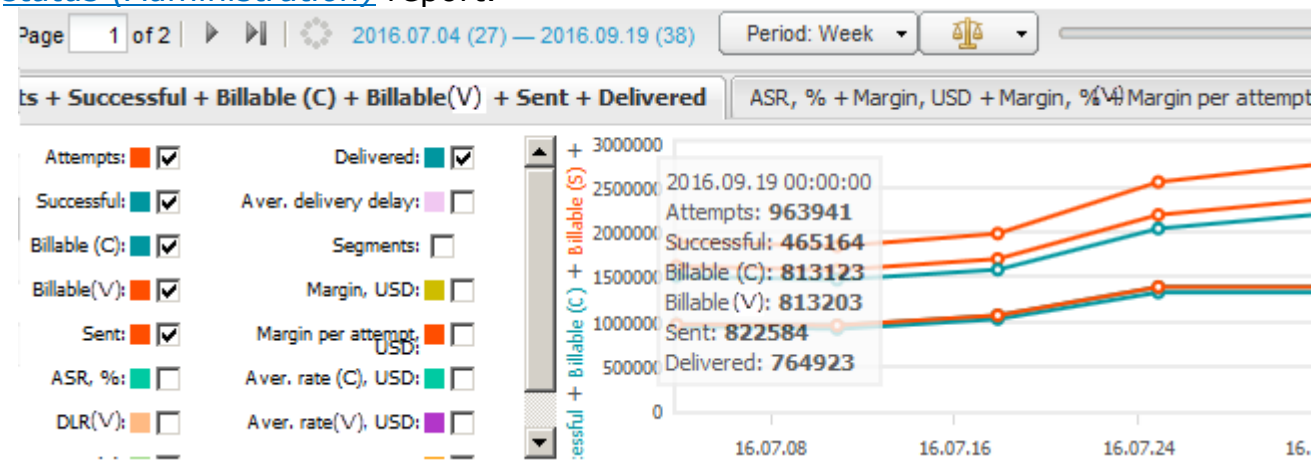
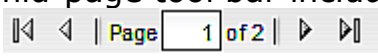


Fig. 115 Chart view (bottom table)

Data in the bottom table can be displayed either in a table format or as a chart by switching the *Chart/Table switch* button in the mid-page tool bar. The chart view allows creating three different profiles in separate tabs sheets. Select appropriate parameter boxes in the left panel that will appear as charts in the right panel.

Other controls on the mid-page tool bar include:

- *Page navigation* 

: statistics in the top table will be arranged in two or more pages if the specified layer contains more than 25 items. NOTE: Only items with non-zero data are displayed in the table
- *Refresh button* 
- *Period*: timeframe breakdown defined by selecting a period from the drop-down list (*Minute, Hour, Day, Week*, or *Month*):

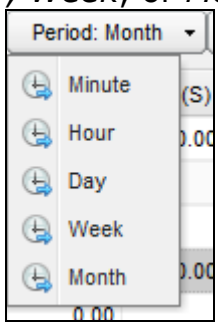
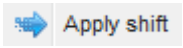


Fig. 116 Period

- *Offsets*: this control allows comparison of current data for some period to the same period in the past, registered a preset number of periods ago. For example, to compare the current month stats with the data of 2 months ago, select *month* in the *Period* control, enter *2* in the edit box as shown below, and click 

. Click  to open the chart view for more convenient data representation. NOTE: The past data appears dimmed both in the table and chart views.

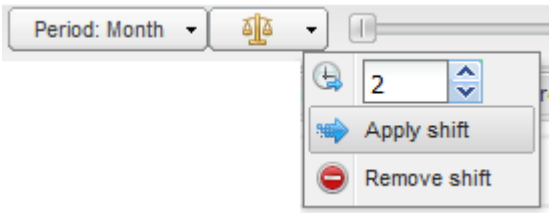


Fig. 117 Offsets

- *Timeframe selector*: a tool for defining the time interval for which statistics is generated. The interval can be set either by dragging the left or right margin of the scale, or by selecting the period in the pop-up window ( pencil button). Click  to apply the timeframe:

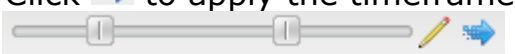


Fig. 118 Timeframe selector

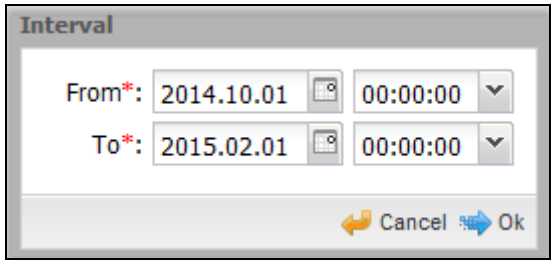


Fig. 119 Interval

- *Table/chart switch*  : a switch between table and chart display formats
- *View options*  contains the following parameters:

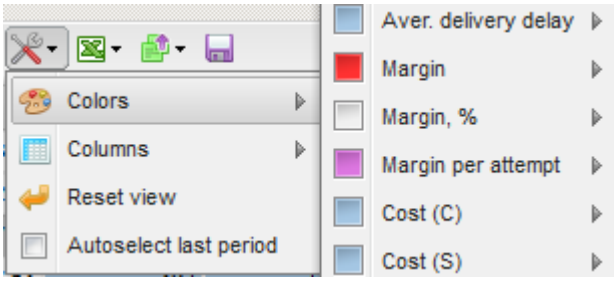


Fig. 120 View options

- *Colors*: selection of colors for performance indicators. For the indicators *Margin, %*, *ASR*, *DLR(T)* and *DLR(S)* the control allows setting threshold values and assigning different colors to them:

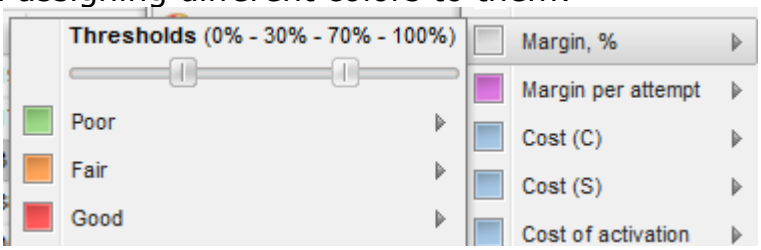
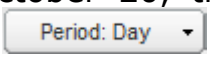


Fig. 121 Assigning thresholds and colors

- *Columns*: selection of columns for display
- *Reset view*: reset all colors and displayed columns
- *Autoselect last period*: the flag fixes the last interval set in the timeframe selector. When the flag is checked, the interval shifts forward as time goes on. For example, if the current date is October 20, the interval is 1 - 10 October and the period set by the button 

is Day, on October 21 the interval will shift to 2 - 11 October, on October 22 it will shift to 2-12 October and so on

- *Export tools button*  allows data export from the upper or lower table to an XLS file

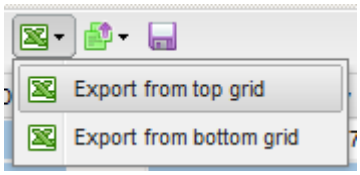


Fig. 122 Export tools button

- *EDR export button*  serves for EDR export. The *EDR export tasks* menu allows viewing export tasks and their progress. NOTE: The columns of the exported EDR file contain only the most relevant parameters; for a more detailed file use the *EDR Export (SMS)* report

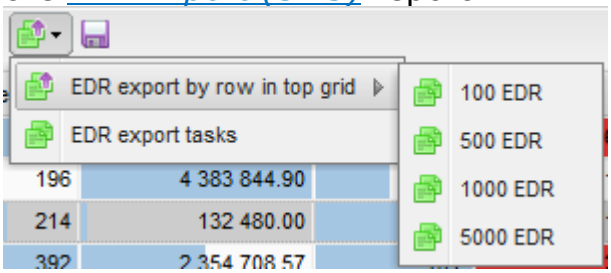


Fig. 123 EDR export button

- *Save current state button* saves the current view (the timeframe selector value, the period (day, month etc.) and the first selected layer of performance indicators). These settings are saved in the browser cash and are displayed when the user accesses the *SMS\Analytics* page the next time

For better visualization the length of the colored bar correlates with the parameter value. Colors for *ASR* and *Margin* parameters can be set to differentiate between *poor*, *fair* or *good* performance. Selection of columns with performance indicators (technical and commercial) can be defined individually for each user by checking *View financial details* and/or *View technical details* boxes in *Carriers\Users* (*Analytics* section).

9.2 EDR management

9.2.1 EDR Reconciliation

The *SMS\EDR Management\EDR Reconciliation* page is used to compare the EDRs (event detail records) of the System owner and its partner to resolve an invoice dispute. The System owner can upload a partner EDR file to compare it to the System EDR data.

The page consists of three sections: *Recent task list* showing the table of tasks, *Task details* containing the parameters of a selected task and *Reconciliation summary* displaying the result of the comparison.

Recent task list

Task ID	Status	Job created	Period	Product list
	All	−∞ ≤ X ≤ ∞		
TASK47170	ready	2016.09.15 10:06:12	2016.09.14 10:04:19 - 2016.09.15 10:04:19	ALARIS TEST
TASK16142	ready	2016.03.16 01:21:44	2016.03.01 00:00:00 - 2016.03.02 00:00:00	PocoDinero En
TASK16140	ready	2016.03.16 01:19:29	2016.03.01 00:00:00 - 2016.03.02 00:00:00	PocoDinero En
TASK16134	error	2016.03.16 01:04:33	2016.03.01 00:00:00 - 2016.03.02 00:00:00	PocoDinero En
TASK16132	error	2016.03.16 01:00:30	2016.03.01 00:00:00 - 2016.03.08 00:00:00	PocoDinero En

Fig. 124 Recent task list

The *Task details* panel shows the parameters set during EDR file import configuration (detailed below).

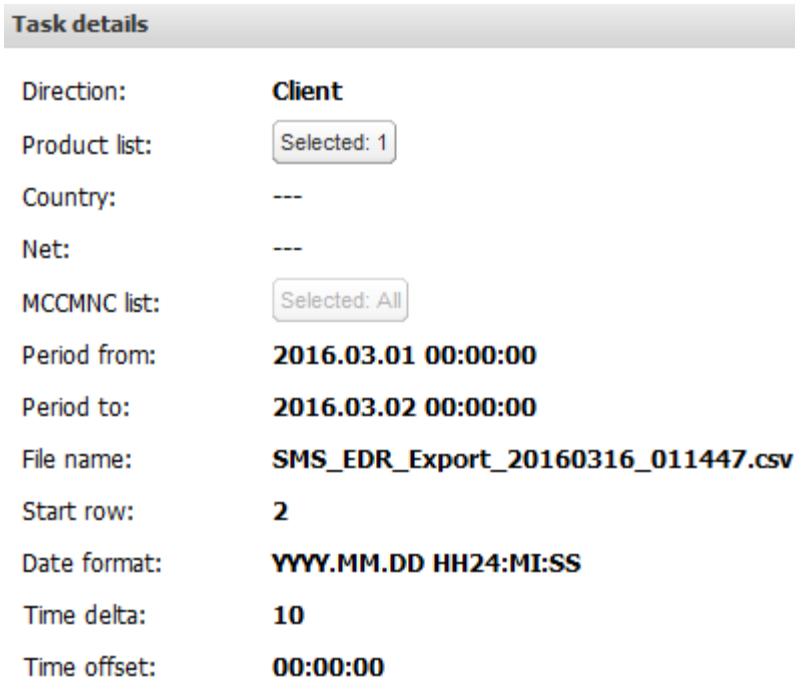


Fig. 125 Task details

The *Reconciliation summary* panel shows the discrepancies found in the System and partner files. NOTE: The most frequent discrepancies are different MCCMNC and cost.

Reconciliation summary

Matching type	EDR count	Owner cost	Partner cost
Partner EDR found only	28	-	
Owner EDR found only	13	0.06	
Same	1 761	45.65	
Total	1 802	45.71	

Fig. 126 Reconciliation summary

The panel contains the following columns:

- *Matching type*: the EDR records grouped by type of discrepancy. Click on the links to view the records. Possible values include:
  - *Partner EDR found only*: records found only in the partner EDR file
  - Owner *EDR found only*: records found only in the System's EDR file
  - *MCCMNC mismatch*
  - *Message ID mismatch*
  - *Rate mismatch*
  - *Submit time mismatch*: the submit (message receipt) time by the System owner is not the same in the two files
  - *Same*: identical records in both files
  - *Total*: the total number of records
- *EDR count*: the number of EDRs of each type
- *Owner cost*: cost for the System owner
- *Partner cost*: cost for the partner

Below is an example of EDR records of the type *Partner EDR found only*.

Reconciliation details

Owner subm...	Partner submit time	Owner calling	Partner calling	Owner c...	Partner called	O
	2015.10.13 03:24:34		Zurich		85291918668	
	2015.10.13 03:41:31		Zurich		85294091874	
	2015.10.13 04:00:48		Zurich		85298304930	
	2015.10.15 16:16:31		ECOBANK		2347043725452	
	2015.10.01 16:16:31		ECOBANK		2347043725452	

Fig. 127 EDRs of the type *Partner EDR found only*

Click Download as CSV at the bottom of the page to save the file for further analysis or for sending it back to the partner. Click Back to return to the *EDR Reconciliation* page.

To start a new analysis of the EDR files, click New reconciliation on the *EDR Reconciliation* page.

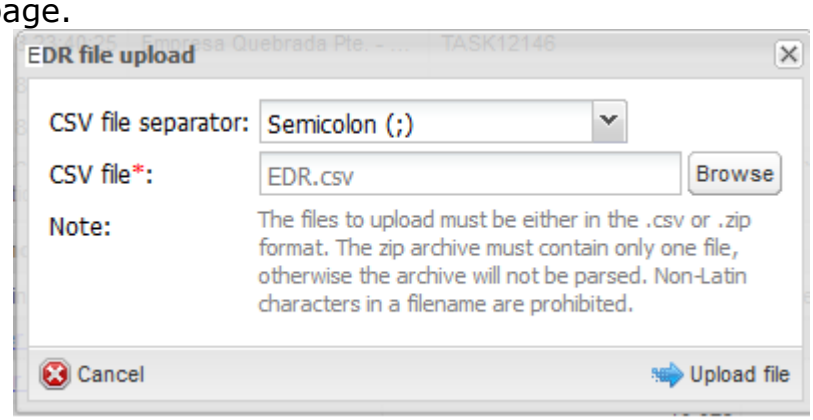


Fig. 128 File upload dialog

In the file upload dialog select the CSV file separator and CSV file. NOTE: The accepted file formats are .csv and .zip (the archive must contain a single file). Click Upload file to open the file parsing page. The page contains two panels - the file preview and the *Settings* panel.

Preview of "EDR3.csv"

	Submit time	A-number	B-number	Column 4
[1]	OWNER_SUBMIT_TIME	OWNER_CALLING	OWNER_CALLED	OWNER_E21
2	01.03.2016 23:59	ECOBANK	2,42067E+11	629010
3	01.03.2016 23:58	ECOBANK	2,42066E+11	629010
4	01.03.2016 23:58	Viber	6,42102E+11	530001
5	01.03.2016 23:57	ECOBANK	2,42067E+11	629010
6	01.03.2016 23:57	ECOBANK	2,42069E+11	629010
7	01.03.2016 23:56	ECOBANK	2,42069E+11	629010

A-number
B-number
MCCMNC
Message ID
Rate
Submit time

Fig. 129 EDR file preview

In the file preview define the column types by clicking on the headers of the table, so that the System knows where to take MCCMNC codes, A- and B-numbers etc. The following column types are available:

- *A-number*
- *B-number*

- *MCCMNC*
- *Message ID*
- *Rate* (optional)
- *Submit time*

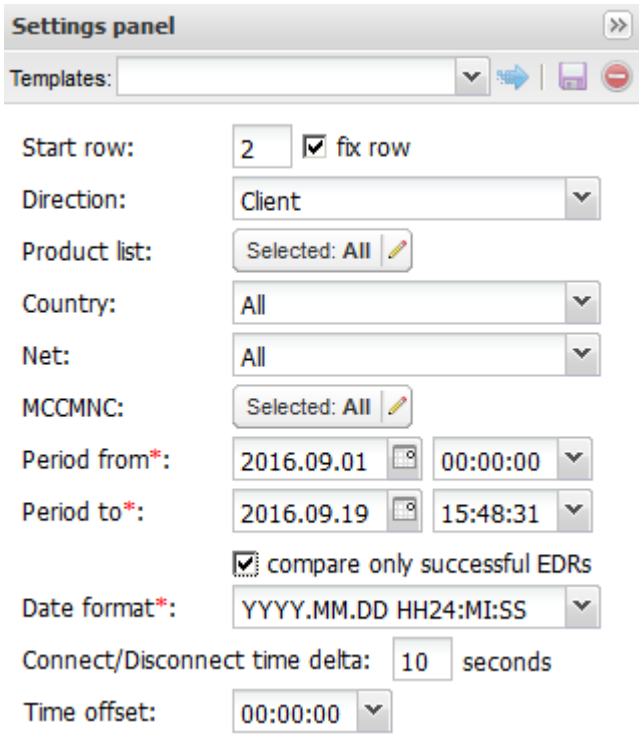


Fig. 130 Settings panel

Once the column headers are defined, configure the parameters in the *Settings* panel.

- *Start row*: define the first row with the EDR data, so that the System ignores everything that is above the EDR table in the file. Check *fix row* to prevent the *Start row* value from changing when you navigate between rows in the preview
- *Direction*
- *Product list*
- *Country*
- *Net*: network name
- *MCCMNC*
- *Period from/Period to*: set the billing period
- *compare only successful EDRs*: check the flag to include only EDR for successfully transmitted SMS
- *Date format*: format of the dates in the EDR file. If required, set up a custom format in the bottom field of the drop-down list of available formats

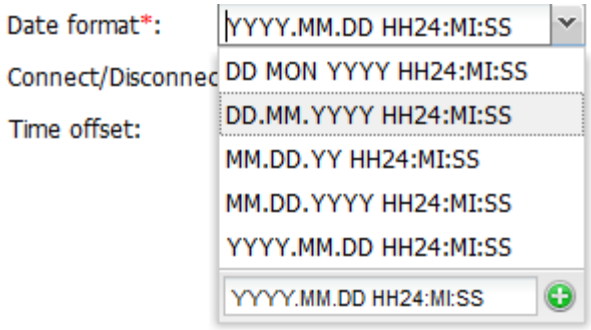


Fig. 131 Date format

- *Connect/disconnect time delta (seconds)*: allowed time slot for better identification of the EDR pair (in case the time on the System and partner servers is not fully synchronized)
- *Time offset*: specify the time difference between the partner EDR file and the System file

Click Start to launch reconciliation. Click Cancel reconciliation to discard the settings and return to the previous page.

The EDR reconciliation settings can be saved as a template. Templates allow quick access to preconfigured settings. Type the new template name in the *Template* field at the top of the panel or select an existing one from the drop-down list and click . To open a template, select it in the drop-down list and click .

Fig. 132 Template

9.2.2 EDR Rerating

The *SMS\EDR Management\EDR Rerating* page serves for revaluation of previously generated SMS event charges in cases when certain data (rates, MCCs, carrier interconnect information etc.) affecting such valuations in the past is altered or added. This mechanism allows keeping statistics and billing data up-to-date. The page is divided into three parts: *Recalculation settings*, *Tasks* and *Task details*.

The System performs automatic EDR recalculation every night for a period up to 30 days, in case any backward changes were made in the rate data. The *Recalculation settings* panel contains parameters for manual recalculation.

9.2.2.1 Recalculation settings

The *Recalculation settings* menu enables selecting items that need to be adjusted by applying the following filters:

Fig. 133 Recalculation settings

- *Period*: time interval within which charges are recalculated
- *Products*: name of the product to be revalued, selected from clients' (*Client leg*) or vendors' (*Vendor leg*) products in the *Products multi picker* menu opened by the button:

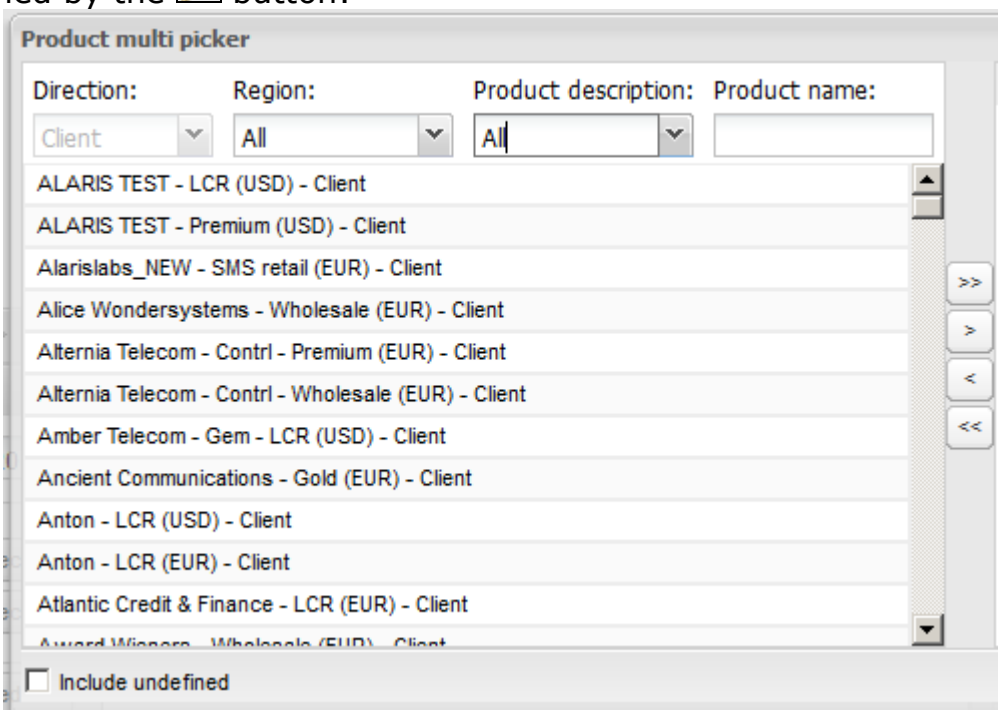


Fig. 134 Product multi picker

- Select the *Include undefined* check box to recalculate undefined messages that may appear in the System due to mal-configuration, junk traffic etc. NOTE: If rerating is performed after an SMS channel was accidentally removed, the messages within the product will be marked as undefined. To fix this, restore the SMS channel and perform rerating with the *Include undefined* checkbox selected. *IP addresses*: IP-address(s) for the selected *Product*. Open the *SMS IP addresses multi picker* menu by the button. Select IP addresses from the list in the left section of the menu, or add

them manually in the edit field at the bottom of the right section and click the button.

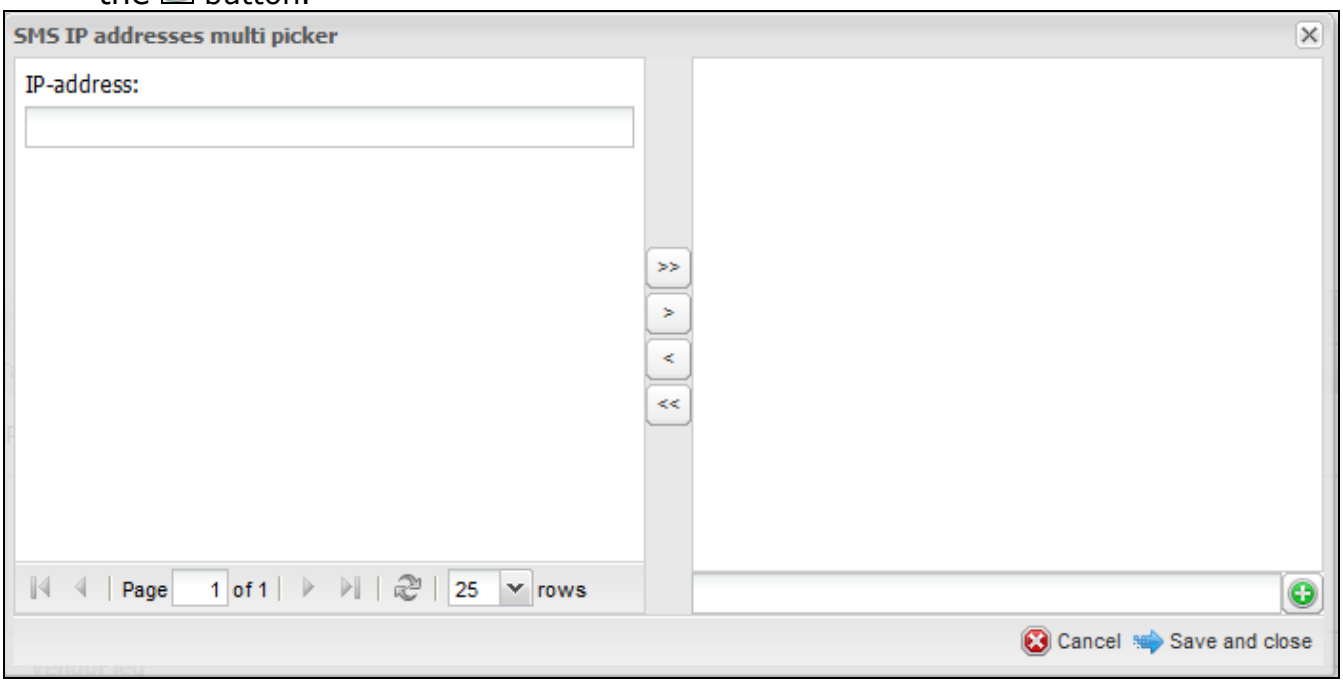


Fig. 135 SMS IP addresses multi picker

- *MCC*: target Mobile Country Codes. Open the *Mobile Country Code multi picker* menu by the button. Select code(s) from the list in the left section of the menu. Search them by specifying either *MCC* or *Country*

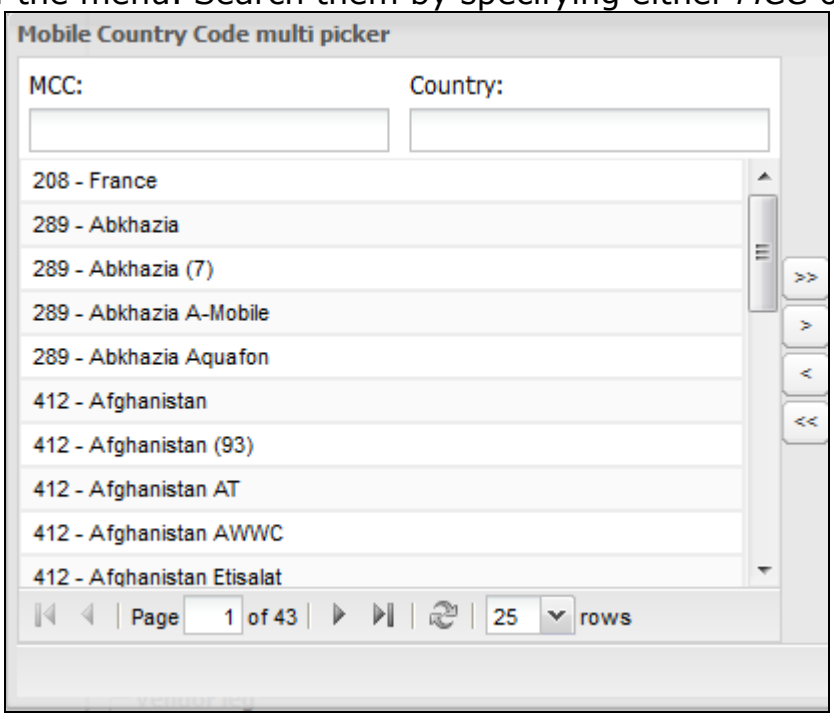


Fig. 136 Mobile Country Code multi picker

- *SMS net*: operator mobile network(s). Open the *SMS net multi picker* menu by the button. Select the SMS net name from the list in the left section of the menu. Search them by specifying the network name in the line

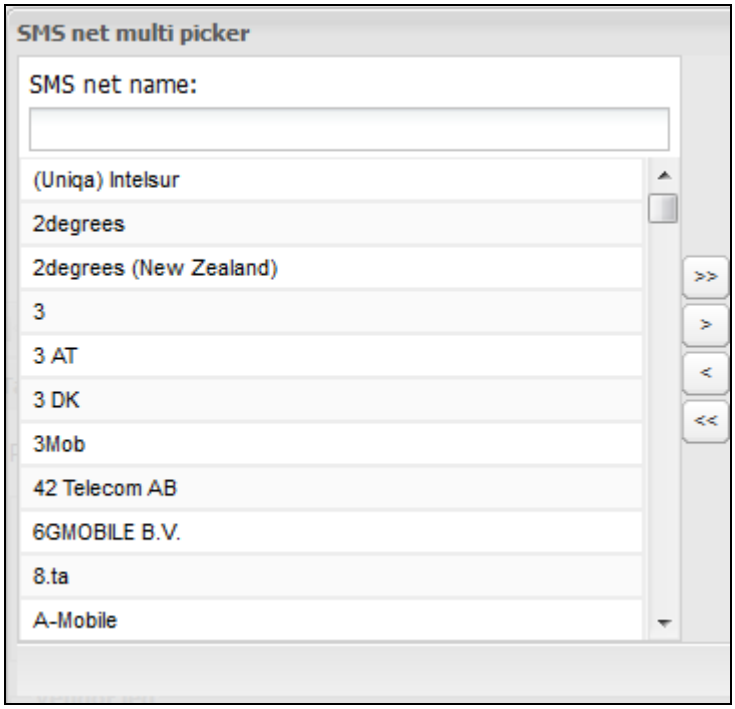


Fig. 137 SMS net multi picker

- *MCCMNC*: use the *MCCMNC multi picker* to select appropriate values
- *Task start time*: this option allows scheduling the recalculation task for any convenient time, for example postponing it till the next System off-peak interval to avoid excessive load on the System

When through with defining the parameters, click Run to start recalculation or Reset to discard the settings.

NOTE: After recalculation, all statistics and analytics will become outdated, and the affected data may be displayed as zero values in tables and charts. The rerating triggers automatic recalculation of OLAP cubes after some time, depending on the current System load. To see when recalculation will be performed, go to *Reports\Analytical cube status (Administration)* and check the *Recalculation status* column.

Period: **Week**

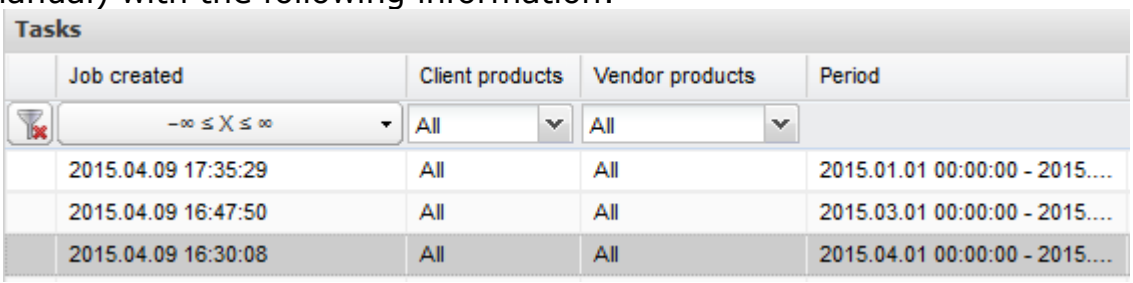
№	Partition period t...	Partition date	State	Last change	Row count	New CDR count...
	Text mask	Text mask	Text mask	Text mask	Text mask	Text mask
1	WEEK	2016.09.26 00:0...	Must be recalculated	2016.09.19 00:0...	0	
2	WEEK	2016.09.19 00:0...	Must be recalculated	2016.09.21 14:2...	72843	4481
3	WEEK	2016.09.12 00:0...	Ready	2016.09.19 02:2...	79346	0
4	WEEK	2016.09.05 00:0...	Ready	2016.09.12 02:2...	79525	0

Fig. 138 Recalculation status report

NOTE: After EDR rerating, perform recalculation of invoices for the same period to bring the invoicing information up to date. Refer to *Finance\Invoices* for instructions.

9.2.3 Tasks

The *Tasks* table displays a list of recent EDR recalculation tasks (both automatic and manual) with the following information:


Tasks

	Job created	Client products	Vendor products	Period
	−∞ ≤ X ≤ ∞	All	All	
	2015.04.09 17:35:29	All	All	2015.01.01 00:00:00 - 2015....
	2015.04.09 16:47:50	All	All	2015.03.01 00:00:00 - 2015....
	2015.04.09 16:30:08	All	All	2015.04.01 00:00:00 - 2015....

Fig. 139 Tasks

- *Job created*: date and time of task creation;
- *Status*: status of the task. Possible values include:
  - *in progress* (with the progress percentage specified)
  - *scheduled*: scheduled task waiting to be run
  - *pending*: automatic task waiting to be run. Every hour the System checks for rate changes and if any are found, it creates a recalculation task scheduled for 1 a.m. All such tasks have the *pending* status. If you need to update the information sooner, start the task manually by the Start task button
  - *aborted* (if terminated manually by the operator)
  - *ready*
  - *error*
- *Details*: shows that the task is *ready* or contains the *Abort task* button if the task is in progress

Any task can be recalculated with the previously selected settings reentered automatically. Select the required task and click the Restart recalculation button located under the *Tasks* table.

9.2.4 Task details

The *Task details* table provides a quick overview of major parameters for the task selected in the *Tasks* table:

- *Period*: period for EDR recalculation
- *Product (client leg/vendor leg)*: product for EDR recalculation
- *IP addresses (client leg/vendor leg*): IP addresses for EDR recalculation
- *MCC*
- *SMS net*
- *MCCMNC*

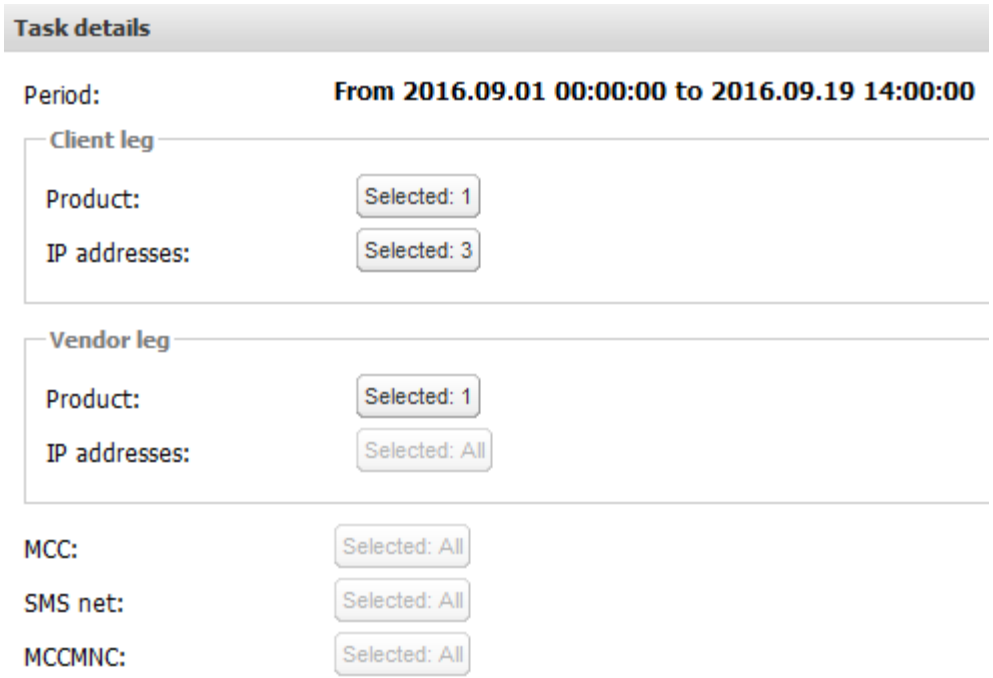


Fig. 140 Task details

9.3 Rates

9.3.1 Rate import

The *SMS\Rates\Rate import* page enables uploading partner rate sheets to the System as .csv, .xls and .xlsx files. Rate import can be performed in two ways:

- Manually – the System owner manually configures the rate sheet format and launches import (further detailed in this section)
- Automatically – all incoming rate sheets are imported automatically based on a preconfigured import template (see *SMS\Rates\Auto rate import*)

The procedure for rate import is as follows:

1. The System owner creates a mailbox for receipt of partner rate sheets and communicates the email address to the Alaris support team to register it with the System
2. Vendors send their rate sheets to this email address; client rate sheets are uploaded to the System manually using the Upload file button. The rate sheet files are displayed at the *SMS\Rates\Rate import* page
3. In case of auto rate import, the files are imported in the System automatically
4. In case of manual rate import, the System owner performs rate sheet parsing in order to translate the file in the format that can be processed by the System (see *SMS\Rates\Rate import\Rate sheet parsing* for more detail)
5. The System owner analyzes the import results, makes corrections if necessary and applies the new rates to the System (or cancels the import)

To start rate import:

1. Go to *SMS\Rates\Rate import*
2. Select a file in the *Select file* table
3. Supply appropriate values in the *Import settings* panel

4. Click Continue to proceed to rate sheet parsing

Below is a detailed overview of the *SMS\Rates\Rate import* page.

9.3.1.1 Rate import page overview

The *SMS\Rates\Rate import* page contains three sections. The top left section is a file import queue that displays files both received to the email address and uploaded by the System owner.

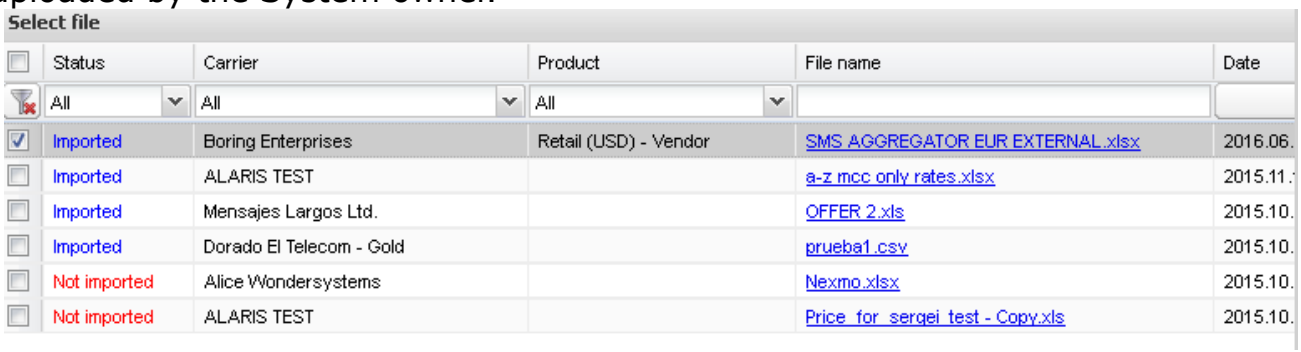


Fig. 141 File import queue

The table contains the following columns (self-explanatory columns are not described below):

- *Status*: displays one of the following values: *Not imported* (has not been parsed), *Imported, Confirmed* (is set by the user to mark successfully imported files), *Ignored* (is set by the user to mark files not intended for import), *and Canceled* (the import is canceled by the user – for example, after preview). Click Set file status below the table to change the status of selected records
- *File name*: click on the file name to open the rate sheet file
- *Mail parameters*: *Mail from*, *Mail to* and *Mail subject*

Click a record to edit the rate sheet file properties as illustrated below: *Carrier*, *Product* and mail parameters: *From*, *To* and *Subject*.

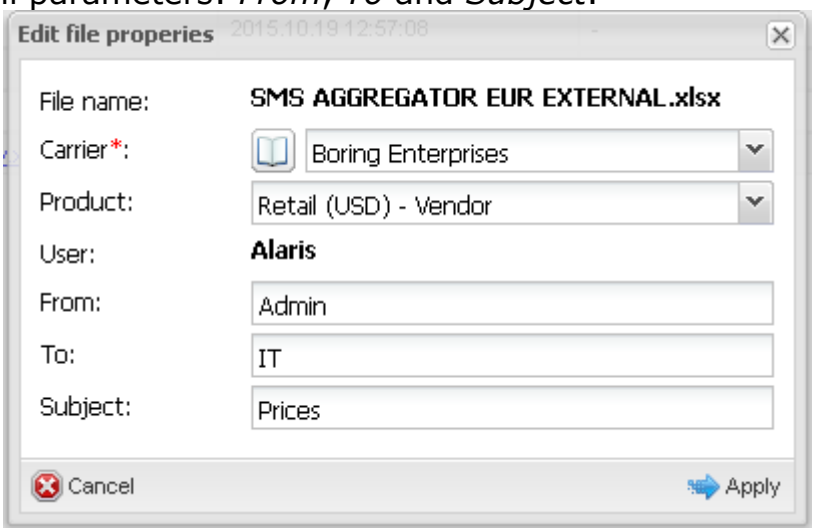
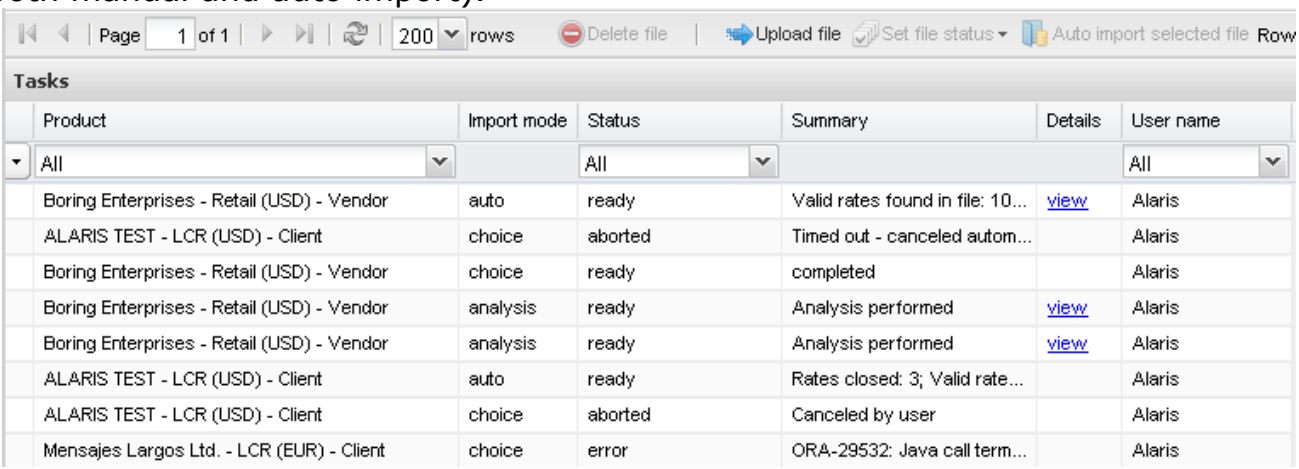


Fig. 142 Edit file properties

The panel below the table contains the following buttons: Delete file - delete the selected record; Upload file - upload a file for import; Set file status - change the file status; Auto import selected file - perform automatic import of the file.
The bottom section of the page is the *Tasks* table containing import tasks (for both manual and auto import).



Product	Import mode	Status	Summary	Details	User name
All		All			All
Boring Enterprises - Retail (USD) - Vendor	auto	ready	Valid rates found in file: 10...	view	Alaris
ALARIS TEST - LCR (USD) - Client	choice	aborted	Timed out - canceled autom...		Alaris
Boring Enterprises - Retail (USD) - Vendor	choice	ready	completed		Alaris
Boring Enterprises - Retail (USD) - Vendor	analysis	ready	Analysis performed	view	Alaris
Boring Enterprises - Retail (USD) - Vendor	analysis	ready	Analysis performed	view	Alaris
ALARIS TEST - LCR (USD) - Client	auto	ready	Rates closed: 3; Valid rate...		Alaris
ALARIS TEST - LCR (USD) - Client	choice	aborted	Canceled by user		Alaris
Mensajes Largos Ltd. - LCR (EUR) - Client	choice	error	ORA-29532: Java call term...		Alaris

Fig. 143 Tasks

The table contains the following columns:

- *Import mode*: possible values are:
  - *auto*: import without preview, using the *Error type level* settings of the *Auto rate import* (see *SMS\Rates\Rate import\Auto rate import* for more detail)
  - *import*: import without a preview of results
  - *choice*: manual import with a preview of results
  - *analysis*: preview of import results without the actual import
- *Status*: possible values are:
  - *ready*: the task is complete
  - *new*: the task has just been created
  - *error*: the task resulted in error
  - *aborted*: the task has been canceled by the user or the System
  - *pending*: the status is currently out of use
  - *scheduled*: the task is scheduled for a specific time
  - *waiting*: the task is not yet completed by the user (e.g., the user has previewed rate results but has not applied them)
- *Summary*: the task result. Click on the tasks that resulted in import to view the summary, in the format: *Valid rates found in file: 1; New rates added: 10; Existing rates expanded/closed: 0; Rates deleted: 0*
- *Details*: contains the *view* hyperlink that opens a preview of rates illustrated below (for the *choice* and *analysis* import modes). Click Back to return to the previous page; click Export to Excel to view the table in MS Excel

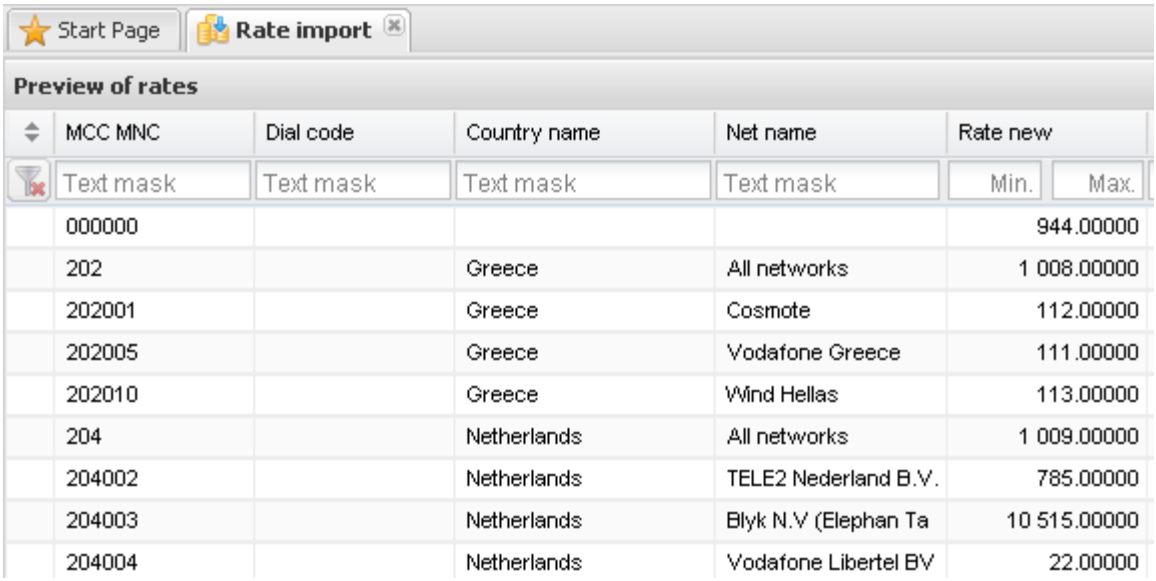


Fig. 144 Preview of rates

The right panel is the *Import settings* that serves to configure import parameters.

Fig. 145 Import settings

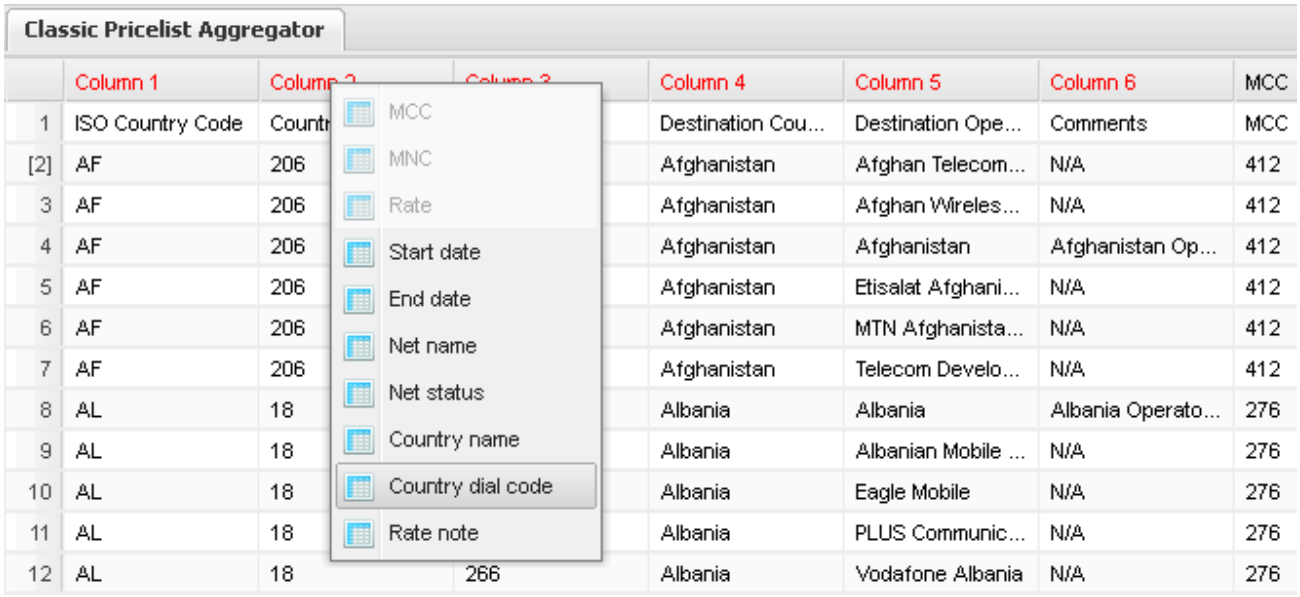
It contains the following details:

- *Parser*: library used for file parsing. Normally, use the default value *Internal library*; try other values only if the output file is illegible
- *Carriers*: select the carrier to which the rate sheet refers. Click to open the reference book for more convenient navigation

Click Continue to proceed to rate sheet parsing.

9.3.1.2 Rate sheet parsing

Once the selected rate sheet file is opened for parsing, the System shows a preview of its contents the way it looks in MS Excel.



	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	MCC
1	ISO Country Code	Countr		Destination Cou...	Destination Ope...	Comments	MCC
[2]	AF	206		Afghanistan	Afghan Telecom...	N/A	412
3	AF	206		Afghanistan	Afghan Wireles...	N/A	412
4	AF	206		Afghanistan	Afghanistan	Afghanistan Op...	412
5	AF	206		Afghanistan	Etisalat Afghani...	N/A	412
6	AF	206		Afghanistan	MTN Afghanista...	N/A	412
7	AF	206		Afghanistan	Telecom Develo...	N/A	412
8	AL	18		Albania	Albania	Albania Operato...	276
9	AL	18		Albania	Albanian Mobile ...	N/A	276
10	AL	18		Albania	Eagle Mobile	N/A	276
11	AL	18		Albania	PLUS Communic...	N/A	276
12	AL	18	266	Albania	Vodafone Albania	N/A	276

Fig. 146 Rate sheet file preview

The user can view the column headers and the data that may be above the rates (some important comments are often placed there by vendors). NOTE: Images are not displayed.

To make the System able to parse the file, define the column types by clicking on the headers of the table, so that the System knows where to take MCC/MNC codes, pricing etc. You do not have to define all columns in the original file – many of them contain auxiliary data that is not required by the rate import process. The following column types are available:

- *MCC*: MCC code column, in case E212 codes are split in two columns in the file (if the MCC column is selected, the E212 column becomes unavailable and the MNC column shows up on the menu)
- *MNC*: MNC code, in case E212 codes are split in two columns in the file (only available if the MCC column is selected)
- *Rate*: termination price for the E212 code (the rate currency is defined by the currency of the partner account the product belongs to)
- *Start date*: effective date/time for the imported rates (if provided as a column in the file)
- *End date*: expiration date/time of imported rates (if provided as a column in the file)
- *Net name*: name of the mobile network the E212 code belongs to
- *Net status*: network availability
- *Country name*
- *Country dial code*
- *Rate note*: arbitrary comments
- *E212*: for cases when full E212 codes are given in one column rather than with the MCC and MNC split to two columns (if the E212 column is selected, the MCC column becomes unavailable)

NOTE: the only required columns are *MCC/MNC* (or *E212*) and *Rate*.

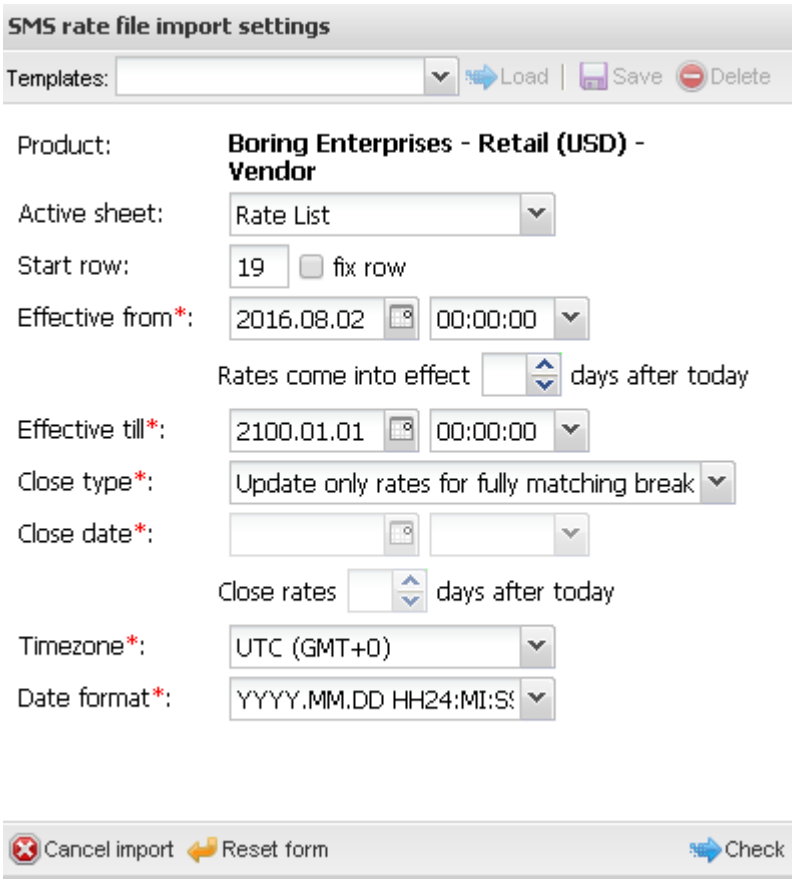


Fig. 147 SMS rate file import settings

Once the column headers are defined, configure the parameters in the *SMS rate file import settings* panel (the parameters are disabled if the data is already contained in the preview table).

- *Active sheet*: select the spreadsheet that will be parsed (in case the original MS Excel file contains several spreadsheets)
- *Start row*: define the first row with the rate data, so that the System ignores everything that is above the rate table in the file. Check *fix row* to prevent the *Start row* value from changing when you navigate between rows in the preview
- *Effective from*: select the date or indicate the number of days in *Rates come into effect days after today*
- *Effective till*: use the default value
- *Close type*: select the appropriate value:
  - *Update only rates for fully matching breakouts*: matching rates will be updated, and all other rates will remain unchanged
  - *Close non-matching breakouts*: all non-matching rates will be closed
- *Close date*: select the date or indicate the number of days in *Close rates days after today*
- *Timezone*: define the partner time zone. NOTE: It is good practice to use the GMT time zone in order to eliminate possible time zone discrepancies
- *Date format*: format of the effective dates if they are provided in the file - i.e. if the *Start date* and *End date* columns are defined. If required, set up a

custom format in the bottom field of the drop-down list of available formats.

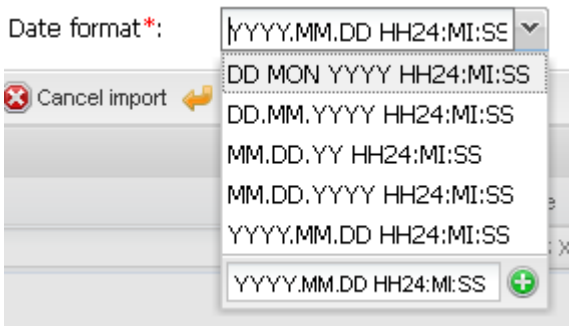


Fig. 148 Date format

Click Check to check the file before the actual import. To clear the parser settings click Reset form. To cancel and return to the previous page, click Cancel import.

The file import settings can be saved as a template. Templates allow quick access to preconfigured settings and are also used in automatic import of rate sheets (see *SMS\Rates\Rate import\Auto rate import* for more detail). Type the new template name in the *Template* field at the top of the panel or select an existing one from the drop-down list and click Save. To open a template, select it in the drop-down list and click Load.

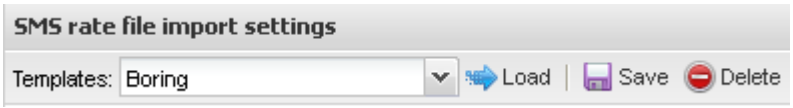
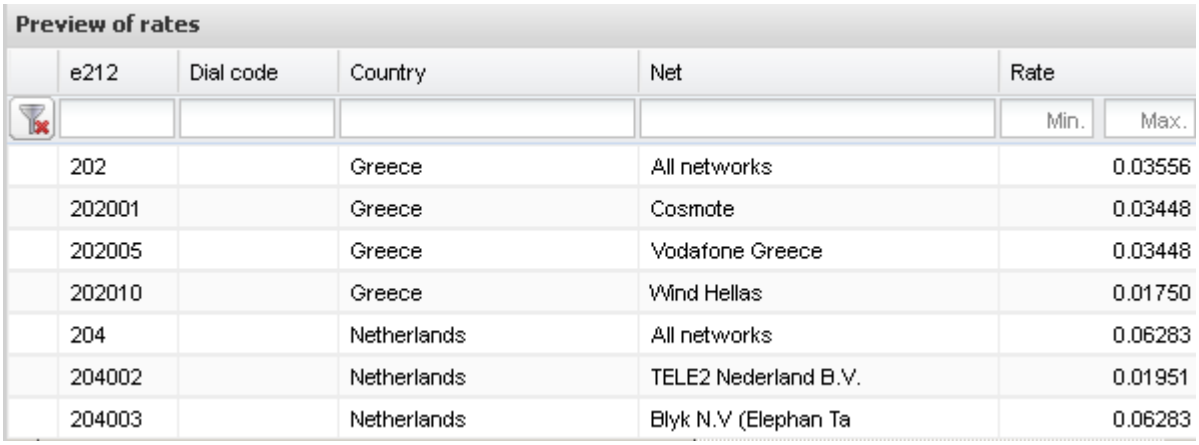


Fig. 149 Template

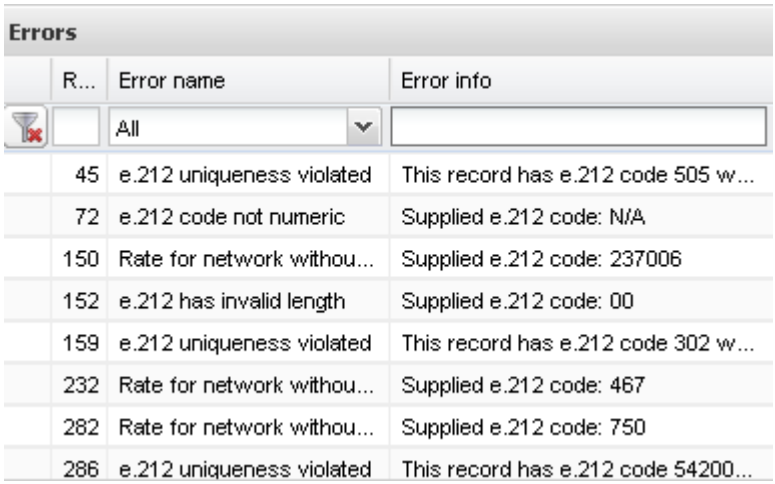
9.3.1.3 Preview of rates

Once the System has processed the rate file (and before the new rates are applied), it shows a preview of the parsed rates and a list of errors that must be shown to the user before committing the new data to the database. The *Preview of rates* is illustrated below.



e212	Dial code	Country	Net	Rate	
				Min.	Max.
202		Greece	All networks	0.03556	
202001		Greece	Cosmote	0.03448	
202005		Greece	Vodafone Greece	0.03448	
202010		Greece	Wind Hellas	0.01750	
204		Netherlands	All networks	0.06283	
204002		Netherlands	TELE2 Nederland B.V.	0.01951	
204003		Netherlands	Blyk N.V (Elephan Ta	0.06283	

Fig. 150 Preview of rates



Errors

	R...	Error name	Error info
		All	
	45	e.212 uniqueness violated	This record has e.212 code 505 w...
	72	e.212 code not numeric	Supplied e.212 code: N/A
	150	Rate for network withou...	Supplied e.212 code: 237006
	152	e.212 has invalid length	Supplied e.212 code: 00
	159	e.212 uniqueness violated	This record has e.212 code 302 w...
	232	Rate for network withou...	Supplied e.212 code: 467
	282	Rate for network withou...	Supplied e.212 code: 750
	286	e.212 uniqueness violated	This record has e.212 code 54200...

Fig. 151 Errors

The *Errors* panel contains the following columns:

- *Row number:* the row in the original MS Excel rate sheet where the error is found
- *Error name*: error message type. Possible values are:
  - *e212 code not numeric*
  - *e212 code has invalid length*
  - *e212 uniqueness violated*: one and the same E212 code is present in the file more than once. One of the possible reasons is that some vendors send E212 codes where the MCC code consists of 3 digits as expected, but the MNC code may be either empty or contain 1 or 2 digits (but not 3). Otherwise, there may be an E212 code having 3, 4 or 5 digits in it. In case of empty MNC or a 3-digit E212 code, the System leaves it the way it has arrived, as this may be a case when an entire country is sold flat-rate. In case of a 1- or 2-digit MNC it adds extra zeros (2 or 1 respectively) at the beginning of the MNC, so that it has 3 digits in it. For example, the E212 codes 2501 and 25001 will be converted to 250 001 (while 250 will remain 250). In case the regular 6-digit MCCMNC code is also present in the file besides its "shortened" cognates (e.g. 250001 vs. 25001), the outcome of such code conversion will be two identical E212 codes – and that will result in error
  - *Rate parsing error*
  - *Rate for network without dial codes*: the MCC/MNC code does not exist in the E212 reference book; alternatively, the MCC/MNC code exists but is not linked to any dial code
- *Error info*: message details

Send the error descriptions to the partner for corrections. In case of reference book-related errors, make the necessary amendments in the original MS Excel file and upload it back to the System.

After the import messages are reviewed, the user can either cancel the import or apply the new rates. Click Run import and select one of the following options:

- *Auto*: import without preview, using the *Error type level* settings of the *Auto rate import*
- *Analysis*: preview of import results without the actual import

- *Choice*: manual import with a preview of results
- *Import*: import without a preview of results

NOTE: All errors and warnings will be ignored in the preview and imported file.

The user is then returned to the *SMS\Rates\Rate import* page; the task appears in the *Tasks* panel (see Fig. 143 above). To see the preview of import results (*Choice* and *Analysis* options only) click *view* in the *Details* column. To see the summary of import results, click on the appropriate cell in the *Summary* column.

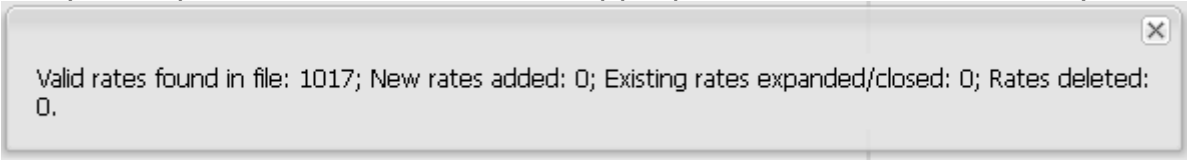


Fig. 152 Summary of import results

9.3.2 Auto rate import

Auto rate import allows creating rules that are used for automatic import of rate sheets sent to a predefined email address or uploaded in the System using the Upload file button on the *SMS\Rates\Rate import* page. To configure automatic rate sheet import:

1. Indicate error types that will prevent auto import
2. Create an auto import rule
3. Test the rule
4. Activate the rule

Open *SMS\Rates\Auto Rate import.* The page contains two panels: the left panel displays the *Auto import rules* and *Error type levels* tab sheets; the right panel contains the *Add, Edit* and *Simulation* tab sheets.

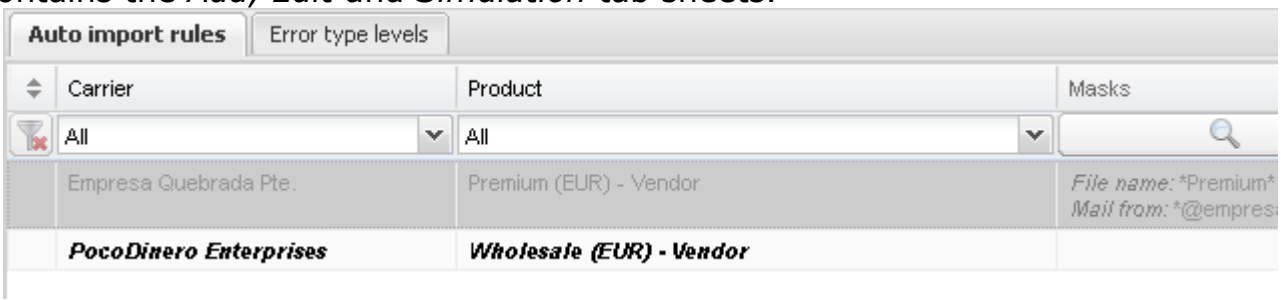


Fig. 153 Auto import rules

Open the *Error type levels* tab sheet to define errors critical for import.

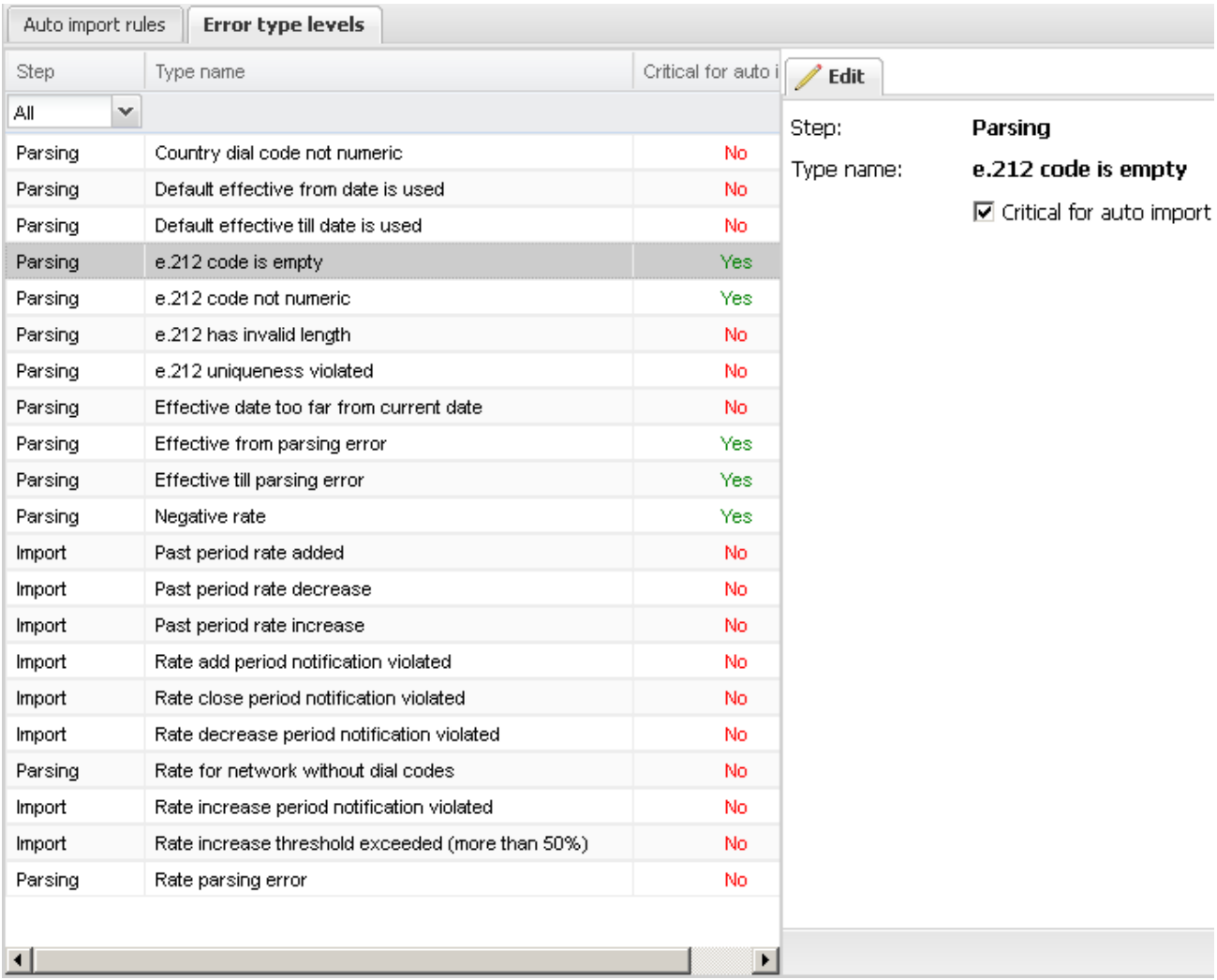


Fig. 154 Error type levels

Rate sheet files containing critical errors will not be imported. Select a record in the table and check the *Critical for auto import* flag when necessary.

Open the *Auto import rules* tab sheet. It contains the list of rules for automatic import. Test rules are highlighted in bold italic font, while inactive rules are greyed out. The table columns contain the parameters that are configured in the right-hand panel.

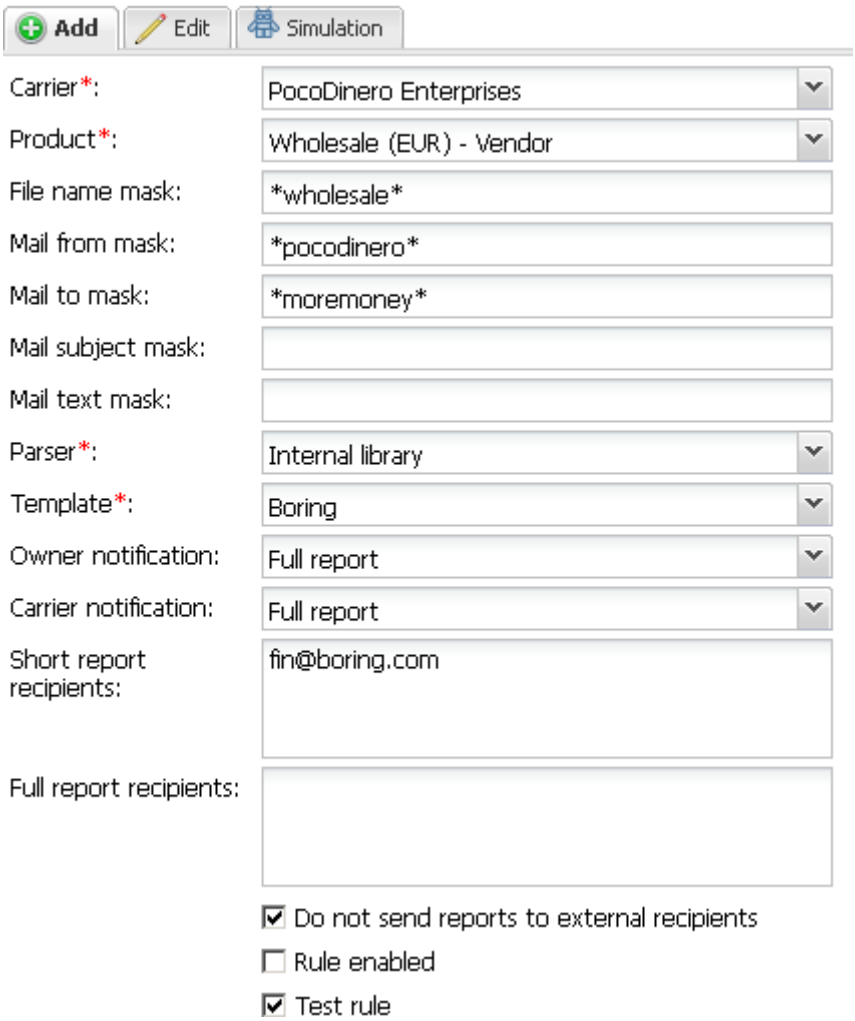


Fig. 155 Add menu

To create a rule, open the *Add* menu and enter the appropriate parameters in the fields detailed below. Fields marked with an asterisk (*) are required.

- *Carrier*
- *Product*
- *File name mask, Mail from mask, Mail to mask, Mail subject mask*: use an asterisk * to define a mask
- *Parser*: library used for file parsing. Normally, the default value *Internal library* is used; try other values only if the output file is illegible
- *Template*: select the rate file import settings that will be used to parse the imported rate sheet. Templates are created in the *SMS rate file import settings* panel at *SMS\Rates\Rate import*.
- *Owner notification, carrier notification*: configure the format for notifying the System owner and partner respectively about the file import. Possible values are:
  - *Not sent*: no notification is sent
  - *Short report*: a summary of import results is sent
  - *Full report*: a full analysis with price changes is sent (similar to the *Preview of rates* illustrated in Fig. 144)
- *Short report recipients*, *Full report recipients*: supply comma- or semicolon-separated email addresses for sending short and full reports respectively

- *Do not send reports to external recipients*: send reports only to managers of the accounts pertaining to the selected carrier
- *Rule enabled*: select when the tests are complete to activate the rule
- *Test rule*: select when testing the rule. Rules with the selected checkbox will not be imported

Click Submit to save the changes. The entry will appear in the *Auto import rules* table.
To test the rule, open the *Simulation* menu.

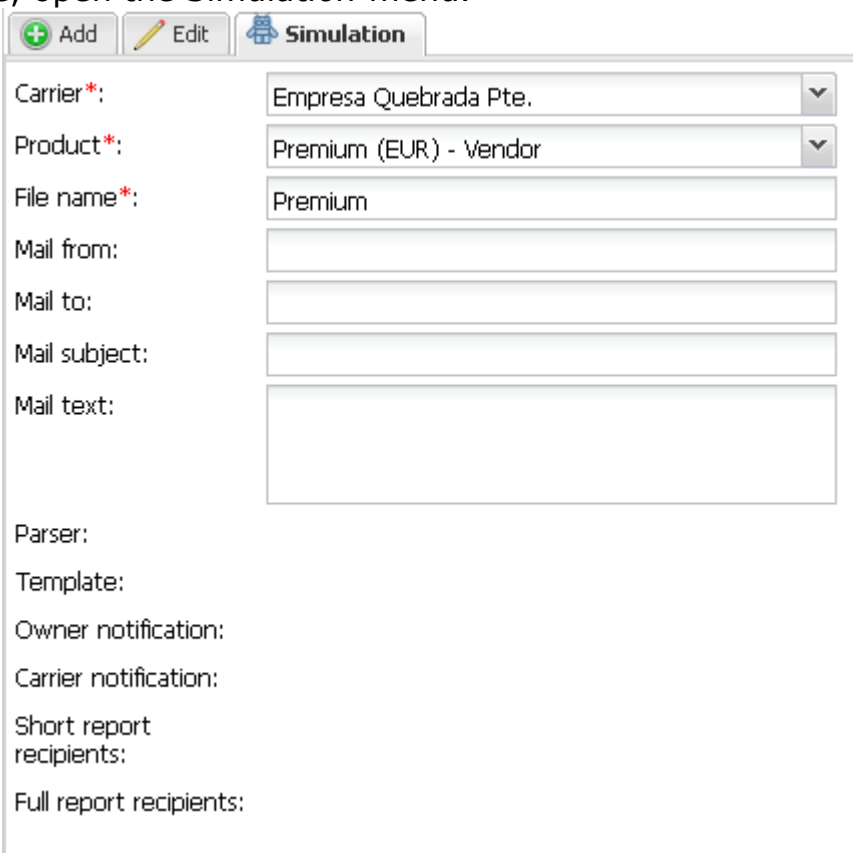


Fig. 156 Simulation

Enter the appropriate parameters and click Run. The test results will appear on the *Simulation* panel. Once the tests are completed, return to the *Edit* menu and check the *Rule enabled* flag to activate the rule.

9.3.3 Rate editor

The *SMS\Rates\Rate editor* page offers a tool for viewing and modifying rates registered in the System, as well as manual creation of new rates.
The page is divided in two panels: the left one is the *Rate filter* that allows locating rates that meet filtering parameters; the right panel contains two tab sheets: *Rate groups* and *Rates*.

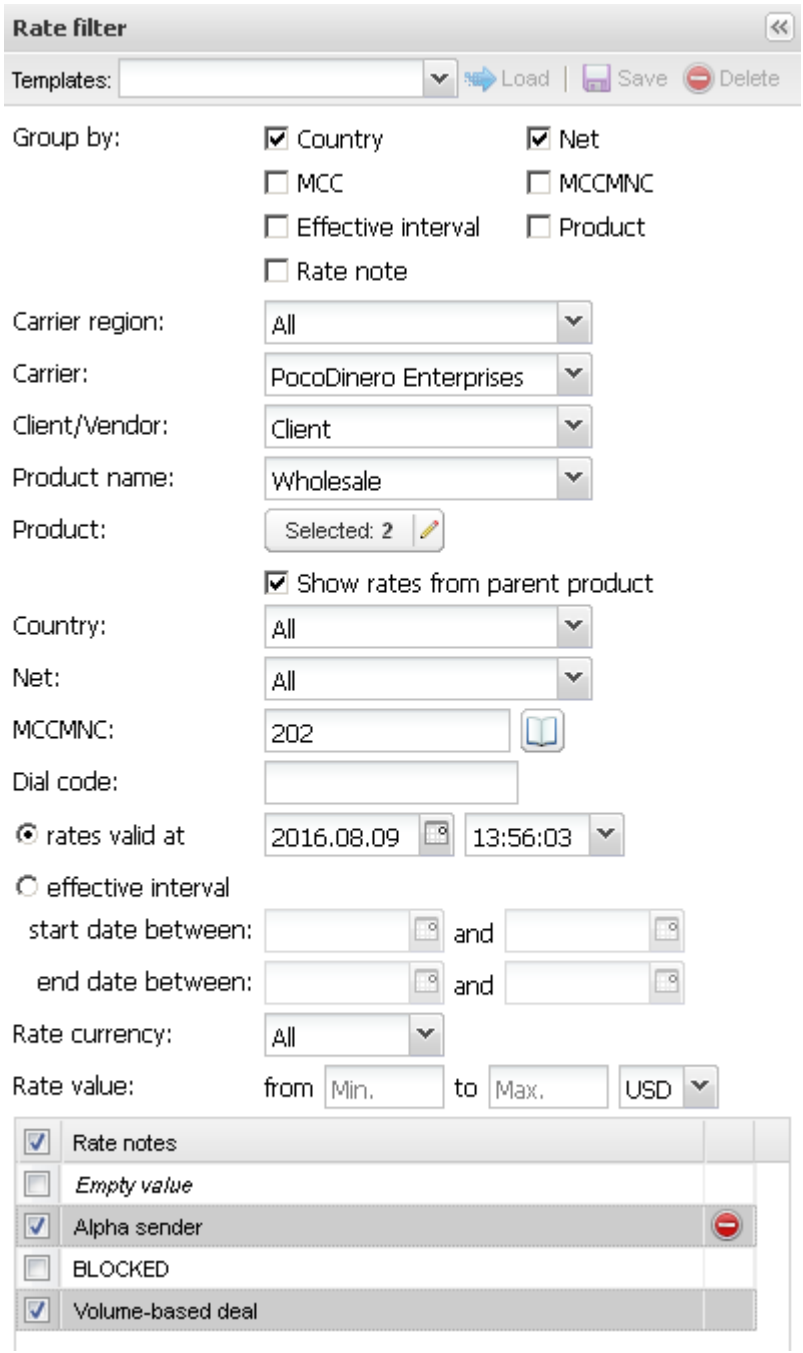


Fig. 157 Rate filter

In the *Rate filter* panel, specify filtering parameters:

- *Group by*: allows grouping rates in the *Rate group* tab sheet based on one or several parameters:
  - *Country*
  - *MCC*
  - *Effective interval:* the period during which the rate is valid
  - *Rate note:* comments in the *Rate note* field
  - *Net*: network name
  - *MCCMNC*
  - *Product*
- *Carrier region*

- *Carrier*
- *Client/Vendor*: traffic direction
- *Product name*: type of SLA (for example, premium, wholesale etc.)
- *Product*: specific carrier product. Select several products to compare rates between them. Click on the Selected: All buttton for multiple selection
- *Country*
- *Net*: network name
- *MCCMNC*: masks with % and * symbols are supported
- *Dial code*: is used when a single MCCMNC includes several dial codes with different rates. For example, two dial codes +1212 и +1718 with different rates can exist for the MCCMNC 310779. Enter the appropriate dial code to view its rates
- *Rates valid at*: date on which the rates are valid
- *Effective interval start (end) date between*: the period during which the rate is valid
- *Rate currency*
- *Rate value from… to*
- *Rate notes:* the table containing comments available in the *Rate note* field. Select rate notes by setting appropriate flags or remove a note from all rates by clicking . NOTE: System notes such as *BLOCKED* and *Volume-based deal* do not contain the button an cannot be removed.

Click Apply filter to display the rates complying to the filter parameters. Click Clear filter to reset the form.

The rate filter parameters can be saved as a template for quick access to preconfigured settings. Type the new template name in the *Template* field at the top of the panel or select an existing one from the drop-down list and click Save. To open a template, select it in the drop-down list and click Load.

Fig. 158 Template

The filtered rates will appear in the *Rate groups* tab sheet, grouped by the parameters specified in the *Rate filter* panel. Rates in the figure below are grouped by *Country*, *Net*, and *MCCMNC*.

Rate groups | Rates

Select row and go to next tab

Country	Net	MCCMNC	Rate	Currency	Rate co
Abkhazia	All networks	289	{..}	EUR	2
Afghanistan	ROSHAN	412020	0.00930	EUR	1
Afghanistan	Etisalat Afghanistan	412050	0.00740	EUR	1
Afghanistan	Afghan Telecom	412088	0.00390	EUR	1
Afghanistan	MTN Afghanistan	412040	{..}	EUR	2
Afghanistan	All networks	412	{..}	EUR	2
Afghanistan	AWCC	412001	{..}	EUR	2

Fig. 159 Rate groups

Click Export to Excel at the bottom of the page to export the table to a MS Excel file.

To view a rate, select a record in the table and open the *Rates* tab sheet.

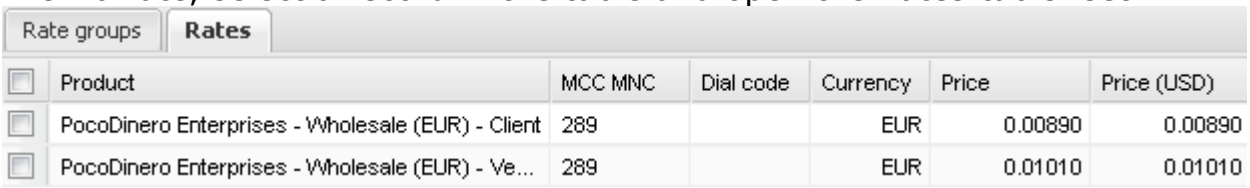


Fig. 160 Rates

Double-click on a rate to modify it. Enter the appropriate parameters in the *Modify rate* dialog that appears and click Submit to save the changes. Click Cancel to discard the settings.

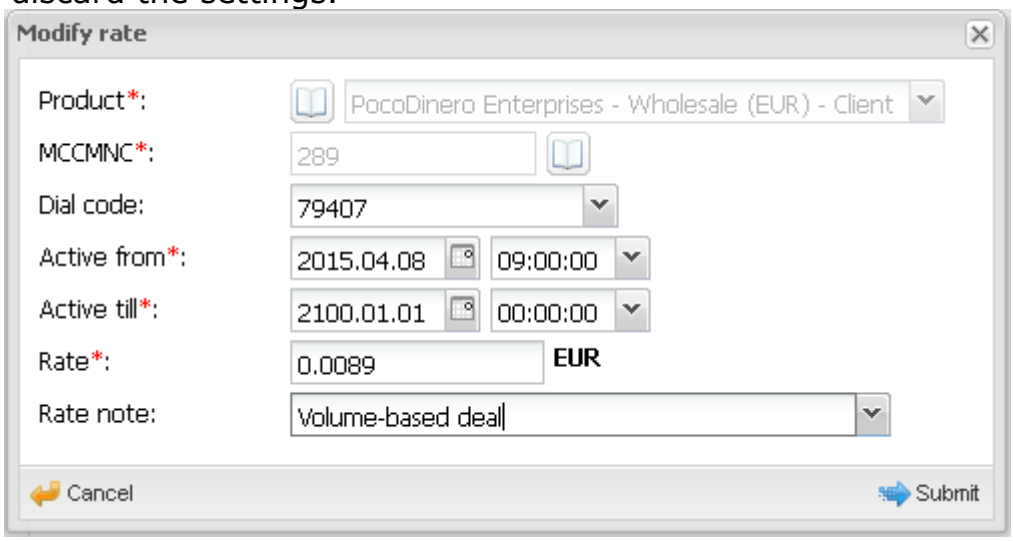


Fig. 161 Modify rate dialog

The bottom of the *Rates* tab sheet contains the *Rate history* panel that shows history of changes for the selected rate. Double click a record to edit it. NOTE: For example, editing the rate history may come useful when correcting an erroneous price etc.

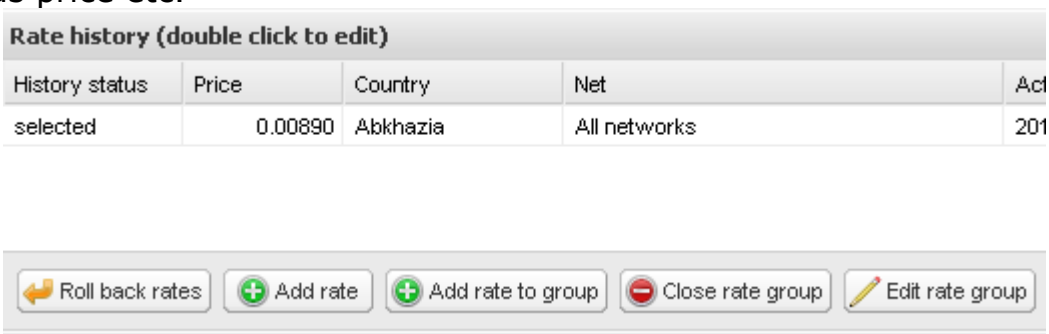


Fig. 162 Rate history

The bottom of the page also contains buttons that allow editing rates and rate groups:

- Clone rate: create a copy of the rate (recommended for use when creating a new rate with similar parameters)
- Modify period: modify the rate *Active from* and/or *Active till* dates; the rates whose dates do not overlap with the new period are removed from routing.

For example, the original rate period is June 10 – June 20; the corrected period is June 10 – June 15. NOTE: rates for the period between June 16 and June 20 will be removed from routing. This control is recommended for correcting erroneous new rates

- Add period: modify the rate *Active from* and/or *Active till* dates; the old rate will be active for the dates that do not overlap with the new period. For example, suppose there is a rate valid from 2016.01.01 till 2100.01.01 and you need to increase it. Click Add period, set the *Active from* date to 2017.02.01 and the *Active till* date to 2100.01.01. In this way, you will have two rates: the old one from 2016.01.01 till 2017.02.01 and the new one from 2017.02.01 till 2100.01.01. NOTE: It is recommended to use Add period rather than Modify period
- Close selected: close the selected rates (stop offering them)
- Export to Excel: export the table to a MS Excel file
- Roll back rates: cancel all changes made for a selected product before the date specified in the *Target date/time* field

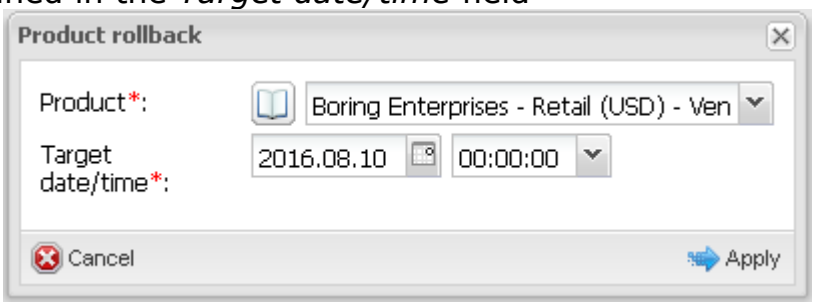


Fig. 163 Product rollback

- Add rate: add a new rate
- Add rate to group: select the appropriate group parameters and specify the rate to be added to the group. NOTE: If a *Group by country* filter is on and the group has several MCCMNC codes, the MCCMNC field will show the MCC code

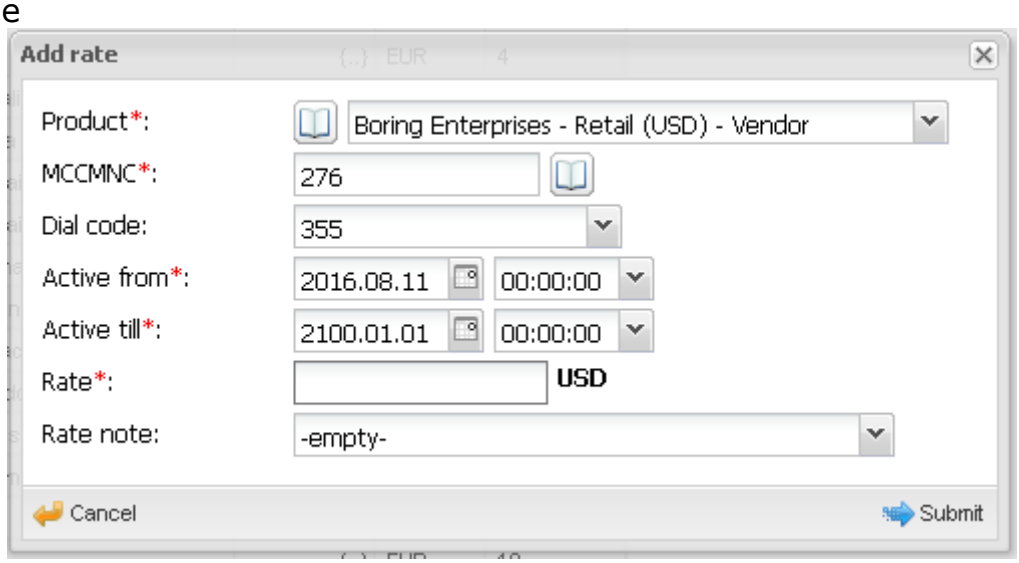


Fig. 164 Add rate to group

- Edit rate group: similar to Modify period detailed above
- Close rate group: similar to Close selected detailed above
- Clone rate group: similar to Clone rate detailed above

9.3.4 Rate export

The *SMS\Rates\Rate\Rate export* page allows downloading rate data from the System database to a file (for analysis) or sending it to the specified e-mails (to clients). The page is divided in three panels: *Export/Column settings*, *Tasks* and *Task details*.

9.3.4.1 Export

The *Export* tab sheet is used to select rates to be exported, by applying the following filters:

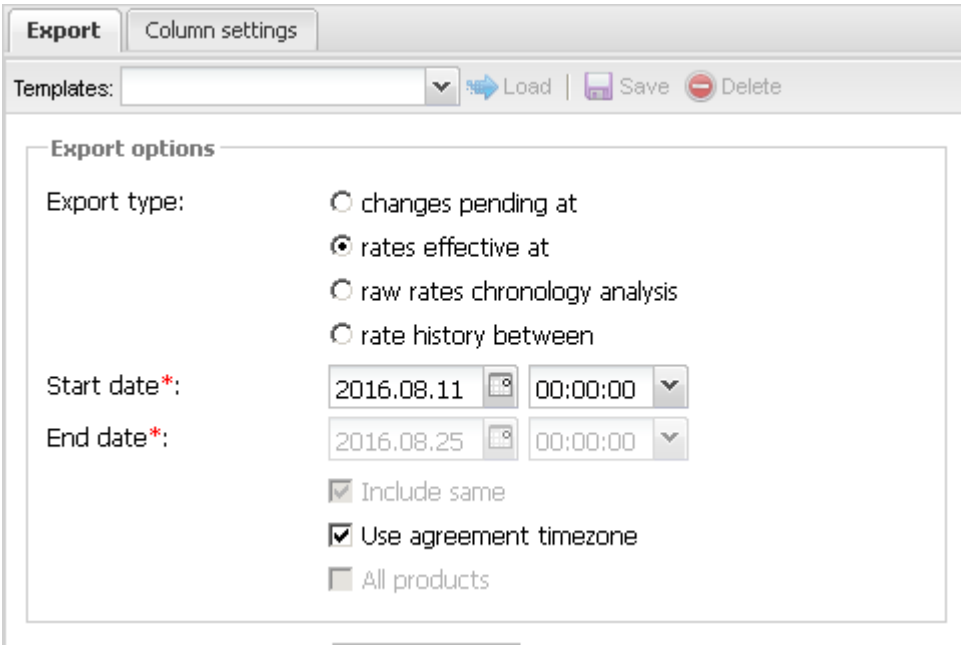


Fig. 165 Export options

- *Export type*: includes the following radio buttons:
  - *Changes pending at*: export scheduled rate changes starting with the date indicated in the *Start date* parameter. In the exported file, rates are marked in compliance with pending changes: *increase*, *decrease*, *new*, *close*, *same*
  - *Rates effective at*: export rates as of the date indicated in the *Start date* parameter
  - *Raw rates chronology analysis*: export rates available on *Start date* and *End date*, and analyze if any changes were made between the dates. For example, select the *Start date* 1 October and the *End date* 10 October. Suppose somewhere between these dates the rate for the whole period was changed from 0.05 to 0.06. The exported file will show the change. NOTE: The latest rate change overwrites all the previous changes. For example, if the rate was changed from 0.05 to 0.06 on October 2, and to 0.07 on October 9, the System will only show the increase from 0.05 to 0.07. It is recommended to use this parameter when the whole rate was

changed retrospectively *Rate history between*: export history of rate changes for the period between the *Start date* and *End date* and analyze if any planned changes were made within the period. Unlike the previous parameter, the System will not show changes for the whole period but display all changes planned (or effected) between the *Start date* and *End date* for part of the period (future dates can be included). For example, select the *Start date* 1 October and the *End date* 10 October. Suppose the rate was 0.05 between October 1 and October 6 and was changed to 0.06 starting October 7. This change will be reflected in the exported file. It is recommended to use this parameter in most cases involving rate history analysis

- *Include same*: check the flag to include the rates that were unchanged
- *Use agreement timezone*: use the partner's time zone in the exported rates
- *All products*: export rates for all products registered in the System

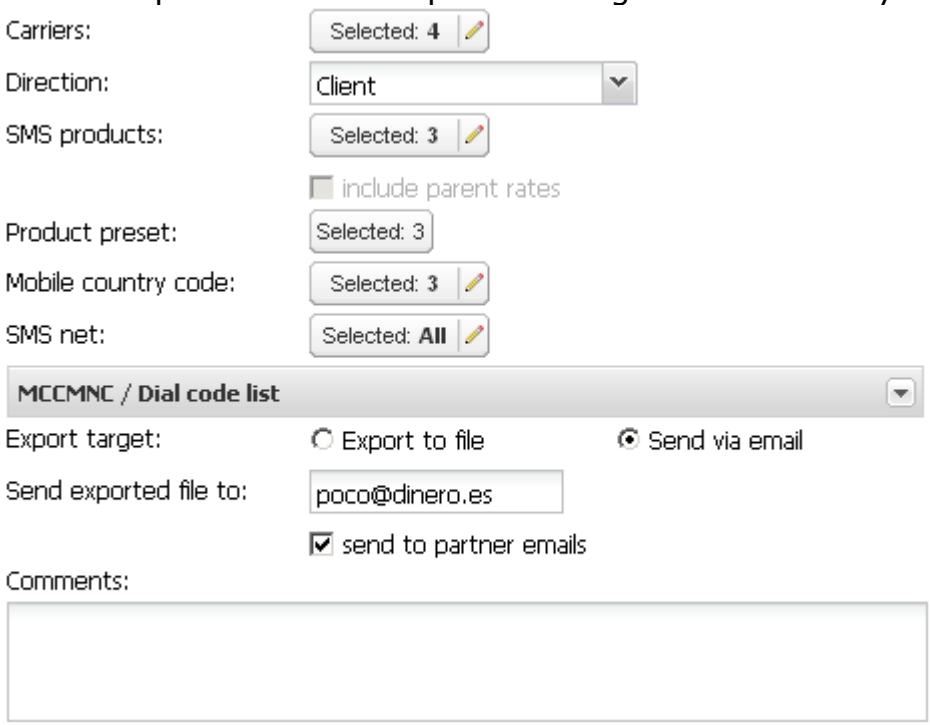


Fig. 166 Export, continued

- *Carriers*
- *Direction*
- *SMS products*: carrier SMS product(s) associated with the exported rates. Check *include parent rates* to include rates of parent products (if applicable)
- *Product preset*: a set of columns in the exported file defined in the *Column settings* tab sheet
- *Mobile country code*
- *SMS net*: network name
- *MCCMNC/Dial code list*: unfold the form by clicking and enter MCCMNC and/or dial codes if necessary

Fig. 167 MCCMNC/Dial code list

- *Export target*: indicate how the file should be exported. Options include:
  - *Export to file*
  - *Send via email*
- Send exported file to: specify the email address for file delivery. Check the send to partner emails flag to deliver the file to the carrier emails configured in *Carriers\Agreements* (*Default rate change emails* parameter). NOTE: Each partner receives only rates pertaining to their accounts
- *Comments*: arbitrary comments. NOTE: The field appears in the exported file only if the *Comments* field is configured in the MS Excel template file (*Administration\Template manager*)

When through with defining the parameters, click Export to start export or Clear filter to discard the settings. The configured export settings can be saved as a template to use for similar rate export tasks in the future. Type the new template name in the *Template* field at the top of the panel or select an existing one from the drop-down list and click Save. To open a template, select it in the drop-down list and click Load.

Fig. 168 Export template

9.3.4.2 Column settings

The *Column settings* tab sheet serves to configure columns of the output MS Excel file. Such set of columns and their parameters is called a product preset. The *Column settings* tab sheet contains four panels: the upper left panel is a table of product presets (Fig. 169), the bottom left panel shows details of the selected record (Fig. 171); the top right panel contains the *Add* and *Edit* menus for creating and editing a product preset (Fig. 170); the bottom right panel contains the *Add* and *Edit* menus for configuring columns within the preset.

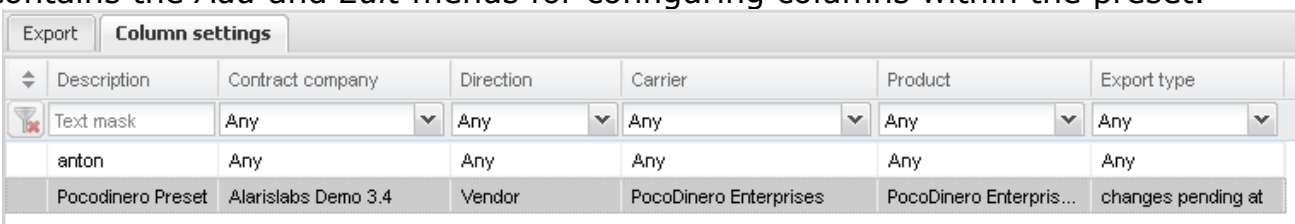


Fig. 169 Table of product presets

To create a new product preset, open the *Add* menu in the top right panel and enter the appropriate parameters in the fields detailed below. Fields marked with an asterisk (*) are required.

Fig. 170 Add menu

- *Description*: name of the product preset
- *Contract company*: the legal entity of the System owner on behalf of which it works with the carrier
- *Direction*
- *Carrier*
- *Product*
- *Export type*: the parameter configured in the *Export* tab sheet (options include: *changes pending at*, *rates effective at* or *rate history between*)

Click Submit to save the changes. Click Reset to clear the form. Click Clone to create a copy of a record selected in the table (the button opens the *Add* menu with the parameters of the record. Edit them as appropriate and click Submit).
A new product preset contains the following default columns:

- *MCC*
- *MNC*
- *DIALCODE*: dial code in E164 format
- *COUNTRY*
- *NETWORK*: network name
- *RATE START DATE*
- *RATE*
- *CHANGE TYPE*: describes the rate change (*increase*, *decrease*, *new*, *close*, *same*)

	System column	User column name	Width	Alignment	Rounding precision	Sort order	Sort direction
1	MCC	MCC	40	left		1	asc
2	MNC	MNC	40	left		2	asc
3	DIALCODE	Dial code	45	left			-
4	COUNTRY	Country	150	left			-
5	NETWORK	Network	250	left			-
6	RATE_START_DATE	Effective date	100	center			-
7	RATE	Rate	60	right	6		-
8	CHANGE_TYPE	Change type	80	left			-

Fig. 171 Details of a selected preset

The user can edit the parameters of the default columns (use the *Edit* menu at the bottom right panel) or add new columns (use the *Add* menu at the bottom

right panel). When adding a new column, configure the following settings (fields marked with an asterisk (*) are required):

- *System column*: select the data type in the drop-down list. Values include:
  - RATE_NOTE: comments configured in the *Rate note* field
  - MCCMNC5: MCCMNC code in a 5-digit format, with the first digit of the MNC code removed (for example, if the 6-digit MCCMNC code is 202002, the 5-digit code is 20202)
  - RATE_END_DATE
  - PREV_RATE: the value of the previous rate
- *User column name*: the name of the column
- *Width*
- *Alignment*
- *Rounding precision*
- *Sort order*: specify sorting priority for the columns, with 1 being the highest priority. Possible values are *1*, *2*, *3*. For example, in Fig. 171 above columns will be first sorted by *MCC* (value *1* in the *Sort order* field and then by MNC (value *2* in the *Sort order* field)
- *Sort direction*: select *asc* for ascending and *desc* for descending

Click Submit to save the changes. Click Reset to clear the form. Click Delete to delete the column.

9.3.4.3 Tasks

The *Tasks* panel displays a list of recent rate export tasks with the following information:

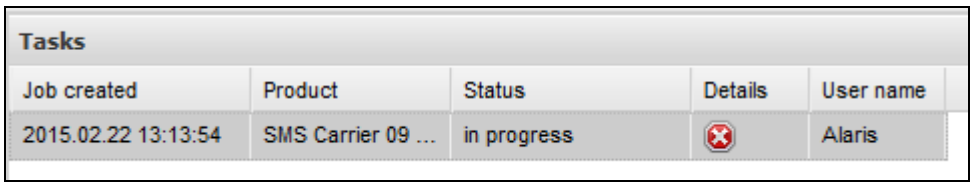


Fig. 172 Tasks

- *Job created*: date and time of task creation
- *Product*: relevant product
- *Status*: status of the task. Possible values:
  - *ready*: the task is complete
  - *new*: the task has just been created
  - *error*: the task resulted in error
  - *aborted*: the task has been canceled by the user or the System
  - *pending*: currently out of use
  - *scheduled*: the task is scheduled for a specific time
- *Details*: may contain:
  - error description if error occurs
  - marked as sent if the *Send via email* option is selected
  - a link to the generated file
  - *Abort task* button if the task is in progress
- *User name*: reference to the user that created the task

Any task can be restarted with the previously selected settings reentered automatically. Select the required task and click the Restart export button located under the *Tasks* table.

By default, created tasks remain in the System for the period of 30 days, and the list of tasks has no length restrictions.

9.3.4.4 Task details

The *Task details* table provides a quick overview of major parameters for the task selected on the *Tasks* page:

Fig. 173 Task details

Export can be configured for several grouped products. For every product in a group a separate task is created. The *Task details* table shows all products within one task.

9.3.5 Rate management tools

Two important rate management tools - *LCR Analysis* and *Rate generator* - are implemented in the *Reports* section. Refer to *Reports\LCR Analysis (SMS)* and *Reports\Rate generator (SMS)* for more detail.

9.4 Reference books

In the SMS industry charges are typically based not on "standard" E164 dial codes, but on a special type of codes intended to address mobile networks rather than geographic areas. That special standard is called E212. On a large scale it brings forward two major items extensively used in the mobile communications industry:

- *MCC*: mobile country code, a 3-digit code of the country the target mobile network is located in. There may be more than one MCC per country
- *MNC*: mobile network code, a 2- or 3-digit code of the target mobile network

MCC and MNC codes are used together as E212 codes. In the inter-carrier settlements there may be cases when a particular E212 breakout traded by a particular carrier has no MNC – meaning that an entire country is bought or sold flat-rate.

While interconnect rates are usually based on E212 codes, SMS messages contain only E164 numbers of addressed mobile subscribers. Therefore, the ability to match E164 numbers with the respective E212 codes is required to correctly estimate the SMS cost for the customer and vendor. For that purpose the System has a reference book that stores E212 ↔ E164 code combinations, as well as mobile network names and country names for E212 codes. All rating- and routing-related procedures are dependent on this reference book, so it should always contain complete and accurate data to avoid billing mismatches. NOTE:

The System comes with a basic version of the reference book. It is recommended to keep it regularly updated.
The *SMS/Reference books* section consists of three pages – *Short Code Reference Book Editor*, *E212/E164 Reference Book Editor* and *E212/E164 Reference Book Import*.

9.4.1 Short Code Reference Book Editor

The short code reference book editor allows configuring short code/carrier matches to enable two-way messaging. When a mobile originated SMS is received from a subscriber, the System uses the reference book to look up which carrier the short code belongs to, and directs the SMS to this carrier.
The *Short Code Reference Book Editor* page consists of two panels. The left panel contains the reference book table; the right panel shows the *Add* and *Edit* menus.

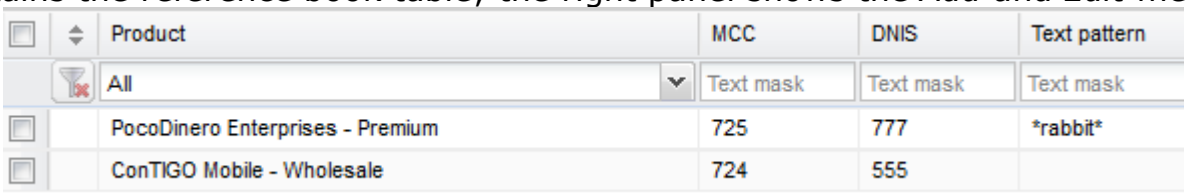


Fig. 174 Reference book table

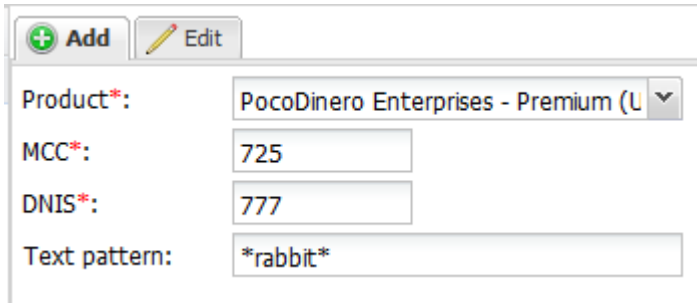


Fig. 175 Add menu

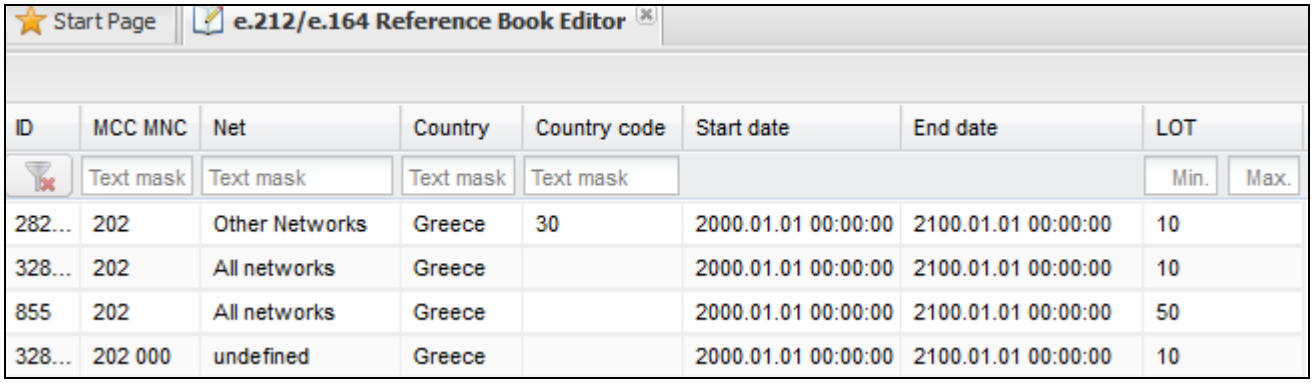
The *Add* menu contains the following parameters:

- *Product*: select the appropriate product in the drop-down list
- *MCC*
- *DNIS*: the carrier's short code
- *Text pattern*: the field is used in case a short code is shared by several carriers, each having their own text code; specify the text code in this field

Fields marked with an asterisk (*) are required. When through with defining the parameters, click Submit to save the record or Reset to discard the settings. Click Delete to remove a record (available in the *Edit* menu).

9.4.2 E212/E164 Reference Book Editor

This page enables the user to review, create and edit entries in the E212/E164 reference book. The page is divided into four panels. The upper left panel is a table of registered E212 codes.



ID	MCC MNC	Net	Country	Country code	Start date	End date	LOT
	Text mask	Text mask	Text mask	Text mask			Min. Max.
282...	202	Other Networks	Greece	30	2000.01.01 00:00:00	2100.01.01 00:00:00	10
328...	202	All networks	Greece		2000.01.01 00:00:00	2100.01.01 00:00:00	10
855	202	All networks	Greece		2000.01.01 00:00:00	2100.01.01 00:00:00	50
328...	202 000	undefined	Greece		2000.01.01 00:00:00	2100.01.01 00:00:00	10

Fig. 176 E212 codes

Use text masks under the column headers to filter the records in the table. Use the button in the upper left corner to clear the filter.

- *ID*: internal identification number
- *MCC MNC*: Mobile Country Codes/Mobile Network Codes
- *Net*: name of the mobile network the E212 code belongs to
- *Country*: name of the country the E212 code belongs to
- *Country code*: code of the country in E164 format (optional)
- *Start date*/*End date*: period of the record validity (normally default values are used to set up an indefinite period)
- *LOT*: level of trust index (from 0 to 100). This parameter defines the level of trust in the source of information placed into the E212/E164 reference book. For example, Home Location Register always gives authentic information about E164/MCCMNC code matching, while some vendor's price list could be less reliable. NOTE: Several records for the same MCCMNC and differing LOT indices can exist in the table; only the record with the highest LOT will be used for billing and routing. However, it is recommended to timely verify the information and delete irrelevant records with the same MCCMNC to avoid confusion

Displayed codes can also be filtered according to their validity by setting a date and time in the *Active at* tool bar:

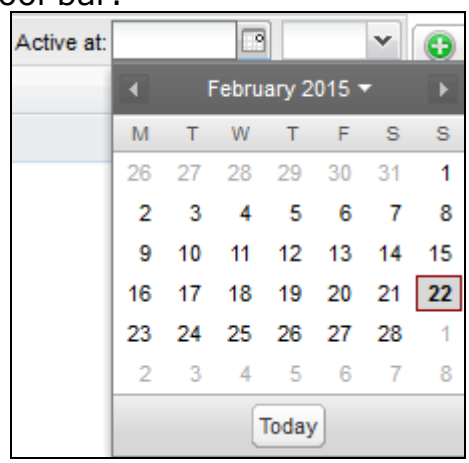


Fig. 177 The "Active at" tool bar

The *Add* and *Edit* menus in the upper right corner of the page allow editing records and creating new ones. To activate the *Edit* menu, click on the record in

the table. Enter the required parameters. Fields marked with an asterisk (*) are required.

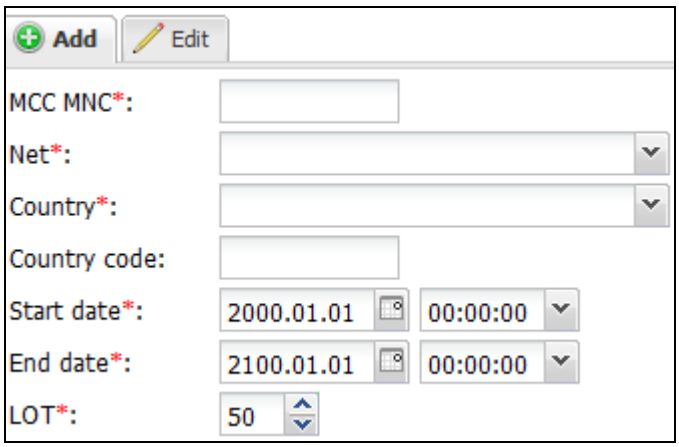


Fig. 178 Add code menu

The bottom left panel shows a table of E164 codes matching the E212 codes. A single E164 code may match only one E212 code, while a single E212 code may match multiple E164 prefixes.

ID	MCC ...	Dial code	LOT		Start date	End date
	Text ma	Text mask	Min.	Max.		
57079	202	30	50		2000.01.01 00:00:00	2100.01.01 00:00:00
42680	202 001	30697	50		2000.01.01 00:00:00	2100.01.01 00:00:00
99913	202 001	30698	50		2000.01.01 00:00:00	2100.01.01 00:00:00
71491	202 001	3097	50		2000.01.01 00:00:00	2100.01.01 00:00:00
28392	202 001	30971	50		2000.01.01 00:00:00	2100.01.01 00:00:00
57089	202 002	306947615...	50		2000.01.01 00:00:00	2100.01.01 00:00:00

Fig. 179 E164 codes

Click on the record in the top table of E212 codes. The matching E164 code will appear in the bottom table. The table contains the following information:

- *ID*: internal identification number
- *MCC MNC*: Mobile Country Codes/Mobile Network Codes
- *Dial code*: dial code in E164 format. NOTE: It is essential that all records contain a dial code. Records without a dial code will not be used for routing or billing
- *LOT*: level of trust index (from 0 to 100). This parameter defines the level of trust in the source of information placed into the E212/E164 reference book. For example, Home Location Register always gives authentic information about E164/MCCMNC code matching, while some vendor's price list could be less reliable
- *Start date/End date*: period of the record validity (normally default values are used to set up an indefinite period)

The *Add* and *Edit* menus in the bottom right corner allow editing this code or adding a new one.

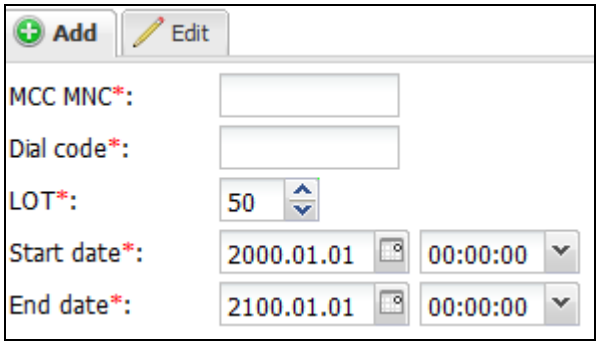


Fig. 180 Add E165 code menu

When through with defining the parameters, click Submit to confirm or Reset to discard the settings. Click Delete to remove a record (available in the *Edit* menu).

9.4.3 E212/E164 Reference Book Import

The System supports import of the E212/E164 data from external sources as a CSV file. The file must contain the following columns:

- E212 (or MCC and MNC separately)
- E164
- Net

The *E212/E164 Reference Book Import* page consists of two panels. The left panel is a preview table of the CSV file; the right panel is the upload menu.

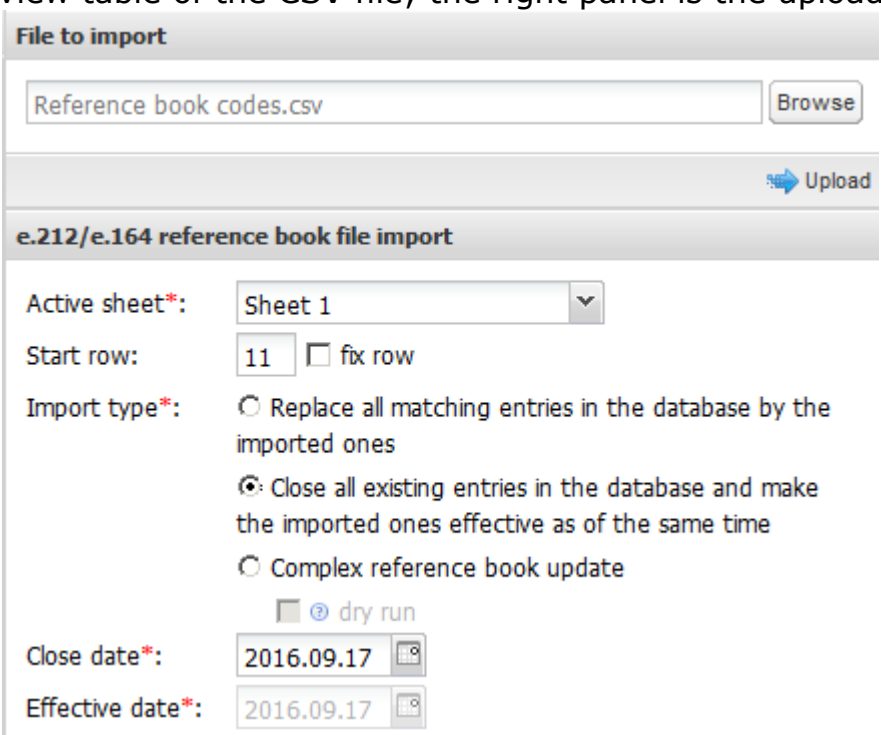


Fig. 181 Upload menu

Use the Browse button to select the file on the local PC and click Upload.
Fill the appropriate parameters in the upload menu:

- *Active sheet*: select the spreadsheet of the uploaded file that will be imported
- *Start row*: define the first row of the reference book data, so that the System ignores everything that is above the rate table in the file. Check *fix*

row to prevent the *Start row* value from changing when you navigate between rows in the preview

- *Import type*: contains the following options:
  - *Replace all matching entries in the database by the imported ones*
  - *Close all existing entries in the database and make the imported ones effective as of the same time.* The date for closing the entries is specified in the *Close date* parameter below. NOTE: this task is normally performed by the Alaris support team
  - *Complex reference book update*: the parameter serves for updating the reference book as follows:
    - *Close a dial code of a specific MCCMNC*: upload a file containing the MCCMNC whose dial code(s) must be closed
    - *Add a new dial code*: upload a file containing the MCCMNC and the new dial code
    - *Close the records for a specific dial code*: upload a file containing the dial code (the MCCMNC field is empty)
    - *Close an existing MCCMNC record and open a new one*: upload a file containing the MCCMNC, country name and network name
    - *Add a new dial code to the reference book*: upload a file containing the MCCMNC, country name, network name and dial code

  All these data can be imported as a single file or in separate files. The date the updates come into effect is specified in the *Effective date* parameter.
  - *Dry run*: check the flag to view the updates without applying them to the database (they will not be submitted even after clicking the Apply button)

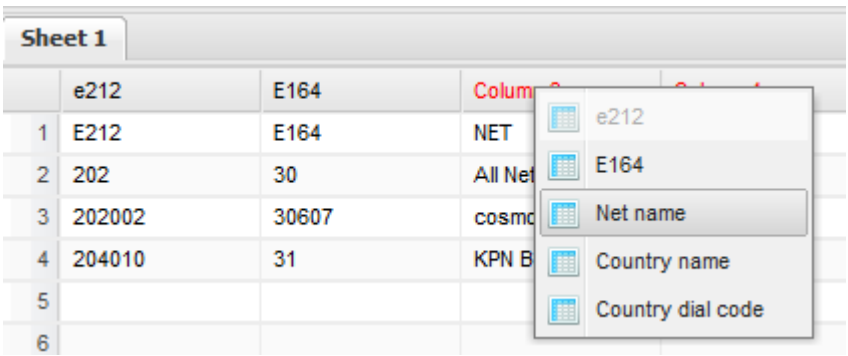
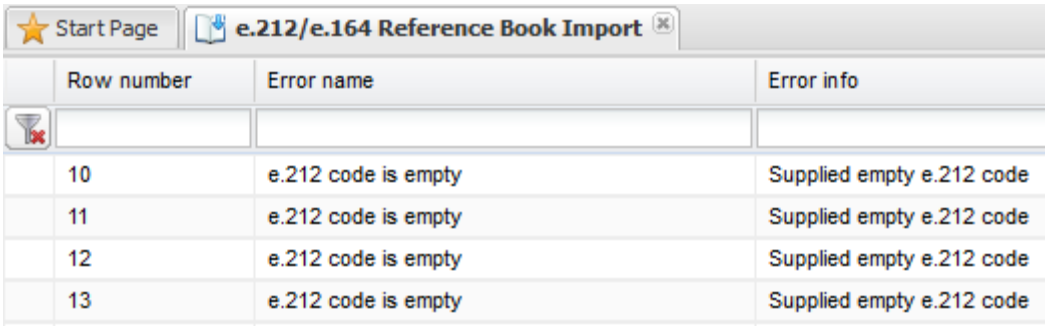


Fig. 182 CSV file preview

In the CSV file preview, set the appropriate column names by clicking on the headers. Click Start import to start import. To discard the settings, click Reset form. To cancel, click Cancel import.

If any errors are found, they are displayed in the page that appears after clicking the Start import button.


Start Page | e.212/e.164 Reference Book Import

Row number	Error name	Error info
10	e.212 code is empty	Supplied empty e.212 code
11	e.212 code is empty	Supplied empty e.212 code
12	e.212 code is empty	Supplied empty e.212 code
13	e.212 code is empty	Supplied empty e.212 code

Fig. 183 List of errors

The bottom section contains a preview of records to be updated. Click Apply to submit the updates to the Database. Click Back to return to the previous page.

9.5 Routing

The *SMS\Routing* section serves to manage the way messages are routed by the switch.

9.5.1 Routing procedure overview

For every message that hits the switch, it immediately sends a request to the routing module over a proprietary protocol. The most important information in the request is the internal ID of the client channel on the switch and the addressed B-number. The System performs client authentication based on the client channel GUID provided by the switch and (optionally) the "service type" parameter specified in the SMS, identifies the net name for the E164 B-number, and collects the E212 code associated with that net name in the *Reference books* or in an external HLR service.

As soon as E212 code matching the destination network is obtained, the System tries to find the respective rate(s) in the client product. Then it makes up a list of vendor rates available for the given MCCMNC (or MCC) code.

As soon as the list of vendor rates in the format "one rate per vendor product" is created, the System checks for any restrictions related to any of the respective vendor accounts and filters the vendor rate list accordingly. Possible restrictions are: no SMS POIs created for the vendor product, or the outgoing credit for the vendor is exceeded, therefore the vendor cannot be used for routing.

On the final stage of routing the System goes through the list of routing rules that can be applied to the given customer and MCCMNC. If such rules are found, it picks the vendor routes from the list (for more details on the vendor selection please refer to *SMS\Routing\Routing types* and *Routing rules page*). Then the System returns the ordered sequence of the selected routes as vendor channel GUIDs back to the switch. Maximum number of routes per SMS is set by the *Vendors to send* parameter in *Administration\System settings\SMS module*. The switch checks if it has active binds of correct types for the provided GUIDs. If yes, message termination attempts are performed to the vendors in the order they were returned by the System. Rerouting to the next vendor is made after the expiration of timeout for the previous route (default timeout value is 30 seconds) or (for SMPP) upon receipt of *submit_sm_resp* message with any value in the *cause* field except 0x00 (for SMPP). For HTTP, rerouting is made upon the receipt of a valid response with the status other than 200 OK or no response.

9.5.2 Routing rules

Routing logic is defined by means of routing rules. Each rule is an instruction from the user to the System - which vendors and networks/E212 codes to use for terminating traffic from a specific set of client products. By default, each rule affects all client products and all networks/E212 codes, unless specified otherwise. Vendor selection is done by means of setting up choices: in general choice #1 will be the first route for the switch to try, choice #2 will be the second option (in case the first route fails) etc.

9.5.3 Routing types

In terms of vendor list creation in a rule, the following routing types exist in the System (they are just for explanation purposes and are not directly reflected in any System parameters):

- *Static routing*: the routing choice contains one or several manually selected vendor products (if more than one vendor product is present in one choice, percent-based load sharing must be set up), so that the routing is only possible between these vendor products
- *Dynamic routing*: instead of a static product list, a formula is provided in the routing choice. The formula is resolved as a numeric value. When the routing rule is triggered, the System forms a list of available vendors and uses the formula to calculate the routing weight for each of them. The bigger the resulting weight value is, the higher the vendor position in the resulting route list – so the vendor with the biggest weight will be used as route #1. All vendors with negative or zero weights are disregarded. In case two or more vendors have equal weight, the System introduces a small random value to arbitrarily distribute the traffic between them. If necessary, the initial list of vendors can be trimmed by applying a condition – a logical expression that is resolved as *True* or *False*. If it is *False* for a vendor product, the product is disregarded. Conditions can contain the same System parameters and operators as formulas. The key difference is that the result of the formula must be a number, while the result of the condition is a Boolean (*True/False*) value. NOTE: If the *Condition* field is empty, the System applies the condition *MRG>=0*
- *Combined routing*: it is possible to set up a formula in the routing choice, but at the same time make a list of manually selected vendor products to apply that formula to. In this case the routing will be dynamic (as it will be based on a formula, so the final sequence of vendors for each SMS may be different if the formula parameters change) and at the same time static (as the routing will be done among manually defined list of vendor products only)

It is also possible to use a more complex type of combined routing: within the same routing choice you can set up a static product and a formula (optionally – with a limited set of vendor products). Then configure load sharing between two options – so that a certain part of the affected traffic is statically routed to the selected vendor product, while the other part of the traffic is dynamically distributed according to the formula.

9.5.4 Routing rules page

The *SMS\Routing\Routing rules* page serves to review, create and edit routing rules.

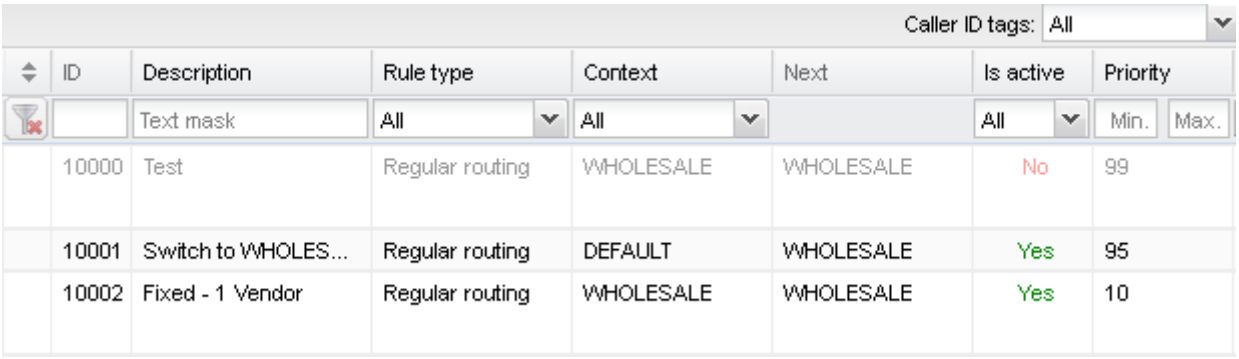


Fig. 184 Routing rules

Use text masks or drop-down lists under the column headers to filter the records in the table. Use the button in the upper left corner to clear the configured filter.

The *Add* and *Edit* menus in the upper right corner of the page allow editing existing routes and creating new ones. To activate the *Edit* menu, click on the record in the table. Enter the required parameters in the corresponding fields. Fields marked with an asterisk (*) are required.

The following parameters are available for configuration in the *Add* menu:

- *Description*: arbitrary text description of the rule. It is recommended to use easy-to-understand descriptions that give an immediate idea about the nature of the rule (e.g. *Russia mobile for Client X*)
- *Rule type*: type of the rule from the standpoint of its expected general effect. Possible values:
  - *Regular routing*: standard rules providing vendors for routing
  - *Block*: route-blocking rules
  - *Test*: rules aimed at distributing a small predefined portion of traffic going through the System among many or all active vendors in the System in order to keep their stats up-to-date. The statistics is calculated based on ASR, DLR(s) and delivery delay. The stats calculation period is configured by the parameters *EMA frame*, *EMA stats delay* and *EMA valid period* in *Administration\System settings\SMS*
- *Context*: user-defined group the given rule is assigned to. The essence of contexts is explained in the *SMS\Routing\Use of contexts*
- *Start date*: date and time when the rule becomes effective
- *End date*: date/time when the rule goes out of effect
- *Is active*: the flag turns the rule on/off. Inactive rules are disregarded by the System
- *Priority*: numeric value defining the rule priority in the range from one to 100. Bigger values mean higher priority. Two or more rules may have the same priority; in this case the final route list will be created after sorting the vendors from all rules with the same priority by their weight. The weight can be viewed in the *SMS\Routing\Simulation* page

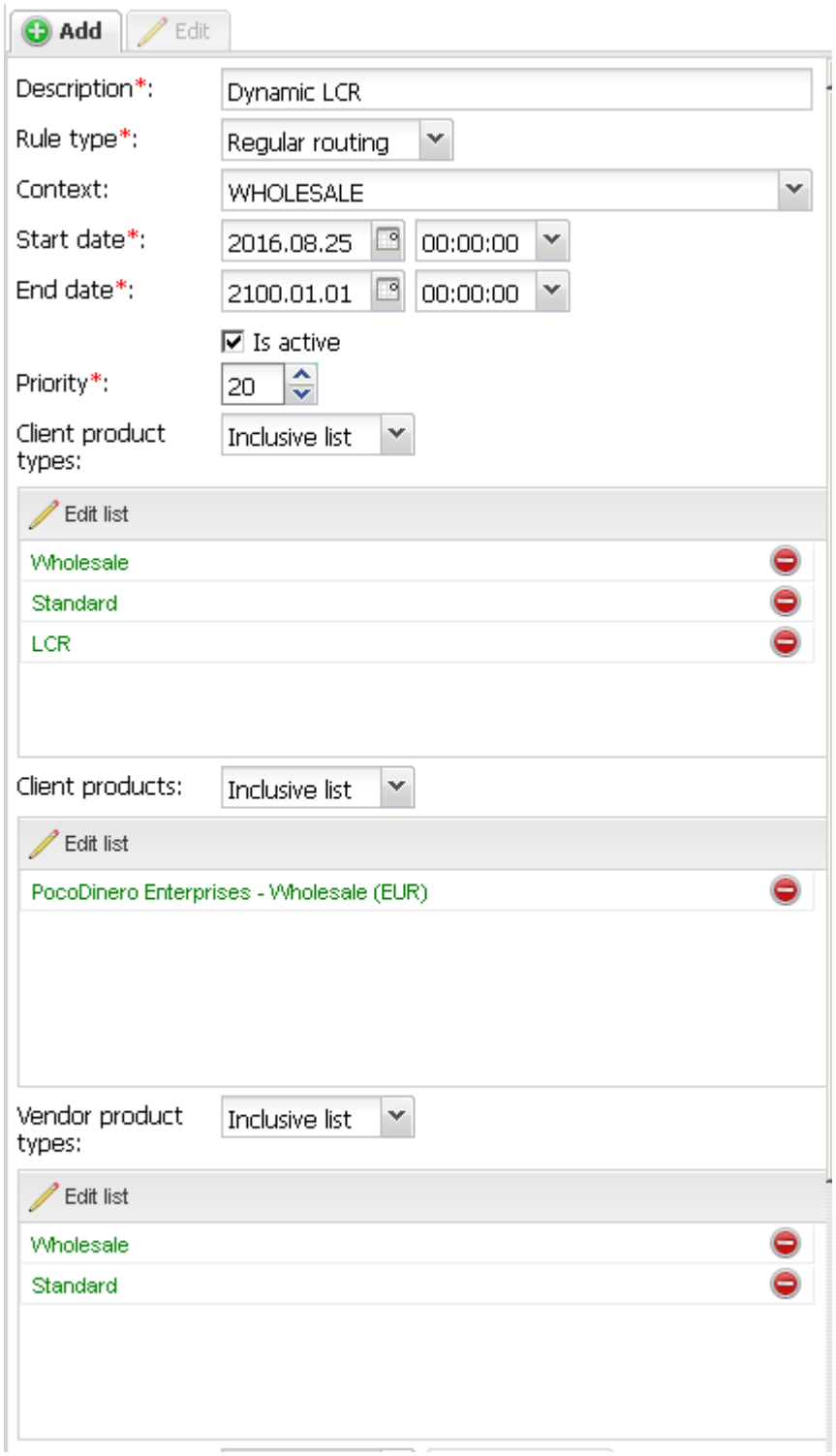


Fig. 185 Add routing rule menu

NOTE: If there several rules have the same priority, static choices will always be on top of the resulting route list even if some/all of them are not choices #1 in their rules. This is done because the System is unable to decide how to otherwise combine static and dynamic vendors from several rules (static vendors cannot be sorted by weight, as they have no weight assigned). To avoid ambiguity, it is not recommended to create two rules with the same priority.

- *Client product types*: types of client products whose traffic the rule will route. Limiting the list of affected client products by type instead of the exact product list is more convenient when it comes to separating the routing for large customer groups – for more detail refer to *SMS\Routing\Use of contexts*
- *Client products*: list of client products the rule will affect. Can be used for a rule specific for one client or a small group of clients (i.e. where using the *Client product types* parameter will not help). Can be inclusive or exclusive
- *Vendor product types*: types of the vendor products that will be allowed to take part in route selection. Can be handy when the user, for example, wants to limit the possible routing options to vendors whose products are called Premium and Platinum

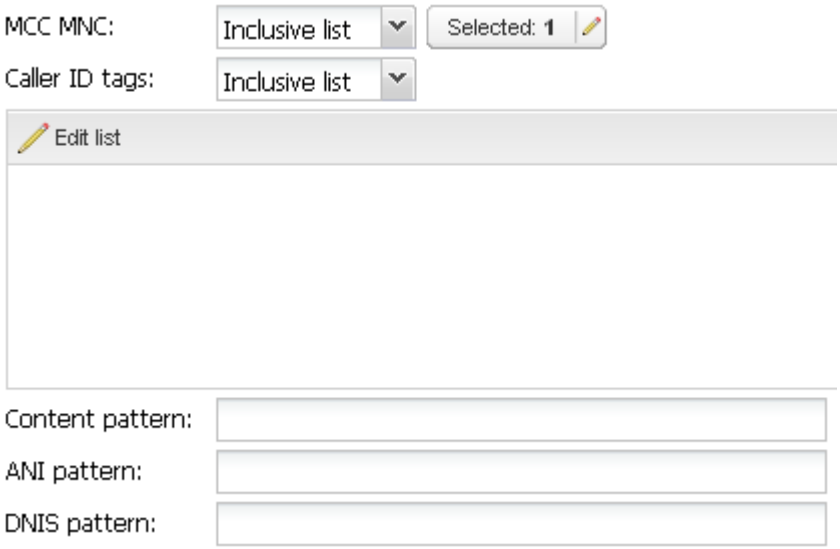


Fig. 186 Add routing rule menu, continued

- *MCC MNC*: E212 codes the rule will be effective for (can be inclusive or exclusive)
- *Caller ID tags*: tags used for routing by A-number. Caller ID tags are configured in *Reference books\Caller ID tags*. Can be inclusive or exclusive. NOTE: Routing by A-number may come handy in blocking undesirable traffic, on-net routing etc.
- *Content pattern*: keywords and keyword patterns, for example .*discount*. The field comes handy in creating an SMS firewall and blocking spam messages. NOTE: The System translates the text of SMS messages to UTF-8, therefore it is recommended to use only symbols compatible with the UTF-8 encoding
- *ANI pattern*: mask that configures a group of A-numbers. For example, for all short codes following the pattern 205XXX and 215XXX use the mask *(205|215)[0-9]{3}*
- *DNIS pattern*: mask that configures a group of B-numbers. For example, for 10-digit B-numbers use the mask *[0-9]{10}*
- *Choice list*: list of vendor selection options. One or several choices per rule can be created; each can contain one or several routing options. Click the Add new choice button to open the *Add new choice* menu.

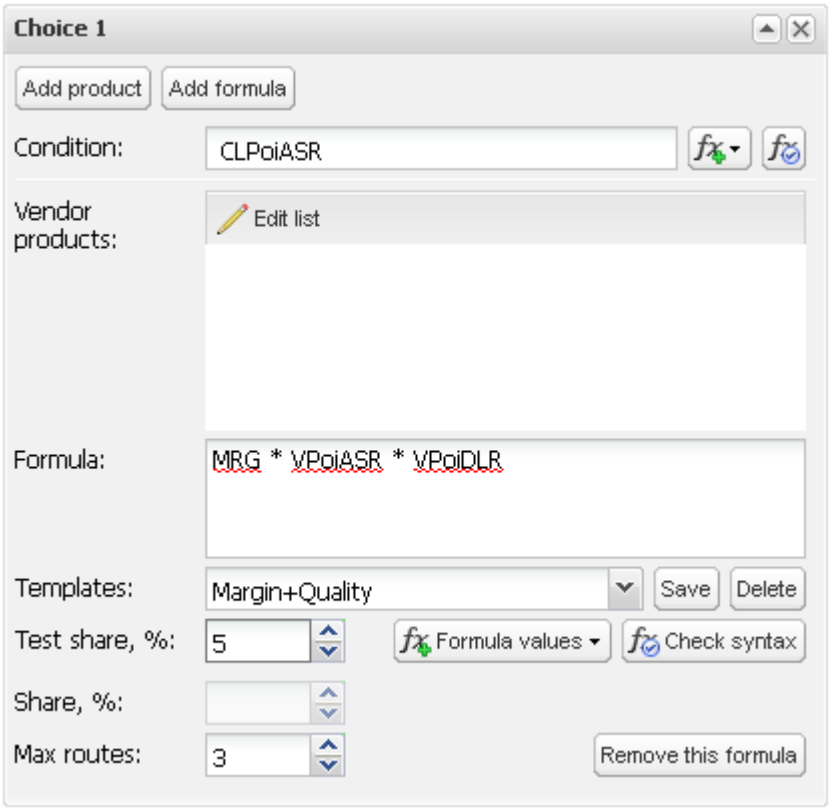


Fig. 187 Add new choice menu

Choice parameters:

- *Condition*: logical expression based on System metrics that resolves as *True* or *False* for every involved vendor product, so that the product is or is not considered in the route selection in the current rule. NOTE: This field helps reject bad vendors. If the field is empty, the System checks for negative margin and rejects vendors that offer rates higher than client rates

Click the  button to open the drop-down list of condition parameters.

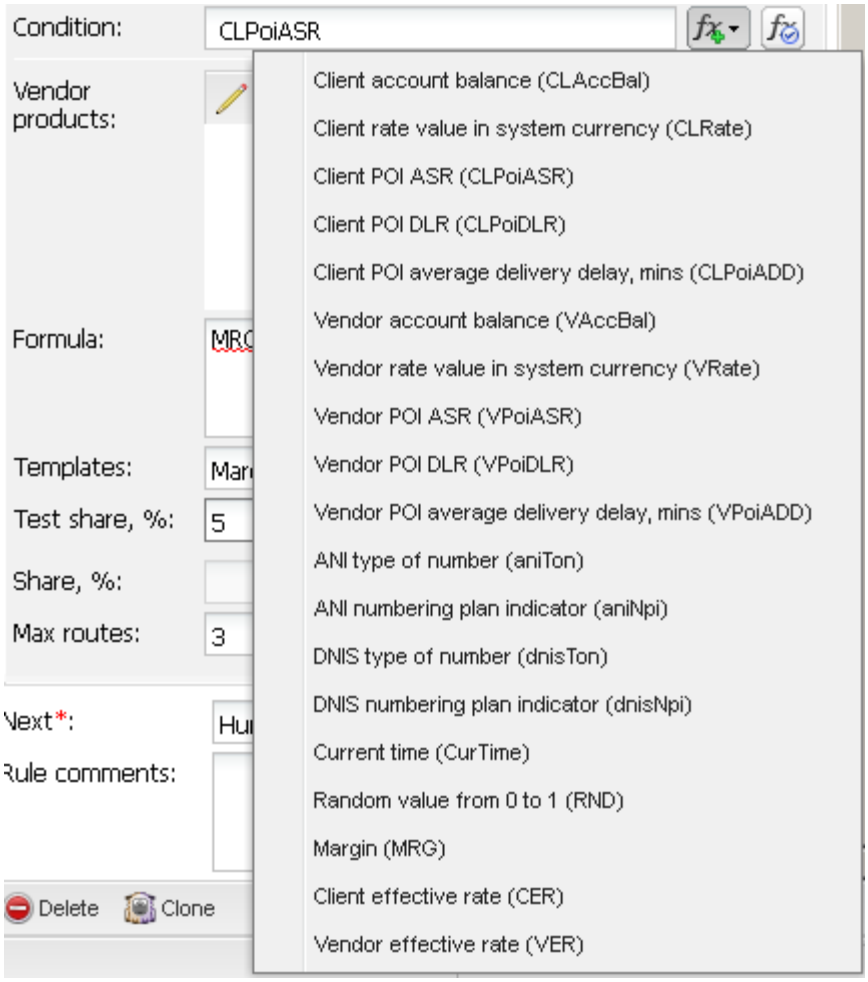


Fig. 188 Condition parameters

The following System metrics are available as condition parameters (can be selected from the list or typed in manually):

- *CLAccBal*: client account balance in the System currency
- *CLRate*: client rate value in the System currency
- *CLPoiASR*: client POI ASR
- *CLPoiDLR*: client POI DLR
- *CLPoiADD*: client POI average delivery delay in minutes
- *VAccBal*: vendor account balance
- *VRate*: vendor rate value in System currency
- *VPoiASR*: vendor POI ASR
- *VPoiDLR*: vendor POI DLR
- *CLPoiADD*: vendor POI average delivery delay in minutes
- *aniTon*: ANI type of number
- *aniNpi*: ANI numbering plan indicator
- *dnisTon*: DNIS type of number
- *dnisNpi*: DNIS numbering plan indicator
- *CurTime*: current time in seconds starting from 01.01.1970 (UNIX time)
- *RND*: random value from 0 and 1
- *MRG*: margin in the System currency
- CER: client effective rate
- VER: vendor effective rate

Additionally, routing features can be used as conditions. Routing features and the examples of their use are detailed in *SMS\Routing\Routing features*.
Click the button to check if the logical expression is correct.

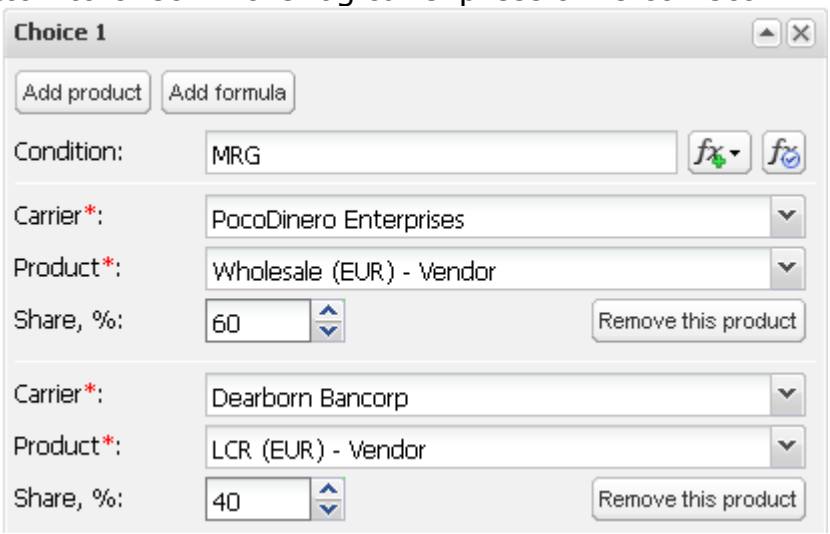


Fig. 189 Add product (static options)

- *Static options* (available for each vendor product added by the Add product button):
  - *Carrier*: select the vendor name from the drop-down list
  - *Product*: select the vendor product name from the drop-down list
  - *Share*: share of traffic to the given vendor product out of the total scope of traffic affected by the rule (in case there are two or more products – or products and formulas – within one choice). Allows balancing the load between several vendors. Click the Remove this product button to exclude the product from the vendor selection

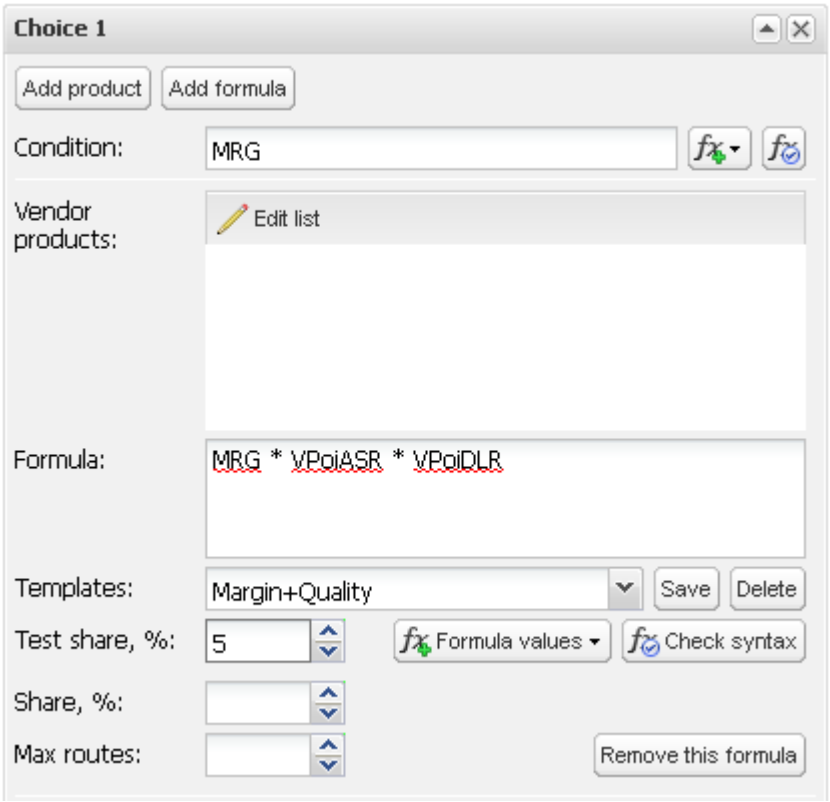


Fig. 190 Add formula (dynamic options)

- *Dynamic options* (available for each formula added by the Add formula button):
  - *Vendor products*: optional list of vendor products to apply the routing formula to (no other vendor products will be considered in this case). Empty by default, which means that all vendors with valid rates for the E212 the SMS is going to will take part in the routing process. Click the Edit list button to open the menu that allows adding/excluding vendor products

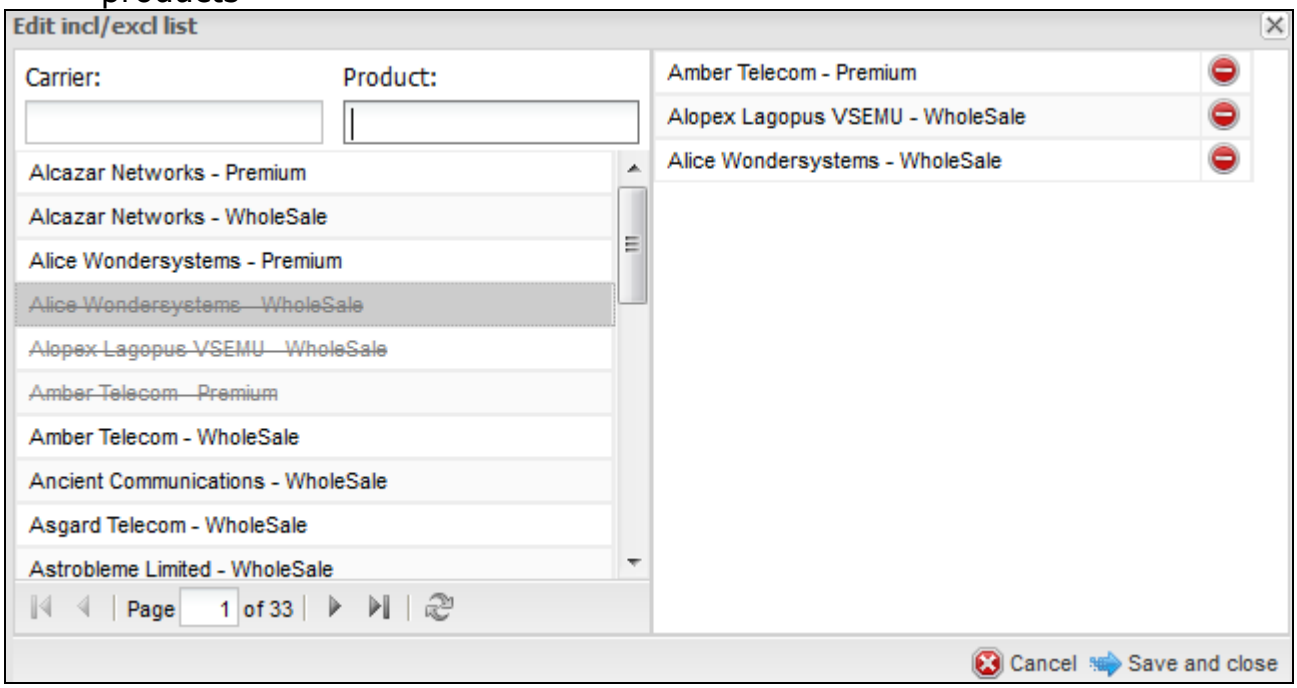


Fig. 191 Edit incl/excl list

Vendor products can be filtered by carrier or product name in the left part of the menu. Double-click on the product to add it to the list. Click the button to remove the product from the list. When through with creating the list, click Save and close to confirm the settings. The list of selected products will appear in the *Vendor products* field

- *Formula*: routing formula - a Python expression that may contain any of the supported System parameters (e.g. margin, ASR etc.), arbitrary numeric factors and mathematical, logical or conditional operators supported in Python. For every vendor product involved in routing, the formula resolves as a number used as the weight of the respective vendor product. Click the Check syntax button to check if the Python expression is correct. The formula parameters are identical to those in the *Condition* field detailed above (see Fig. 188)
- *Templates*: drop-down list of pre-set formula templates. Use Save and Delete buttons to manage the templates
- *Test share,%*: share of traffic passing through the rule that needs to be divided between all vendors present in the *Vendor products* list (if any) in order to keep their stats up-to-date
- *Share,%*: share of traffic routed by the formula out of the total scope of traffic affected by the rule
- *Max routes*: maximum number of routes to be returned by the routing choice with the formula. This parameter limits the number of vendor POIs
- *Next*: this parameter defines whether the routing should be stopped after the current rule (*Huntstop*), continued in the current context (*Continue search within same context*) or switched over to another context (*Switch to context*). See *SMS\Routing\Use of contexts* for more detail.
- *Probability, %*: the share of SMS messages processed by the test rule (applicable only for rules with the value *Test* in the *Rule type* parameter)
- *Rule comments*: arbitrary notes

When through with defining the parameters, click Submit to save the routing rule or Reset to discard the settings. Click Clone to create a similar routing rule and Delete to remove the rule (available in the *Edit* menu).

9.5.5 Use of contexts

A context is a user-defined group of routing rules. Each rule is assigned to a context. There may be as many contexts in the System as the user needs. The only context that must be there at all times is *DEFAULT* – that is where routing of every SMS always starts.

Switching the route search to another context is possible by setting the *Next* parameter in one of the rules in the current context to the *Switch to context* value supplemented with the name of the target context (it is not necessary to set up any routing choices in such rules). If that rule is triggered, the System will switch to the selected context for further routing. There are no other ways to make the System change the current context – if it has checked all rules in the current context and has not come across any context-switching rules, the routing procedure will end.

There are two typical ways to use contexts in routing:

- Contexts are created for different types of clients, based on client product types (e.g. *Premium* or *Wholesale*). To switch the routing to the right context for all clients with a particular product type(s), respective context-switching rules must be created in the *DEFAULT* context
- Contexts are created for individual clients when it is necessary to stipulate one or several per-customer exceptions in the routing setup. In this setup each individual context needs to contain a context-changing rule with the lowest priority so that this rule will be the last to be considered. The System will be switching the routing to a context common for all customers – therefore that new context must contain rules effective for all clients

To create a context, open the *Add menu* of the *Routing rules* page. Unfold the *Context* drop-down list. In the edit field at the bottom of the list type the context name and click . Fill other parameters of the rule as appropriate and click Submit to save the changes.

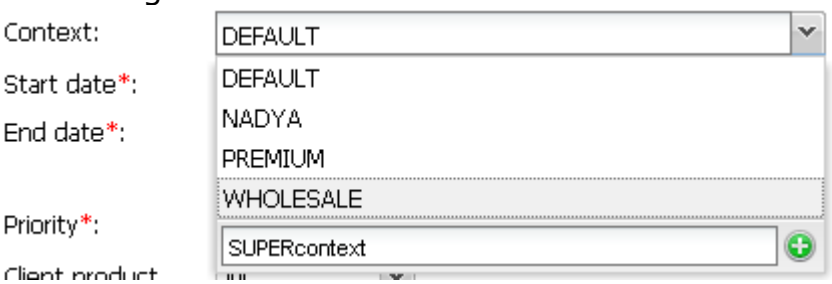


Fig. 192 Adding a new context

To remove a context, delete all rules in this context.

9.5.6 Routing configuration algorithm

Suppose you need to configure routing for two types of SLAs – wholesale and premium. Create client products of two types: *Premium* and *Wholesale*. Products are created in the *Carriers\Products* page.

Two routing setup procedures are possible:

Procedure 1 (recommended).

1. Create two contexts: *wholesale* and *premium* (refer to *SMS\Routing\Use of contexts* for instructions)
2. Create rules for wholesale clients, with the value *wholesale* in the *Context* field. Create rules for premium clients, with the value *premium* in the *Context* field. NOTE: Leave the *Client product types* field blank as the product types are already defined by the context
3. Create two "context-switching rules" so that the System can switch to the *premium* context for premium routes and *wholesale* context for wholesale routes. For these "context-switching rules" configure the following parameters:
   - in the *Context* field select *DEFAULT*
   - in the *Priority* field enter a high value, for example, *95*
   - in the *Client product types* field select appropriate values (for example, those relating to retail/Gold etc. SLA for the premium routes and relating to LCR, standard etc. SLA for wholesale routes)
   - in the *Vendor product types* field select appropriate values

- in the *Client product types* and *MCC MNC* fields select *All*
- leave the *Choice list* must be left blank
- in the *Next* field select *Switch to context*
- in the *Next context* field select *wholesale* for wholesale routes and *premium* for premium routes.

An example of a context-switching rule is illustrated in the figure below.

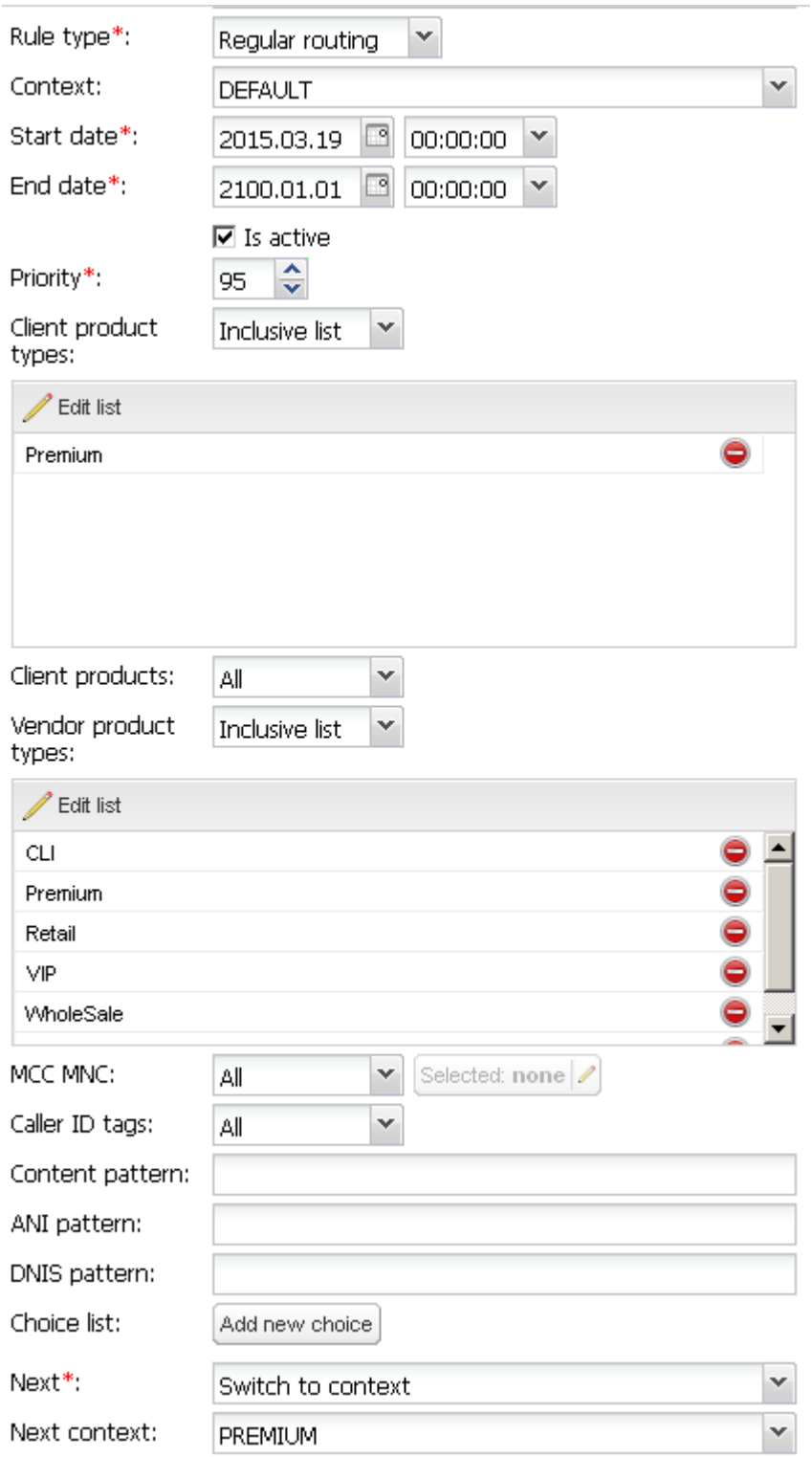


Fig. 193 "Context-switching rule" settings

Procedure 2.

1. Create the routing rules as necessary. In the *Context* field of all the rules select *DEFAULT*.
2. In the *Client product types* list select *Premium* for premium clients and *Wholesale* for wholesale clients.

NOTE: In this case the System will have to process all rules of the *DEFAULT* context which adds extra load on the System. Besides, administration of the numerous rules may be difficult. It is therefore recommended to use Procedure 1 in routing rule creation.

9.5.7 Routing setup example

Suppose Client A has 3 products: CLI, Non-CLI, Premium. The following routing setup is required:

- Premium traffic to Spain from Client A needs to be routed to special vendors (not like all other Premium clients), as well as its CLI traffic to TIM Brazil.
- No traffic to MTS Russia for client A is allowed.
- No traffic to O2 UK is allowed from Client A - Premium.
- For other countries general routing for all clients of the same type (Premium, CLI, Non-CLI) needs to work for that client.

Context DEFAULT

Rule 1
Name = Switch to CLI
Rule type = Regular routing
Priority = 90
Client product types = CLI (the rule will only work for clients with products named CLI, irrespective of the client name)
Client products = All
MCCMNCs = All
Choices = No
Next = Switch to context, Next context = CLI (switching the route search to the context CLI)

Rule 2
Name = Switch to Non-CLI
Rule type = Regular routing
Priority = 90
Client product types = Non-CLI
Client products = All
MCCMNCs = All
Choices = No
Next = Switch to context, Next context = Non-CLI

Rule 3
Name = Switch to Premium

Rule type = Regular routing
Priority = 90
Client product types = Premium
Client products = All
MCCMNCs = All
Choices = No
Next = Switch to context, Next context = Premium

Rule 4
Name = Block MTS Russia - Client A
Rule type = Block
Priority = 20 (basic priority of Block rules is always higher than that of Regular routing rules, so the Priority field doesn't have any real impact in this case)
Client product types = All
Client products = Client A Premium, Client A CLI, Client A Non-CLI
MCCMNCs = 250001
Vendor products = All

Context PREMIUM

Rule 4
Name = Spain - Client A
Rule type = Regular routing
Priority = 90
Client product types = All (you don't need to set Premium here, as this has already been checked in the DEFAULT context and no other client products except Premium are allowed in this context anyway)
Client products = Client A Premium
MCCMNCs = 214% (please note the '%' sign after the MCCMNC - it makes the rule valid for any network within the given MCC)
Choices = Vendor 1, Vendor 2, Vendor 3
Next = Huntstop (this is to stop routing for Client A on this rule, so that vendors for Spain from Rule 5 won't be added to the routing results - it is up to you whether or not this needs to be done in each particular case)

Rule 5
Name = Spain - General
Rule type = Regular routing
Priority = 80 (this rule has a lower priority than Rule 4, therefore for Client A Rule 4 will be triggered first)
Client product types = All
Client products = All
MCCMNCs = 214%
Choices = Vendor 4, Vendor 5, Vendor 6

Rule 6
Name = Other countries - General

Rule type = Regular routing
Priority = 80
Client product types = All
Client products = All
MCCMNCs = All
Choice = MRG, Max routes = 3 (with this formula traffic will be routed by margin, and 3 most profitable vendors will be selected as routing options)

Rule 7
Name = Block O2 UK - Client A Premium
Rule type = Block
Priority = 20
Client product types = All
Client products = Client A Premium
MCCMNCs = 234010, 234011
Vendor products = All

Context CLI

Rule 7
Name = Special Route to TIM Brazil for Client A
Rule type = Regular routing
Priority = 90
Client product types = All
Client products = Client A CLI
MCCMNCs = 724002, 724003, 724004, 724008
Choices = Vendor 10, Vendor 11, Vendor 12

Rule 8
Name = General Routing to TIM Brazil
Rule type = Regular routing
Priority = 80
Client product types = All
Client products = All
MCCMNCs = 724002, 724003, 724004, 724008
Choices = Vendor 13, Vendor 14, Vendor 15

Rule 9
Name = General Routing to other countries
Rule type = Regular routing
Priority = 80
Client product types = All
Client products = All
MCCMNCs = All
Choice = MRG, Vendor product list = Vendor 16, Vendor 17, Vendor 18 (the LCR formula will only be applied to the short list of selected vendors)

Context NON-CLI

Rule 10
Name = General Routing to Spain
Rule type = Regular routing
Priority = 80
Client product types = All
Client products = All
MCCMNCs = 214%
Choices = Vendor 19, Vendor 20, Vendor 21

Rule 11
Name = General Routing to Brazil
Rule type = Regular routing
Priority = 80
Client product types = All
Client products = All
MCCMNCs = 724%
Choices = Vendor 22, Vendor 23, Vendor 24

9.5.8 Simulation

The *Simulation* page consists of two tab sheets – *Simulation* and *Send SMS*.
The *Simulation* page allows testing of the SMS routing logic by emulating a routing request from the switch. The *Send SMS* page serves to test if actual messages are received by the vendor.
The *Simulation* page is divided in three panels. The upper left panel contains the *Simulation* menu shown below.

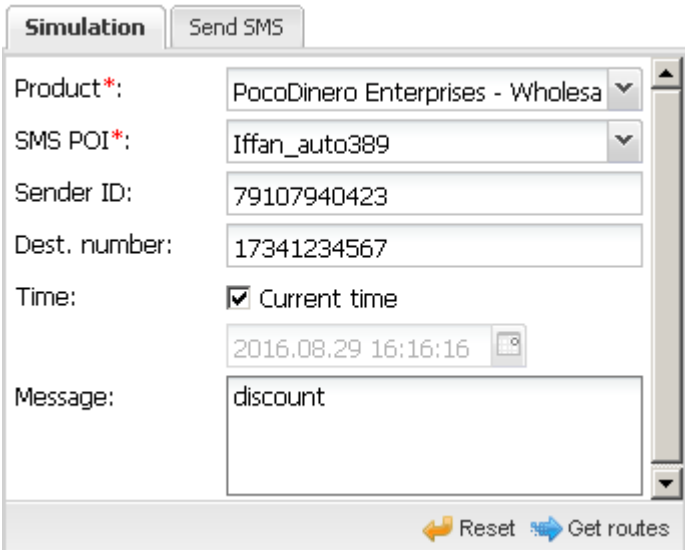


Fig. 194 Simulation menu

The menu allows configuring the following parameters:

- *Product*: select the client product from the drop-down list
- *SMS POI*: select the POI from the drop-down list

- *Sender ID*: this parameter is used to test routing by A-number (configured in *SMS\Routing\Routing rules* by the *Caller ID* and *ANI pattern* parameters. Specify a caller ID tag value or an ANI pattern
- *Dest. number*: target number
- *Time*: set date and time in the calendar or select the *Current time* checkbox
- *Message*: text of the SMS

When through with defining the parameters, click Get routes to start SMS simulation.

Results are displayed in the table to the right from the menu.

Job created	Product	SMS channel	IP	Serv	GUID
−∞ ≤ X ≤ ∞	All				
2016.08.29 16:16:28	PocoDinero Enterprises - Wholesale	Iffan_auto389	39.178.120.109		25373EBB-7B7...
2016.08.19 10:02:59	Testcarrier1 - Nadya	1111	123		nn
2016.08.19 10:02:29	Alice Wondersystems - Wholesale	Alice_auto264	181.34.141.61		04EEA530-2857...
2016.08.19 10:02:28	Alice Wondersystems - Wholesale	Alice_auto264	181.34.141.61		04EEA530-2857...
2016.07.08 15:19:08	Dorado El Telecom - Gold - Wholesale	Dorad_auto244	18.69.171.148		F79CDA2A-457...
2016.06.09 09:38:24	Dorado El Telecom - Gold - Wholesale	Dorad_auto244	18.69.171.148		F79CDA2A-457...
2016.05.26 12:18:10	Dorado El Telecom - Gold - Wholesale	Dorad_auto244	18.69.171.148		F79CDA2A-457...

Fig. 195 Simulation table

The table displays the following parameters:

- *Job created*: date and time of the task creation
- *Product*: name of the product selected in the *Simulation* menu
- *SMS channel*: name of the SMS channel
- *IP*: IP address of the SMS channel used for simulation
- *Service type*: service type of the POI channel used for simulation
- *GUID*: identifier of the POI channel used for simulation
- *Sender ID*: A-number selected in the *Simulation* menu
- *Destination number*: B-number selected in the *Simulation* menu
- *Time*: date and time of the SMS selected in the *Simulation* menu
- *Details*: contains a link to the simulation log (*SMS\Routing\Simulation\Simulation log*). The link to each simulation log can be shared and opened from the outside. The log gives the output describing different steps of the routing procedure
- *User*: the name of the user that created the simulation task

Click on a record in the table to view the simulation results displayed at the bottom of the page. The results are displayed in a table of vendor routes, listed as they were used for routing. If the route is dynamic, it is displayed in black. If it is static, it is greyed out. The upper (zero) row shows the details of the client route on behalf of which the simulation is performed.

#	Context	Weight	Carrier	Product	GUID	Service ty...
0			SMS Carrier 1	Wholesale	undefined	undefined
1	DEFAULT	100....	SMS Carrier 4	Wholesale	Test_1_out	
2	DEFAULT	99.9...	SMS Vendor 2	Wholesale	VELOSOLUTI...	
3	DEFAULT	99.9...	SMS Vendor 2	Wholesale	VELOSOLUTI...	
4	DEFAULT	99.9...	SMS Vendor 2	Wholesale	Net_net	
5	DEFAULT	99.9...	SMS Carrier 11	Wholesale	Dont_know	
6	DEFAULT	99.9...	SMS Client 1	Wholesale	Net_OUT	
7	DEFAULT	99.9...	SMS Vendor 1	Wholesale	Test_1_in	

Fig. 196 Simulation details

The table displays the following parameters:

- *Context*: context of the routing rule. Several vendors can be selected for routing according to different rules
- *Weight*: weight calculated for the selection (for dynamic routes only)
- *Carrier*: in the upper row - name of the client used for simulation, in all the other rows – names of the selected vendors
- *Product*: in the upper row - client product type used for simulation, in all the other rows – types of the selected vendor products
- *GUID*: identifier of the selected vendor's POI
- *Service type*: service type of the selected vendor's POI
- *Vend. caller ID*: vendor's caller ID
- *Dest number*: target number used for simulation
- *e212*: MCCMNC of the rate selected for a vendor in routing
- *ASR*: answer seizure ratio of the product and MCCMNC
- *DLR*: delivery rate
- *Count*: number of sent messages
- *Rate*: in the upper row - rate from the client's side, in the remaining rows – termination rates from vendors
- *Margin*: margin for the route
- *Rule ID*: link to the used routing rule (click to open the rule for editing)
- *DLR*: delivery rate of the simulation

9.5.8.1 Simulation log

The simulation log is used for troubleshooting purposes. It comes instrumental if something goes wrong during the simulation process – for example, unexpected routes or no routes at all are found. To view the log for a particular simulation task, click on the *view log* link of the appropriate record in the tasks table (*Details* column).

Dest. number	Time		Details	User name
				All
17341234567	2016.09.06 16:20:17		view log	Alaris
17341234567	2016.09.06 16:18:59		view log	Alaris

Fig. 197 View log link

The log contains the following sections:

- *initial data*: simulation input parameters

- *looking for client*: client identification
- *looking for client rates*
- *looking for vendor rates*
- *looking for routing rules*

```
=============== route search trace =========================
--------- initial data ---------------
ANI/DNIS      empty / 573012225005
guid          F79CDA2A-4575-A9FA-954C-0046CBD55295
serviceType
setup time    1431373569.67
target time   2015-05-11 22:46:10(1431373570.0)
VUA           NOT VUA (False)
ForcedMCCMNC

--------- STAGE 1: looking for client ---------------
client searching status - SMS channel id 11325, SMS POI id 10677
Client SMS POI id <10677>, valid 1381780800.0-1893445200.0
Client SMS channel id <11325>, enabled - 1
Client product id <99842>, code <Wholesale>, code <Wholesale>
Client account id <11414>, balance 80.2489, limit <no limit>
Client operator id <1393>, name <Dorado El Telecom - Gold>, inbound allowed 1, trusted - 1
MCCMNC <732165> for DNIS <573012225005> found
Network <ColombiaMovilSAESP> and country <Colombia> with refId 1033 found for MCCMNC <732165>
Client currency and rate - EUR, 1.24636

--------- looking for client rates ---------------
Looking for rates for product 99842, parent product None
    Check E212 <732165>, rate ID 3832585/cost 0.17400 - skipped as OBSOLETE
    Check E212 <732165>, rate ID 3845822/cost 0.10160 - skipped as OBSOLETE
```

Fig. 198 Simulation log

Each of the log sections is explained in the figures below.

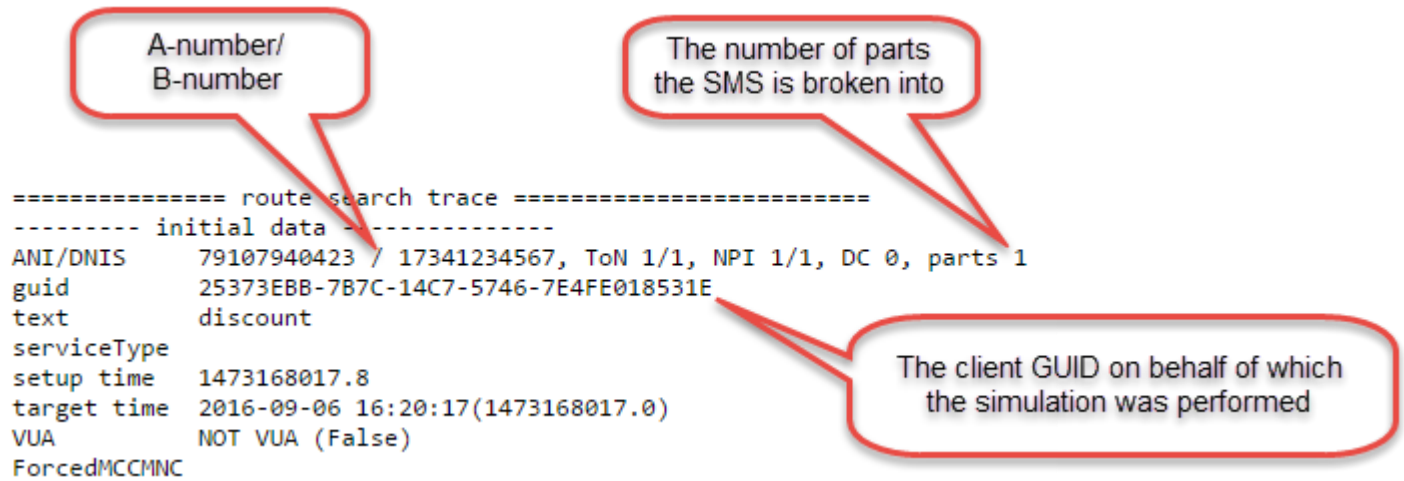


Fig. 199 Initial data

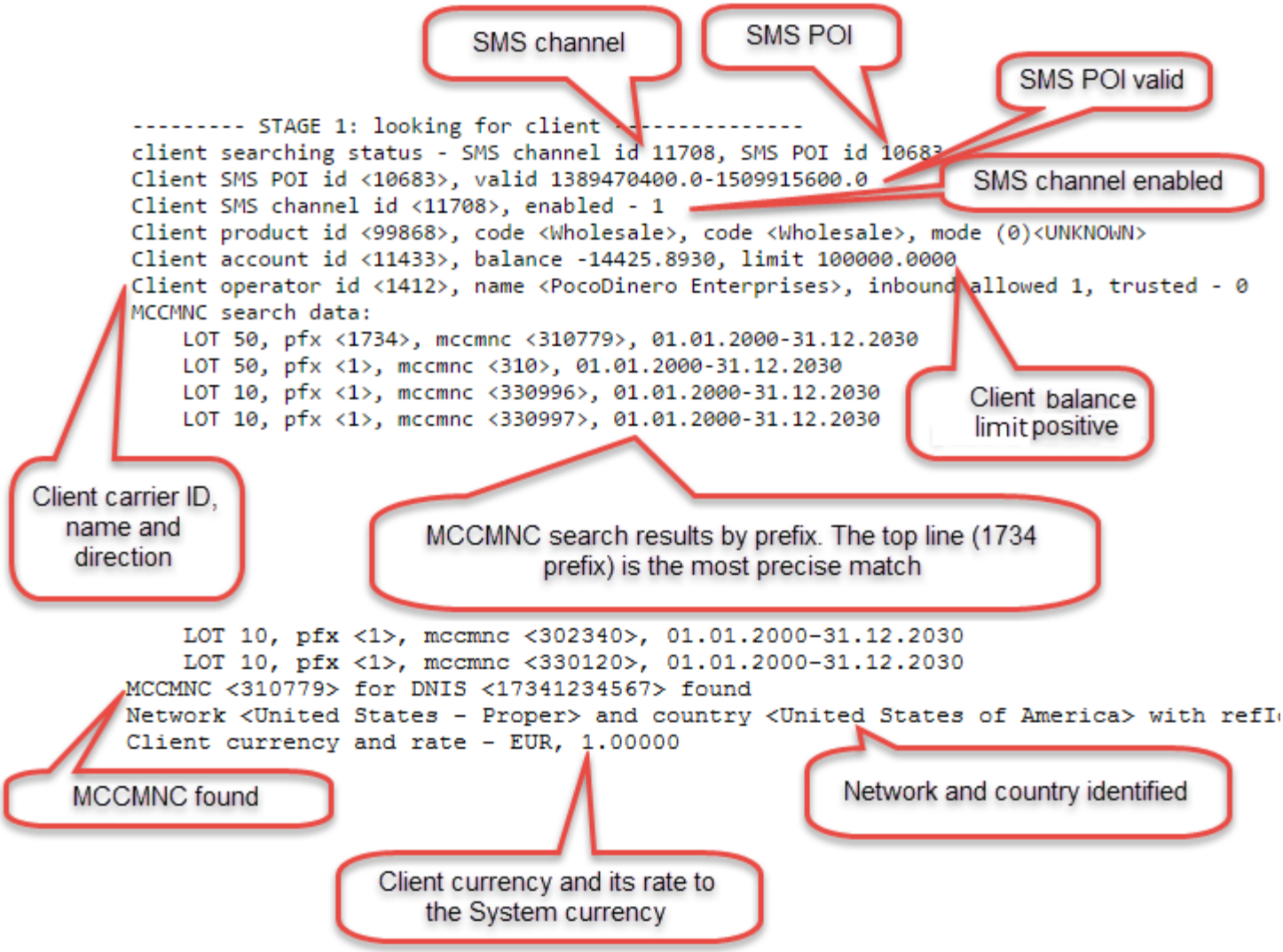


Fig. 200 Looking for client

NOTE: the channel name, POI, product, account and carrier can be looked up by their respective IDs in the *Carriers* section.

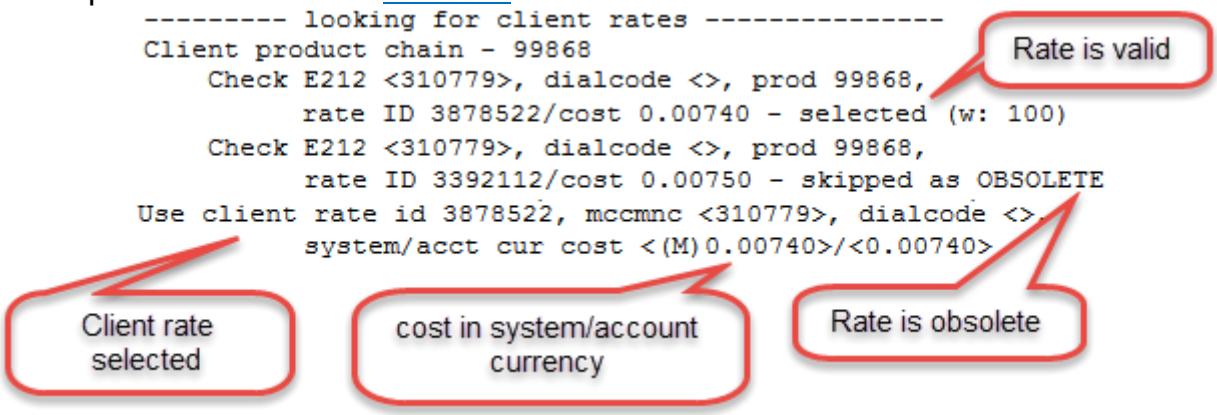
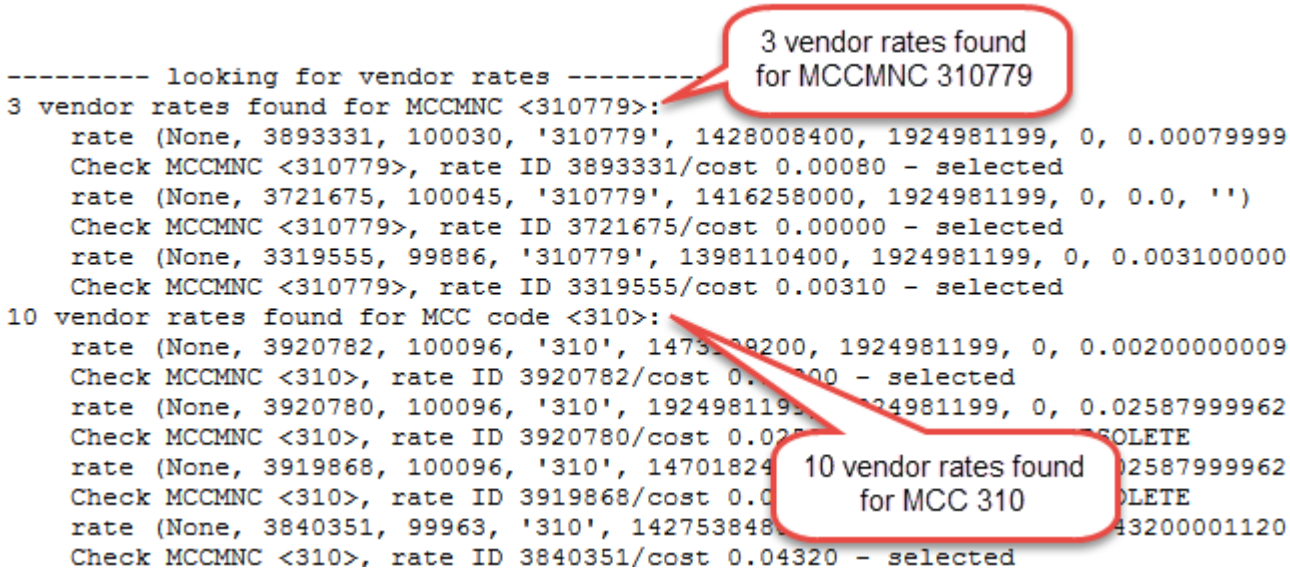
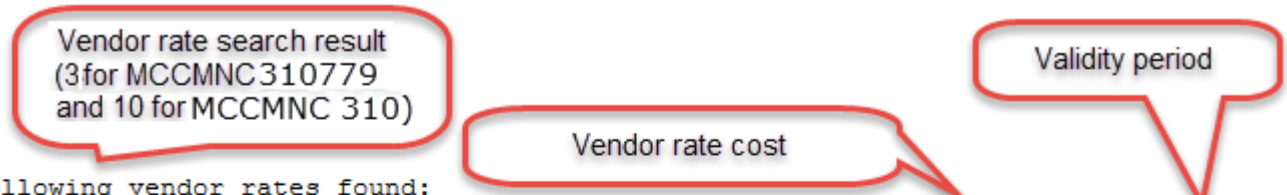


Fig. 201 Looking for client rates




```
--------- looking for vendor rates ---------
3 vendor rates found for MCCMNC <310779>:
    rate (None, 3893331, 100030, '310779', 1428008400, 1924981199, 0, 0.00079999
    Check MCCMNC <310779>, rate ID 3893331/cost 0.00080 - selected
    rate (None, 3721675, 100045, '310779', 1416258000, 1924981199, 0, 0.0, '')
    Check MCCMNC <310779>, rate ID 3721675/cost 0.00000 - selected
    rate (None, 3319555, 99886, '310779', 1398110400, 1924981199, 0, 0.003100000
    Check MCCMNC <310779>, rate ID 3319555/cost 0.00310 - selected
10 vendor rates found for MCC code <310>:
    rate (None, 3920782, 100096, '310', 1473[illegible]9200, 1924981199, 0, 0.00200000009
    Check MCCMNC <310>, rate ID 3920782/cost 0.[illegible]00 - selected
    rate (None, 3920780, 100096, '310', 1924981191[illegible]24981199, 0, 0.02587999962
    Check MCCMNC <310>, rate ID 3920780/cost 0.02[illegible]OLETE
    rate (None, 3919868, 100096, '310', 14701824[illegible]02587999962
    Check MCCMNC <310>, rate ID 3919868/cost 0.0[illegible]LETE
    rate (None, 3840351, 99963, '310', 142753848[illegible]43200001120
    Check MCCMNC <310>, rate ID 3840351/cost 0.04320 - selected
```

Fig. 202 Looking for vendor rates




```
Following vendor rates found:
    mccmnc <310779>, prod id 100030, rate id 3893331, value 0.00080, valid 2015-04-03 (
    mccmnc <310779>, prod id 100045, rate id 3721675, value 0.00000, valid 2014-11-18 (
    mccmnc <310779>, prod id 99886, rate id 3319555, value 0.00310, valid 2014-04-22 0(
    mccmnc <310>, prod id 100096, rate id 3920782, value 0.00200, valid 2016-09-06 00:(
    mccmnc <310>, prod id 99963, rate id 3840351, value 0.04320, valid 2015-03-28 13:2(
    mccmnc <310>, prod id 99901, rate id 3804887, value 0.01160, valid 2015-02-26 16:3(
    mccmnc <310>, prod id 99985, rate id 3821474, value 0.00460, valid 2015-03-11 23:0(
    mccmnc <310>, prod id 100030, rate id 3892062, value 0.00090, valid 2015-04-03 00:(
    mccmnc <310>, prod id 99939, rate id 3793900, value 0.00370, valid 2015-02-18 17:0(
    mccmnc <310>, prod id 99933, rate id 3316782, value 0.05780, valid 2015-03-18 09:1(
    mccmnc <310>, prod id 99886, rate id 2973563, value 0.00370, valid 2015-03-24 08:4(
    mccmnc <310>, prod id 99869, rate id 2784821, value 0.03500, valid 2015-03-15 23:0(
    mccmnc <310>, prod id 99873, rate id 2710501, value 0.00520, valid 2015-03-10 00:0(
```

Fig. 203 Vendor rate search results

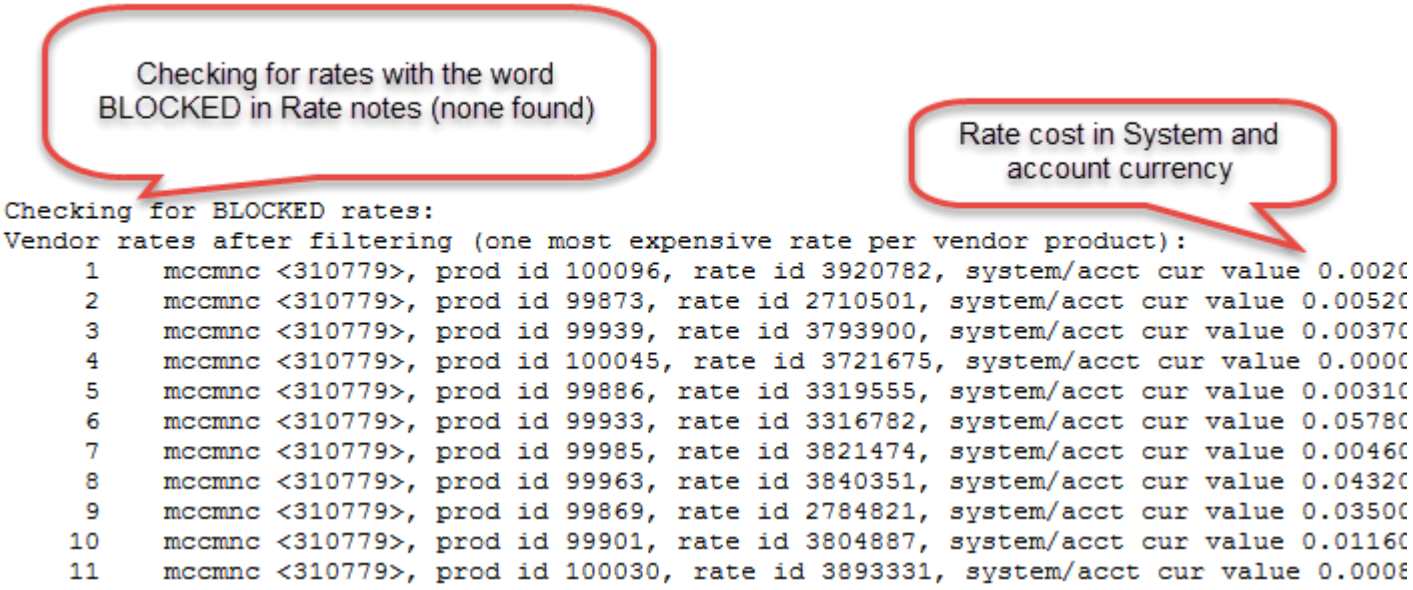


Fig. 204 Checking for blocked rates; vendor rates list

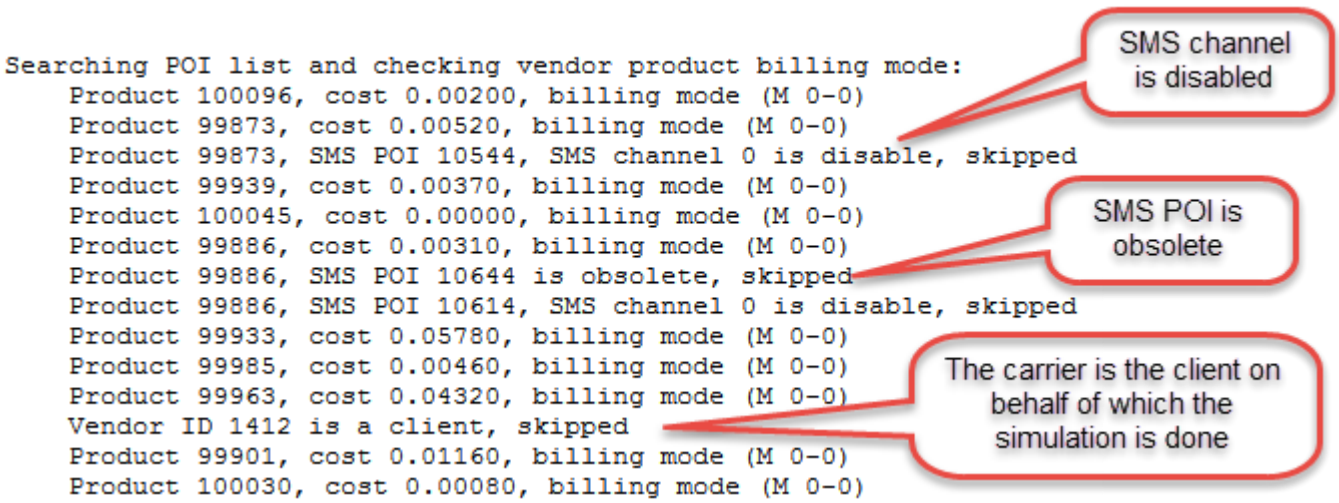


Fig. 205 Searching POI list

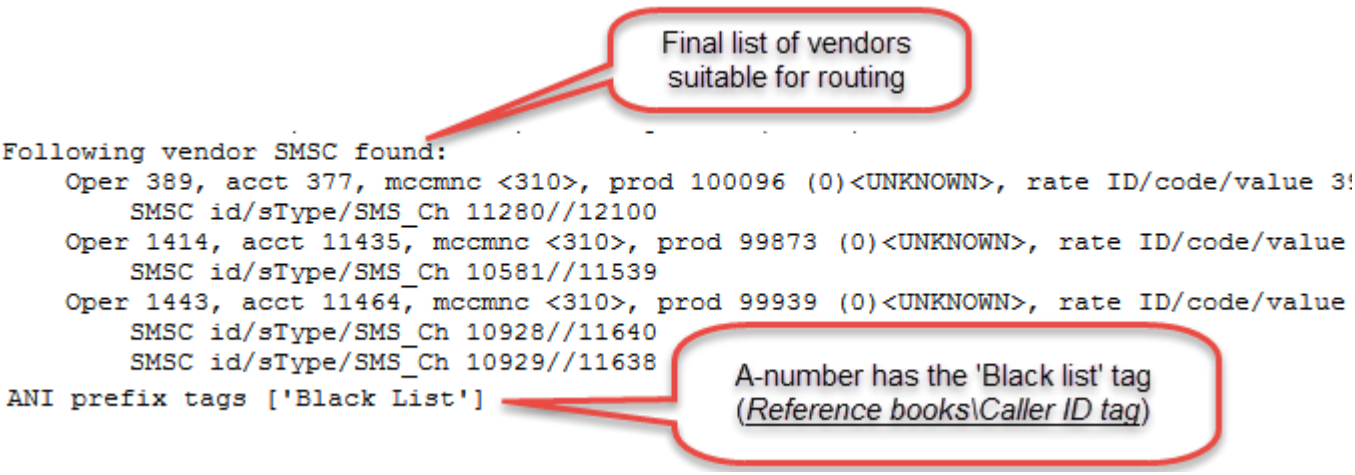


Fig. 206 List of vendor SMSC

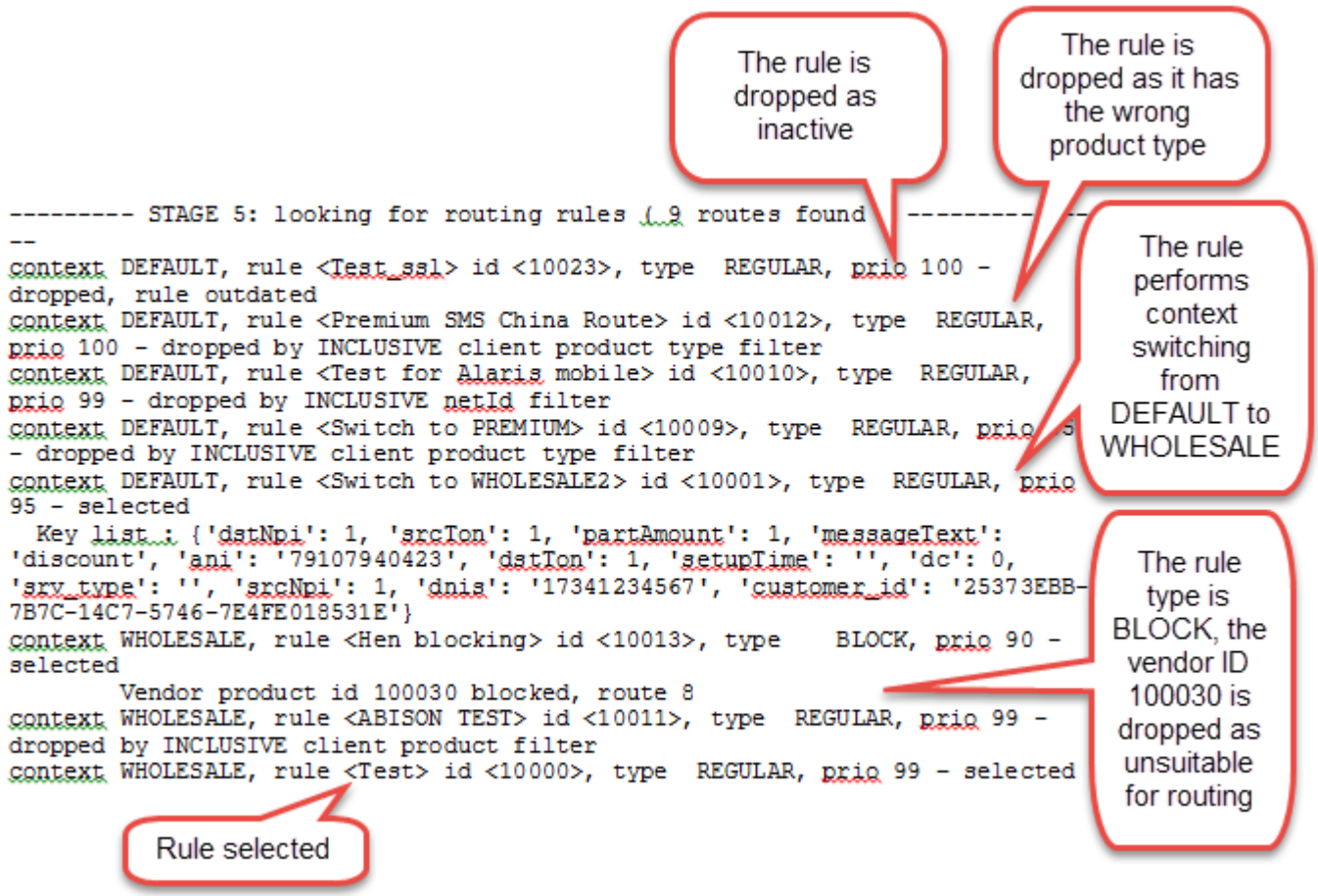


Fig. 207 Looking for routing rules

NOTE: The rules with the BLOCK type are processed first, irrespective of their priority; this is why after the context was switched to WHOLESALE in the figure above, the rule <Hen blocking> with the priority 90 was handled earlier than the rules with higher priorities such as <ABISON TEST> or <Test> (both having priority 99).

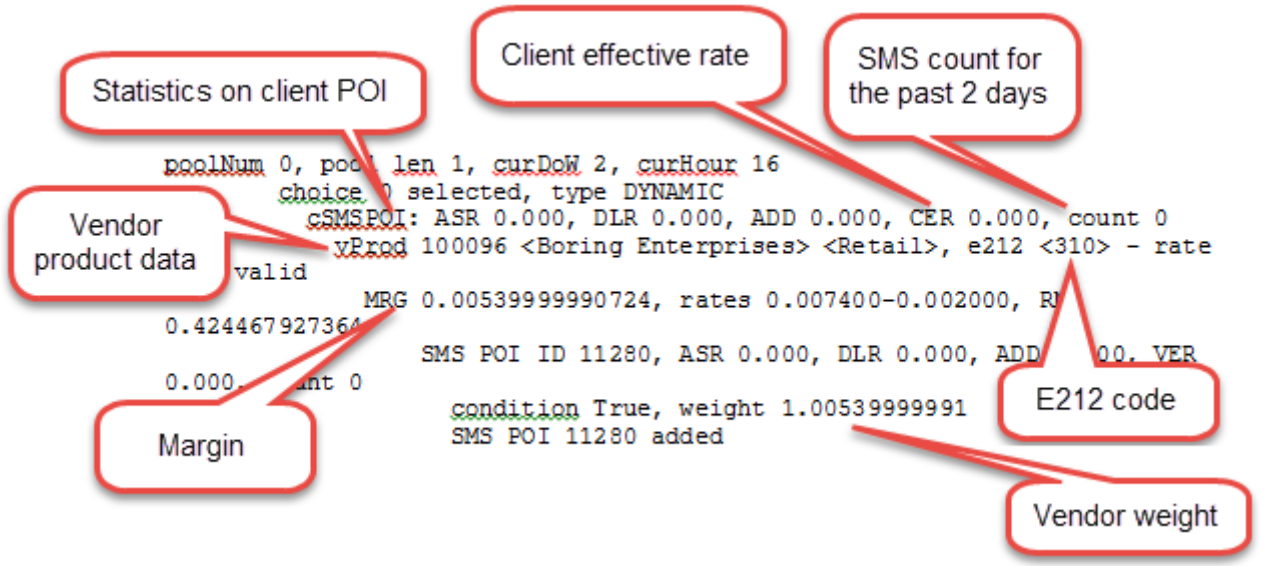


Fig. 208 One of selected routing rules

```
Route added:  1. vProd 100045-LCR, SMS POI 10962
<17341234567>, ToN/NPI/RD/F (1, 1, 1, 1, None, N
Route added:  2. vProd 100096-Retail, SMS POI 11
ToN/NPI/RD/F (1, 1, 1, 1, None, None), trRule:
Route added:  3. vProd 99939-Wholesale, SMS POI
<79107940423>, DNIS <17341234567>, ToN/NPI/RD/F
Route added:  4. vProd 99939-Wholesale, SMS POI
<79107940423>, DNIS <17341234567>, ToN/NPI/RD/F
Route added:  5. vProd 99985-Wholesale, SMS POI
<79107940423>, DNIS <17341234567>, ToN/NPI/RD/F
Route added:  6. vProd 99873-Wholesale, SMS POI
<79107940423>, DNIS <17341234567>, ToN/NPI/RD/F
Route added:  7. vProd 99901-Wholesale, SMS POI
<79107940423>, DNIS <17341234567>, ToN/NPI/RD/F
Route added:  8. vProd 99963-Premium, SMS POI 10
<79107940423>, DNIS <17341234567>, ToN/NPI/RD/F
Route added:  9. vProd 99933-Wholesale, SMS POI
<79107940423>, DNIS <17341234567>, ToN/NPI/RD/F
```

Fig. 209 Sumary of added routing rules

N	Context	Weight	Vendor	Product	
1	WHOLESALE	1.01	Topics Entertai	LCR	(10962)
2	WHOLESALE	1.01	Boring Enterpri	Retail	(11280)
3	WHOLESALE	1.00	ConchisCall	Wholesale	(10928)
4	WHOLESALE	1.00	ConchisCall	Wholesale	(10929)
5	WHOLESALE	1.00	Glasgow Rangers	Wholesale	(10944)

Fig. 210 Final routing table

9.5.8.2 Send SMS

The *Send SMS* page allows configuring and sending test messages on behalf of a client. Clients whose settings are used are not charged for test messages, but the System applies the routing logic the way it would do for an SMS received from that customer. NOTE: The test messages will be originated from and paid for by the System owner.

The menu allows configuration of the following parameters:

- *Product*: client's product
- *SMS POI*: client's POI for the test message
- *Sender ID*: A-number
- *Dest. number*: B-number
- *Message*: text of the test message
- *Long message sending*: specify how the System should send messages exceeding the standard length

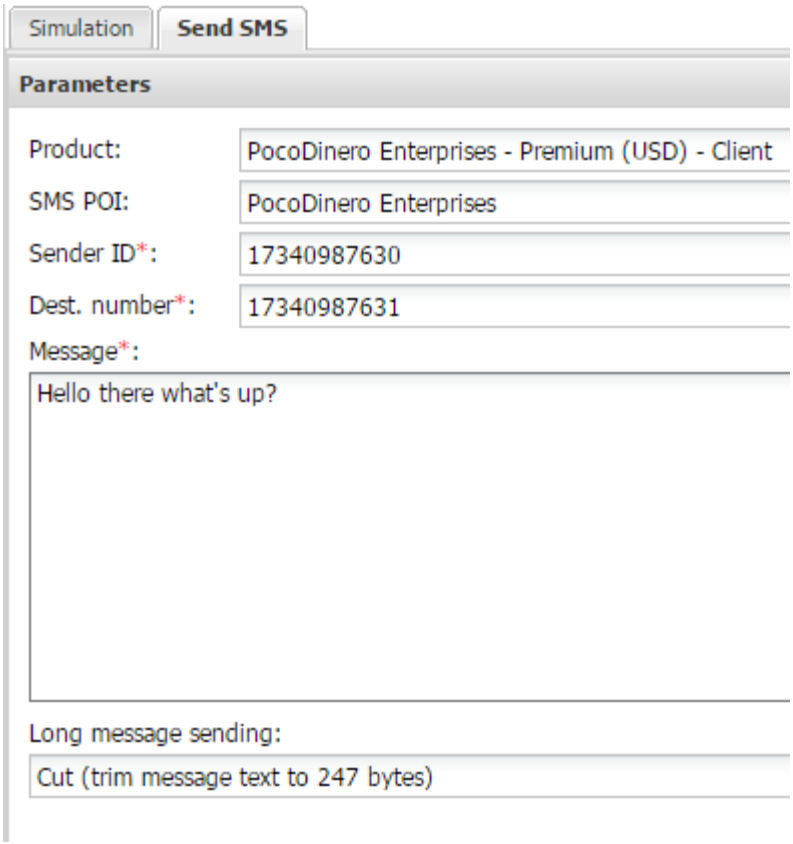


Fig. 211 Send SMS menu

When through with defining the parameters, click Send to send a message or Reset to discard the settings.
The results will be displayed in the right hand panel containing the following details:

- *Status*: *true* (message delivered) or *false* (message not delivered)
- *Output*: *transaction_id* if the message is delivered or error description if an error occurred

9.5.9 Routing features

The *SMS/Routing/Routing features* page allows assigning preconfigured properties to routes. The assigned properties will be used as conditions in setting up routing rules.
The page consists of two panels. The left panel contains the *Classifier* and *Features* tab sheets; the right panel shows the *Add* and *Edit* menus.

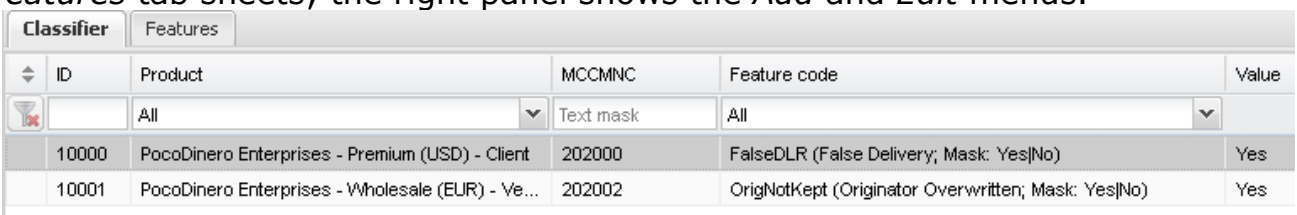


Fig. 212 Classifier tab sheet

The Classifier tab sheet is a table of products and features assigned to them. It contains the following columns:

- *ID*: the record ID number
- *Product*

- *MCCMNC*
- *Feature code*: the feature name, description and possible values as configured in the *Features* tab sheet
- *Value*: the feature value

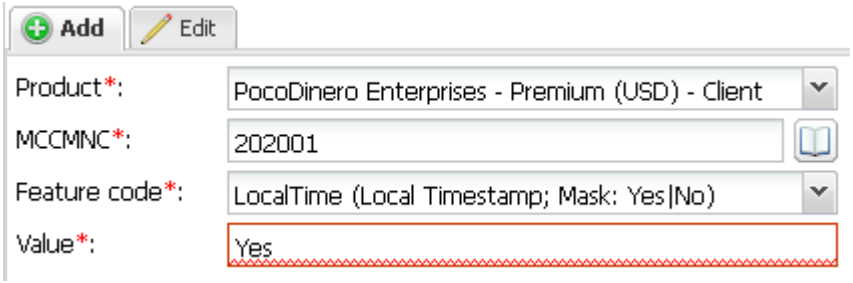


Fig. 213 Add menu

The *Add* and *Edit* menus in the upper right corner of the page allow editing table records and creating new ones. To activate the *Edit* menu, click on the record in the table. Enter the required parameters in the corresponding fields. Fields marked with an asterisk (*) are required. When through with defining the parameters, click Submit to save the entry or Reset to discard the settings.

Classifier | **Features**

ID	Feature code	Description	Value pattern
	Text mask	Text mask	
1	MNP	Mobile Number Portability Support	Yes|No
2	LongMSG	Long Message Support	Yes|No
3	LocalTime	Local Timestamp	Yes|No
4	OrigNotKept	Originator Overwritten	Yes|No
10	FalseDLR	False Delivery	Yes|No
6	DLVNotif	Delivery Notifications To Handset Support	Yes|No
7	Bin	Binary	Yes|No
8	MSGLength	Length Support	\d+
9	AvailNet	Available Network	Yes|No
5	PreRegOrig	Pre-Registration Originator	Yes|No

Fig. 214 Features tab sheet

The *Features* tab sheet contains a list of available features and the *Add* and *Edit* menus for creating new entries or editing existing ones.
The following default features exist in the System:

- *MNP (Mobile number portability support)*: the route supports mobile number portability. This feature allows configuring routing rules so as to save money on HLR requests
- *Long MSG (Long Message Support):* the route supports messages exceeding standard length. The feature can be used to configure routing to partners that process long messages correctly
- *LocalTime (Local Timestamp)*
- *OrigNotKept (Originator Overwritten)*: describes routes where the A-number may be changed during message transfer

- *FalseDLR (False Delivery)*: describes routes where messages may be terminated with fake delivery reports
- *DLVNotif (Delivery Notifications To Handset Support)*
- *Bin (Binary)*: the route supports binary (rich-content) SMS
- *MSGLength (Length Support)*
- *AvailNet (Available Network)*
- *PreRegOrig (Pre-Registration Originator)*

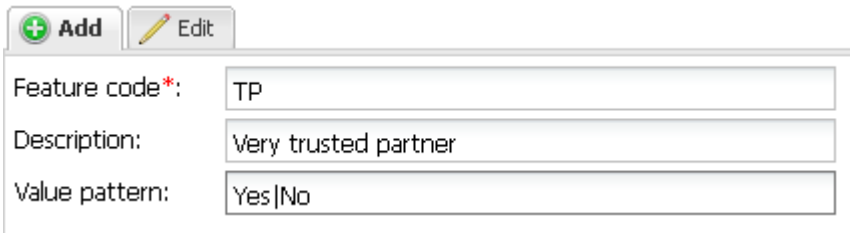


Fig. 215 Add menu

The *Add* menu contains the following parameters:

- *Feature code*: name of the feature
- *Description*: description that explains the feature
- *Value pattern*: possible values (|-separated)

To edit a record, select it in the table. NOTE: Default features cannot be edited. Click Submit to save the entry or Reset to discard the settings.

9.5.9.1 How to use routing features in routing

Suppose vendor X sends false DLR reports to MCCMNC 250001 and must therefore be excluded from routing. Proceed as follows:

1. In the *SMS/Routing/Routing features* page open the *Classifier* tab sheet of and create a new record with the the following parameters:
   - *Product*: select the appropriate product of vendor X
   - *MCCMNC*: specify *250001*
   - *Feature code*: select *FalseDLR*
   - *Value*: specify *Yes*
2. Open the *SMS\Routing\Routing rules* page and create a new rule. In the *Condition* field of the *Add* menu specify FakeDLR == *Yes*. The System will therefore reject all vendors that have the FakeDLR value equal to *Yes*.

9.5.10 Routing statistics

The *SMS/Routing/Routing statistics* page is used for supplying initial quality of service (QoS) statistics for new vendors. When a new vendor is added, the System knows nothing about its quality of service, and therefore cannot use it for quality-based routing. The System owner can enter initial data about the vendor's quality in the *Routing statistics* page.

	Carrier	Direction	Product	POI
	All	All	All	All
	Alarislabs_NEW	Client	SMS retail (EUR) - Client	Alarislabs_NEW: 11554
	Alice Wondersystems	Vendor	Wholesale (EUR) - Vendor	Alice_trc328
	Award Wieners	Vendor	Wholesale (EUR) - Vendor	Porto_trc336
	Award Wieners	Vendor	Wholesale (EUR) - Vendor	Porto_trc336
	Award Wieners	Vendor	Wholesale (EUR) - Vendor	Porto_trc336
	Award Wieners	Vendor	Wholesale (EUR) - Vendor	Porto_trc336
	Award Wieners	Vendor	Wholesale (EUR) - Vendor	Porto_trc336
	Award Wieners	Vendor	Wholesale (EUR) - Vendor	Porto_trc336
	Award Wieners	Vendor	Wholesale (EUR) - Vendor	Porto_trc336
	Award Wieners	Vendor	Wholesale (EUR) - Vendor	Porto_trc336

Fig. 216 Statistics table

The page contains two panels. The left panel is the statistics table, the right panel contains the *Add* and *Edit* menus.

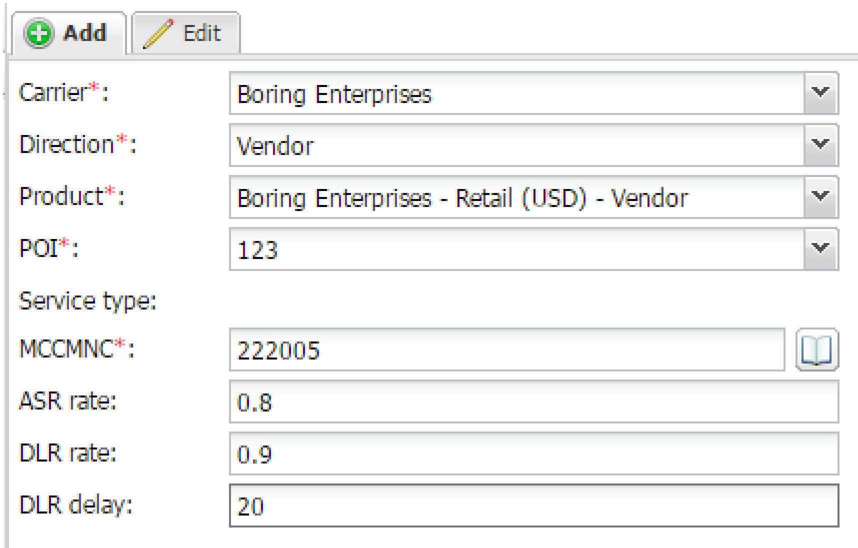


Fig. Add menu

To add a new record to the table, open the *Add* menu and complete the following fields:

- *Carrier*: the partner's name
- *Direction*
- *Product*
- *POI*
- *Service type*
- *MCCMNC*
- *ASR rate*: a decimal value between 0 and 1
- *DLR rate*: a decimal value between 0 and 1
- *DLR delay*: DLR delivery delay in minutes

Click Submit to save the entry or Reset to discard the settings. Once the record appears in the table, the new vendor can be used in configuring routing rules. NOTE: Once the real-life statistics is collected, the record becomes irrelevant.

9.5.11 Translation rules

The *SMS\Routing\Translation rules* page serves to configure regular expressions for transforming various parameters of an SMS as it is transferred from one carrier to another. The page contains a table of translation rules and the *Add* and *Edit* menus that allow adding and editing records.

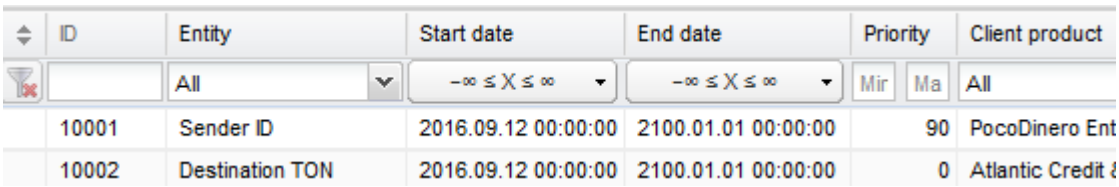


Fig. 217 Translation rules table

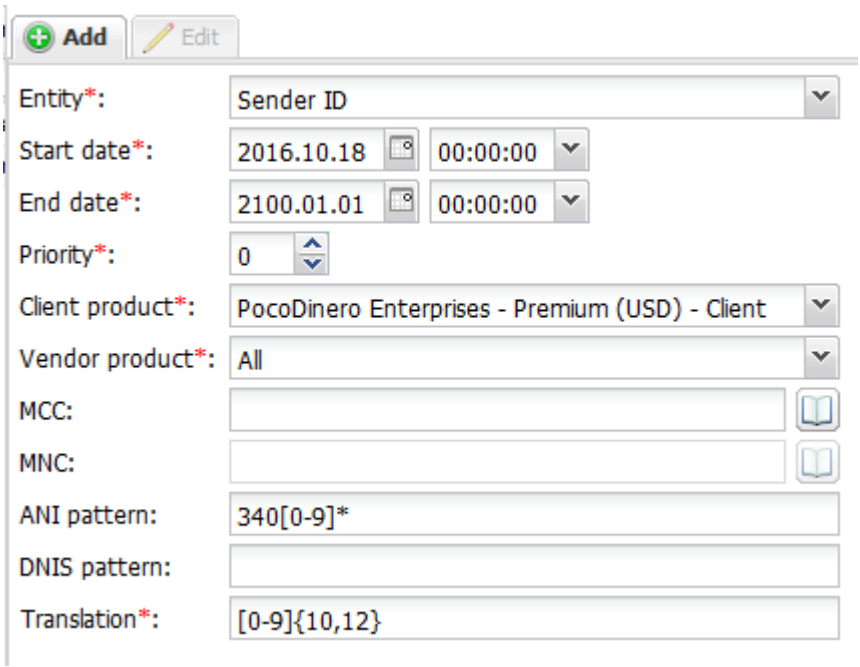


Fig. 218 Add menu

The *Add* menu contains the following fields:

- *Entity*: the SMS parameter to be transformed. Possible values include:
  - *Sender ID*: select this parameter to transform the sender ID from numeric to alpha values or vice versa. NOTE: For correct translation, two rules must be created: one with the *Sender ID* selected as the *Entity*, the other with the *Sender TON*.
  - *Destination number*: the parameter is used when a partner sends or wants traffic in a non-E164 numbering format
  - *Sender TON*: a numeric value denoting the sender's type of number (*Unknown (0), International (1), National (2), Network specific (3), Subscriber number (4), Alphanumeric (5), Abbreviated (6)*). Typically, the parameter is used when the *Sender ID* needs to be transformed from numeric to alpha values or vice versa. NOTE: For correct translation, two rules must be created: one with the *Sender ID* selected as the *Entity*, the other with the *Sender TON*.
  - *Sender NPI:* a numeric value denoting the Sender's numbering plan ID (*Unknown (0), ISDN/telephone numbering plan (E163/E164)(1), Data*

numbering plan (X.121)(2), Telex numbering plan (F.69)(4), Land mobile (E.212)(6), National numbering plan (8), Private numbering plan (9), ERMES numbering plan (ETSI DE/PS 3 01-3)(10), Internet (IP)(13), WAP client ID (18))

- *Destination TON, Destination NPI:* the parameters are similar to *Sender ID* and *Sender NPI*. They are normally used for translation between a national and international number plans
- *Registered delivery*: use this parameter to change the value of the *registered_delivery* flag of the *submit_sm* packet. NOTE: This parameter is used when for some reason the client fails to provide DLR reports. Create a rule translating the flag value from 0 to 1 to request DLR reports from the vendor
- *Flash message*: this flag allows transforming regular messages to flash sms and vice versa

- *Start date*, *End date*: the period during which the rule is valid
- *Priority*: serves to set the priority for several rules with overlapping parameters. For example, suppose rule No1 changes *registered_delivery* for all messages from 0 to 1, while rule No2 changes *registered_delivery* for messages in Greece to 0. In this case it is reasonable to set a higher priority for Rule No2.
- *Client product*, *Vendor product*
- *MCC*
- *MNC*
- *ANI pattern*: sender ID pattern (regular expressions are supported)
- *DNIS pattern*: B-number pattern (regular expressions are supported)
- *Translation*: the regexp-based rule

Below are some examples of regular expressions and translation rules.

ANI pattern:
[a-zA-Z0-9_]* - alphanumeric
[0-9]* - numeric
340[0-9]* - numeric beginning with 340

DNIS pattern:
[0-9]{10,12} – numeric between 10 and 12 digits
34[0-9]{10} – prefix 34 + 10 digits

Example of translation (for *Sender ID*):
ANI pattern:
([0-9]{4}).* - any numeric number, the first 4 digits of which are saved into group 1
Translation:
\g<1>10500 - use group 1 from the source ANI and add 10500

Fields marked with an asterisk (*) are required. When through with defining the parameters, click Submit to confirm or Reset to discard the settings. Click Delete to delete the selected record.

9.6 Test System

The *SMS\Test system* page serves to test the quality of SMS delivery. The Test system provides an API for the platforms *TestMySMS* and *remote365*.
The Test system page contains three panels:

- *Test destinations*: destinations for testing
- *Task settings*: testing task parameters
- *Test tasks*: test results

9.6.1 Test destinations

The *Test destinations* panel contains the *Test platform* drop-down list that allows selection of the external test platform (TestMySMS or remote365). It also displays the *Test destinations* table with the following columns:

- *Vendor*
- *Product*
- *POI*
- *Country*
- *Net*: network name
- *MCCMNC*: MCC/MNC code
- *Rate, USD*: the minimum and maximum rate
- *Rate actual at*: the date on which the rate is actual

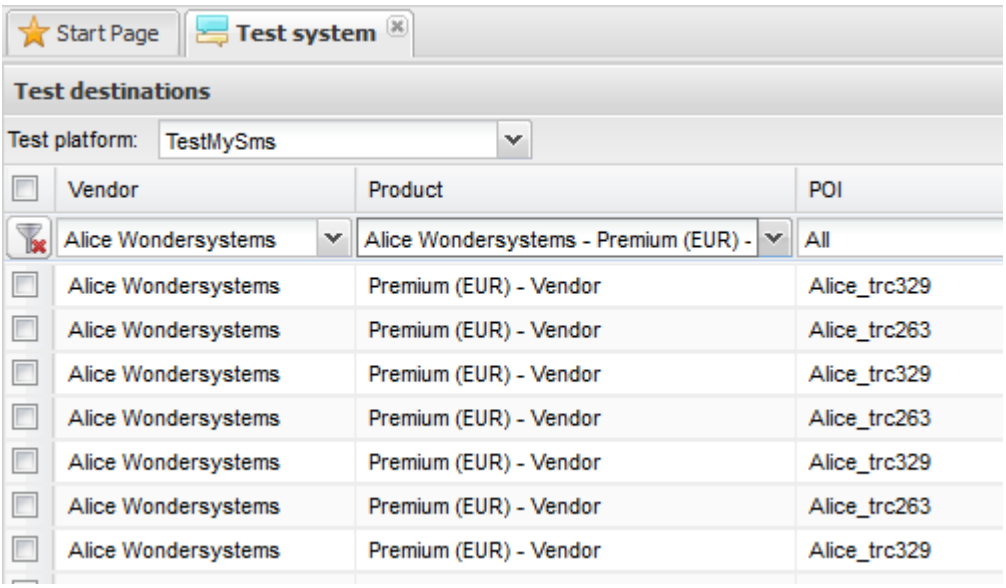


Fig. 219 Test destinations

NOTE: Some destinations may not be supported by the testing platforms; such records are greyed out.
Use text masks or drop-down lists under the column headers to filter the records in the table.

9.6.2 Task settings

The *Task settings* panel serves to create a new test task. It has the following parameters:

- *Test platform*: the system selected in the *Test destinations* panel
- *Balance*: the account balance of the test platform (only available for TestMySMS)

- *Start date*: the start date and time for the test
- *Sender*: the sender ID
- *Message template*: the message template (configurable in the test platform)
- *Message text*: text of the test message (for the TestMySms service it is configured in the service interface)

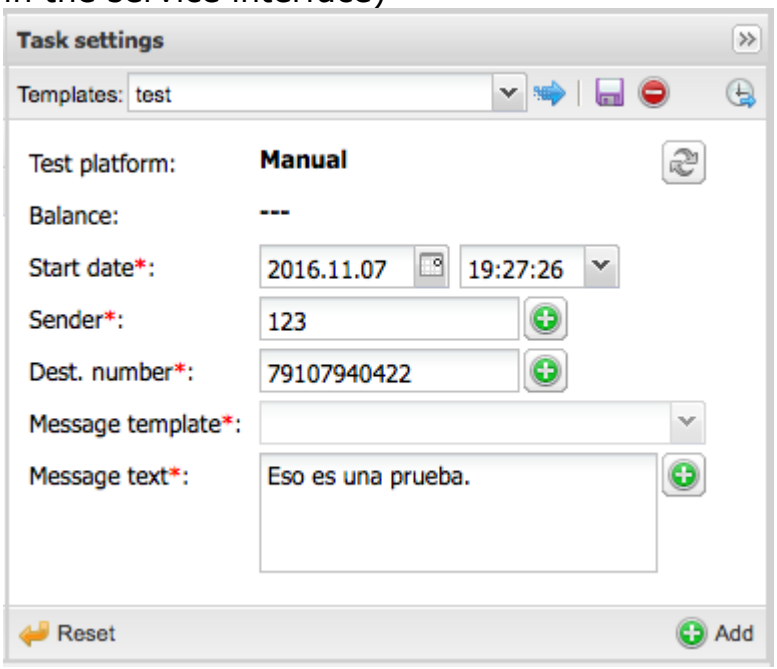


Fig. 220 Task settings

9.6.3 Test tasks

The *Test tasks* panel is a table of submitted test tasks. It contains the following columns:

- *Task ID*
- *Test platform* (values are *TestMySMS* and *remote365*)
- *Status*: the task status. Possible values include:
  - *scheduled* – task with a future date and time
  - *in progress* – task in progress
  - *postponed* – indicates a pause between message send attempts
  - *completed* – the task is completed (the message was sent; it may be delivered correctly or with errors, or not delivered, which is shown in the *Delivery status* and *Status details* columns)
  - *failed* – the task was not completed successfully
  - *canceled* – the task was canceled by the user
- *Scheduled to*: the task date
- *Vendor*
- *Product*
- *POI*
- *Country*
- *Net*
- *Result*: task result. Valid values include:
  - *OK* – the task is completed successfully
  - *FAIL* – the task failed

- *Test ref ID*: the task ID
- *Send date*: the message send date
- *Delivery status*: SMS delivery status. Valid values include:
  - *OK* – the message is delivered
  - *FAIL* – the message is not delivered
- *Delay*: message delay
- *Sent text*: the text sent by the Test system
- *Received text*: the text received by the recipient
- *Text diff*: the difference between the sent and received text
- *Sent sender*: the sender ID sent by the Test system
- *Received sender*: the sender ID received by the recipient
- *Template name*: the template selected in the *Task settings* panel
- *Target number*: the destination number
- *Status details*: the information on the task status. Possible values include:
  - *unexpected status failed* – a conflict between the test statuses received from the vendor and the test platform (the vendor sent the *delivered* status, whereas the platform sent the *failed* status)
  - *task completed, test successful* – the message was delivered with no modifications in the sender's ID or message text
  - *task completed, test unsuccessful* – the message was delivered with some modifications in the sender's ID or message text
  - *allowed number of attempts exceeded* – the message was not delivered as the allowed number of attempts was exceeded (the number of attempts is configured in Administration\System Settings\SMS Test (the parameter *SMS test max attempts count*)
  - *canceled by user* – the message was not delivered as the task was canceled by the user

9.6.4 Using TestMySMS to test SMS delivery

In order to test SMS delivery using the TestMySMS service, proceed as follows:

1. Add a new carrier (see *Carriers* for more detail)
   a. In the *Carriers* page, check *Inbound traffic allowed*
   b. Configure pages *Users, Accounts, Agreements, Products, Voice POI* as appropriate
   c. In the *SMS channels* page, specify the following:
      - *Carrier*: provide a carrier's name
      - *Partner direction*: select Client
      - *Channel bind type*: select *Auto*
      - *Channel name*: provide an arbitrary name
      - *Host name*: supply the IP address *209.208.212.224*
      - *Login* and *Password*: make up values that will be used by the TestMySMS service to access the Alaris SMS Platform.
      - Leave the remaining fields blank or fill them with arbitrary values and click *Submit*

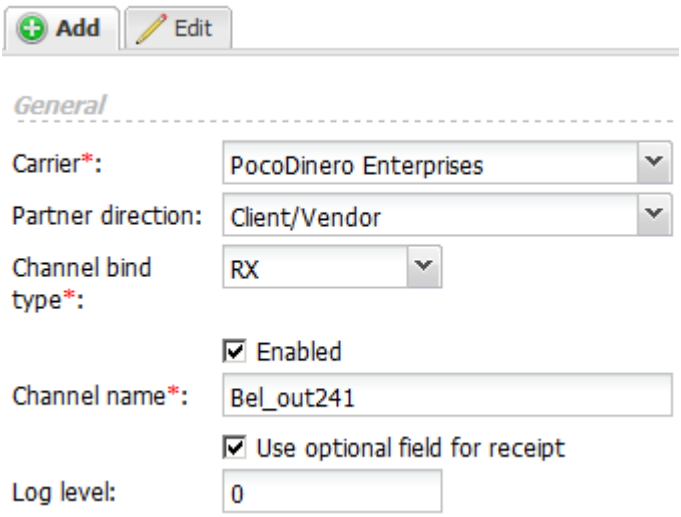


Fig. 221 Add SMS channel menu

2. Create an SMS POI for the channel. Go to the *SMS POI* page, select the carrier, product, active dates and SMS channel. Leave the *Service type* field blank

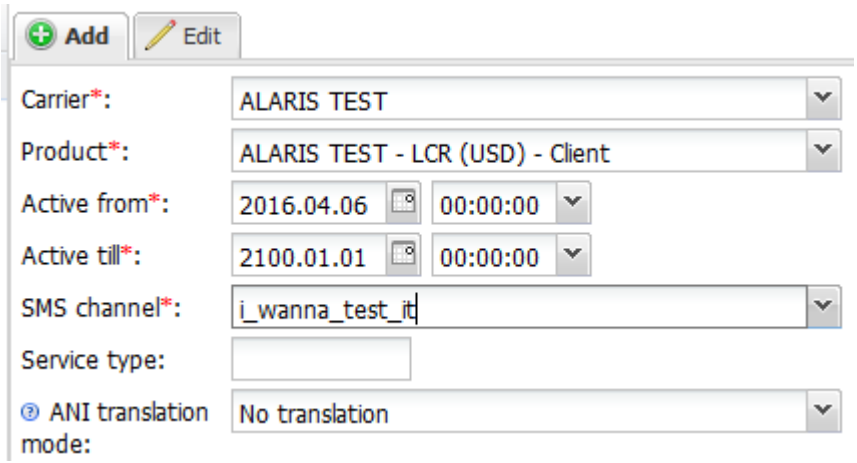


Fig. 222 Adding the SMS POI

3. Register an account with the TestMySMS service, create a new vendor and configure the channel connection parameters (use the SMS channel values configured above)
4. Go to *Administration\System settings\SMS Test* and configure the following parameters.
    a. *TestMySMS URL*: provide the platform URL
    b. *TestMySMS password* and *TestMySMS user name*: supply login and password used to access the TestMySMS platform
    c. *TestMySMS vendor*: enter the name of the vendor as specified in the TestMySMS platform
5. Go to the *Test system* page (*SMS\Test system*) and create a new test task.
    a. In the *Test destinations* section:
        - Select *TestMySMS*
        - Select the appropriate destination
    b. In the *Task settings* section, configure the following:
        - *Start date* – specify the start date and time for the test

- *Sender* – supply the sender's phone number
- *Message template* - select the message template created in the TestMySMS platform

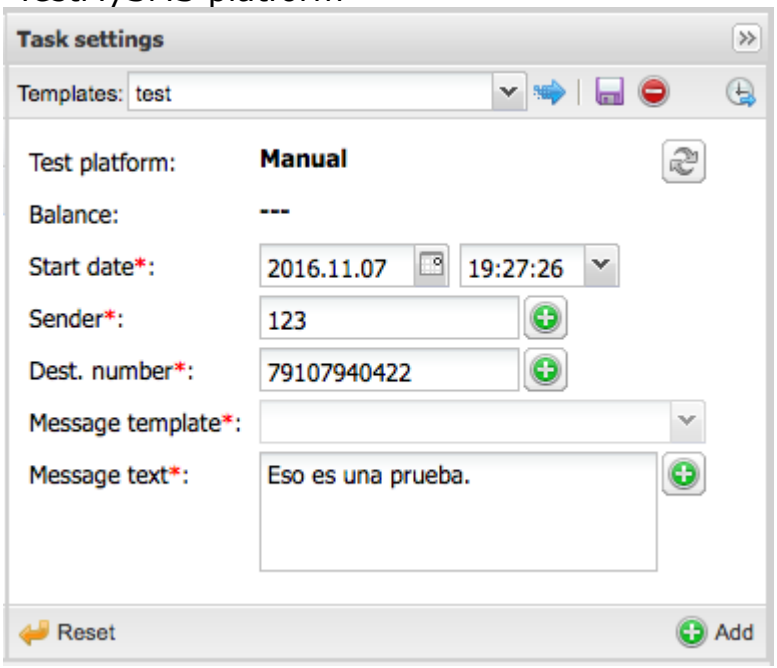
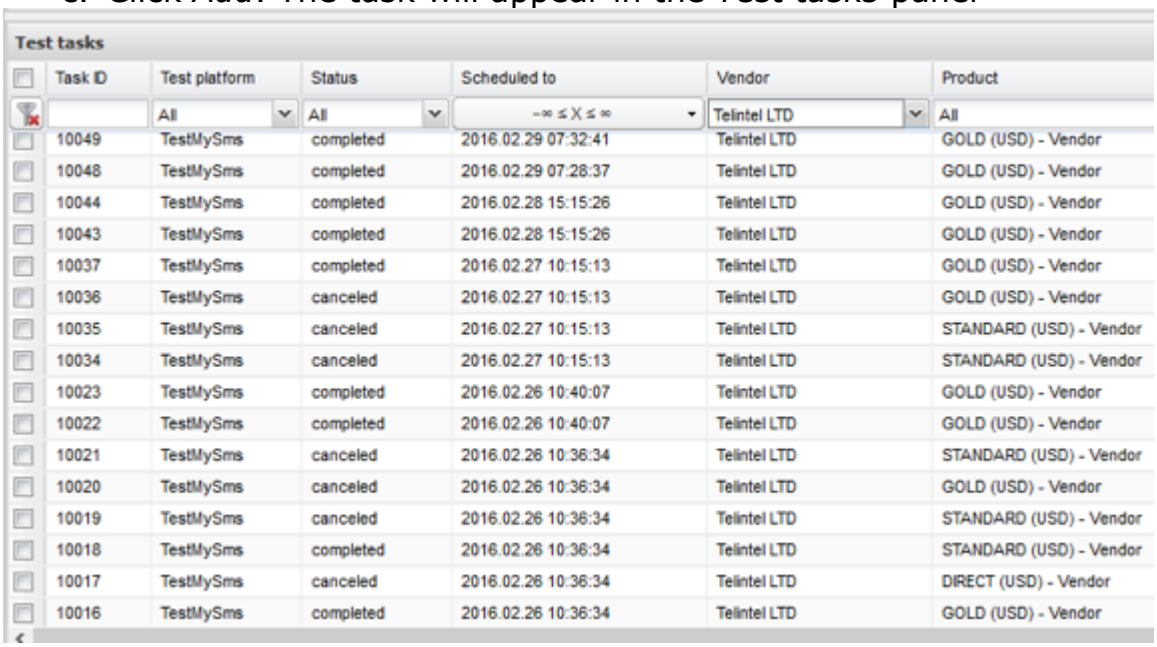


Fig. 223 Task settings

c. Click *Add*. The task will appear in the *Test tasks* panel



Task ID	Test platform	Status	Scheduled to	Vendor	Product
	All	All	-∞ ≤ X ≤ ∞	Telintel LTD	All
10049	TestMySms	completed	2016.02.29 07:32:41	Telintel LTD	GOLD (USD) - Vendor
10048	TestMySms	completed	2016.02.29 07:28:37	Telintel LTD	GOLD (USD) - Vendor
10044	TestMySms	completed	2016.02.28 15:15:26	Telintel LTD	GOLD (USD) - Vendor
10043	TestMySms	completed	2016.02.28 15:15:26	Telintel LTD	GOLD (USD) - Vendor
10037	TestMySms	completed	2016.02.27 10:15:13	Telintel LTD	GOLD (USD) - Vendor
10036	TestMySms	canceled	2016.02.27 10:15:13	Telintel LTD	GOLD (USD) - Vendor
10035	TestMySms	canceled	2016.02.27 10:15:13	Telintel LTD	STANDARD (USD) - Vendor
10034	TestMySms	canceled	2016.02.27 10:15:13	Telintel LTD	STANDARD (USD) - Vendor
10023	TestMySms	completed	2016.02.26 10:40:07	Telintel LTD	GOLD (USD) - Vendor
10022	TestMySms	completed	2016.02.26 10:40:07	Telintel LTD	GOLD (USD) - Vendor
10021	TestMySms	canceled	2016.02.26 10:36:34	Telintel LTD	STANDARD (USD) - Vendor
10020	TestMySms	canceled	2016.02.26 10:36:34	Telintel LTD	GOLD (USD) - Vendor
10019	TestMySms	canceled	2016.02.26 10:36:34	Telintel LTD	STANDARD (USD) - Vendor
10018	TestMySms	completed	2016.02.26 10:36:34	Telintel LTD	STANDARD (USD) - Vendor
10017	TestMySms	canceled	2016.02.26 10:36:34	Telintel LTD	DIRECT (USD) - Vendor
10016	TestMySms	completed	2016.02.26 10:36:34	Telintel LTD	GOLD (USD) - Vendor

Fig. 224 Test results

9.6.5 Using remote365 to test SMS delivery

To test SMS delivery using the remote365 platform, proceed as follows:

1. Create an account at the remote365 platform
2. Add a new carrier as detailed in *Carriers*. Configure appropriate parameters except for those on the *SMS channel* page (see *SMS\Test system\Using TestMySMS to test SMS delivery* for parameter values)

3. Go to *Administration\System settings\SMS Test* and configure the following parameters (supplied by the Remote365 service).
    a. *Remote365 SMS send URL*
    b. *Remote365 control URL*
    c. *Remote365 password*
    d. *Remote365 user name*
4. Contact the Alaris technical support team to install a specialized add-on module and complete service configuration

10. Partner portal

10.1 Overview

Partner portal is the System's web interface intended for partner carriers of the System owner. Based on their rights, partner carriers can view their statistics and create and edit SMS POIs.
The user accounts and access rights for the Partner portal are configured by the System owner in *Carriers\Users*. User rights are configured in the *Roles* section of the *Add* menu (*Roles >> Partner portal*).

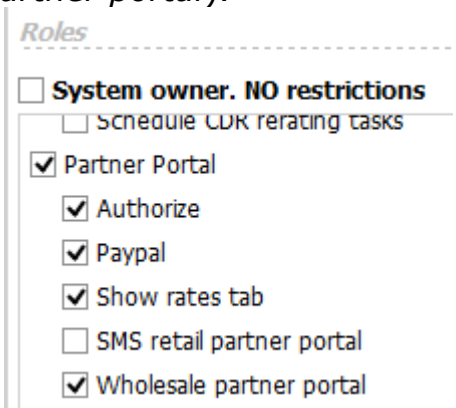


Fig. 225 Roles (Add menu, *Carriers\Users*)

Once the user account is created, the user will receive a link to the partner portal and password.

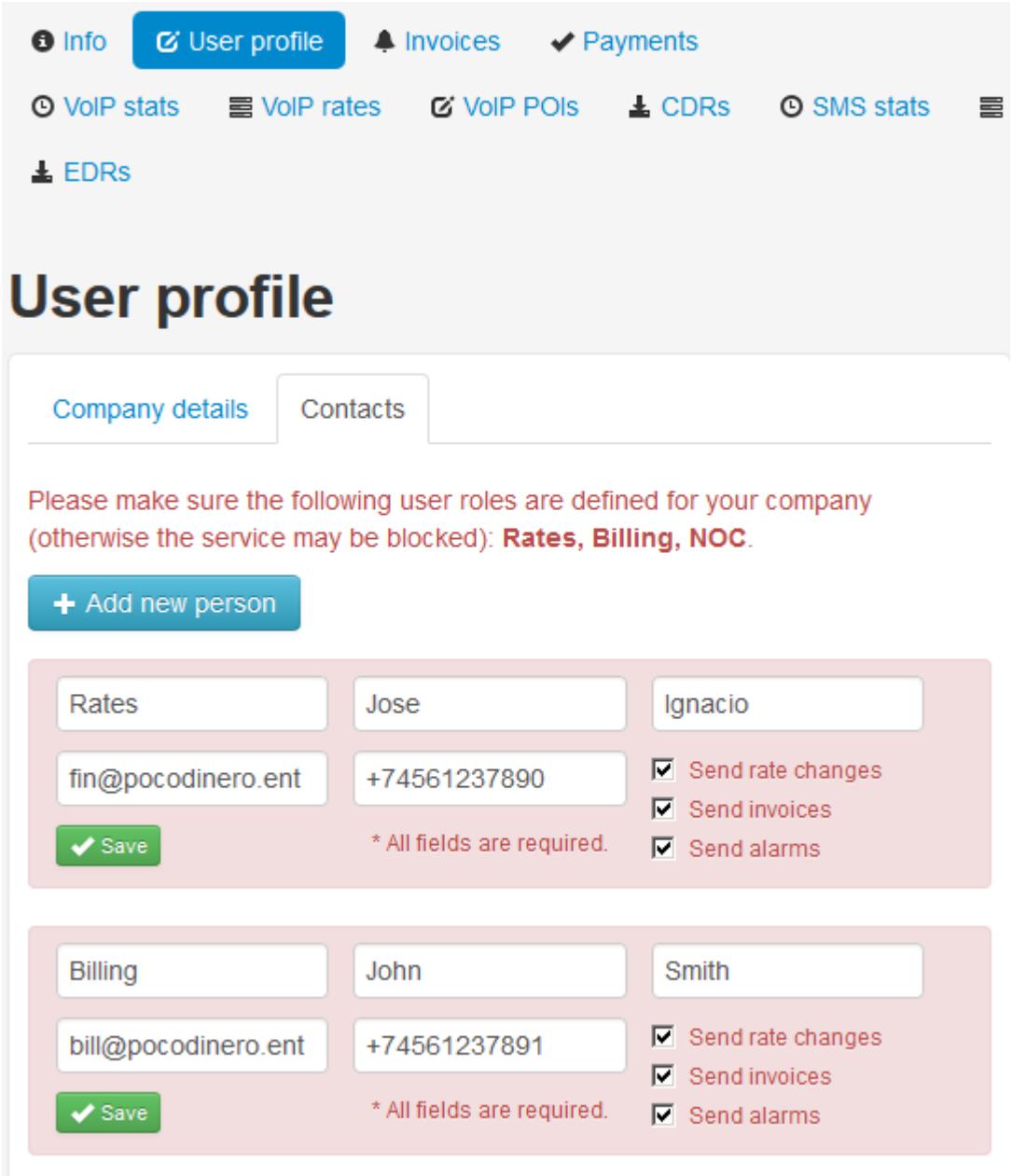


Fig. 226 Portal front page

The portal front page contains the following sections and controls:

- *Menu*: shows the following items (displayed depending on the user permissions): *Info*, *User profile*, *Invoices*, *Payments*, *SMS Stats*, *SMS Rates*, *SMS POIs* and *EDRs*
- *User profile*: contains two tab sheets: *Contacts* and *Company details*.
  - The *Contacts* tab sheet shows information about the carrier's users: *Position, First name*, *Last name, Phone, Email* address for sending notifications and *Notifications* checkboxes (*Send rate changes*, *Send invoices*, *Send alarms*)
  - The *Company details* tab sheet shows the company's name, region and address

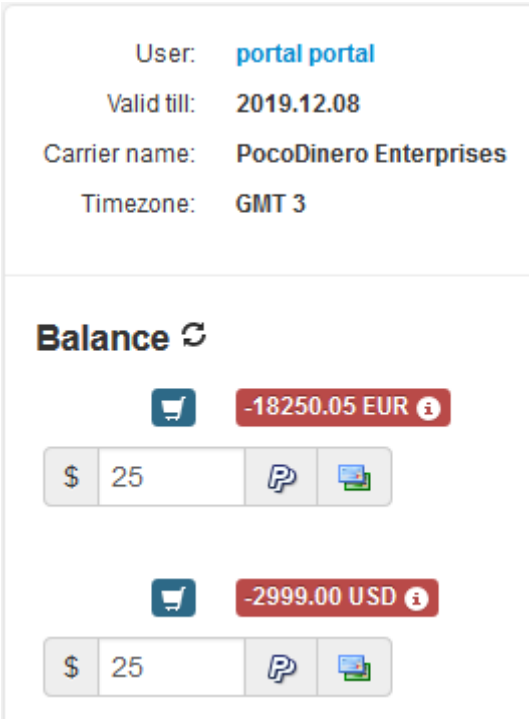


Fig. 227 Account details and Balance sections

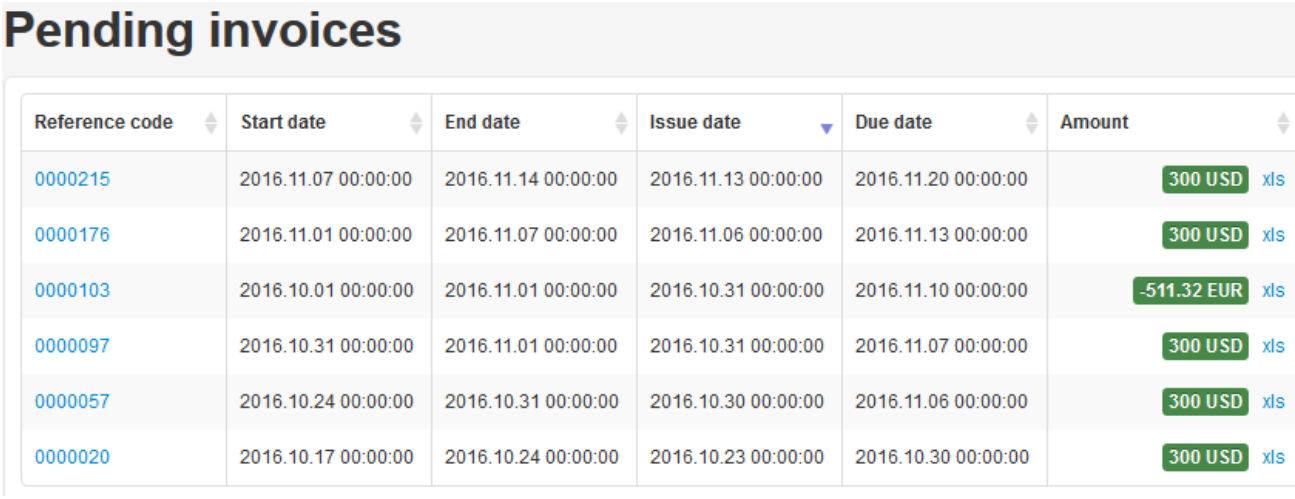
- Account details section at the top right corner of the page shows the account summary.
- *Balance* section: displays the account balance in the carrier's and System currencies. Point the cursor to the amount to view the billing period and latest balance update date. Click to update the balance. Click to top up the balance. Enter the amount in the edit box and click to use Paypal or to use Authorize.net. NOTE: Prior to using this function, an account must be registered at Paypal and authorize.net respectively and configured in *Administration\System settings\Partner portal*

- The top right corner of the page contains the Logout button and the session expiry timer 09:13. A minute before the session expires, the user is offered to renew the session or log out. The default session time is 10 minutes. Click on the timer to renew the session at any time

Pages containing tables have the Refresh button that serves to update the page, and the xls-file button that serves to import the table to an xls file.

10.2Invoices

The *Invoices* page contains a list of the carrier's invoices.



Pending invoices

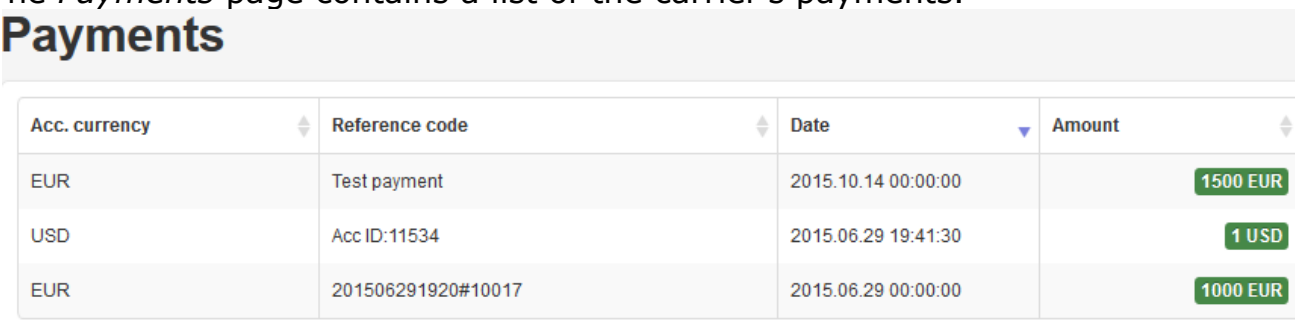
Reference code	Start date	End date	Issue date	Due date	Amount
0000215	2016.11.07 00:00:00	2016.11.14 00:00:00	2016.11.13 00:00:00	2016.11.20 00:00:00	300 USD xls
0000176	2016.11.01 00:00:00	2016.11.07 00:00:00	2016.11.06 00:00:00	2016.11.13 00:00:00	300 USD xls
0000103	2016.10.01 00:00:00	2016.11.01 00:00:00	2016.10.31 00:00:00	2016.11.10 00:00:00	-511.32 EUR xls
0000097	2016.10.31 00:00:00	2016.11.01 00:00:00	2016.10.31 00:00:00	2016.11.07 00:00:00	300 USD xls
0000057	2016.10.24 00:00:00	2016.10.31 00:00:00	2016.10.30 00:00:00	2016.11.06 00:00:00	300 USD xls
0000020	2016.10.17 00:00:00	2016.10.24 00:00:00	2016.10.23 00:00:00	2016.10.30 00:00:00	300 USD xls

Fig. 228 Invoices

Click on the value in the *Reference code* column to open the invoice cover sheet (in pdf format). Click on the *xls* link in the *Amount* column to view the traffic details file (in xls format).

10.3 Payments

The *Payments* page contains a list of the carrier's payments.



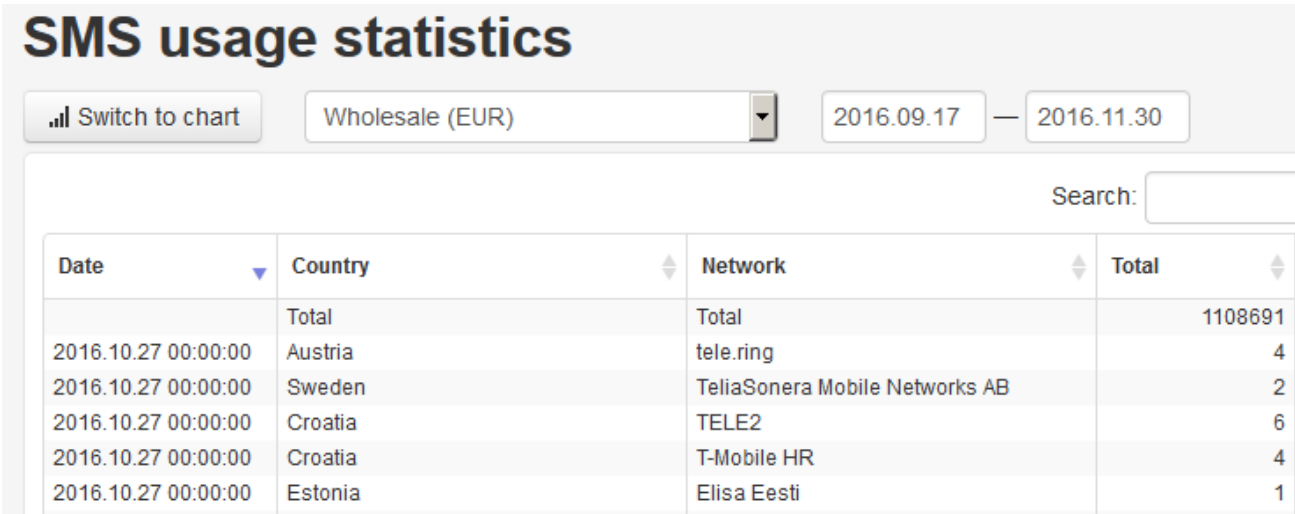
Payments

Acc. currency	Reference code	Date	Amount
EUR	Test payment	2015.10.14 00:00:00	1500 EUR
USD	Acc ID:11534	2015.06.29 19:41:30	1 USD
EUR	201506291920#10017	2015.06.29 00:00:00	1000 EUR

Fig. 229 Payments

10.4 SMS Stats

The *SMS Stats* page contains the carrier's statistics of SMS transfer.



SMS usage statistics

Switch to chart | Wholesale (EUR) | 2016.09.17 — 2016.11.30

Search:

Date	Country	Network	Total
	Total	Total	1108691
2016.10.27 00:00:00	Austria	tele.ring	4
2016.10.27 00:00:00	Sweden	TeliaSonera Mobile Networks AB	2
2016.10.27 00:00:00	Croatia	TELE2	6
2016.10.27 00:00:00	Croatia	T-Mobile HR	4
2016.10.27 00:00:00	Estonia	Elisa Eesti	1

Fig. 230 SMS usage statistics

To view the statistics, select the product in the drop-down list and specify the period in the edit fields. Click Switch to chart for a chart view.

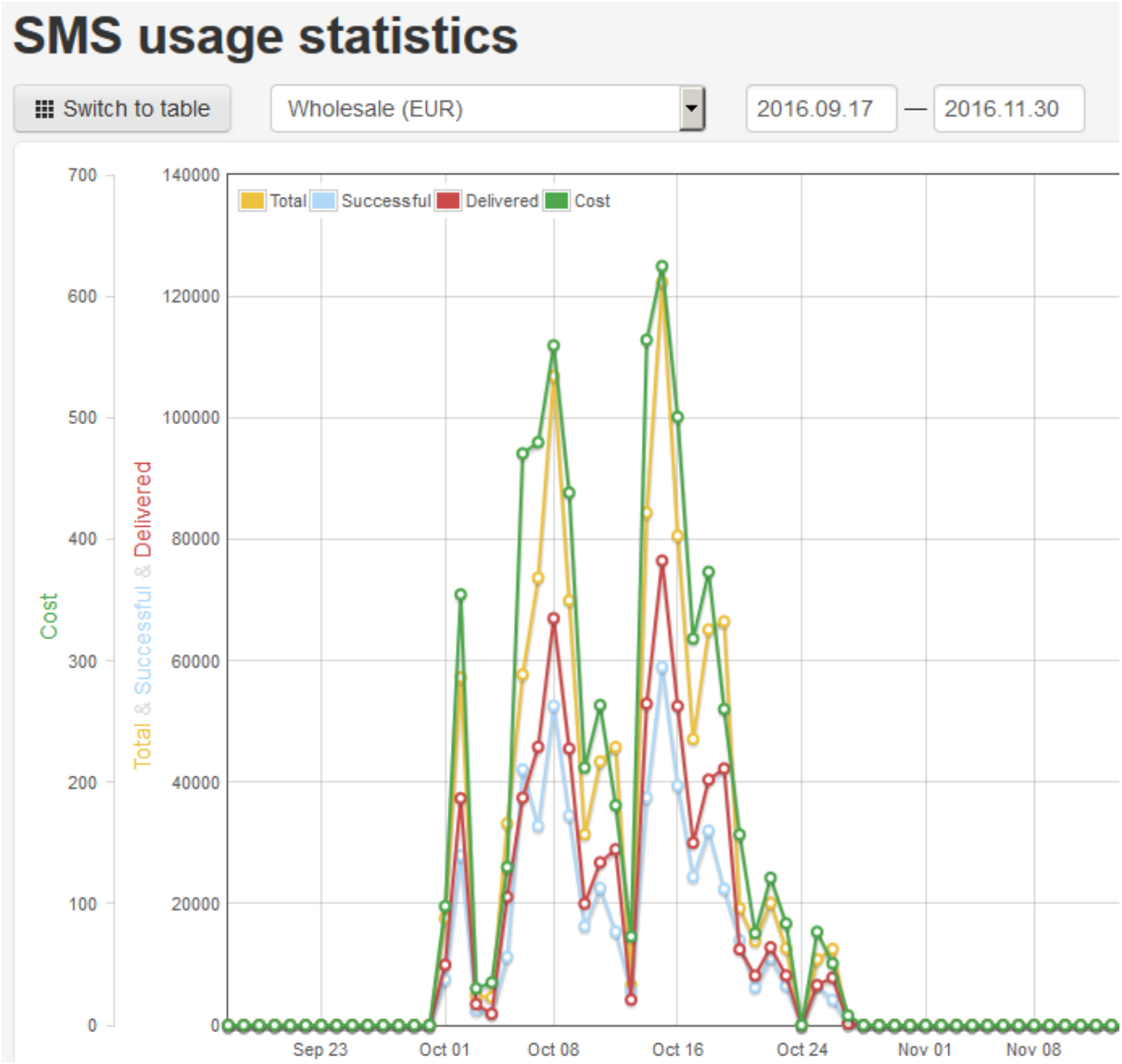


Fig. 231 SMS usage statistics chart view

10.5 SMS rates

The *SMS rates* page contains a table of the carrier's active rates. To view the statistics, select the product in the drop-down list and specify the date in the *Active at* field.

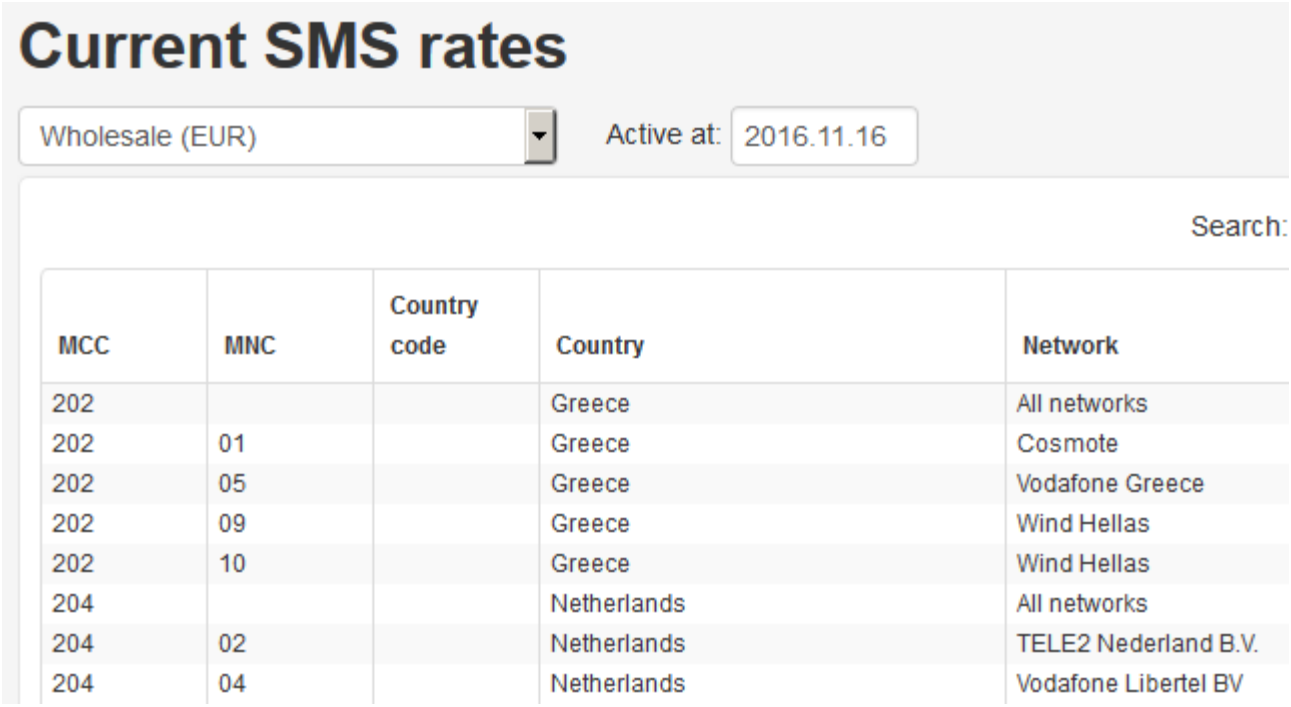


Fig. 232 Current SMS rates

10.6 SMS POIs

The *SMS POIs* page contains two tab sheets: *List of SMS POIs* and *Add new SMS POI* (displayed if the user has the rights to create/edit SMS POIs; the rights are configured in *Carriers/Users*, *Add* menu, *Roles >> SMS >> SMS POI edit*)

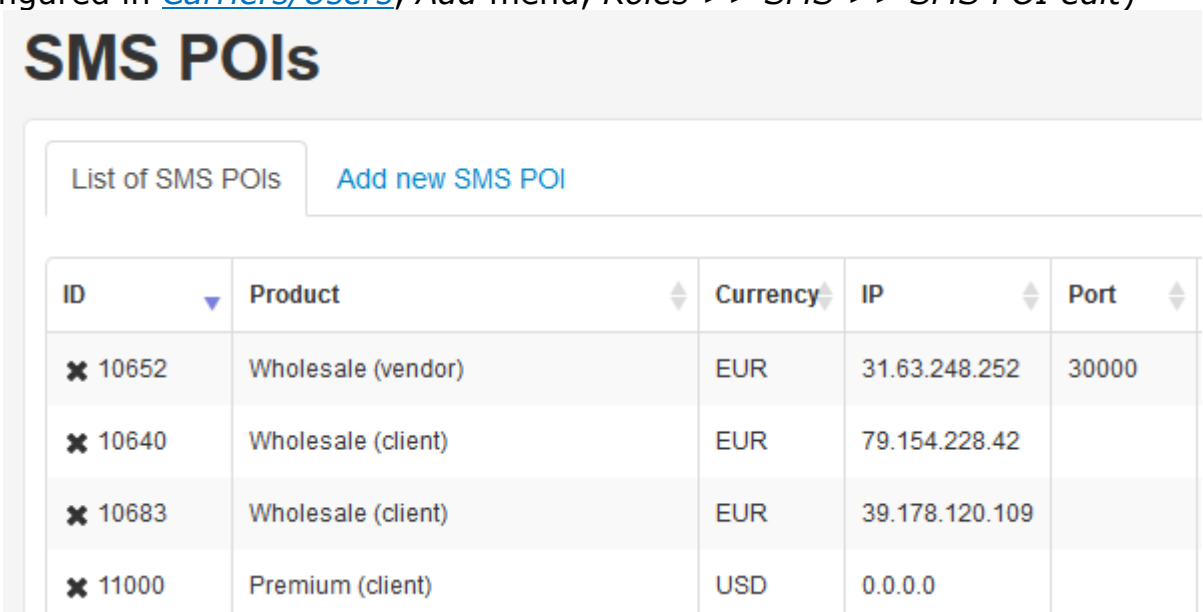


Fig. 233 SMS POIs

To add a new SMS POI, open the *Add new SMS POI*, select the product and enter the IP address.

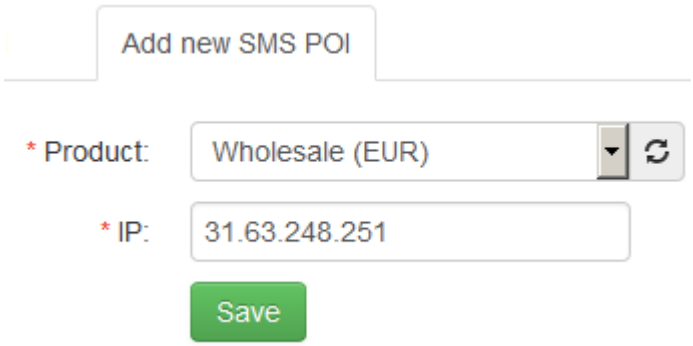


Fig. 234 Add new SMS POI

10.7 EDRs

The *EDRs* page serves to download EDRs for a specified period.

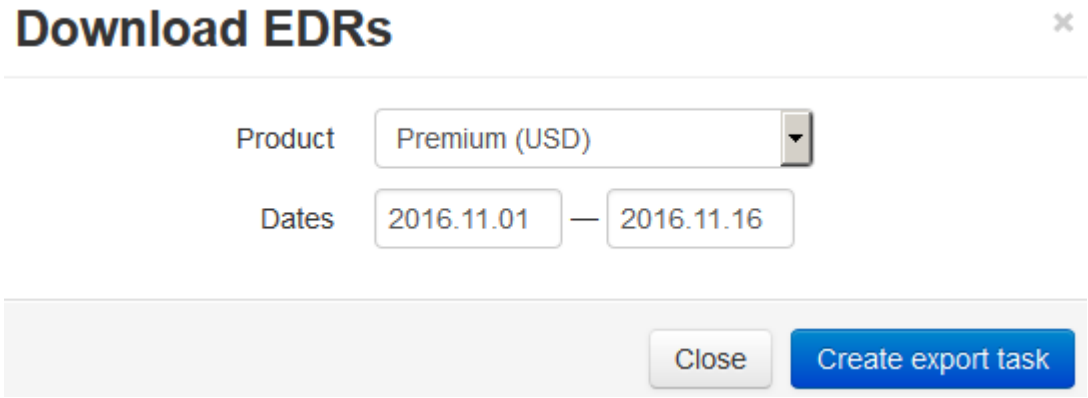


Fig. 235 Download EDRs

Select the product, specify the dates and click Create export task. Once the file is downloaded, the download link will be sent to the user's email address (as configured in *Carriers/Users*).

11. Appendix 1. HTTP API

11.1 Overview

This section provides the HTTP API description for integration of external systems with Alaris SMS platform.
HTTP API enables SMS submission and SMS delivery status requests.
Authentication information (login/password) for connecting to Alaris SMS platform must be requested from the owner of Alaris SMS platform for each new interconnection. Credentials must be sent with each API request otherwise the user will be rejected as non-authorized.
Requests can be sent either with the GET or POST method to URL provided by the System owner in the format: http(s)://<IP_address>:<port>/api? (e.g. https://1.1.1.1:8443/api? or http://1.1.1.1:443/api?)

11.2 SMS submission.

Request format:

https://1.1.1.1:8443/api?username=<username>&password=<password>&ani=<ani>&dnis=<dnis>&message=<message>&command=submit&serviceType=<serviceType>&longMessageMode=<longMessageMode>

http://1.1.1.1:443/api?username=<username>&password=<password>&ani=<ani>&dnis=<dnis>&message=<message>&command=submit&serviceType=<serviceType>&longMessageMode=<longMessageMode>

Parameters:

username:	Login
password:	Password
ani :	Caller ID. Technical limitation - alpha-numeric up to 32 symbols. Additional limitations can be caused by destination route peculiarities.
dnis:	Destination number. Must be sent in international E.164 format (up to 15 digits allowed).
message:	Message text.
command:	Request type. Must be set to “submit” value.
serviceType:	Service type, provided by the system owner for the registered interconnection. Can be blank.

longMessageMode: Type of long message processing. The following values allowed:
1 Cut (trim message text to 140 bytes) - shortens the message leaving only first 140 bytes to be sent.
2 Split and 3 Split SAR - split the message according to the logics described below. The difference between them is in the header to be used, for Split it is UDH header, for Split SAR it is SAR accordingly.
4 Payload - message_payload field is used for sending the message text

The splitting (options 2/3) depends on the coding:

- dataCoding = 0: one message can contain up to 160 symbols, if more – segment count = message length / 152
- dataCoding from 1 to 7: one message can contain up to 140 symbols, if more – segment count = message length / 134
- dataCoding = 8: one message can contain up to 70 symbols (140 bytes), if more – segment count = message length / 67 (134 bytes)

All parameters except of longMessageMode are obligatory, the default value for longMessageMode is 1 (Cut).

Response format
In case of successful processing, the status in the header of the HTTP response is 200 OK. Response body contains the message_id.
Sample of a response in JSON format:

```
HTTP/1.1 200 OK
Content-Type: text/html; charset=UTF-8

{"message_id":"alss-a1b2c3d4-e5f67890"}
```

In case of rejected sms (no compatible routes found or authentication data is incorrect), the HTTP response status is - 400 Bad Request. The response body contains a string describing the reason for rejection, for example NO ROUTES or Unknown username.

```
HTTP/1.1 400 Bad Request
Content-Type: text/html; charset=UTF-8

Unknown username
```

In case an incorrect password is provided, the HTTP status is 401 Unauthorized. The response body contains the string describing the reason for rejection.

```
HTTP/1.1 401 Unauthorized
Content-Type: text/html; charset=UTF-8

Incorrect password
```